AN INVESTIGATION INTO THE FACTORS ENHANCING OR INHIBITING PRIMARY SCHOOL CHILDRENS' CREATIVITY IN PAKISTAN

By

ROBINA SHAHEEN

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School of Education

University of Birmingham

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ABSTRACT

This study provides a baseline analysis of the extent to which the primary education system in Pakistan is capable of enhancing or inhibiting children's creativity. It involved 1008 primary schools who participated in a survey, 154 children who took the Torrance Tests of Creative Thinking, and classroom observation in 16 schools as well as documentary analysis of the education policy documents, curriculum and the official science textbook. The research presents the findings related to the definition of 'creativity', and the means used to identify, assess and enhance it as well as the importance and the obstacles faced in doing so.

The study finds that while policy documents mention the introduction of creativity in education, and the curriculum lays emphasis on the concept in a comprehensive manner, the designated textbooks and teaching practices do little more than encourage rote memorization and regurgitation of information. The measurement of children's creativity in this study has shown that children have the ability to produce ideas which are at times also original. But they appear to be weaker in other areas such as being able to produce abstract titles, and remaining open to going beyond the 'ordinary' in their thinking. This is due to the fact that much of the teaching is only geared towards knowledge acquisition. This research has reinforced the need for a systems view of creativity, in order to provide a more holistic and less distorted view of the phenomenon.

DEDICATION

This PhD is dedicated to all those circumstances, often constraining yet life changing, which allowed me to dream. But more so it is dedicated to my husband, Javaid Iqbal, who recognised my passion and removed all barriers.

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LIST OF ABBREVIATIONS/TERMINOLOGY

AEO	Assistant Education Officers
AEPM	Academy of Educational Planning and Management
B.Ed	Bachelor of Education
BAES	Bachelor of Arts Educational Studies
Baji	Used to address an elder female out of respect
CCOS	Classroom Creativity Observation Schedule
Centre Schools	The Centre School acts as an administrative unit to a cluster of schools
CI	Creativity Index
CPD	Continuous Professional Development
CPE	Coordinator Primary Education
CRB	Criminal Record Bureau
CT	Certificate of teaching
Daily dairies	The MCs were required to wrote a dairy daily to document the research process
DDEO	Deputy District Education Officer
DEO	District Education Officer
DPME	District Program Manager Education
DSD	Directorate of Staff Development
EDO	Executive District Officer
EMIS	Education Management Information System
ESF	Education Sector Reforms
GM	General Manager

Guide/Guidebook	This is a book containing the answers to end of unit questions of the textbook
HDSU	Human Development Support Units
ICG	International Crisis Group
Markaz	A geographical division of a tehsil. Each tehsil may be divided into a number of Markaz
Matriculate	Qualification obtained after secondary education
MC	Markaz Coordinator
NACCCE	National Advisory Committee on Creative and Cultural Education
NCHD	National Commission for Human Development
NFBE	Non formal basic education centre
NRSP	National Rural Support Program
PC	Provincial Coordinator
PEC	Punjab Examination Commission
PEMIS	Punjab Education Management Information System
PTC	Primary certificate teaching
Purdah	Females not meeting unknown males, and/or covering themselves in a full veil
Sabaq	This is the task given to children when in lessons
Takhtee	A wooden slate used for practicing writing
Tehsil	Sub-district, a geographical division of the district
The Centre Head	Head teacher in charge of a Centre School.
TTCT	Torrance Tests of Creative Thinking

CHAPTER 1

INTRODUCTION

1.1: Statement of purpose and aim of the study

The idea for this study was conceived as a result of working in Pakistan and perceiving that schooling often involves children rote memorizing and reproducing the prescribed textbook contents. Also in Pakistan, education research focuses on enrolment, retention and children's learning competencies in the core academic subjects such as mathematics and science. This is a potential problem, considering that providing knowledge may no longer be regarded as sufficient to prepare children for their future. The purpose of education is changing globally, shifting from knowledge transmission alone to developing other abilities such as creativity. Creativity is being regarded as essential for progress and development, which if true is something that developing nations such as Pakistan need to make provision for.

The purpose of this research is to provide support to the Government of Pakistan in identifying the systemic factors that may be inhibiting or promoting primary school children's creativity. In this, the aim is to establish a baseline against which to gauge the effects of future interventions for creativity. The overall aim is to provide contextually appropriate recommendations for reform of policy, curriculum, textbooks, teaching techniques and teacher perceptions. This is so that the government can make any desired changes for developing children's creativity through primary education which build upon existing practices rather than reinventing best practice elsewhere. Hence, with suggestions for appropriately indigenous solutions it will reduce the risk of importing, imposing and the worry of sustaining creativity concepts from other cultures and countries. This investigation is

therefore 'an attempt to truly indigenize research in creativity' (Sen and Sharma, 2004, p.153).

This study aims to make contribution to scholarship by; adopting the 'systems' approach to investigate creativity; conducting creativity research within a new context (Pakistan); working with an understanding that each person is capable of being creative, hence taking the view that creativity is an 'everyday' phenomenon (Runco, 2007, p.x); using the framework of both the implicit and explicit theories of creativity. The implicit theories of creativity are 'derived from individual's belief systems,' while the explicit are based on 'theoretically or empirically derived hypotheses' (Rudowicz, 2003, p.275).

1.2: Research questions

The central question of this study is:

> To what extent is the primary education system in Pakistan hindering or promoting children's creativity?

In order to answer the overall question the following questions are addressed:

1. What do we mean by creativity?
2. What is the importance of developing creativity?
3. To what extent can creativity be developed?
4. To what extent can creativity be assessed?

These questions are explored within the framework of the components of Pakistan's primary education system which includes the education policy, curriculum, textbooks, teacher views

and teaching. The findings are used to help explain the creativity test results obtained from assessing primary school children.

1.3: Structure of the research report

The research report is divided into four parts, literature review, methods, findings, conclusion and recommendations.

- Part one consists of four chapters containing review of existing evidence related to the creativity and education, importance of creativity, definitions, development identification, assessment and methods used to research creativity.

- Part two consists of three chapters related to the context of the study and the methods used to conduct this research.

- Part three consists of seven chapters related to the findings in relation to the research questions as well as the quality of sample. These include definitions, importance, identification, development and assessment of creativity. Also included are the findings related to the sample, research instruments and processes adopted.

- Part four contains one chapter consisting of conclusions and recommendations.

The purpose and aims of the study have been outlined in this chapter as well as the research questions and the structure of the report. The first part of the thesis provides a background to the study in the form of existing literature in relation to the research questions, starting with a consideration of the definitions and importance of creativity in the next chapter.

CHAPTER 2

CREATIVITY AND EDUCATION

This chapter starts with a brief background of the link between creativity and education, including the perceived beginning of the most recent interest in the two. There is a short discussion into the reasons for this renewed interest. This is followed by the dissatisfaction with current education and its changing role in the light of increasing importance being accorded to creativity. Lastly, evidence in educational policy documents from around the world is presented to show the steps being taken for implementation.

2.1: The link between creativity and education

Although the interest in creativity goes back to Plato's age (Cropley, 2004) and is found in the Greek, Judaic, Christian and Muslim traditions, (Craft, 2001) renewed policy interest came about with the launch of satellite, 'Sputnik 1,' by the Soviet Union in 1957. The purported failure of the engineers from Europe, USA and other Western countries was attributed to their lack of creativity which led to the National Defense Education Act (USA) to accept the concept as important for 'prosperity…survival of society' (Cropley, 2004, p.13). Since this there have been several 'waves of creativity in education' (Wilson, 2005, p.7). The latest interest, however, began in the late 90's (Jeffrey, 2005) and has since been growing (Turner-Bisset, 2007) throughout the world, including countries such as the USA and UK (Feldman and Benjamin, 2006). Policy-makers have shown more sustained enthusiasm than previously (Craft, 2006), which has added to its popularity as a topic of debate (Dickhut, 2003) moving it from the 'fringes of education…to being seen as a core aspect of educating' (Craft, 2005, p.5).

Fostering creativity in education is intended to address many concerns. These are described in more detail in Chapter three. However, as a summary, this includes dealing with ambiguous problems, coping with the fast changing world and facing an uncertain future (Parkhurst, 1999). Perhaps the most dominant current argument for policy is the economic one. The role of creativity in the economy is being seen as crucial (Brundrett, 2007) to assist nations for attaining higher employment, economic achievement (Davies, undated) and to cope with increased competition (Nesta, 2002). It is for this reason that creativity cannot be 'ignored or suppressed through schooling' (Poole, 1980, p.14) or its development be left to 'chance and mythology' (Nesta, 2002, p.2). It is predominantly for this reason that there is a call for its inclusion in education as a 'fundamental life skill' (Craft, 1999, p.136) which needs to be developed to prepare future generations (Parkhurst, 1999) so that they can 'survive as well as thrive in the twenty-first century' (Craft, 2006, p.339). Developing children's creativity during their years in education is the start of building 'human capital' upon which, according to Adam Smith and successive commentators, depends the 'wealth of nations' (Walberg, 1988, p.342).

2.2: Changing role of education

Formal education 'represents both a right and need' (Carnoy, 2004, p.1) but it has time and time again been criticized for turning out 'conformists' and 'stereotypes' rather than 'freely creative and original thinkers' (Rogers, 1970, p.137). The role of education institutions has been questioned (Craft, 1999) and blamed for 'spoon feeding' (Parnes, 1970, p.351) and 'killing' creativity (Kaila, 2005, p.1). The increased pressures to gear education towards the '3 R's' and meeting the requirements of national curriculum, inspections and monitoring has led to the feeling, for some, that creativity in teaching and learning has ceased to exist and this will prevent governments from achieving a 'creative society' (Grainger et al, 2004, p.244).

One of the reasons why education systems have been regarded as barriers to developing and 'releasing creative potential in the economy' is that the teaching focuses on 'knowledge acquisition' (Davies, undated, p.5). Knowledge, as an outcome of education is said to be no longer sufficient (Scoffham, 2003; Guilford, 1975). This is because it is difficult to know what knowledge will be needed in the future (Parnes, 1970).

If nations are to respond to the needs of the economy they need to produce an 'educated workforce'. Inevitably, this requires a rise in the level of educational achievement (Jeffrey, 2006). But what are being considered as criteria of educational achievement are said to be changing (Wilson, 2005) and being 'reconceptualized... [to] encompass creativity' (Craft, 2005, p.10). In the light of this, education systems are being required to undergo 'a major overhaul in resources, attitude and understanding' (Nesta, 2002, p.1) so that creativity can be valued. As a response to such calls there has been a shift in educational policy around the world and efforts are being made to combine creativity and knowledge (Dickhut, 2003). Creativity is being made the focus of 'curriculum and pedagogy' (Wilson, 2005, p.7) and an 'official agenda' (Burnard, 2006, p.313) for improving schools.

Schools are being seen as places for the encouragement of creativity because they can do this in a 'more efficient' manner and can develop it 'not merely in elites but in masses of students' (Walberg, 1988**,** p.350). In fact it is being said that creativity needs to be 'fostered by the education system(s) from the early years onward' (Craft, 1999, p.137) and that elementary and secondary education may be more important than university education for 'national prosperity and welfare' (Walberg, 1988, p.343). Primary education is being seen as:

> ...a critical stage in children's development – it shapes them for life. As well as giving them the essential tools for learning, primary education is about children experiencing

the joy of discovery, solving problems, being creative in writing, art, music, developing their self-confidence as learners and maturing socially and emotionally (DCSF, 2003, p.4).

2.3: Evidence of inclusion of creativity within education

The inclusion of creativity into educational policy documents is evidence of the fact that the focus on creativity is not merely a matter of paying 'lip service' (Hussain, 2004, p.93) to the concept, but rather action is being taken. O'Donnell and Micklethwaite (1999) reviewed the curriculum documents of 16 (developed) countries, (American, European and East Asian), identifying the place of arts and creativity in education. They found that creativity was included at various educational levels, at least from early years through primary education for most countries and beyond, up to higher education, for some.

In Canada 'creative thinking' is outlined as one of the 'common essential learning(s) (p.8). In Kentucky, USA, one of the learning goals is to enable students to 'use creative thinking skills to develop or invent novel, constructive ideas or products' (p.57). In Korea the National Curriculum defines an educated person as 'healthy, independent, creative and moral' (p.33). In Sweden the Government's National Development Plan for Pre-School, School and Adult Education (1997) stated that education should provide 'the conditions for developing creative skills' (p.52). In France schools in lower secondary are expected to develop in children the 'taste for creation' (p.14). In Germany, the emphasis of primary education is placed on developing 'children's creative abilities' (p.20). In Netherlands one of the principles on which primary education is based is 'creative development' (p.38). In Florida (USA) one of the goals of restructuring the schools was to provide students opportunities 'to learn and apply

strategies for creative…thinking' (Treffinger, 1996, p.1). The second educational goal for young people in Australia is to:

> …become successful learners, confident and creative individuals, and active and informed citizens (ACARA, 2009, p.8).

In Japan the school curriculum has included development of creativity since the Second World War. The Japanese National Council on Educational Reform (NCER) has outlined the development of creativity as the most important objective of education for 21st century. In Singapore the aim of new initiatives, launched by the Ministry of Education, was to foster, 'enquiring minds, the ability to think critically and creatively' (O'Donnell and Micklethwaite, 1999, p.45). These initiatives included the 'Thinking Schools, Learning Nation' (TSLN) program (Tan, 2006, p.89) designed to develop thinking skills and creativity in students. This was in response to leading industrialists and entrepreneurs indicating that staff in Singapore was more 'conforming' than 'independent' and 'not curious enough' (Tan, 2006, p.90). The Singapore Ministry of Education website states that they expect of their young to 'be creative and imaginative' (MOE, 2009, p.1). According to Singapore's primary curriculum creativity is amongst the eight core skills and values (INCA, 2009).

In China creativity has become an important component of education since 2001 and its development has become a 'priority' (Vong, 2008, p.149). In Hong Kong the education policy proposal includes creativity as 'higher order thinking skills' (Fryer, 2003, p.16). There are educational reforms being carried in preschool, primary and secondary education in which development of creativity is being given a 'top priority' (Fryer, 2003, p.19). In Turkish education the concept of creativity is being discussed more and more, however attempts to enhance it through education are limited (Oral, 2006). In Ireland a strategy paper was

developed called ‘Unlocking Creativity’ (Robinson, 2001) for developing creativity and education. In the Cultural Policy Statement (2004) by the Scottish Executive the Minister for Tourism, Culture and Sport spelt out his ‘vision’ regarding creativity, in that:

> Our devolved government should have the courage and the faith to back human imagination, our innate creativity, as the most potent force for individual change and social vision. I believe we should make the development of our creative drive the next major enterprise for our society...I believe this has the potential to be a new civic exercise on a par with health, housing and education – the commitment to providing and valuing creative expression for all.

The Policy Statement goes on to say that:

> The creativity of Scots – from the classroom to the boardroom – is the edge we need in a competitive world. Our duty as an Executive is to create the conditions that allow that creativity to flourish – whether in arts, sciences, commerce or industry. Creativity is as valuable in retail, education, health, government and business as in culture. The cultural sector should become the national dynamo of the creative impulse that can serve all these areas (p.5).

Scotland is one of four home countries in the UK. In the 1990’s a number of policy documents and statements emerged for UK home countries which included creativity (Craft, 2003). In 1997 the White Paper, Excellence in Schools, referred to preparing people for the 21st century by recognizing their ‘different talents’. This was built upon by another report by the National Advisory Committee on Creative and Cultural Education (NACCCE, 1999) which spoke of equipping young children with skills required by employees (Craft, 2005).

The NACCCE report acknowledged the UK government's views that creativity 'was relevant to schools' (Jeffrey, 2005, p5). This increased interest in the topic, bringing it back 'on the agenda in a big way' (Brundrett, 2007, p.106). These mentioned documents provided the 'foundation' (Craft, 2005, p.1) for the recent policy discussions in which the British Government responded to 'debates about creative...education to meet the economic, technological and social challenges of the 21st century' (Loveless, 2002, p.2).

Another document which called for creativity in primary education was the National Primary Strategy for primary schools, 'Excellence and Enjoyment' (Turner-Bisset, 2007). The Office for Standards in Education (Ofsted) published this report in 2003 and in this they identified creativity as 'a significant factor in educational experience' (Jeffrey, 2005, p5). This document, it is said, added a 'conviction' that it is time for 'a new, more creative approach to curriculum planning and a greater emphasis on creativity for learning' (NCSL, 2004, p.1). There were also literature reviews on creativity supported by the Qualification and Curriculum Authority (QCA) and reports on the national Curriculum as well as a 'criteria' for ensuring creativity was included in every subject (Jeffrey, 2005). A website was established under the name of 'Creativity: Find it! Promote it!' to enable teachers to promote creativity in the classroom (Burnard, 2006).

Creativity has become a focus in the curriculum as evident in its inclusion in the Foundation Stage Curriculum and National Curriculum for schools in England (Talboys, 2004). On the website for the National Curriculum, Key Stage 1 and 2, there is a section on creativity which includes information on:

- What is creativity?
- Why is creativity important?

- How you can spot creativity?
- How can teachers promote creativity?
- How can heads and managers promote creativity? (QCDA, 2009)

In the National Curriculum itself Aim One is that the school should:

> Enable pupils to think creatively and critically, to solve problems and to make a difference for the better. It should give them the opportunity to become creative, innovative, and enterprising (QCDA, 2009, p.1).

The National Curriculum outlines six 'key skills' and amongst these is 'thinking skills'. Included in this is 'creative thinking' which it is said enables 'pupils to generate and extend ideas, to suggest hypotheses, to apply imagination, and to look for alternative innovative outcomes' (QCA, 1999, p.22). This is regarded as one of the skills which are 'universal' and 'embedded in the subjects of the National Curriculum and are essential to effective learning'. As an example of inclusion of creativity in the subjects it is stated in the science curriculum that:

> Science stimulates and excites pupils' curiosity about phenomenon and events around in the world around them. It satisfies this curiosity with knowledge. Because science links direct practical experience with ideas, it can engage learners at many levels. Scientific method is about developing and evaluating explanations, through experimental evidence and modeling. This is a spur to critical and creative thought (QCA, 1999, p.76).

There has also been investment in staff development and creating teaching resources. The UK government has moved beyond policy level work to initiate projects to provide and

enhance ‘creative experiences’ (Loveless, 2002, p.2) to learners by establishing projects under the Creative Partnerships schemes (Craft, 2006). In this the schools are provided with opportunities to work with organizations such as dance studios and film makers (Hayes, 2004) through partnerships (Jeffrey, 2005). These efforts and ‘massive investments’ (Burnard, 2006, p.314) have brought creativity to the forefront.

It appears from what has been documented in the literature that the recent upsurge in creativity and education has taken place in European, American, Australian and East Asian countries, as reflected in their policy documents. This is further evidenced by the fact that some have stated that creativity has come to be seen as ‘key to economic competitiveness in **advanced economies’** (highlighted by researcher) (NESTA, 2002, p.2) implying that this is not so the case in less advanced economies. In referring to Tony Blair, (the former British Prime Minister), who it is reported ‘couples creativity in education to the future needs of the national economy’ Gibson says that in this ‘the assumption…is that the production of a new, adaptive work force...is the sole way forward if **Western economies,** (highlighted by researcher), are to remain buoyant in future global contexts’ (Gibson, 2005**,** pp.152-153). Does this then mean that developing or non-western countries do not want to economically compete, do not need a new type of labor force, do not face any of the problems indicated, all of which, as it has already been argued, require creativity. In this Oral (2006) is of the view that:

> For many developing countries, creativity remains neglected, whereas in developed countries, educational philosophy and goals rely on students’ enhancement of creativity and self-actualization…For developing countries, integration of creative

> thinking skills in…education is a crucial need for shaping their future orientations and actualizing reforms in political, economic and cultural areas (p. 65).

Sinlarat (2002), speaking of Asian countries, is of the view that the Asians are 'consumers' of Western products. This has resulted in loss of 'self-identity,' 'self-independence' and 'prosperity'. He goes onto say that in order to overcome the dependency there is a need for Asians to become 'creative and productive persons' and in this 'education that yields creativity and productivity is essential'. It is suggested that rather than taking what UNESCO states should be taught:

Learning how to learn
Learning how to do
Learning how to work together
Learning how to be

The following characteristics must be produced in people:

Learning how to learn critically
Learning how to do creatively
Learning how to work constructively
Learning how to be wise (pp.139-142).

It is further stressed that:

> Educational process primarily needs to set a target on new thinking and creativity for it to make education have the real effect on the society. Asia must adapt itself to be free, must have the advanced and creative way of life and must be able to give a push

> in the direction of globalization. These will happen when Asian education and society develop into truly creative and productive society and when Asia resists adopting ideas and copying knowledge from other countries as is the present case (Sinlarat, 2002, p.143).

To say for certain what Asian countries are doing regarding creativity and education and what they may need to do there is need for further research. Only by taking this approach will it be possible to say for sure that creativity is actually a 'world-wide phenomenon' (Boyd, 2009, p.5) and the need for it in education is being recognized globally to solve the current problems facing societies. This is one of the reasons for situating this study in the context of a developing country.

This chapter has outlined the various arguments given in literature for the need to couple creativity and education. Also included has been the evidence from policy documents from various countries to indicate that practical steps are being taken to make creativity part of the educational agenda, except perhaps in countries like Pakistan. But what does this concept, creativity, actually mean? The various definitions both within the educational and general context are discussed in the next chapter as well the problems of and the need for a definition of creativity and the importance of its development in people.

CHAPTER 3

THE MEANING AND IMPORTANCE OF CREATIVITY

This chapter is a discussion about what constitutes creativity and why it is important, starting with why we might need a suitable definition, and existing criticisms of ideas of creativity. The large numbers of definitions have been grouped, for simplicity, into five broad categories. The meanings of the two most common defining features, originality and usefulness, are also discussed as well as views on how children's creativity should be defined. This is followed by presenting findings from existing research on creativity definitions across cultures, by teachers and in the policy documents ending with a statement of the stance the research will take in relation to the definition of creativity. In the second section of this chapter the importance of creativity, both the positive and negative aspects, are discussed in relation to society, individuals and children. Then research into policy documents and teacher views on the importance of creativity and creative teaching are reviewed.

3.1: Views about definitions of creativity

It is said that those concerned with researching creativity are:

> …apt to be overwhelmed by the current breadth of conceptions…as well as relative uncertainty of its fundamental components (Feldhusan and Goh, 1995, p.232).

One of the early impressions which emerges from the creativity literature, as far back as 40 years (Taylor, 1975) and as recent as 2009, (Kaufman and Beghetto, 2009), is that the debate about what creativity actually means is still ongoing. This is a view which is also shared by others such as Sharpe (2001) who further elaborates that creativity is difficult to define. In fact Craft (2003) says that one of the limits to creativity in education is what it means. This is

of particular concern and a challenge for those working in education (Boyd, 2009) especially when in some languages there is not even an equivalent word (Simonton, 2006). Mpofu et al. (2006) found that only one of the 28 African languages (Arabic) had a word equivalent in meaning to creativity.

Some commentators are of the view that there is 'no universally agreed upon definition' (Getzels, 1975, p.327) which is needed if 'creativity is to truly underpin education' (Brundrett, 2007, p.106). This is a view shared by those from the philosophical circles, such as White (1972), who in considering four different cases to whom the word 'creativity' can be applied states that it:

> …has no one meaning in these different examples, but a number of meanings, with just enough in common between them to make it plausible, though confusing, to apply the same word to all four cases (p.133).

He argues that the extent to which one can be called 'creative' depends upon the 'value' of their output to a particular area or discipline. The various meanings of the word 'value' are discussed later in this chapter. Elliot (1971), also speaking from a philosophical perspective, speaks of two concepts of creativity, the 'traditional' and the 'new'. The former is related to the person producing something and in the later it is not deemed 'necessary to make or create anything in order to be creative' (p.139). While discussing the two concepts Elliot acknowledges that creativity is 'of great importance,' yet found to be 'in a state of profound confusion'. In his concluding remarks the author further elaborates to say that this confusion is no more than we would face in our daily lives and in this sense we should not be tempted to be hurried to adopt a certain definition. He argues that:

> Getting the concept of creativity finally and satisfactorily arranged will involve more than decisions concerning the use of words (pp.150-151).

Some, on the contrary, say that there is 'good deal of agreement' (Eysenck, 1994, p.220) on what creativity means while others are of the view that it is something 'often invoked but not well understood' (Puccio, 2006, p.2). It is regarded as a 'multifaceted phenomenon' (Scoffham, 2003, p.4), a 'multidimensional variable' (Rudowicz, 2003, p.276) and also a 'multi-level…complex thought process, involving many different factors' (Hussain, 2004, p.96).

The number of definitions being offered appears to have been increasing over time. Morgan (1953) listed 25 and Rhodes (1961) identified 40 different definitions. Upon closer examination of these he found that the contents consisted of characteristics of creative persons, aspects of creative process, creative product and the environments (press) which develop creativity (Puccio, 1999). In 1988 Repucci provided 50-60 definitions saying that the 'list is expanding everyday' (Taylor, 1988, p.118). Treffinger (2000) provided a list of 112 definitions, identified from literature, ranging from 1929-1994, arguing that 'it can and does mean different things to different people' (p.3), a view also shared by Klein (1982). Aldrich (2001) developed a dictionary containing 1400 definitions and related terms showing that 'the array of definitions…is vast' (Treffinger, 2000, p.3).

3.2: The need for a definition

One of the reasons why there is need for a definition of creativity is because there are many criticisms about how it *has* been defined. It is accused for being too 'loosely' defined (Cropley, 1967, p.20), an 'ill-defined' term (Gibson, 2005, p.153), 'elusive' (Kerr and Gagliardi, undated, p.3), having a 'fuzzy nature' (Eysenck, 1993, p.147), a 'puzzle…mystery'

(Boden, 1994, p.75) and a 'chaos' (Schofer, 1975, p.366). It is also said to be misunderstood by people including educators (Robinson, 2001). For others creativity definitions have 'suffered from…lack of consistency' (Afolabi, et al, 2006, p.1) and the variety is 'hindering a consistent educational response' (Parkhurst, 1999, p.1).

It is also said to be important to have a definition so that it can be enhanced (Csikszentmihalyi, 1996) and investigated (Amabile, 1996; Ivcevic, 2009). The impact of any misunderstandings includes schools being unable to advance the idea any further (Winchester, 1993). Claxton (2006) is of the view that one of the consequences of the current policies, advocating creativity and its development, is that it has left teachers with the task of understanding 'what it means' (p.352).

3.3: Categorization of definitions

It is very difficult to categorize the many definitions alluded to above. However, for the sake of gaining a better understanding these have been grouped as; a) production of something original; b) production of something original and of value; c) production of something new, of value and imaginative; d) production of something original, of value and which is accepted by a group. There is also the category for other definitions not fitting these four categories. These definitions come from literature which has been written within the educational and general context.

Perhaps a good point to start is that creativity does not mean:

> …doing whatever you like… [behaving in an] undisciplined way… impulsive expression… [or being] unconventional (Cropley, 1967, pp.20-21).

3.3.1: Creativity as production of something original

Creativity has been defined by some as production of something that is original (Torrance, 1988; Straus and Straus, 1968). Other words used to denote the same meanings are 'novelty,' 'new' and 'novel' (Mayer, 1999, p.450). The ability to produce something original is considered as central to creativity (Cropley, 2004).

The definitions which include the element of originality (given below) range in time as well as subjects showing that the concept is widely applicable:

> Creativity to me means mess, freedom, jumbled thoughts, words and deeds each fighting to claim their own space in my mind, and deciding, given the small amounts of free time, whether I shall write, paint, draw, take off to the beach with a camera, run outside, turn my house upside down to create a new environment, plant a garden or plan a new business. Or in a more formal sense it is the original thought, the spark, the ignition, the original design concepts or the blueprint (Thorne, 2007, p.17).

> The emergence in action of a novel relational product, growing out of the uniqueness of the individual on the one hand, and the materials, events, people, or circumstances of his life on the other (Rogers, 1959, p.71; Rogers, 1970, p.137).

> Originality of thinking and freshness of approaches to architectural problems; constructive ingenuity; ability to set aside established conventions and procedures when appropriate; a flair for devising effective and original fulfillments of the major demands of architecture (Mackinnon, 1975, p.70).

> …process of generating new ideas, new concepts, goals, wishes, new perceptions of problems-the output is new thoughts which in themselves do not change anything in the real world until they are implemented in some way (Nolan, 2004, p.45).

> …a configuration of the mind, a presentation of constellated meaning, which at the time of its appearance in the mind was new in the sense of being unique, without a specific precedent (Ghiselin, 1963, p.36).

3.3.2: Creativity as production of something original and useful

Mayer (1999) concluded that there was an agreement that 'originality' and 'usefulness' were the 'two defining characteristics of creativity' (p.450), a view which is shared by many others including Hennessey and Amabile (1988). Dickhut, (2003) regards these as the 'two necessary ingredients' (p.2) of creativity. These are also used by the United States Patent Office as criteria to issue patents (Huber, 2001). For Puccio (2006) creativity means not just originality and value but 'a balance' between the two (p.2). Alternative words used for 'usefulness' include 'value, appropriate, significant, adaptive, valuable, utility' (Mayer, 1999, p.450), 'fitting' (Pope, 2005, p.59), 'significant' (Lumsden, 1999, p.153) and 'aptness' (Barron, 1988, p.80). Amongst those who hold this definition are psychologists (Feist, 1999) and researchers (Kerr and Gagliardi, undated) but there doesn't seem to be a mention about educators agreeing on such components.

While some have spoken of value and originality being a definition of creativity others have included it as part of their definition (Perkins, 1990; Sternberg, 2003; Beaney, 2005; Boden, 1999; Nickerson, 1999; Gruber and Wallace, 1999; Newell, et al, 1962). Some examples of definitions in this category are given below:

…a response or an idea that is novel or at least statistically infrequent. But novelty or originality, while a necessary aspect of creativity is not sufficient…it must also to some extent be adaptive to reality. It must serve to solve a problem, fit a situation, or accomplish some recognizable goal. And thirdly, true creativeness involves a sustaining of the original insight, an evaluation and elaboration of it, a developing of it to the full (MacKinnon, 1975, p.68).

A product or response will be judged creative to the extent that (a) it is both a novel and appropriate, useful, correct, or valuable response to task at hand, and (b) the task is heuristic rather than algorithmic (Amabile, 1988, p.65-66).

Creative thinking consists of forming new combinations of associative elements, which combinations either meet specified requirements, or are in some way useful. The more mutually remote the elements of the new combination the more creative are the process or solution (Mednick and Mednick, 1964, p.55).

…the fresh and relevant association of thoughts, facts and ideas, into new configuration which pleases…is harmonious, relevant, valuable, satisfying… to you (Parnes, 1975, p.225).

Creative products…are novel, not imitations…are valuable or useful to society (Tardif and Sternberg, 1988, p.438).

Creativity from Western perspective can be defined as the ability to produce work that is novel and appropriate (Lubert, 1999, p. 339).

The types of creative outcomes which may be produced exhibiting the above attributes include:

- Novel solution to a math's problem
- Invention
- Discovery of new chemical process
- Composition of piece of music
- Poem
- Painting
- Forming new philosophy or religious system
- Innovation in law
- Fresh way of thinking about social problems
- Breakthrough in treating a disease
- Devising new ways of controlling others minds
- Invention of new armaments
- New ways of taxing by government
- Change in peoples manners (Barron, 1988, p.80).

Other attributes of creative products include 'effective surprise' (Bruner, 1962, p.3) and 'beauty' (Cropley, 2004, p.17).

3.3.3: Creativity as something original, useful, and imaginative

Some of the current definitions, particularly those specifically coined for and being cited in the educational context, involve three characteristics, imagination, original and useful/valuable. Amongst the most popular is the 'three step' (Robinson, 2001, p.114) definition:

> Imaginative activity fashioned so as to produce outcomes that are both original and of value.

This outlines four elements of the creative processes which are:

> First, they always involve thinking or behaving imaginatively.
>
> Second, overall this imaginative activity is purposeful: that is, it is directed to achieving an objective.
>
> Third, these processes must generate something original.
>
> Fourth, the outcome must be of value in relation to the objective (NACCCE, 1999, p.30).

Imagination has for long been regarded as something that makes creativity possible (Sinnott, 1970), a view with a growing consensus (Burnard, 2006). Imaginative activity does not mean recalling from 'real experience' (Robinson, 2001, p.115) and is defined as:

> ...the process of generating something original: providing an alternative to the expected, the conventional, or the routine (NACCCE, 1999, p.31).

The second characteristic, pursuing purposes, means that if someone is being creative they are doing something intentionally although Turner-Bisset (2007) is of the view that this is not always the case. The third characteristic, being original, is defined at three levels, individual, relative and historic. The fourth characteristic is 'value' because originality is not sufficient to produce something creative (NACCCE, 1999). This definition is considered appropriate for education because it recognizes that 'all pupils can be creative' (Craft, 2001, p.14).

On the basis of the NACCCE definition the Qualifications and Curriculum Development Agency has further defined creativity at the classroom level as follows:

- Questioning and challenging
- Making connections and seeing relationships
- Envisaging what might be
- Exploring ideas, keeping options open
- Reflecting critically on ideas, actions and outcomes (QCDA, 2009, p.1).

There are very few criticisms of the NACCCE definition. However Craft is of the view that it gives the impression that creativity is 'arts-based' and offers the following, what she calls 'little c' or 'everyday life' creativity:

> …a life-wide resourcefulness which is effective in successfully enabling the individual to chart a course of action by seeing opportunities as well as overcoming obstacles. This may occur in personal and social matters or in undertaking an activity in a curriculum area, such as mathematics or the humanities (Craft, 2004, pp.143-144).

This definition, it is claimed, does not associate creativity with arts or the kind which is 'paradigm-shifting' and related to 'great figures in history'. It involves being imaginative (Craft, 2001) which means 'going beyond the obvious,' 'seeing more than is initially apparent' or 'interpreting something in a way which is unusual' and being aware of the 'unconventionality' of one's doing or thinking (Craft, 2000, p.4). In summary 'little c' creativity involves 'doing it differently…finding alternatives…producing novelty…self-creation and self-expression' (Craft, 2004, p.144). Odena (2001) also offers a definition which includes imagination as its component:

> Creativity is imagination successfully manifested in any valued pursuit, a thinking style manifested in actions (p.2).

3.3.4: Creativity as something that is original, useful and the outcome is accepted by a group

Cropley (2004) is of the view that something is determined as creative by the way people react to it, in that 'their willingness and ability to recognize creativity'. He says 'when a number of observers, especially experts, agree that a product is creative, then it is' (p.14). Similarly Stein (1963) is of the view that any criterion to judge creativity has 'its roots in the judgments of others' (p.215). Csikszentmihalyi (1990) is of the view that creativity is judged by the 'field'. This is made up of people, 'gatekeepers,' who are aware of the 'grammar of rules' of that area and they decide if something meets their criteria to be called 'creative' or just 'ignored or censored' (p.202). This view is also supported by others such as Gardner (1993) who in his study of famous people focused on the 'notion of acceptance by a field,' field meaning the judges and institutions. This is because as he says 'I know of no other criterion that is reliable in the long run' (p.389). Some examples of definitions which include the criteria of acceptance by a group of people are given below:

> Creativity is, in fact, a judgment made by the community, culture or field, be they gallery owners….or teachers (Gibson, 2005, p.164).

> Creativity is that process which results in a novel work that is accepted as tenable or useful or satisfying by a group at some point in time (Stein, 1963, p.215).

> Important elements of a widely used explicit definition of creativity are originality and novelty of ideas, behaviors or products which are accepted and judged as appropriate

by a group of people within the specific socio-cultural context (Rudowicz, 2003, p.276).

One must conclude that creativity is not an attribute of individuals but of social systems making judgments… (Csikszentmihalyi, 1990, p.198).

3.3.5: Other definitions given within the educational and general context

Some of the definitions which have been given in the literature, written within the educational context, are not easily classified with the above, but are as follows:

Claxton (2006) describes what he terms as 'soft creativity' as the:

…gentle, long-term cultivation of the psychological skills and attitudes that underpin a wide range of creative projects-all those that involve the gradual emergence of an idea, or a way of thinking or talking, that gives a novel purchase on an interesting and previously intractable problem (p.353).

…open-mindedness, exploration, the celebration of differences and originality. It stands for humor and the pleasures of learning… (Cullingford, 2007, p.133).

…involves ideas, invention, exploration, imagination and risk taking. It is about how we think, learn, have cognition and understanding of the world around us. It is concerned with the potential in everyone to generate imaginative ideas and to explore connections between seemingly unrelated pieces of knowledge (Goodwin, 2005, p.45).

> Creativity is a special kind of problem solving; in creative thinking the product of thinking has novelty and value, either for the thinker or for his culture (Torrance, 1970, p.2).

> …the displacement of attention to something not previously noted, which was irrelevant in the old and is relevant in the new context; the discovery of hidden analogies as a result of the former; the bringing into consciousness of tacit axioms and habits of thought which were implied in the code and taken for granted; the uncovering of what has always been there (Koestler, 1964, pp.119-120).

Some other definitions which have been given in the general context are as follows:

> …a decision that anyone can make (Sternberg, 2006, p.97).
>
> …the ability to see (or to be aware) and to respond (Fromm, 1959, p.44).

3.4: Meanings of value and originality

Having given examples of definitions under the described categories the meanings attributed to originality and usefulness deserves further elaboration. Originality is defined as something that cannot be predicted (James et al, 2004), does not already exist (Ghiselin, 1963), is not common (Barron, 1955; Barron, 1963), and is 'relative to sameness, or replication' (Murray, 1959, p.99). Stein (1953) explains that the degree of novelty depends upon the degree of divergence from 'the traditional or the status quo' (p.311). However Abinun (1981) asks what the extent of this deviation should be and Walberg (1988) asks if the outcome should be original to the person, culture or the world. In this there are two views; some say that the creative outcome should be new for the person creating it (Johnson-Laird, 1988; Macleod, 1962). This is termed as 'private novelty' (Eysenck, 1994, p.201), 'subjective novelty'

(Kaufmann, 2003, p.238) and 'personal originality' (Robinson, 2001, p.116). For others it should be original for the 'situation in which it occurs' (Martindale, 1999, p.137), that is 'social originality' (Robinson, 2001, p.116) and for a patent the product must be 'new to the world' (Huber, 2001, p.28). This is termed as 'objective novelty' (Kaufmann, 2003, p.238) or 'historic originality' (Robinson, 2001, p.116). It is the first two categories of originality that are taken to judge general creative work (NACCCE, 1999).

For the child it is the 'private' or 'subjective' novelty that is considered to be more appropriate as Storr (1972) states:

> The child who links together in his mind two ideas which have hitherto been separated, and who produces a third as a result of the fusion, may find, disappointingly, that he has not been as original as he had supposed when his teacher points out that someone else has had the same idea before him. None the less, he has been creative in that he has produced for himself something which is new to him… (p.xi).

The work must be original for the child or in comparison to other children (Robinson, 2001). This is because if it is defined against anything beyond this then much of children's work will be excluded (Runco, 2003). In referring to how teachers would judge if something is creative Shallcross (1981) leaves the decision to the teachers as to whether children are judged against themselves and their previous work or the 'norms of society' (p.9).

If something is helpful in solving a problem or achieving something it is considered as useful (James et al, 2004). The usefulness of an outcome is judged in relation to the purpose of the task (NACCCE, 2009) although doing this for a new idea is said to be difficult (Robinson,

2001). For children the outcome is valuable if it is 'pleasing or communicative or meaningful' to the child. In the school context Davies (undated) suggests that the 'value' (p.3) of a creative work should be judged through negotiation between those who are judging and those whose work is being judged, that is teachers and other children. For a patented product being 'useful' means having an 'economic value' (Huber, 2001, p.28). Boden (1994) distinguishes between two types of creativity, P-creativity (psychological) and H-creativity (historical). In the P-creative category an idea is valuable if it has not occurred to the creator before, irrespective of who else has had the idea. However in the H-creative category an idea is valuable if it has never occurred before 'in all human history' (p.75).

3.5: Defining children's creativity

Definitions specifically stated for children are very few, however in this it is suggested that a 'broad, democratic' (Sharpe, 2001) definition should be adopted because in this way all children can be considered to be capable of being creative. Others are of the view that the focus should be on idea generation (James-D-III, 1988) although at times they might find it difficult to communicate these (Jalongo, 2003). Some of the definitions include:

> …adaptive…innovative behavior (Feldhusen, 2002, p.179).

> …thinking or problem solving that involves the construction of new meaning, [which] relies on personal interpretations, and these are personal and new for the individual, not on any larger scale (Runco, 2003, p.317).

3.6: Creativity as defined in policy documents

Educational documents have often included creativity but have failed to define it (Odena, 2001), or at the most have 'loosely associated [it] with problem solving and thinking skills'.

Similar is the case with the policy documents, discussed later in this chapter, which emphasize creativity as an important learning outcome, however do not provide a definition. There is also inconsistency in the use of terminology within documents across countries. In Japan the word used is 'creativity,' in Sweden it is 'creative skills' (O'Donnell and Micklethwaite, 1999, pp. 636, 27, 52) and in Singapore it is 'creative' (MOE, 2009, p.1).

The inconsistency in terminology is also found across different documents within the same country. In reviewing the various periods in education policy and creativity in the UK, Craft (2004) reported that there is lack of 'coherence' amongst these (p.143). The one policy document in which the meaning of creativity has been thoroughly thrashed out from a purely educational perspective is the 'highly influential' (Davies, undated, p.2) NACCCE report. However despite a comprehensive definition being provided in this, the National Curriculum describes it as a 'thinking skill' (QCDA, 2009, p.1; QCA, 1999, p.22). Odena (2001) sums up in that:

> …issues concerning creativity and its interpretation remain nonetheless because they are not resolved by the centralized production of policy…Policy makers are being called upon to include in future guidelines an explanation of what is meant by the word 'creativity' so that there are no confusions conceptually (pp.2, 8).

Ideally an operational definition would have been of use since it helps in 'defining or explaining... precise, measurable or observable characteristics…' and 'represent an effort to be objective, in that they do not rely simply on someone's personal reactions, feelings, or impressions, but on stated criteria' (Treffinger, 2000, p.5).

3.7: Teachers' definitions of creativity

Studies have been conducted to identify how teachers define creativity. These findings have been categorized according to Western (Table 3.1) and Eastern countries (Table 3.2). Teacher definitions are seen by some as 'wide-ranging' (Wilson, 2005, p. 30) meaning different things to different people. It has been defined as a 'general capacity' (Odena, 2001, p.7), 'general ability,' (Diakidoy & Kanari, 1999, p.225) a 'skill,' and 'an element of a child's character, a personal quality' (Goldsmiths and Fasciato, 2005). However some teachers don't have 'a set definition' (Odena, 2001, p.8) or do not prefer to define creativity because it will 'limit the extent to which pupils will be encouraged to show a wide range of creative responses' (Craft, 2001, p.25).

Table 3.1: Teacher definitions of creativity from Western countries

UK (Fryer and Collings, 1991) N=1028)	UK (The Creativity Centre, 2006) N=90	UK (Jackson, 2006) N=29	(Runco, 1990)	UK (Craft,1997) N=18	Finland (Rudowicz, 2003)
Imagination (88)	Imagination (90)	Generating new ideas (100)	Artistic	Taking risks (going beyond, breaking with tradition)	Finding new solutions
Original idea (80)	Seeing unusual connections (87)	Thinking outside the box (100)	Challenging	Receptive	Using old knowledge in new ways
Self expression (73)	Original ideas (80)	Inventing (96)	Curious	Openness	Hard work
Discovery (65)	Combining ideas (80)	Adapting already invented things (96)	Exploratory		Humor
Seeing Connections (65)	Innovation (77)	Curiosity (96)	Expressive		Imagination
Invention (61)	The lowest rated definitions;	Experimenting (96)	Flexible		Flexibility in social situations
Innovation (59)	Mysterious processes		Good designing		
Divergent thinking (53)	Tangible products		Imaginative		
Thinking Process (52)	Unconscious activities		Independent		
Awareness of Beauty (50)	Aesthetic products		Innovative		
Combining Ideas (50)			Intelligent		
Inspiration (47)			Non conforming		
			Original		
			Questioning		
			Self-directed		
			Sensitive		

Aesthetic Products (34) Valuable Ideas (33) Unconscious activities (18) Convergent Thinking (10) Mysterious Processes (10) Tangible products (10) Other aspects (5)			Uninhibited Unique Wide interests		

(Figures in brackets represent percentage of teachers responding)

The common definitions of teachers from both Eastern and Western countries include imagination and producing something original. However, imitation and producing something that is not necessarily new, are specific to teachers from India and China. In fact Froebel once regarded imitation as a definition of creativity contrary to today's Western view (Feldman and Benjamin, 2006) which shows that definitions are prone to change with time and, as discussed later, with place as well.

Table 3.2: Teacher definitions of creativity from Eastern countries

China (Vong, 2008)	India (Sarsani , 1999)	India (Sen and Sharma, 2004)	Cyprus (Diakidoy & Kanari, 1999) N=42
Imitation Gaining social recognition	Inspiration Imagination Original ideas Self expression	Doing something new/different in contrast to copying Doing something without it being new. Re-creation reproduction of others work/idea Producing something new and original	Process leading to novel outcomes (65) Making things (38) Problem solving/critical thinking (34) Self-expression, fulfillment of potential (14) Insight/imagination, inventive(14) Producing something appropriate/ useful' (10)

(Figures in brackets represent percentage of teachers responding)

As has been shown teachers have their own ideas about what creativity means and these can affect their approach to teaching and assessment activities that are aimed to develop creativity (Odena, 2001). It is also important to understanding teachers' beliefs about creativity as these 'may also provide the foundations for the improvement of professional preparation and training' (Diakidoy & Kanari, 1999, p.226).

3.8: Creativity across cultures

Every culture has some concept of creativity (Raina, 2004) but research has shown that there are differences albeit 'subtle' rather than a 'fundamental divergence' (Rudowicz, 2003, p.279). Amongst very few global agreements on the issue of creativity includes the definition:

> Creativity involves thinking that is aimed at producing ideas or products that are relatively novel and that are, in some respect, compelling (Sternberg, 2006, p.2).

However while there a consensus on the creative product being useful, there is a difference on the 'newness' aspect. According to the Eastern view a creative product can be a 'modification' and 'adaptation' and if a 'new' idea or outcome is generated it must fit into the 'socio-cultural system' (Rudowicz, 2003, p.276). The emphasis of the Eastern view is on producing 'new and applicable responses to the daily challenges of living…' rather than something that is 'novel or original' (Sen and Sharma, 2004, p.153). The Eastern approach places emphasis on 'intuitive experiences' while the Western approach is on 'reason… logical progression' (Wonder and Blake, 1992, p.184), individuality and independent thinking (Craft 2004).

The definitions identified across Western and Eastern countries reveal that novelty is a common feature (Table 3.3 and Table 3.4). However the Eastern views include imitation which is similar to teacher views as discussed earlier.

Table 3.3: Creativity definitions across Western countries

Brazil and Cuba (Rudowicz, 2003)	Bali (Jalongo, 2003)	Spain (Genovard et al, 2006)	Poland (Necka et al, 2006)	Germany (Preiser, 2006)
Intuition Humor Curiosity Resistance to failure Being a dreamer Being a humanist	Contribution to the good of the group	Generating new solutions Coming up with something that didn't exist Breaking the routine Being unexpected Novel contribution Valuable product To help society progress	Producing a new and valuable outcome	Producing an outcome which is: Novel Suitable/useful Socially accepted

Table 3.4: Creativity definitions across Eastern countries

African Countries (Mpofu et al, 2006)	India (Misra et al, 2006)
Process that aims to transform reality Effective solution to a problem or situation To produce something using existing resources Adding value to what already exists To produce something of value to the self and others A gift from god Able to imitate new things	Newness Sociability Leadership Unconventional personality orientation Task persistence

The current creativity definitions are blamed for suffering from American and European influences (Rasekoala, 2004). Their universal nature is therefore questioned and despite studies being conducted into the ways it is perceived in other parts of the world (Rudowicz, 2003) a common understanding has not emerged (Craft 2004). It is argued that its

'universalisation' may be 'premature and inappropriate' because there are still strong cultural 'identities' (Craft, 2004, p.147) as well as different traditions and values. In fact some have been of the view that there is no need for a 'universal meaning' (Sprecher, 1963, p.77). A culture can influence the way creativity is conceptualized (Rudowicz, 2003) and what is 'regarded as creative in one culture at one point in time may not be in another' (Taylor and Getzels, 1975, p.3).

The current understandings of creativity is said to be 'still evolving' (Forrester and Hui, 2007, p.30). The differences between the East and West continue to exist which calls for further investigation (Raina, 2004). This may lead to 'resolve the conflict' (Hussain, 2004, p.96) and broaden understanding (Jalongo, 2003) therefore making 'an attempt to truly indigenize' creativity research (Sen and Sharma, 2004, p.153). The fact that creativity is being continually defined is evidence that a common understanding has not been reached and that there is dissatisfaction. There are calls for a 'fuller understanding' because of the 'powerful claims made on behalf of creativity' (Hayes, 2004, p.282). These claims, the importance of creativity, are discussed next after a statement about the stance this research will take in relation to the definition of creativity.

Although the consensus appears to be that two of the distinguishing features of a definition are production of something original and of value, the researcher will not work with a predefined definition. This is with a view that doing so may increase the risk of for example leading the respondents and influencing their responses. This is an exploratory study and one of the questions, as already outlined (refer to Chapter one), is to identify what creativity means in the Pakistani context. However this research does support the definitions which recognize that creativity is an everyday phenomenon, that everyone can be creative, and that

the creative outcome is original and of value to the person producing it. This is for example implied in the NACCCE definition (1999).

3.9: Importance of creativity for society, individual and children

It is said that we are now entering the 'age of creativity' (Cropley, 2004, p.13) which immediately makes creativity universal, particularly when these messages are being issued by high ranked think tanks and strategy houses such as the Nomura Research Institute of Japan (Nomura, 2007, p.1). There are claims that creativity is the answer to many of the problems facing societies. Articles dating back to 1950 have advocated the need for creativity with the same zeal. In fact in examining the work of some authors the change has not been in their enthusiasm but the need for which creativity is required. For example in 1967 Cropley saw creativity as a way of saving 'human dignity' (p.19) from the threat of the computer age. Almost four decades later he deemed it as a way of solving almost every problem:

> …political (e.g. terrorism, achieving fairness in international relations), economic (demand for elimination of inequalities between rich and poor nations), industrial (e.g. offshore manufacturing, globalization), social (e.g. adaptation of immigrants, integration of minorities), demographic (e.g. breakdown of the family, ageing of the population), environmental (e.g. global warming, gene modified crops), and biotechnological (e.g. communications, health)… (Cropley, 2004, p.14).

Similarly Guilford (1970) regarded creativity as important for survival, for responding to military needs, coping with 'intellectual, scientific, cultural, economic, political challenges,' waking up from 'state of boredom…lethargy,' dealing with the 'age of space…technological advancement and social implications of these advancements' (pp.167-168).

In fact the potential consequences of lack of creativity significantly increase its appeal, making it seemingly indispensable. Rogers (1959) warned that without creativity there will be 'individual maladjustment…group tensions…international annihilation' (p.138). Thorne (2007) says that 'without creativity, we have no real innovation' (p.18) while an almost godly power is attributed to the concept when Cropley (2004) issues a warning to leaders to become 'creative' otherwise 'societies will stagnate; even perish…' (p.13). Csikszentmihalyi (1996) states that:

> There is no question that the human species could not survive, either now or in the years to come, if creativity were to run dry. Scientists will have to come with new solutions to overpopulation, the depletion of nonrenewable resources, and the pollution of the environment - or the future will indeed be brutish and short. Unless humanists find value, new ideals to direct our energies, a sense of hopelessness might well keep us from going on with the enthusiasm necessary to overcome the obstacles along the way. Whether we like it or not, our species has become dependent on creativity…to be human means to be creative (pp.317-318)...Without creativity, it would be difficult indeed to distinguish humans from apes (pp.1-2).

Others have also shared Csikszentmihalyi's view that creativity is a distinguishing feature of human beings (Esquival, 1995) and 'fundamental to life' (Puccio, 2006, p.1). Taylor (1988) concludes that it is 'one of the highest level performances and accomplishments to which mankind can aspire' (p.99) while Nolan (2004) sums up its all pervasive nature in that it is something 'with many diverse applications in the arts, science, business, education…the whole of life'(p.45).

But perhaps the dominant reason for the current revival of the creativity discourse is its linking with economic well-being (Craft, 2003) in which it is being seen as a 'form of capital…an engine of economic growth' (McWilliam and Dawson, 2008, p.635) which can help economies to compete and generate wealth. This 'modern mantra,' as it is called (Jeanes, 2006, p.128), is also being chanted by powerful world leaders such as Prime Minister of India, Dr. Manmohan Singh, (Idris and Arai, undated) and former British Prime Minister, Tony Blair (Gibson, 2005), moving the idea from philosophical and scholarly discussions into the political arena.

Besides being beneficial to society, creativity is also regarded as important for the individual and the culture (Tusa, 2003). Individuals who are creative are said to be mentally and emotionally sound (Simonton, 2000), which benefits society (Runco, 1993). It leads to better solutions and makes our lives 'better, easier and safer' (Idris and Arai, undated, p.10) more 'enjoyable' and 'rewarding' (Csikszentmihalyi, 1996, p.344). Individuals who can think creatively can deal with difficult problems (Robinson, 2001) and these people are in constant demand by the society to find new solutions and ideas (Martinsen, 2003; Sternberg and Lubert, 1999). The value of creativity at the child's level is perhaps less discussed. However, it is indicated that creative children 'lead richer lives and…make a valuable contribution to society' (Hayes, 2004, p.281). Even those who are in some way disadvantaged may also benefit from creativity (Runco, 1993). It is also regarded as a better predicator of achievement than those often used in practice (Milgram, 1990).

In summary, and as with the issues to come in this chapter, it does not matter so much here whether all of these claims are true. The key point is that they are becoming increasingly influential.

3.10: The importance of creativity as highlighted in educational policy documents

The creativity section on the UK's National Curriculum website, for example, states that creativity 'prepares pupils for life…for a rapidly changing world' and students who are encouraged to think creatively become:

- More interested in discovering things for themselves.
- More open to new ideas.
- Keen to work with others to explore ideas.
- Willing to work beyond lesson time when pursuing an idea or vision (QCDA, 2009. P.1).

In Japan, development of creativity has been considered a way of responding to social and economic changes. In Korea it could be a way of meeting the requirements of globalization and to cope with social changes. In Singapore, the development of creativity was considered essential to help the country as it approached the new Millennium (O'Donnell and Micklethwaite, 1999). In China, fostering creativity has become a priority to increase innovation and resultantly wealth and peoples quality of life (Vong, 2008). In Hong Kong, creativity is seen as a means of 'nurturing talents and giftedness' (Fryer, 2003, p.16). In Sweden, the Government's National Development Plan for Pre-School, School and Adult Education (1997) stated that it is essential to 'create the preconditions to enable all students to develop the personal qualities and competence necessary to enable them to achieve their potential on the labour market' and for this purpose there were calls to develop 'creative skills' (O'Donnell and Micklethwaite, 1999, p.52). A strategy paper developed for Ireland for including creativity into education stated that the country can be 'at the leading edge of the new knowledge-based economy, by nurturing and harnessing…individual creativity'

(Robinson, 2001, p.5). In short, creativity of the nation is accepted as a key issue in both developed and important developing countries across the world.

3.11: Teacher views on the importance of creativity and creative teaching

Creativity is said, by teachers, to prepare children so that they can meet challenges (Fischman et al, 2006), solve problems, develop thinking and independent thinking, bring out 'hidden talents,' enhance imagination, acquire 'novel views' and 'adapt and improve themselves in ever changing environments' as well as achieve their goals (Sarsani, 1999, pp.243-244). The teachers in Sen and Sharma's study (2004) reported that creativity helped to 'retain student interest' and resulted in 'better understanding' of concepts (p.162). It is regarded as 'critical' for leadership, for success in the workplace. The US Department for Labor labels it as the 'foundation skills' and one of the 'basic skills' (Parkhurst, 1999, pp.1-2) required for the future.

3.12: Is there a downside to creativity?

While creativity is mostly 'seen as a good attribute' (Simonton, 2000 p.151) a few commentators have discussed it as a negative. It is criticized for being 'over-romanticized' and as a 'capitalist creation' (Jeanes, 2006, p.130). Csikszentmihaly (1996) is of the view that while creativity has solved problems it has also created them. For example better farming and public health has led to overpopulation or 'psychological isolation' due to progress in transport (p.318). Craft (2005) is critical of the current demand for ever new products and services. She suggests that there is a need to adopt a culture of 'make do and mend' rather than change things which are working 'perfectly well'. She is also of the view that creativity may not be as 'relevant' or 'desirable' in 'repressive or conformist' (Craft, 2004, pp.147-148) cultures. Cropley (2004) suggests adding an element of 'ethicality' so that creativity does not

result in ‘anger, resentment or rejection’ where it ‘deviates from the social norms’ (p.16). Barron (1988) is also of the view that it needs ‘to be entertained with criticism, wisdom, and responsibility’ (p.82). In education creativity may be viewed favorably as a concept but not when children exhibit related behaviors such as being independent, non-conforming and questioning (Runco, 1993). Cropley (2004) gives example of universities in the United States where creativity was not favored. He also reports that teachers disliked creative characteristics in children such as ‘boldness, desire for novelty or originality’ (p.16).

3.13: Summary

In this chapter the various meanings and the significance of creativity has been discussed. It has been shown that while there are still problems in defining creativity, there is, nevertheless, an overwhelming consensus across time and countries, from Cropley (1967) to McWilliam and Dawson (2008) that creativity is indeed something that is important for the society as well as the individual. This becomes even more noticeable when placed against the consequences of not being creative, something that has also been highlighted through the years from Rogers (1959) to Thorne (2007). With so much reliance being placed on creativity it perhaps highlights dissatisfaction with current strategies to deal with issues confronting us. However we are given little evidence of this and it appears to be more at the level of thinking rather than knowing for sure and having been proved. With reference to creativity being essential to ‘economic competitiveness’ it is said that ‘to date there is little evidence that this is so’ (Nesta, 2002, p.2) which raises the question of why it is consistently (over time and place) being attributed such power. But then there is also no evidence to suggest that these benefits cannot be reaped if the concept is taken on board, tried and tested. Until this is done it is not possible to accept or deny the importance of creativity in all aspects of life. But this still leaves unanswered the question of why it is taking us time to take on board and implement the

creativity concept. The reason for this may lie in the difficulty of deciding what creativity is (as already discussed), and what, if anything, we can do about it which is the subject of the next chapter.

CHAPTER 4

DEVELOPING CREATIVITY AND THE POTENTIAL BARRIERS

Having considered what creativity is and why it is important in the last chapter, this chapter moves on to an examination of whether and to what extent creativity can be developed, before discussing the possible techniques for use across subjects and specifically for science teaching. Research evidence into teachers' views on how creativity can be developed and findings from existing observational studies on teaching for creativity are also described. Lastly there is a review of some of the existing programs, the potential limits and barriers to developing creativity.

4.1: Can creativity be developed?

Creativity is no longer, as was once believed, exclusive to the arts or about the 'individual genius' (McWilliam and Dawson, 2008, p.635) and 'extraordinary creativity' (Craft, 2003, p.114) which is 'reserved for the high and mighty' (Millgram, 1990, p.215). It is the 'everyday' (Craft, 2004, p.143) creativity which is considered to be more important (Cropley, 2001) where every person is believed to have some creative potential (Eisner, 1965). This later more all-embracing view is said to be one of the main reasons for the continuing efforts to include creativity in education (Esquivel, 1995).

The consensus now is that creativity *can* be enhanced (Sternberg, 2003), at least to some degree (Sternberg, 2006) and also stifled (Kershaw, 2009) in which case individuals may become 'imitative' (Jensen, 1969, p.137). There is increasing pressure on those working in education to take on this task (Craft, 1999) and develop creativity in all children (Esquivel, 1995). In fact, for some it is regarded as a 'myth' to think that enhanced creativity is possible

without support from 'teachers, mentors, peers, and intimate groups' (Feldman, 1999, p.176). Schools it is said can be organized to provide the required opportunities (Claxton, 2006) in both 'open' and 'traditional' classrooms (Poole, 1980, p.11) although open classrooms are said to be more conducive (Hennessey and Amabile, 1993). Programs can also be designed specifically to target this development (Puccio, 1999). However it is claimed that there is a need for 'direct instruction,' 'new curricula,' 'new incentives,' 'new teacher training' (Barron, 1988, p.96; Parkhurst, 1999, p.19) and knowledge about creativity (Puccio, 2006). Parnes (1970) emphasizes the need for a deliberate effort:

> Just as physical education does not take for granted the physical development of our students, likewise creative education must provide deliberately for their creative development. And research does seem to warrant the postulates that the gap between an individual's innate creative talent and his lesser creative output can be narrowed by deliberate education in creative thinking (p.352).

Specific programs which are examples of this deliberate effort include the Synectics, Osborn-Parnes Creative Problem Solving (CPS) and The de Bono program as well as the work of Torrance which is said to be very comprehensive and within the reach of teachers who can use it to design their own programs (Fryer, 2003). More recent interventions include Creative Partnerships in the UK (Maddock et al, 2007), the Creative Learning and Student Perspectives (CLASP) project involving nine European countries (Jeffrey, 2006). This involved schools focusing on a 'critical event' while continuing mainstream work (Jeffrey, 2005, p.9).

Having discussed the view that creativity is something which can be developed the next question which naturally arises is how this is possible. In this suggestions are offered in the creativity literature for the type of curriculum required and certain techniques for classroom

teaching. Research has also been conducted into teachers' views on ways to develop creativity, classroom observation and analysis of instructional material (textbooks), although to a far lesser extent. These are discussed next starting with creativity and the curriculum.

4.2: How to develop creativity

4.2.1: Curriculum for Creativity

It is said that a curriculum which contains a lot of knowledge and takes up a lot of time may present challenges to developing creativity (Craft, 2004). Part of the restructuring and reform of education systems is 'modernization of the curriculum' (Conroy et al, 2008, p. 2). In this 'reproduction' (Kress, 2000, p.138) is being considered insufficient as an outcome and the need to have a curriculum that focuses on developing creativity is being advocated (Martinsen, 2003) where children are at the centre (Poole, 1980), problem solving activities are offered, opportunities for investigation, experimentation, discovering the unknown and using knowledge to gain further knowledge are provided (Gowan et al, 1967). Such a curriculum provides the basis for producing instructional material for use in the classroom.

4.2.2: Instructional material for developing creativity - the textbook

Various efforts have been made to produce instructional material for developing children's creativity such as for example in India for grade five children (Misra et al, 2006). In developing countries instructional material is often in the form of textbooks which are regarded as essential for contributing towards providing a quality education (Farrell and Heyneman, 1989; Crossley and Murby, 1994; Altbach & Kelly, 1988; Kumar, 1988; Pearce, 1990; Farrell and Heyneman, 1988). Montagnes (2000) gives a comprehensive description of the role of textbooks in developing countries:

> In many countries of the developing world, the textbook is the major, if not the only, medium of instruction. It is the main resource for teachers, setting out the general guidelines of the syllabus in concrete form, providing a guide and foundation to the content, order, and pacing of instruction, supplying exercises and assignments for students to practise what they have learned. It is both a source of essential information and the basis for examination and appraisal. The textbook retains its primacy because, in comparison to other educational technologies, books are cheap, easy to use, easily portable, and familiar (p.1).

However, much of the literature on textbooks is related to publishing and dissemination but not within the context of creativity. There are nevertheless a few examples, although on a very small scale and not part of current research trend, of research into textbooks. In this textbooks have been analyzed to identify incidences of creativity. Examples of such work include the analysis of primary textbooks for mathematics (Yeap, 2002), bible textbooks and their teachers guides (Wechter, 1996), elementary curriculum textbooks (Nurse, 1969) and Spanish textbooks (Collado and Atxurra, 2005). The findings from these studies show that very little space is given to creativity in the textbooks as the following evidence indicates.

Nurse (1969) found that the space given to 'creating' as compared to 'non-creating' (p.32) was 10 percent in total for the four books analyzed. Wechter (1996) reported that the books focused more on knowledge acquisition in which closed ended questions were used and required children to recall information. A summary of the occurrences for each category of the Blooms Taxonomy (for more information regarding the Taxonomy refer to Chapter eight), which was used as criteria for analysis, is given in Table 4.1, and shows that the knowledge category by far exceeds all others.

Table 4.1: Findings from analysis of Bible textbook

Criteria	Number of occurrences found in the textbook
Knowledge	142
Comprehension	34
Application	30
Analysis	48
Synthesis	61
Evaluation	26

Source: Wechter, 1996

Yeap (2002) found that majority of the tasks in the mathematics textbooks were 'fixed response type' which just required students to practice and did not encourage their creativity. The analysis of these textbooks showed that the number of tasks encouraging creativity decreased from 28% in 'Primary 1' to 20% in 'Primary 3' and less than 10% in 'Primary 5' (p.7).

The above examples have shown that school textbooks contain very little material which is actually geared towards developing creativity, despite increasing calls for this, which perhaps gives an indication that implementation is not quite as advanced as the policy statements. However besides teaching material some factors related to teachers are also considered to be conducive to developing creativity which is discussed next.

4.2.3: Teacher related factors conducive to creativity

It is said that every teacher, like every child, has the potential to be creative. However in order to be 'creative practitioners' (Grainger et al, 2004, p.251) it is reported that they need more than the knowledge of the prescribed curriculum (Wilson, 2005). They must rather support and value creativity as well as reflect this in their attitude (Poole, 1980) and philosophy. Their ability to do this, it is claimed, depends upon how they interpret their role as a teacher (Claire,

2005), their knowledge of creativity (Martinsen, 2003), teaching approach and instructions (Esquivel, 1995).

One of the factors which is regarded to be the 'most powerful' way to develop student creativity is to 'model' (Turner-Bisset, 2007, p.201) creative activities to show students how to be creative, and teaching 'creative techniques and strategies' (Davies and Howe, 2005, p.183). Modeling creativity, it is said, reassures students that it is 'acceptable,' 'valuable' and appropriate to be creative. However, in doing this it is cautioned that teachers should be careful not to give the message that what they are doing is the 'only way' (Runco, 1993, pp.5-6).

Teacher characteristics which are reported to be conducive to development of student creativity include the following:

- Passionate
- Open
- Receptive
- Accepting attitude
- Responsive
- Encouraging
- Flexible
- Show enthusiasm
- Show empathy
- Show dedication
- Have ability to experiment with ideas
- Enjoy being creative

- Develop in themselves playfulness
- Develop in themselves ability to innovate
- Supportive
- Are motivated
- Do not dismiss student views
- Find better way of doing things
- Working around the curriculum constraints
- Have expert knowledge
- Allow children to communicate
- Respect student ideas
- Ensure creative talent is recognized

(Woods, 2004; Poole, 1980; Esquivel, 1995; Grainger, 2005; Nickerson, 1999; Jensen, 1969; Wilson, 2005; Hennessey and Amabile, 1993; Davies and Howe, 2005; Sternberg, 2003; Thorne, 2007; James et al, 2004; Torrance, 1970)

Appropriate teacher characteristics alone are not deemed sufficient in themselves. It is said that there must be support for creativity from the education system and the school administration (Wilson, 2005). System support is said to be required because just giving directives that 'creativity is officially approved' is not enough to ensure implementation. It is reported that one role of school leadership in this is to understand the process, allow and support people to think creatively, give feedback to teachers, allow research and modification and set up a support team (Thorne, 2007). The teachers need to be given time as well as confidence so that they can try different approaches, change and build upon their existing practices. They need to be reassured that they can try out new things without the threat of any consequences (Hayes, 2004). In this regard teacher training, specifically Initial Teacher Training (Compton and Nahmad-Williams, 2009), is said to be required.

Sinlarat (2002) speaks of 'Proactive Teacher Education' rather than 'Passive' which will produce 'the real creative and productive teachers that will lead to the production of creative and productive persons …' (pp.141-142). Oral (2006) regards training of prospective teachers in creative thinking as essential for developing the creativity of the coming generations. Grainger et al (2004) are of the view that for student teachers to use 'creative approaches' to teach their subjects they need to 'observe tutors teaching creatively and take part in creative learning experiences' (p.245). In a study of student ICT teachers, it was concluded that the teachers,' having been involved in activities during their training which required them to use their own creativity, were able to support children's ideas in a 'more flexible manner' (Wilson, 2005, p.30). Since 2001, the Chinese government has been organizing teacher seminars and workshops, also printed material, to inform new teachers about creativity (Vong, 2008).

Whether teachers have been trained to include creativity in their teaching or not they do appear to have views on the issue. This is evident from the research into teachers' views which has shown that most of those involved in studies across countries and time periods have reported that creativity can be developed. For example 93% (N=49) in Diakidoy & Kanari (1999) and 89% (N=1028) in Fryer and Collings (1991). The majority of the teachers in Sarsani (1999) were also of the same view. The various ways outlined by the teachers for developing children's creativity are shown in tables 4.2 and 4.3.

Table 4.2: Teachers views on ways to develop creativity as identified from teacher studies

India (Sarsani, 1999)	India (Sen and Sharma, 2004) N=29	UK (Fischman et al, 2006) N=40	UK (Foster, 2004) N=24
Give new problems Encouraging generate new and unfamiliar solutions Teachers asking divergent questions Children encouraged to ask questions Using visual aids Discussions Telling life stories of 'great persons' Organizing teacher training programs	Explaining concepts practically Using (aids) models, maps, making diagrams Not using the 'talk-and-chalk' method Encouraging children to draw neat and correct diagrams Helping children to understand the textbook contents Children following teacher instructions Children asking clarification questions	Teachers model alternative approaches for solving problems Teachers model how to tackle problems	Recognize creative talents Promote creativity Set tasks that require creative thinking Teachers allow themselves to develop their own creativity Student exam results not regarded as the only criteria of success Respect student ideas Encourage questioning and experimentation Passionate about their students

There are both differences and similarities in the teachers' views across countries. For example the Indian teachers in Sen and Sharma's (2004) study regarded asking clarification questions as a way of developing creativity while those in Sarsani's (1999) study differed and regarded asking divergent thinking questions as a possible way. Problem solving is a method reported by teachers in both the Sarsani and Fischman (2006) study. In the study by Diakidoy & Kanari (1999) it was reported that student creativity depends upon individual personality as well as environmental factors as shown in Table 4.3. For findings from this research on Pakistani teachers' views refer to Chapter 12.

Table 4.3: Factors which effect development of creativity

Cyprus (Diakidoy, & Kanari, 1999) N=49			UK (Fryer and Collings, 1991) N=1028
Characteristics and abilities	Environmental factors	Tasks that encourage creativity	
Imagination (100)	Emphasis on autonomy and independence (100)	Divergent thinking tasks(98)	Building confidence (98),
Ability to set own goals (93)	Emphasis on discovery learning (98)	Open-ended tasks (95)	Encouraging pupils to ask questions (97)
Self-confidence (91)	Emphasis on intrinsic motivation (92)	Unfamiliar tasks (67)	Free choice at home (92)
Divergent thinking ability (89)	Opportunities to correct own mistakes (92)	Ill-defined problems (53)	Supportive family (88)
Independence (83)	Choice in assignments (83)		Pupils allowed choice of method (74)
Autonomy (83)	Opportunities to question theories and assumptions (79)		Examinations (5)
Critical thinking ability (81)	Acceptance of all work outcomes (63)		Encouraging pupils to work quickly (3)
Many interests (73)	Emphasis on collaborative learning (57)		Permissive atmosphere
Ability to set own rules (69)	Frequent an detailed feedback (28)		
Innate talent (67)	Frequent praise (28)		
Artistic tendency (67)	Use of external rewards (24)		
Problem finding ability (51)	Emphasis on competition (18)		
Intelligence (38)	Frequent evaluation of outcomes (16)		
Analogical reasoning ability (32)	Emphasis on knowledge acquisition (14)		
Need for praise and reinforcement (28)	Emphasis on following instructions (8)		
Need to avoid mistakes (14)			
Willingness to accept guidance (12)			
Need for recognition and acceptance (10)			
Convergent ability (10)			
Fear of failure(0)			
Obedience to rules (0)			

(Figures in brackets show percentage of teachers responding)

But these are only teachers' views on developing creativity, which begs one to ask if these are part and parcel of classroom practices as well and this is discussed next as outlined in the creativity literature.

4.2.4: Classroom practices conducive to creativity development

It is claimed that there is no one specific approach, suitable for *all* children, to enhance creativity (Taylor, 1975) which means different children will need different experiences (Martinsen, 2003). Various methods (Meichenbaum, 1975) and numerous activities (Thorne, 2007) can, it is reported, be used for this purpose. In fact some have suggested holistic approaches which:

> ...specify the factors that are involved in the development of learners' capacity to be creative (their abilities, skills, knowledge, motives and personal properties), the components of the creative process (e.g., divergent thinking, convergent thinking), the creative climate, that is the characteristic environment or context enables the facilitation of creativity, and finally the nature of the interactions among these factors (Xerxen, 2009, p.24).

Before discussing some of the potential methods for developing creativity it is important to first clarify what some authorities believe creativity in the classroom does not look like:

> …chaotic conditions that allow students total freedom to express themselves. Nor does it imply the abdication of the role of the teacher as the person in charge. It does not mean creating a totally unstructured, anything-goes, condition (Shallcross, 1981, p.14).

A supportive and encouraging environment is said to be more effective in influencing creativity (Hennessey and Amabile, 1988) than genetic factors. A conducive environment is a 'source for ideas' (Runco, 1993, p.5). In order to create such an environment it is claimed that all aspects must be given attention 'social, behavioral, technological and curricular' (Hennessey, 1995, p.213), the physical aspects of school building and organization of the classroom space (Craft, 1997). The classroom arrangement, it is said, should allow children to participate in different kind of activities as well as provide places to display their work and space to store materials within easy access. Although 'elaborate' (Shallcross, 1981, p.13) equipment is said to be not as necessary, 'appropriate' resources are believed to be important (Foster, 1971, p.148), such as books, computers, atlases, games, construction materials, puzzles and craft materials (Craft, 1997). It is suggested that 'unfamiliar' materials are better than 'familiar' because the latter encourage students to:

> …rely on rote associations and preconceived ideas, and these are rarely original or creative. Unfamiliar materials...force students to think of new ideas and possibilities (Runco, 2003, p.9).

Some authorities say it is important that children are encouraged to take risks (Jeffrey and Craft, 2003). This, it is said, increases the chances of producing a creative outcome (Sternberg and Williams, 1996). Children need to take risks in how they think about problems and the solutions they generate (Claire, 2005). Classrooms in which creativity is promoted are also said to allow children to make mistakes (Craft, 1997).

While allowing mistakes is said to be important encouraging children to recognize and admit that they have made a mistake is also regarded as necessary. In this it is believed that children will learn that everyone makes mistakes and at such times these can be fruitfully discussed.

But in traditional schools, making mistakes is actively discouraged and children are often reprimanded for incorrect answers. This may result in them being 'afraid to risk the independent and the sometimes flawed thinking that lead to creativity' (Sternberg and Williams, 1996, p.16). If children become afraid of erring they will find it difficult to be creative (Sternberg, 2003). In order to encourage both making mistakes and taking risks a fear free atmosphere is required that:

> …encourages children to think outside the box without fear of ridicule...working with trusted friends and having the solidarity of a group to back your ideas...working through role play or games, or with puppets...which allows them to play safely with new ideas (Claire, 2005, p.160).

A secure environment, it is said, can be provided when teachers establish cordial relationships with their students (Xiaolei and Yan, 2004). Torrance (1970) refers to this as providing a 'refuge' (p.362), Shallcross (1981) as an 'emotional climate' (p.19) and Woods (2004) 'making emotional connections' (p.6). Studies have shown that more creative teachers had 'close, personal' relationship with their students while the less creative preferred an 'impersonal' relationship (Esquivel, 1995, p.190). It is claimed that teachers themselves need to take risks by trying out new things (Wilson, 2005). A study showed that student teachers were encouraged by their tutors to take risks with comments such as 'You are taking risks with sounds-good'. This it is said:

> …may help protect students from the pressure to avoid risks and the possible ridicule of their peers when they are nurturing new and unusual ideas and may feel vulnerable (Grainger et al, 2004, p.250).

Working together in groups can, it is believed, develop children's creativity (Esquivel, 1995), as they share ideas, cooperate (Jensen, 1969) and respect each other (Shallcross, 1981). Group work is also claimed to provide opportunities to explore 'divergent ideas' (James et al, 2004, pp.8-9) and exploration itself is stated to be 'critical' for creativity (James-D-III, 1988) therefore should be encouraged. It is said that when children are working in groups the 'excitement and adventure' should be kept alive, group 'desires' encouraged and children allowed to freely participate, out of choice but not due to any pressure (Jensen, 1969). In Chinese high schools the teaching of English includes students working in small group discussions, pair work, and whole class debates as part of the strategy to develop their creativity (Xiaolei and Yan, 2004). James et al (2004) report on the 'Cool Project,' under the Learning Teaching Scotland initiative, in which when children worked in groups they showed 'mutual respect,' 'excitement' and 'commitment' as well as 'sharing, compromising, and decision-making' (pp.7-10).

Whether children work in groups or individually it is reported that they need to be given time if they are to think creatively and generate ideas (Wilson, 2005). However, it is cautioned that if too much time is given then the work 'stagnates' (James et al, 2004, p.8). Sternberg and Williams (1996) advise that a set amount of time, for example 10 minutes, should be given and children instructed to use this just to 'think carefully, openly, creatively' (p.20). Time is not only needed for ideas to emerge but also to 'relax,' 'review' (Csikszentmihalyi, 1996, p.353) and 'reflect' upon them (Sternberg, 2003, p.335). Teachers, it is said, need to help give children this time (Claxton, 2006). This means spending time with them to listen, answer questions, encourage curiosity, being interested in them, helping them 'feel good about themselves' and encouraging them to improve their work (Thorne, 2007).

Generating different and original ideas is said to be 'fundamental' to creativity. This can involve coming up with new products, new ways of looking and doing things (Davies and Howe, 2005). However, besides thinking up ideas children also need to be encouraged to do something *(*Klein, 1982). This is what Bailin (1984) calls as 'actual creating' (p.21). Some of the methods suggested for encouraging generation of ideas include brainstorming or 'blue-sky,' 'linking-thinking' (using analogy) (Davies and Howe, 2005, p.179) and 'cross-fertilizing'. This is thinking across subjects using different subject materials. In this regard it is said that:

> …creative ideas... result from integrating material across subject areas, not from memorizing and reciting material (Sternberg and Williams, 1996, p.18).

Whatever ideas are generated (irrespective of how silly) need to be appreciated (Sternberg and Williams, 1996) and accepted (Runco, 1993). When ideas (particularly unusual ones) are respected it is claimed that it shows that they are valuable (Jensen, 1969). In this regard it is said that when developing creative behavior the:

> …most important effect comes from the implicit message that children receive: We, your teachers, value creativity. We welcome your creative ideas, and we will support your efforts to become more creative (Hennessey and Amabile, 1993, p.25).

If the ideas produced are not 'creative' then new approaches to these should be suggested by the teacher and the creative aspects of other ideas should be identified (Sternberg and Williams, 1996). It is claimed that what needs to be avoided is students saying 'I can't think of anything!' (Davies and Howe, 2005), and to encourage positive thinking, that is shifting from 'I can't' to 'I can' (Thorne, 2007, p.50).

Much of creative work involves encouraging children to use their imagination and be curious (Csikszentmihalyi, 1996). Imagination it is said can be stimulated by giving projects (Shallcross, 1981), allowing children to dream, fantasize, do imaginative writing (Thorne, 2007), by telling them stories (Woods, 2004) and asking 'what if…' questions (Claire, 2005, p.161). Teachers also need to find imaginative ways of teaching and have confidence in their own ability to employ techniques which will encourage children to use their imagination (Wilson, 2005).

Whatever the nature of the task developing creativity, it is claimed, involves developing motivation for this. This is said to be particularly true for internal/intrinsic motivation (Nickerson, 1999) which is however believed to be the most neglected in classrooms. Developing intrinsic motivation is said to be important because it determines the motivation with which children work on an assignment (Hennessey and Amabile, 1993). The work on internal motivation and creativity (the social-psychology approach to creativity) is based on the fact that 'people are most creative when they feel motivated primarily by the interest, enjoyment, satisfaction, and challenge of the work itself, not by external pressures' (Hennessey, 1995, p.164). James et al (2004) offer six strategies (applicable to education) which can effect intrinsic motivation, these are; challenge, freedom, resources, group-work, supervisory encouragement and organizational support (p.6). According to Hennessey and Amabile (1993) this can be increased through encouraging making choices and free-play, however not all type of play is conducive to developing creativity.

Craft (1997) is of the view that people who have had opportunities to be involved in play which requires 'non-standardized responses' which is 'dramatic' and 'fantasy type' are more creative on other tasks. It is not 'imitative play' that encourages creativity but rather

'experimental play' (p.8) 'free-play' or 'make-believe' (Hennessey and Amabile, 1993, p.22) for which children need to be given time, materials and many opportunities (Loveless, 2002). Introducing things in a 'play full game like way' can provide children 'comfort' and encourage 'self-expression and divergent thinking'. This 'playful' way it is said will suggest to children that 'they do not need to concern themselves with grades, working quickly, competing with classmates, or details like spelling' (Runco, 1993, p.7), all of which nevertheless allow children to acquire knowledge.

The role of knowledge, both 'general' and 'specialized,' and the need to impart it has been acknowledged as important for creativity (Feldhusen, 2002, p.179). Children need to be involved in tasks which are 'convergent,' that is giving information, as well as 'divergent' (Runco, 1993, p.10). In fact it is said that creativity actually starts with using existing knowledge (Roy, 1978), the 'more knowledge one has, the more one has the basics with which to be creative' (Foster, 2004, p.132). However it is also said that having too much knowledge can lead to only looking at things in the 'correct way' (Nickerson, 1999, p.410) rather than seeking out alternatives, which can:

> …lead to a kind of rigidity, and rigidity, like fixity, makes original thinking very difficult, if not impossible' (Runco and Sakamoto, 1999, p.66).

In a study of Cypriot student teachers only 28% (N=49) said that tasks which require children to have a lot of knowledge are more likely to facilitate creativity. In fact the author concludes that:

> ...an emphasis on knowledge acquisition was considered to be a primary reason for the school's lack of success in promoting creativity (Diakidoy, & Kanari, 1999, pp. 253, 239).

From the above discussion it is evident that various techniques are available to support creativity development in children. In fact many of these are consistent with those reported in research carried out on classroom practices showing these being used as given in Table 4.4.

Table 4.4: Comparison of methods identified as being used during teaching for developing creativity

Burnard et al, 2006	Woods, 2004	Jeffrey, 2006	Claxton, 2006	Fryer, 2003
Children worked in groups Richly resourced environments Children acting as mentors for others Team work Teachers being aware of children's interest beyond schools, Teachers telling students the time available for an activity In groups children discussed options collected materials collaboratively trialed ideas reviewing progress teacher watched carefully, noticing difficulties joining groups to support challenge	Using students prior knowledge Incorporating children's home experiences in school Allowing children to return to previous activities Teaching outside lesson times Abandoning planned activities Teachers and students work together to solve problems Teachers play down their 'omniscience' At times pretend that they are ''mystified,' Attend to the children's feelings Remove fears/encourage risk taking Establish personal	Reorganization of space Provide more time Teachers model creativity Draw out student's ideas Celebrate student ideas Invested time in discussion and critique Formed external partnerships Review work Discussing mistakes, Looking for alternative ways to deal with problems Showed high level of concentration Persisted with the task Took on board others	Rearranging classroom space Children encouraged to use their imagination.	Good relationships with pupils Valuing ideas and questions Variety and humour Pupil choice Teacher direction Teach that there are many ways to solve a problem Break down complex problems Appreciate patterns and relationships Appreciate the value of guessing or estimating

children's thinking Replies treated by the teacher respectfully Prompted students to evaluate by asking questions Teacher value offered suggestions	relationship Provide enjoyable teaching Stimulate the imagination Telling stories and narratives Develop empathy Allowing children to begin projects at different times ('staggered entry')	ideas Learning by doing and discovery Took risks Made decisions Adopted experimental trial and error strategies Encouraged to be curious		

Having described the various methods claimed to be effective in the classroom for developing creativity the following is a discussion on ways to develop creativity when teaching science. The reason for including this into the discussion is that the present study (refer to Chapter 12 for findings) focuses on science and the way it is taught in the classroom as well as in the science teaching material (textbook). This will therefore provide a basis for comparison.

In this it is suggested that such lessons be used in which there is 'concept development and concept-attainment' which makes children think that 'I can figure this out myself' (Starko, 2001, p.301). These include 'nondirective' (Esquivel, 1995, p.195) and open ended assignments (Davies and Howe, 2005). Two of the strategies which have been further elaborated for science teaching specifically are asking questions and problem solving (Thorne, 2007). For teaching problem solving Starko (2001) suggests students beginning with an 'ill-structured problem' (p.281). Csikszentmihalyi (1996) suggests that the first step is to find a problem and the next is to frame it in a way so that it can be solved. Once the problem has been identified it needs to be considered from alternative perspectives, and then generate many solutions until one is found which is considered best for the problem. With regard to

using questioning several authors have presented various models such as the seven level model by Sternberg and Williams, (1996) and a 9 point questioning strategy by Starko (2001).

It is suggested that to encourage creativity it is better to ask questions which do not have one specific answer. Teachers, it is believed, have a habit of doing this because it is easier to judge a correct answer (Runco, 1993) than many different responses. In Chinese schools challenging and open-ended questions are used when teaching English. The students are encouraged to generate numerous instead of one correct answer (Xiaolei and Yan, 2004). Sternberg and Williams (1996) suggest that it is more important for children to learn what questions to ask and how to ask them than learn the answers. The belief that the teachers job is to ask questions and the child's job is to answer should be discouraged. Children need to be taught how to ask 'good, thought provoking, interesting' (p.12) questions and the emphasis on rote learning should be reduced. How teachers respond to the students will determine if they continue to ask questions.

In summary it is said that the following should be used to encourage creativity during science teaching:

- Observing
- Making hypothesis
- Manipulating variables
- Discussing
- Defending ideas
- Testing
- Exploring
- Investigating

- Being challenged and given challenges
- Solving problems
- Interacting with others to share and compare ideas
- Being encouraged to make causal links
- Being surrounded by supportive adults (Starko, 2001; Johnston, 2005).

4.2.5: The effectiveness and limits to developing creativity

With the popular view that creativity can be developed Woods (2004) is of the opinion that there is still not a 'coherent and principled pedagogy' for creative teaching and learning (p.18). For the many interventions which have been made it is said that there is still little evidence to suggest that some practices are better than others (Feldman and Benjamin, 2006). Many of these have been on a small scale and their effectiveness has only been shown when used in combination with other approaches (Fryer, 2003). For example when The de Bono Program was used under the 'Project Intelligence' in the USA and then evaluated it was found that children who were involved had made progress in comparison to those not involved, leading some to the conclusion that creativity 'can be enhanced by a modest amount of classroom instruction that has been carefully prepared with that objective in mind'. However it was also reported that the effects of such programs were not long lasting (Nickerson, 1999).

Some have gone as far as stating that there are limits to developing creativity and a need to exercise care when providing opportunities for creative development to ensure that at the same time societies preserve 'their unique cultures and their traditional values' (Rudowicz, 2003, p.287). Craft (2006), in questioning the new tradition of the ever increasing need for new things, what she calls the 'throw away' culture, asks how 'WISE' it is for educators to encourage this. She calls for developing creativity with 'wisdom' and 'responsibility' in

which teachers and students are encouraged to evaluate their ideas, by for example introducing classroom rules and the impact these ideas may have on themselves, others and the broader environment, which calls for developing empathy (Craft, 2004).

This ends the section in which the many potential ways for developing creativity have been described, as well identifying research evidence into teachers' views and practices on how creativity can be developed and limits to its development. In the next section the obstacles which may be faced in the process of developing creativity are discussed. This includes the need to identify barriers, the teacher behaviors and classroom practices which obstruct creativity and teachers' views on ways that creativity can be inhibited. For findings related to obstacles faced by Pakistani teachers in developing student creativity refer to Chapter 13.

4.3: The need to identify barriers to creativity

It is important to ask what obstacles face teachers, as part of an overall discussion about enhancing children's creativity. It is said that the 'challenge' to increasing 'creativeness' is to 'understand, expect and be ready to cope with barriers to creativity from the environment or from inside oneself...' (Davis, 1999, p.170). In fact such seems to be the importance of knowing about creativity barriers that Davis (1999) goes as far as saying that:

> The contrast between creative and uncreative people lies more in barriers and uncreative attitudes than in differences in intelligence or thinking styles' (p.165).

Groth and Peters (1999) share Davis's view in that barriers do hamper 'creative willingness...suppress and drive into hiding the creative talents of individuals' (p.179). Shallcross (1981) echoes the need to identify these barriers as she opens the chapter 'Barriers to creative thinking' with:

> What is it that keeps children, teenagers, or adults from exercising their creative potential? What is it about ourselves, about the way we think and feel about ourselves, the way we live, the way we relate with other people and to the things that surround us? Fundamentally, each individual must figure out what barriers to creative expression exist within himself or herself. We all need to discover whether those barriers are internal or external and which are real or imagined (p.55).

If such is the importance of knowing about barriers to creativity then it is perhaps even more important for teachers to be able to identify and be aware of these because what may seem as a good and acceptable attitude, practice and environment may be a creativity inhibiter and vice versa. In fact knowing what the barriers are is a step towards removing them, which should be the ultimate objective as Sternberg (2010) says:

> Whether internal or external, obstacles must be overcome (p.1).

Many researchers while attaching importance to being aware of creativity barriers also issue a 'word of caution' and sensitize us to the need to have barriers because these can:

> ...offer safety checks and quality controls. A totally barrier-free environment could create hazardous chaos....psychologically we need the security of certain limitations (Shallcross, 1981, p.69).

An example of this, given by Shallcross, is the importance of developing both divergent and convergent thinking skills, where divergent thinking is regarded as 'the cognitive basis for creativity' resulting in things which 'may never have existed before'. Convergent thinking involves 'production of orthodoxy' resulting in 'correct answers' (Cropley, 2004, p.32). This

then points to the fact that although there is an agreement that it is important to recognize, be aware of and remove barriers to creativity it is perhaps also important to be aware that factors which may be considered as barriers in one context may not be in another. This poses a certain challenge for the teacher and the training of the teacher, where a balancing act will be required. This highlights the complex nature of teaching for creativity. Pope (2005) in this regard states that:

> Too little constraint and nothing happens (because there is no pressure for change) - or it just occurs haphazardly. Too much constraint and again nothing happens (this time because the system is seized) – or it all happens in a rush, willy-nilly (p.122).

4.4: General barriers

So how is a barrier defined and what are considered as the barriers, 'creativity killers' (Bartel, 2007, p.1) or 'killers' of creativity (Hennessey, 2003, p.258). Davis (1999) defines these as:

> ...blocks, either internal or external, that either inhibit creative thinking and inspiration or else prevent innovative ideas from being accepted and implemented (p.165).

This definition indicates to barriers at two stages, first, those resulting in idea generation and second, the evaluation of this idea which results in it being accepted or rejected which has implications for its implementation. This is something which is perhaps more applicable to the adult world than the child. Shallcross (1981) defines barriers as:

> A factor that impedes or restricts free movement, and in a psychological context, barriers are those elements that impeded growth and development (p.69).

The origin of barriers may be family, community, educational environment and others in the culture or organisation (Davis, 1999).

Shallcross (1981) outlines five groups of barriers, historical, biological, psychological, sociological and physiological. Historical barriers include religious and technological which use 'fear and conformity' and 'leave people feeling that they have little, if any, control over their lives'. Biological barriers refer to the belief that creativity is hereditary, physiological barriers may occur through illness, sociological through the environment created by the society which has:

> ...set norms in which we are accepted to fit which affects our ability to express our uniqueness – creative expression involves risk taking and when reaction is negative an individual will retreat to feel accepted- this has implications for those trying to develop creative behaviour through teaching (p.58).

The psychological barrier is regarded as the most important in terms of teaching (Shallcross, 1981). Davis (1999) outlines six barriers, learning and habits, rules and traditions, perceptual, cultural, emotional and resource constraints. Lack of education, political unrest, poverty (Eysenck, 1993) and the value which is placed on creativity (Jensen, 1969) can all inhibit it as well. Csikszentmihalyi (1996) is of the view that we need to satisfy our most basic needs first such as hunger and shelter otherwise it will be difficult to 'approach the world creatively' (p.346).

4.5: Teaching practices and teacher behaviors that inhibit creativity

Some authors have outlined a number of barriers which it is said need to be avoided during teaching, including having children work for rewards, focus on evaluation, restricted choice,

use of 'plenty of surveillance' (presence of an audience) and competition (Amabile, 1988). Hennessey (1995) reports of research in which children with less choice of material made less creative collage. Studies have also shown that teachers who are more controlling pay more attention to the detail and accuracy in children's work, while the low-controlling are more focused on the diversity of pupil ideas (Wodtke and Wallen, 1965). It is believed that if there is lack of creativity in their teaching teachers will 'structure and control all aspects of learning' and restrict creativity (Johnston, 2005). This implies that teacher creativity is important for developing student creativity. In summary the inhibitors indentified in the literature are given in Table 4.5, and have been grouped under student, teacher and classroom factors.

Table 4.5: Student, classroom and teacher related inhibitors of creativity

Student related inhibitors	Classroom practice related inhibitors	Teacher related inhibitors
Being defensive to others criticism	Follow-the-directions lessons	Concern for preservation of self
Having low self concept	Use of real life ideas	image- not students
Either thinking or getting messages that they cannot do something	Structured material and instructions	Preoccupation with discipline
Pressure of classroom participation	Distractions	Unavailable outside classroom
	Standardized tests/testing for facts and expectation of high scores	Lack of training opportunities
	Being encouraged and allowed to copy	Not valuing creativity
	Teacher giving critical comments	Tendency to conform
	Early teacher interference	Sensitive to criticism
	Teachers making suggestions for improvement/ pointing out anything that may be wrong	Respect for authority
	Teachers not asking open questions	Insecure
	Teachers assigning grades without providing informative feedback	Hypocritical
	Teachers setting time	Sarcastic
	Discouraging ideas	Unenthusiastic
		Dogmatic

	Giving more importance to imparting information (rote learning) and not skills Teacher demonstrating instead of students practicing Giving freedom without focus Having unclear goals Giving answers instead of teaching problem solving methods Praising neatness and conformity instead of original work More emphasis on maintaining orderliness Rewarding students for producing correct work and giving expected answers	Rigid Incompetent Narrow interests

(Oral, 2006; Foster, 2004; Bartel, 2007; Walberg, 1988; Jensen, 1969; Amabile, 1988; Hennessey, 2003; James-D-III, 1988; Feldman and Benjamin 2006; Hennessey, 1995; Cohen, 1988; Sternberg and Williams, 1996; Shallcross, 1981; Sternberg, 2010)

4.6: Teacher views on obstacles to creativity

Studies of teachers have shown that certain factors are regarded as obstacles to creativity. Diakidoy & Kanari (1999) reported that student teachers did not think that the school environment was conducive to creativity (89.8%), the national curriculum did not allow for creativity (65.3%), the large content to be covered in schools and the emphasis on knowledge acquisition (p.234). Fryer and Collings (1991) reported that 83% (p.213) teachers think that constrained atmosphere hinders creative development. One of the constraints included in the study by Sen and Sharma (2004) was the head teacher's and other teachers' attitude towards the creative activities such as for example the noise created. The creative activities were linked to having 'fun' and not 'seriously' studying. Other comments included 'You can't

control the class' or 'Time is being wasted' (p.164). The other obstacles outlined are given in Table 4.6.

Table 4.6: Obstacles facing teachers in developing children's creativity

Obstacles to creativity	Percentage of teachers reporting each obstacle
Excessive non teaching work	69
Vastness of syllabus	62
Lack of awareness of how to teach creatively	62
Short teaching period- lack of time	58
Over large classes	54
Inadequate time to prepare for lessons	46
Excessive teaching load	42
Inadequate teaching resources	35
Unsuitable class accommodation	27
Inadequate non teaching resources	27
Constraints imposed due to attitude of the principle	23

Source: Sen and Sharma, 2004, N=26

Sarsani (1991) categorized obstacles as outlined by the teachers into three levels, teacher, school and student as shown in Table 4.7.

Table 4.7: Categories of obstacles facing teachers in developing children's creativity

Teacher	Student level	School level
Overloaded syllabus	Lack of experience and their participation in the classroom as passive	Inadequate resources
Stress on completion of the syllabus	Silent spectators	Inadequate instructional material
Over emphasis on preparing the students for examination	A tendency to rote learn	Conflicts with curricula demands
Heavy teaching workload	A lack of motivation	Unsuitable accommodation
Lack of time	General poor performance	Inadequate funds
Lack of recognition and appreciation of teachers work	Unequal aptitudes	
	Poor family back ground	

Great emphasis on the lecture method Inadequate training in creativity and its development	No parental care or encouragement Parental illiteracy	

Source: Sarsani, 1999

Other barriers included short time of lessons, lack of laboratory facilities, government policies, lack of knowledge among administrators and distractions from teaching such as frequent election duties (Sarsani, 1999).

4.7: Summary

Overall, the evidence summarised here suggests that creativity, in the generic sense defined at the outset, can be influenced by the nature of schooling. Some likely ways forward have been identified for schools, teachers and policy-makers. But it has also been found that much of the research has been conducted in developed countries which has been on a small scale and not taking a systems view. There appears to be considerable literature on teaching practices, teacher views and so some extent the curriculum but there is relatively very little on teaching materials, specifically textbooks in relation to creativity. This is again an indication that perhaps there is little research from countries where the textbook is still the major teaching material, particularly many developing countries**.** It has also become apparent that many of the studies have outlined many barriers when efforts are made to develop creativity. These obstacles are similar across different countries at school and teacher level. However there has been less focus on obstacles at student level. But it must be remembered here that these are just views, without providing evidence of whether these are just general barriers to teaching or teaching for creativity, which may become more apparent from further investigations through for example observational research. This ends the discussion on methods of developing

creativity and the potential barriers faced in doing do. In the next chapter the methods and problems faced during identification and assessment of creativity are discussed.

CHAPTER 5

ASSESSING AND INVESTIGATING CREATIVITY

This chapter discusses the methods for identifying and assessing children's creativity and outlines the various behaviours found in the classroom as well as reported findings from existing creativity research on the most and least valued student traits by teachers. This is followed by a section on assessing creativity and includes the need for creativity assessment, as outlined in the policy documents as well as general literature, and the various assessment instruments which are in use (for findings related to assessment from the current study refer to Chapter 14). Following this is a summary of the approaches taken to study creativity in general, including methods used to investigate creativity in education. Also discussed is the need to study creativity in its cultural context and the systems approach which is used in this research to investigate the components of the primary education system.

5.1: Identifying creativity

Some of the behaviours which are said to be found in the classroom when children are being creative include those outlined by the UK government, as part of the initiative to promote creativity in schools. These include:

*Questioning and challenging***:** ask 'why?' 'how?' 'what if?', ask unusual questions, respond to ideas, questions, tasks or problems in a surprising way, challenge conventions and their own and others' assumptions, think independently.

*Making connections and seeing relationships***:** recognise the significance of their knowledge and previous experience, use analogies and metaphors, generalise from information and

experience, searching for trends and patterns, reinterpret and apply their learning in new contexts, communicate their ideas in novel or unexpected ways.

*Envisaging what might be***:** imagine, seeing things in the mind's eye, see possibilities, problems and challenges, ask 'what if?', visualise alternatives, look at and think about things differently and from different points of view.

*Exploring ideas, keeping options open***:** play with ideas, experiment try alternatives and fresh approaches, respond intuitively and trust their intuition anticipate and overcome difficulties, following an idea through, keep an open mind, adapting and modifying their ideas to achieve creative results.

*Reflecting critically on ideas, actions and outcomes***:** review progress, ask 'is this a good...?' 'is this what is needed?', invite feedback and incorporate this as needed, put forward constructive comments, ideas, explanations and ways of doing things, make perceptive observations about originality and value (QCDA, 2009, p.1).

Studies into teacher views about creativity have shown that certain student characteristics are more valued than others. Some of these studies used the Torrance Ideal Pupil Checklist which contains over 60 characteristics. The most valued characteristics across studies are shown in Table 5.1.

Table 5.1: Most valued pupil characteristics from the Ideal Pupil Checklist

Fryer and Collings, 1991 N=1028	Sen and Sharma, 2004	Torrance's Experts in Sen and Sharma, 2004	Stoycheva, 1996
Considerate (45)	Doing work on time healthy, sincere	Courageous in conviction	Sincere
Socially well adjusted (29)	Courteous , competitive	Curious	Curious
Self-confident (26)	Self confident neat and orderly	Independent in thinking	Thorough
Independent in thinking (23)	Courageous in conviction, desirous of excelling	Independent in judgement	Healthy
Curious (20)	Affectionate, industrious	Willing to take risks	Persistent
	Curious, independent in thinking, refined, free of coarseness	Intuitiveness	Sense of beauty
	Physically strong, socially well adjusted	Becomes pre-occupied with tasks	Sense of humour
	Remembering well, versatile	Persistent	Independent thinking
	Altruistic ,energetic, determined, persistent	Unwilling to accept things on mere say	
	Popular, well liked	Visionary	

There is a difference in the most valued traits of students in that independence of thinking is amongst the top in the Torrance's experts rating and Fryer but it is not in Sen and Sharma (India) or Stoycheva (Bulgaria). Many of the most valued traits in the Sen and Sharma's study are different to the other studies.

Table 5.2: Least valued pupil characteristics from the Ideal Pupil Checklist

Fryer and Collings, 1991 N=1028	Sen and Sharma, 2004	Torrance Experts given in Sen and Sharma, 2004	Stoycheva, 1996
Negativistic(62)	Fearful, apprehensive	Conformity	Bashful
Haughty and self satisfied (48)	Disturbs procedures and organisation of group	Willing to accept judgments of authority	Haughty
Stubborn and obstinate (48)	Haughty and self satisfied	Fearfulness	Self-satisfied
Disturbing group organisation and procedures (44)	Timid, shy, bashful	Timidity	Timid
Domineering (43)	Stubborn, negativistic	Obedience	Sophisticated
	Talkative	Courteousness	Quit
	Fault finding objecting	Promptness in doing work	Obedient
	Critical of others	Socially well adjusted	Fault finding.
	Unsophisticated	Haughty and self satisfied	
	Conforming	Neatness and orderliness	

The top rated least valued trait by Torrance's Experts is 'conformity' however although this is also in the Sen and Sharma's list it is not amongst the highest rated (refer to Table 5.2). Obedience is another trait which is amongst the least valued in studies other than Sen and Sharma, which shows that there are differences in teacher views across countries. Other creative behaviours outlined using different instruments include:

- Has interesting, uncommon ideas.
- Shows great curiosity and interest in things others are not interested in.
- Quickly understand real-life problem situation and suggests non trivial, but effective solutions.

However in research studies in which teachers were asked to describe their students so that a new teacher could become familiar with them it was found that creativity and related

behaviours was not amongst the most important characteristics and outlined by very few teachers. The ranking of creativity related behaviours from a list of 61 items was low, perhaps indicates that the findings depend upon the instruments used, as the following shows:

- Search for novelty interested in the unknown showing creative preference (49th).
- To do very well in uncommon situations (61st) .
- To have original ideas (25th).
- A climate for creative work (37th) (Stoycheva, 1996, p.1).

5.2: Assessing creativity

5.2.1: The need for and problems of assessing creativity

The Assessment and Learning Research Synthesis Group (ALRSG) in their review protocol for systematic review of research on 'The impact of the use of ICT for assessment of creative and critical thinking skills' state that:

> ...if valued goals of education are to be effectively taught, they need to be effectively assessed (ALRSG, 2003, p.8).

The NACCCE (1999) report defined assessment as the process of 'judging pupils' progress and attainment' and made recommendations that, 'all schools should review their provision for creative and cultural education'. It went on to highlight that:

> Reliable and systematic assessment is essential in all areas of the curriculum, to improve quality of teaching and learning and to raise standards of achievement. This is as true of children's creative and cultural education as for all other areas of education (p.124).

McCann (undated) also emphasises that '...creative processes and products be part of the overall assessment plan in the curriculum,' arguing that:

> ...in schools, work that is not linked to standards and assessed in some systematic way is treated as less important and less vital to educational purposes. When work is not assessed, it is treated as if it does not "count" (p.9).

There are a number of reasons outlined for the need to assess creativity. It can lead teachers to prepare and plan for it (Rogers and Fasciato, 2005) as well as to create the required environment (Foster, 1971) and encourage it (Compton and Nahmad-Williams, 2009).

Assessment of creativity is said to be a neglected area despite its importance. This is regarded as a reason for concern keeping in view the high profile that creativity currently has and its linking with education for preparing children for the future (ALRSG, 2003). The cause for this neglect may be that assessment for creativity is regarded as 'problematic,' (Scoffham, 2003, p.5) 'difficult' (Thorne, 2007, p.24) and 'challenging' (Feldman and Benjamin, 2006, p.332).

There are various reasons given why assessment of creativity is seen to be difficult despite being investigated for over a century. These include having no definite standards or standard methods (Afolabi et al, undated). There are also said to be definitional problems in that creativity is no longer defined as production of something novel, rather it also includes the outcome being useful. This makes it difficult to assess particularly since what is of value may differ from culture to culture (Scoffham, 2003). In fact some are of the view that the question of whether or not creativity can be assessed depends upon the definition of creativity adopted (Cartier, 2001) and in order to assess it a definition is needed (Rogers and Fasciato, 2005).

Other problems include the different opinions over what is deemed as creative across different subjects and using instruments based on Western ideas in other cultures (Rudowicz, 2003). In summary McCann (undated) states that assessment is challenging because creative work is:

> ...multi-faceted, multi-layered, and do not yield a single, correct, and easy-to-score response (p.9).

5.2.2: Instruments for assessing creativity

Nevertheless despite the attributed problems of creativity assessment many efforts have been made resulting in the development and use of various methods and instruments. Fishkin and Johnson (1998) outlined 60 instruments for use with school age children. These were grouped into process, personality, products, press, combination measures and systems or procedures approach. Hennessey and Amabile (1993) grouped assessment methods into three categories: personality inventories, biographical inventories and behavioural assessments (p.7). Afolabi et al (undated) divided these into ten categories: divergent test, attitude and interest inventories, biographical inventories, personal inventories, teacher nomination, peer nomination, supervisor ratings, judgements of products, eminence and self-reported creative activities and achievement (p.2). These are not without criticism either. One of these is that they are not adequate for the task (Loveless, 2002). There are also problems of reliability and validity (Diakidoy & Kanari 1999) as well as 'subjectivity and bias' (Afolabi et al, undated, p.4). In the case of tests there are also scoring problems (McCann, undated).

Children's creativity it is claimed can be assessed informally or formally using 'tests or expert judgments' (Sharp, 2001, p.6). Tests which have been used in education and regarded as the most popular are the divergent thinking type which includes the Torrance Tests of Creative

Thinking (TTCT) (1974) and the Wallach and Kogan (1965) tests (Plucker, 2001). Such tests are also said to be effective when used to evaluate the effect of programs introduced to develop creativity (Fishkin and Johnson, 1998). The TTCT (also called the Minnesota Tests of Creative Thinking) has been used across the world from Brazil, (Wechsler, 2006) to India (Misra et al, 2006) and 'remain the most widely used assessments' (Sternberg, 2006, p.87). It is regarded as appropriate for identifying and educating gifted children but more so for 'discovering and encouraging everyday life creativity' (Kim, 2006, p.11) being useful for researchers and teachers for assessing children's creative abilities.

However despite much praise for the TTCT it is not considered as useful if teachers are interested in day to day changes in children's creativity. For this the Consensual Assessment Technique is suggested to be more appropriate. This uses judges who 'are familiar with the domain to independently evaluate products and then reach consensus' (Fishkin and Johnson, 1998, p.43). In this the respondent is asked to complete a task and then experts in that particular 'domain' such as poetry are required to rate the creativity of the product (Hennessey and Amabile, 1993).

Other tests which have been used in classroom setting include the Remote Associations Test (RAT), which requires respondents to find connections between items. However it has been criticised for being more of a measure of intelligence than creativity (Taylor, 1975). There is also the Guilford's Unusual Uses Test which requires the respondent to come up with as many names for common objects as possible (Hennessey and Amabile, 1993). Instruments which collect data about the personality and attitude aspects based on details of past achievements and are not regarded as good for primary school children. The approaches in which information about the creative environment is collected are said to lack 'well

researched' instruments however one of the instruments given in this category and the only one related to classroom observation for creativity, is the 'Classroom Creativity Observation Schedule (CCOS)'. Other more recent measures are combining the standard measures with some alternative approaches 'performance assessment techniques' which include 'direct writing assessments, open-ended written questions, hands-on experiments, performances or exhibits and portfolios'. But evaluating children's work requires 'clear standards and knowledgeable judges' (Fishkin and Johnson, 1998, pp.42-43).

All measures, however, are said to have their strengths and weakness it is therefore suggested that in order to assess children's creativity multiple measures should be used (Plucker, 2001). The measures used will depend upon the assessment purpose and the definition of creativity adopted (Fishkin and Johnson, 1998) as well as the aspect of creativity that is of interest such as the 'product, process, person, and environment' (Auh, 2009, p.1). Taylor (1975) suggested that thought be given to how the creative process occurs over long periods of time using a variety of techniques. The methods for assessment, which ever used, will have some implication for the way teachers 'think about creativity' (Hennessey and Amabile, 1993, p.9).

5.2.3: Teacher views on assessment of creativity

Studies of teacher views on creativity assessment have shown mixed attitudes. Fryer and Collings (1991) reported that three quarter of the teachers said that test scores were not useful for assessing children's creativity. The preferred assessment criteria were as given in Table 5.3 which includes, as the top rated, imagination and originality in the pupils' work.

Table 5.3: Teachers preferred criteria for assessing creativity in pupils work

Assessment criteria	Percentage of teachers reporting the criteria
Imaginative	87
Original for pupil	85
Showing initiative	79
Pleasing to pupil	74
Expressing depth of feeling	70
Useful	13
Accurate	6

Source: Fryer and Collings, 1991 N=1028

In another study of UK trainee teachers (N=315) it was found that 12% of all respondents (Rogers and Fasciato, 2005) said creativity could not be assessed. This study included teachers from two universities and 43% from one said they were certain that it could be assessed and 12% from the other. The majority of the teachers said that assessment should be informal. It should be assessed 'in order to share ideas and develop enthusiasm and creativity even more'. Some suggested assessing children's implementation of their ideas while others suggested assessing the process rather than the outcome, yet some said that children should not be assessed on their creative ideas. Some trainees suggested that pupils could assess their own creativity as well as being assessed by the teacher.

However the teachers were of the view that assessment could pose certain problems as well. It could lead to discouragements, which raises the question, the author says, of whether creativity should be assessed. It was also considered as subjective, as it may mean different things to different people and may be different in different areas. Teachers felt that they lacked set criteria and guidance for assessing creativity and thus were unprepared. They wanted a creativity definition and criteria for assessment. Some said that 'creativity is individual' and so there cannot be any criteria for assessment or that there is no one way of assessing it since pupils are creative 'in different ways' (Rogers and Fasciato, 2005).

Having discussed the existing literature and findings from previous research the identification and assessment of creativity seemed to be the two weaker areas. In this Foster (1971) was of the view that the chances of teachers being able to identify creativity can be increased if they have:

> ...sound knowledge of the psychological bases of creativity, an understanding of the creative process and personality, an awareness of the conditions which are likely to elicit creative response.

With this teachers can also attempt to assess creativity. However he was apprehensive about this as he stated:

> ...this seems like an entire study of a subject in itself which teachers need to master, [it has] implications for teachers training and may be very difficult in countries where teachers barely manage to have mastery of the subjects they teach, however the positive side is that once mastered it can be applied to all subjects where only the contents will differ (p.53).

This completes the discussion on the various methods and problems related to identification and assessment of creativity. It has been found that research carried out in different countries shows that the teachers, to some extent, value different characteristics for creative students. Presented next are the various approaches taken to study creativity.

5.3: Research approaches

The history of creativity research suggests that the three more widely used approaches are psychometric, experimental and biographical, while biological, computational and contextual

approaches are regarded as important for the future. Mayer (1999) describes what he terms 'research paradigms' for each of the six approaches. These are 'describing the nature of creativity,' 'comparing creativity and non-creativity' and 'relating factors to creativity'. With six approaches and three paradigms, for each, results in 18 research methodologies for creativity. Cropley (2001) speaks of two kinds of creativity research 'qualitative' and 'quantitative'. The qualitative approach studies the extremely creative people whereas the qualitative approach takes the view that everybody can be creative, some of which are discussed next.

5.3.1: Psychometric approach

This approach aims to measure creativity directly. Studies conducted from this perspective are said to have formed the understanding we have of creativity (Plucker and Renzulli, 1999). In this it is believed that creativity is a mental characteristic which can be quantified (Mayer, 2004). The four areas investigated using this approach are the creative process, creative personality and behaviour, creative products, and creative environments (Plucker and Renzulli, 1999) – dealt with in turn here.

The creative process is how creativity occurs, this is examining the thinking stages (Scritchfield, 1999). In order to measure this creativity or divergent thinking tests have been used, such as Structure of the Intellect battery (SOI), Torrance Tests of Creative Thinking (TTCT), Instances Test, Uses Test, Word Association, and Problem-construction Tasks. These are said to be suitable for use in schools and many are still used in research and education. Amongst these the TTCT is the most commonly used internationally (Plucker and Renzulli, 1999).

For the creative personality, the focus is on measuring the characteristics of a person believed to have creative ability (Scritchfield, 1999). Self-reports are used as well as teacher/external ratings of past behaviour, personality and attainment. Instruments used are designed by studying creative people and identifying their common attributes against which other people can be compared. The instruments commonly used in this include the Group Inventory for Finding Talent and the Group Inventory for Finding Interest, What kind of Person Are You?, Adjective Check List and Sixteen Personality Factor Questionnaire. Such an approach is however said to be not 'logistically feasible' with younger children. In response to this instruments such as Preschool and Kindergarten Interest Descriptor have been developed. Research into the measurement of creative attitude within education is said to be limited, although implicit theories have been used to identify the everyday person's views of creativity including teachers (Plucker and Renzulli, 1999).

There has been very little research in area of the environment in which creativity occurs (Scritchfield, 1999), which investigates the ways that systems approaches to creativity can be used to develop creativity-fostering environments in educational settings (Plucker and Renzulli, 1999).

Many researchers are said to agree with MacKinonn (1978) in saying:

> ...the starting point, indeed the bedrock of all studies of creativity, is an analysis of creative products, a determination of what it is that makes them different from more mundane products (p.187).

This involves studying the features of the outcome produced (Scritchfield, 1999). Rating scales have been used to analyse the products such as Creative Product Semantic Scale, The

Student Product Assessment Form and the Consensual Assessment technique (CAT). In the CAT expert judges assess whether a product is creative or not. One of the problems outlined with this is that the judge's expertise depends on a number of factors such as their skill in the subject. Judges may be able to evaluate their own but not others products (Plucker and Renzulli, 1999).

5.3.2: Experimental approach

The experimental approaches focuses on studying the cognitive processes as people engage in creative problem solving (Mayer, 1999). One of the strengths of this is that it allows for more valid conclusions because the research is controlled, something not possible in other types of research such as archival, observation and surveys (Runco and Sakamoto, 1999). However, one of the weaknesses is that the results may not be generalizable to 'real creative thinking' (Mayer, 1999, p.455).

5.3.3: Biographical approach

Studies using this approach are based on investigating creative people whose 'status as creators is unquestionable' (Simonton, 1999, p.116). It is different from psychometric and experimental methodologies in that creativity is studied under real and not controlled conditions (Mayer, 1999). The historical and biographical records of creative persons are examined to identify the personal attributes and circumstances which have resulted in the person's success (Simonton, 1999).

5.3.4: Biological approaches

This approach is used to identify the psychological characteristics of creative problem solving. In this the brain activity is examined as people engage in creative thinking. The

strength of this method is that it provides evidence that cannot be obtained through other methods (Mayer, 1999; Martindale, 1999).

5.3.5: Computational and contextual approaches

These are based on the idea of simulating the process of creative thinking using computer programming, which offers a level of accuracy not found in other approaches (Boden, 1999). The contextual approach focuses on creativity in the 'social, cultural, evolutionary context'. The distinguishing feature is that it broadens the focus of creativity beyond creative thinking (Mayer, 1999: Csikszentmihalyi, 1999).

5.4: Systems view of creativity

In the face of the suggested range of methodologies given above it is recommended that a wide approach be taken to the study of creativity, based on the relative strengths and weaknesses of the methods. A broader approach may also increase work in the neglected areas, such as creative classroom environments (Plucker and Renzulli, 1999). Research into creativity has continued to increase. From 1920 to 1950 186 titles in the Psychological abstracts were listed which dealt with creativity from a total of 121,000. From 1960 to 1991 there were almost 9,000 references (Albert and Runco, 1999, p.17). By 28th June 2009, a search on Advanced Google Scholar (by the researcher), with the word 'creativity' in the title, returned 15,600 hits from 1991-2009 which suggests that creativity research has been increasing worldwide.

Studies of creativity, as found from a review of articles published in the Journal of Creative Behaviour from 1967 to 1989, have been of various types including test-based, questionnaire, interviews, archival and field based. Also included were some studies which used a mixture of methods and a few were longitudinal, meta-analytic and experimental (Cropley, 2001).

Investigations have been conducted into the personal characteristics of creative people, the creative process and the steps involved in producing something creative as well as environments which are favourable to creativity (Hennessey, 2003). Creativity has been researched at higher levels and 'less frequently as exhibited by average people and/or children' (Feldhusen, 2002, p.179).

Research into creativity within the educational context has been increasing since the 1980's, including answering questions such as conceptualising of creativity, how it is fostered, documenting creative teaching and investigating creativity in specific subjects such as information and communication technology (Wilson, 2005). The review of research in the previous chapters has shown that amongst the popular methods of research is a teacher survey, often done in preference to observations of teaching (Grainger et al, 2004). However surveys are usually on a very small scale, except for the widely quoted Fryer and Collings (1991) study with 1,028 teachers. The surveys, besides being small scale, include a mixture of teachers from various educational levels and often from a few schools rather than from a greater geographical spread.

There has also been research into textbook analysis, although very little in comparison to surveys. For example, Collado and Atxurra (2005) developed a set of codes. Included amongst these was the category 'action required by each activity' which consisted of verbs such as 'describe, discuss, create...' (pp.444-445). Nurse (1969) defined categories which identified material related to 'creating' as compared to 'non-creating' (pp.19-20). Wechter (1996) developed her instrument based on the Bloom's Taxonomy of Educational Objectives which was found to be comprehensive, and easier to understand compared to others.

Much of the researches in which surveys have been employed have also used interviews and some in combination used the creativity tests. There is very little, if any research, which has combined large scale surveys, with small scale research using teacher interviews, classroom observation, analysis of policy documents, teaching material as well as testing children for their creativity to investigate into the components of the primary education system to identify the factors enhancing and inhibiting primary school children's creativity. This is despite the fact that the 'system' (Csikszentmihalyi, 1990, p.200; also refer to Csikszentmihalyi, 1988) or the 'ecological' (Cropley, 2001, p.144; Esquivel, 1995, p.216) view to the study of creativity has been increasingly recognised as a way forward. It is believed that creativity is 'systemic rather than an individual phenomenon' (Csikszentmihalyi, 1996, p.23; also refer to Harrington, 1990) arising from an interaction of various factors (Cropley, 2001) as Csikszentmihalyi (1990) reinforces:

> To study creativity by focusing on the individual alone is trying to understand how an apple tree produces fruit by looking only at the tree and ignoring the sun and the soil that support its life (p.202).

For education it is said that:

> A framework that emphasizes interactions among person, domain and field may help focus curriculum and instruction reform efforts on those aspects that are most likely to foster innovation, larger scale transformation, and appropriate preparation for creative contributions of personal and cultural value (Feldman and Benjamin, 2006, p.330).

In speaking of the role of the teacher Esquivel (1995) is of the view that it is important to consider the 'interrelation among different systemic levels (e.g., the child, the teacher, the

classroom environment) and... the need to apply an ecological model to the study of creativity' (p.216). Similarly Feldman and Benjamin (2006) are of the view that if creativity is studied within the 'social/cultural/historical/evolutionary context' the focus shifts from the individual to the 'conditions that support, inhibit, constrain or enable creative work to take place' (p.329). It is the 'systems' approach which this current study will adopt to investigate creativity in education.

5.5: Researching creativity in the cultural context

Besides taking on a systems view of creativity there is also a need to study creativity in different cultures which can 'play an important role in conceptualising and developing creativity' (Rudowicz, 2003, p.287). This is because most of the research has been done following Western frameworks as Raina (2004) says that:

> ...not many researchers have seriously studied how various civilisations and philosophies have defined and approached creativity (p.25).

It is said that using work conducted in only a handful of societies to generalise from can result in a 'distortion of reality' it is therefore necessary to conduct research across cultures as it:

> ...helps to unravel the effects of tradition, values and life-philosophy on creative expression (Rudowicz, 2003, p.285).

This chapter completes the first part of the thesis, the literature review related to the research questions. The discussion so far has been related to the link between creativity and education, definition, importance, development, assessment of creativity and the methods used to

investigate creativity. The next part of the thesis starts with the context of the study in terms of the place where the research was conducted.

CHAPTER 6

CONTEXT OF THE STUDY

The fieldwork for this new study took place in the Punjab province of Pakistan. This chapter provides background information on the area to assist international readers with the educational and geographical context, and to set the scene for the sampling strategy which is done by districts of the Punjab.

6.1: The country - Pakistan

Since the first Educational Conference in 1947, after the country's independence, education in Pakistan has been regarded as 'one of the most important…long term objectives of national development' (Shahid, 2000, p.320) and emphasized as a way forward. However despite this emphasis and many ongoing efforts the provision of education to all is still a challenge. The literacy rate is around 53% (65% for males and 40% for females) (Kazmi, 2005) as compared to 16% in 1947-48 (ICG, 2004). This remains below other South Asian countries with similar levels of economic development. The educational institutions lack physical facilities and there are some shortages of qualified and motivated staff. There are reported financial constraints, want of managerial capacity, inadequate resource allocation and slow implementation of programs. The quality of education is also reported to be affected by an inadequate number of trained teachers with knowledge of the subject matter and able to communicate effectively. Teachers are inflexible in adapting to changing learning needs and there is a heavy burden on them in terms of number of students per class, (45:1), which is said to be higher than the majority of Asian, African, North and South American countries (Kazmi, 2005).

In recent years, a number of initiatives in the education sector have sought to improve the existing education scene. The Education Sector Reforms (ESR), for example, aimed to bring improvement in all aspects of education, infrastructure, human resource, teaching learning process, curriculum, teaching learning material, CPD, and measurement of learner achievement levels. The goal for quality education in the ESR is 'designed to create compatibilities with growing global pressure…' (Ministry of Education, 2002, p.5). Recent Green and White Papers reviewing National Education policy have emphasized a change in focus regarding the purpose of education which includes creativity and raising of creative individuals (Aly, 2007; National Education Policy Review Team, 2006). In the new Draft National Education Policy (2009), as part of the 'overarching priorities' for 'widening access and raising quality' it is stated that:

> The objective of education is the development of a self reliant individual, capable of analytical and original thinking, a responsible member of his community and, in the present era, a global citizen (Ministry of Education, 2009, p.21).

Pakistan is amongst the 12 countries in the world that spend less than 2% of their GNP on education (Kronstadt, 2004). This reveals the low priority accorded to education as compared to countries like Iran (4.7%), Malaysia (6.2%), Thailand (4.2%), South Korea (4.6%), India (3.8%) and Bangladesh (2.5%) (Ministry of Education, 2009). The primary education system in Pakistan is ranked as one of the least effective in the world. The U.S. Agency for International Development recently claimed that only two thirds of Pakistani children aged 5-9 are ever enrolled in school and only one-third will complete the fifth grade (Kronstadt, 2004). This education system is criticized for encouraging 'rote learning where cramming of facts is of paramount importance' (Aly, 2006, p.42). The centralized syllabus and textbook

production is said to 'make the education system more rigid and unable to adapt to the diverse needs of students' (ICG, 2004, p.1). The views of major donors such as the World Bank, with regard to the quality of education being provided, are reflected in the following:

> ...a large proportion of today's school-age children are not acquiring the fundamental knowledge and skills that would enable them to participate fully in their country's economic, social, and political development (Stern, 2001, p.1).

Education is delivered provincially, whereas the Federal Government is responsible for policy, planning and promotion of education facilities. There is a National Education Policy and a National Curriculum framed by the Federal Ministry of Education's Curriculum Wing. Both of these determine the contents of the government prescribed textbooks which are the main and often only source of teaching material used in schools (ICG, 2004). The medium of instruction at the primary level is Urdu or the provincial/local language.

Primary education is free and compulsory. It is delivered through three sectors, public, private and other public. While public and private sector institutions are perhaps self explicable, 'other public' sector institutions are defined to mean:

> Public Institutions run by other than Ministry of Education or Provincial/ Regional Education Departments (AEPM, 2008, p.9).

Each sector consists of educational institutions starting from pre-primary to degree colleges in the private sector and mosque schools to degree colleges in the public and other public sectors. They are geographically located within urban and rural locations and either single or mixed sex. There is variation in the distribution of education institutions, teachers, and enrolment across these three sectors. In terms of primary schools, the focus of this research,

there are more schools in the public sector (Table 6.1). Most of these are in rural areas and single sex. The larger number of boys' schools is perhaps indicative of higher participation in education for boys than girls.

Table 6.1: Distribution of primary schools in Pakistan (in percentages)

	Geographical Location								
Sector	Urban				Rural				Total
	Boys	Girls	Mixed	Total	Boys	Girls	Mixed	Total	
Public	4	3	1	8	43	26	11	80	88
Other Public	0.1	0.1	0.1	0.4	0.1	0.1	0.7	0.9	1
Private	0.1	0.1	5	5	0.1	0.3	5	6	11
Total	4	3	6	14	43	26	16	86	100

Source: Table compiled using data from AEPM, 2008 Total schools=157,575

The existence of a third sector indicates a possible gap not being filled by both the public and the private sector. The majority of the primary schools are in rural locations because the majority of the school-going population live in these areas. Most of the private schools are mixed sex.

Table 6.2: Distribution of primary school teachers in Pakistan (in percentages)

	Urban			Rural			Total
	Male	Female	Total	Male	Female	Total	
Public	8.4	7.9	16.3	41.6	21	62.6	80
Other Public	0.2	0.6	0.8	0.3	0.2	0.5	1
Private	1.6	10.2	11.8	2.7	5.2	7.9	19
Total	10.2	18.7	29	44.5	26.5	71	100

Source: Table compiled using data from AEPM, 2008 Total teachers=442,398

The variation in the distribution of teachers across sectors (Table 6.2) follows a similar pattern as the schools. However there are more teachers in the private sector in comparison to the public. There are almost twice as many teachers in private schools in urban areas as rural, while the same is also true for other public sector institutes. This may indicate a shortage of teachers in the public sector. It may also be that it is easier for private schools to employ

teachers due to recruitment procedures. Private schools may also be able to employ teachers for a lower salary compared to the public sector. There are more male teachers overall of whom the majority are in the public sector, while there are more female teachers in the other sectors.

6.2: The Province - Punjab

The country is divided into four provinces, Punjab, Sindh, North West Frontier Province (NWFP), and Balochistan, plus some federal units which include the Islamabad Capital Territory, Federally Administered Tribal Area (FATA) and Northern Areas (FANA). The study was conducted in the Punjab province because of the researcher's knowledge and experience of working in this area, and familiarity with the education system as well as the language. This province consists of 36 districts and is the second largest of the four provinces in terms of area with more than half of the country's population. It is the most industrialized, although the economy is mostly agricultural (Government of Pakistan, 2009). The literacy rate is 46 percent (57 percent for male and 35 percent for female), which is higher than other provinces and the country. The level of education of almost one third of the population is primary with one fifth being below primary. More people living in urban areas have higher qualifications (Government of Pakistan, 2010). In comparison to the other provinces Punjab has more primary schools, enrolment and teachers. There are 63,119 schools, including 44,068 primary schools (AEPM, 2008; Ministry of Education, 2009).

Enrolment in primary schools is higher in the public sector (Table 6.3), as there are more schools in this sector compared to private and other public sector (Table 6.5). However, what is important to note is that while only one third of schools are in the private sector, enrolment in this sector is almost half of that in the public sector.

Table: 6.3: Percentage of enrolment in public, private and other public sector primary schools (2006-07)

	Urban			Rural			Total		
Sector	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Public	6	6	12	28	23	51	35	29	64
Private	11	10	21	7	6	14	18	16	35
Other Public	0.7	0.7	1	0.2	0.1	0.3	0.8	0.7	1
Total	17	17	34	36	29	66	54	46	100

Source: Compiled and calculated from: AEPM, 2008 Total enrolment = 9,132,210

Primary school teachers (Table 6.4) are over two thirds in the public sector, with the majority being in rural areas. There are more boys teachers in the public sector, while the majority in the private sector are female. There are also more female teachers in the other public sector.

Table 6.4: Percentage of teachers in primary schools (public, private, other public)

Sector	Urban			Rural			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Public	6	6	12	33	28	60	39	33	72
Private	2	14	16	2	9	11	4	23	27
Other Public	0.2	0.5	0.8	0.3	0.3	1	0.2	0.5	1
Total	8	20	28	36	36	72	43	57	100

Source: Compiled and calculated from AEPM, 2008 Total teachers = 187105

There are a high number of schools, 80%, in the public sector (Table 6.5) which indicates where the majority of the children are being educated. It is interesting to note that while there are more schools in the public sector as compared to private there are more teachers in the private sector as compared to public schools. For example 28% of the teachers are in private sector while there are 18% schools. The majority of the private and other public schools are mixed sex schools which is not the case in the public sector where there are only single sex schools.

Table 6.5: Percentage of primary schools (public, private, other public)

Sector	Urban				Rural				Total			
	Male	Female	Mixed	Total	Male	Female	Mixed	Total	Male	Female	Mixed	Total
Public	4	4	-	8	35	37	-	72	39	41		80
Private	0.1	0.1	9	9	0.3	0.4	9	9	0.4	0.6	17	18
Other Public	0.1	0.001	0.3	0.5	0.1	0.1	1	1	0.3	0.2	1	2
Total	4	4	9	17	36	37	9.6	83	40	42	18	100

Source: Compiled and calculated from AEPM, 2007 Total schools=55904

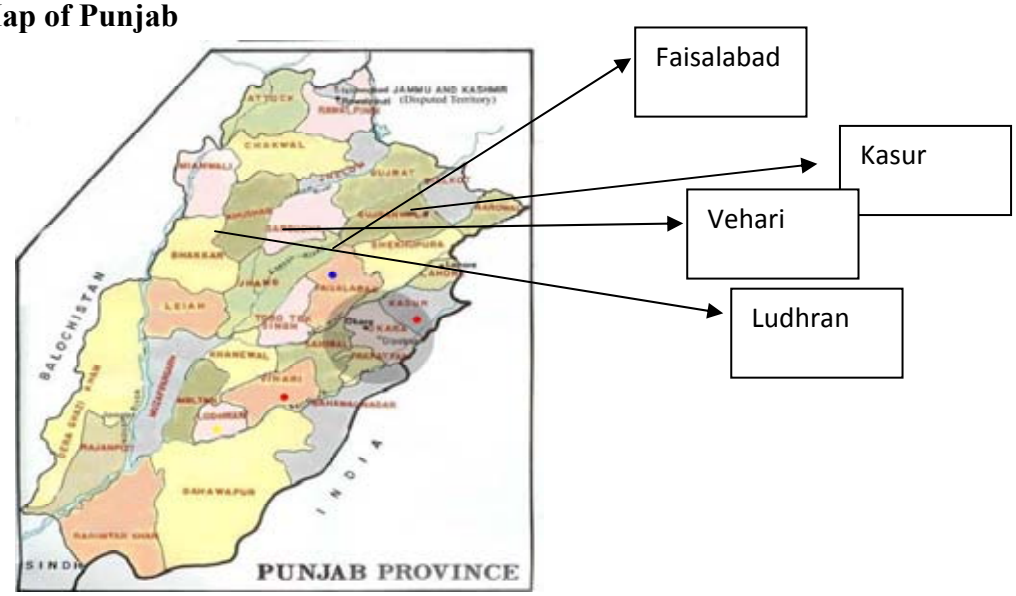
Just over half of the teachers in the public sector have the minimum professional teaching qualification (Primary teaching certificate, PTC), and almost 35% have the Certificate in Teaching (CT), the second highest qualification and B.Ed. Almost half of the teachers have the minimum academic qualification (matriculate) while 25% have B.A/B.Sc and over 10% have a Masters degree. There are also teachers in primary education with an M.Phil degree which shows the high qualifications required or taken for teaching at primary level (AEPM, 2008).

Although nearly all schools have buildings and what is called a 'pakka' construction which is built with brick and cement, almost 80% are said to be not in satisfactory condition and many lack basic amenities such as latrines and boundary walls (AEPM, 2008). Over half of the primary schools have two class rooms. It is worth remembering that each primary school has five classes, but only 15% have three classrooms and less than 5% (N=44,684) have more than three classes. Many of the schools either use the space in the veranda or the playground using trees for shade in the summer and the open grounds during winter for warmth.

6.3: The Districts - Vehari, Ludhran, Kasur and Faisalabad

Four of the Punjab districts were selected for the study Ludhran, Vehari, Kasur and Faisalabad, their location is shown on Figure 6.1 (Punjab map).

Figure 6.1: Map of Punjab



The four districts are not only different in their geographical location but also in their years of establishment, level of industrialisation, the population size, area and the education status in terms of literacy rates, school going population, enrolment, number of schools and teachers. District Faisalabad is industrially highly developed and district Kasur is moving towards development with its tanneries and leather industry. District Vehari has the best cultivated land but district Ludhran is one of the least developed districts in Punjab, it is also the smallest and less populated than the other four districts. The districts also differ in terms of the literacy rates (with district Faisalabad having the highest literacy rate and Ludhran being amongst the lowest of all districts (CIDA, 2009) (Table 6.6).

Table 6.6: District Literacy Rates (in percentages)

	Urban			Rural			Total			Literacy Ranking
	Male	Female	Total	Male	Female	Total	Male	Female	Total	
Ludhran	59	35	47	39	12	26	42	16	29	32
Vehari	70	52	61	53	24	38	56	29	42	25
Kasur	61	48	54	51	23	38	29	54	42	26
Faisalabad	73	63	68	58	36	47	65	49	57	10

Source: Ministry of Education, 2009 Note. The literacy rates for Ludhran are for 1998 and for the remaining districts 2001. The literacy ranking is based on 1998 Census data.

The four districts also differ in their levels of enrolment, teachers and schools (Table 6.7). The highest enrolment and teachers by far is in Faisalabad, although the number of primary schools is not as high, however higher than other districts. This perhaps shows shortage of schools and teachers.

Table 6.7: Schools, enrolment and teachers in primary schools in public sector 1999-2000 (in percentages)

	Ludhran	Vehari	Kasur	Faisalabad
Enrolment	71,640	133,518	129,070	276,421
Teachers	2,147	3,984	3,945	7,860
Primary Schools	757	1,159	1,291	1,932

Source: Ministry of Education, 2009

This chapter has given the background context to the study, especially for international readers, in relation to the country, province and districts in which it was conducted. The next chapter describes the methods which have been used to research creativity, and the following chapters describe the conduct of this study.

CHAPTER 7

METHODS (I)

This is the first of two methods chapters. It includes a description of the gatekeepers who supported the research, the proposed link between the research questions and the methods used to collect data, the sample design and the teacher survey. The next chapter contains discussion on the instruments used for testing children's creativity, the Torrance Tests of Creative Thinking (TTCT), followed by classroom observation for which the Classroom Creativity Observation Schedule (CCOS) was used, teacher interviews and content analysis of textbooks, policy documents and curriculum. Description starts with each instrument followed by the administration and analysis procedure.

7.1: Role of gatekeepers

7.1.1: National Commission for Human Development (NCHD)

The National Commission for Human Development was the major organization supporting the research activities. There were various levels of coordination between the researcher and the NCHD. The support was provided by the Education teams based at Head Office (Islamabad), Punjab Provincial Office (Lahore) and the Human Development Support Units (HDSU) in the four study districts. This was under the coordination and management of the Director of Education, based at Head Office, who was the focal point throughout the research and instrumental at the organizational level, overseeing the research activities with a personal commitment. At the Head Office further support was provided by the Education Officer, Material Developer and Coordinator Quality Education. The Director Education worked with the Director Operations in the Provincial office for verification of addresses of sampled schools, the data collection strategy and ensuring support from the district staff at the HDSUs.

The researcher did not correspond with the Director Operations and was informed of the outcomes by Director Education. The Director Operations allocated the tasks to Provincial Coordinator (PC) who then worked with the district staff for planning and implementation of activities. Once in the HDSUs the researcher's first point of contact was the General Manager (GM) who ensured the implementation of the field plan and the logistic support through the District Program Manager Education (DPME) and Coordinator Primary Education (CPE). The DPME and CPE worked with the Markaz Coordinators (MC) during field work.

7.1.2: District Education Department

The NCHD district staff worked in collaboration with the district education department to disseminate the questionnaires to the teachers and channel them back. The researcher was not involved directly with the department. The district education department is structured such that the Executive District Officer (EDO) is in charge of education in the district. There is District Education Officers (DEO) for elementary, secondary, colleges and special education who report to the EDO. There are two DEOs for Elementary education, one for girls' schools and the other for boys. Each DEO Elementary works with Deputy District Education Officers (DDEO) at the tehsil (sub-district) level. The tehsil is a geographical division of the district. There is one DDEO (male and female) per tehsil. The number of tehsils may vary from district to district. Each DDEO works with Assistant Education Officers (AEO), at the Markaz level. A Markaz is a geographical division of a tehsil. Each tehsil may be divided into a number of Markaz. In each Markaz there are a number of Centre Schools. The Centre School acts as an administrative unit to a cluster of schools within the vicinity. The Centre Head is in charge of a Centre School.

7.1.3: UNICEF

UNICEF (Punjab) was contacted for sampling data. However this was not available with the organization but it provided information of and access to the Punjab Examination Commission who was then contacted with the UNICEF reference. UNICEF was contacted because of the researcher's previous work with the organization.

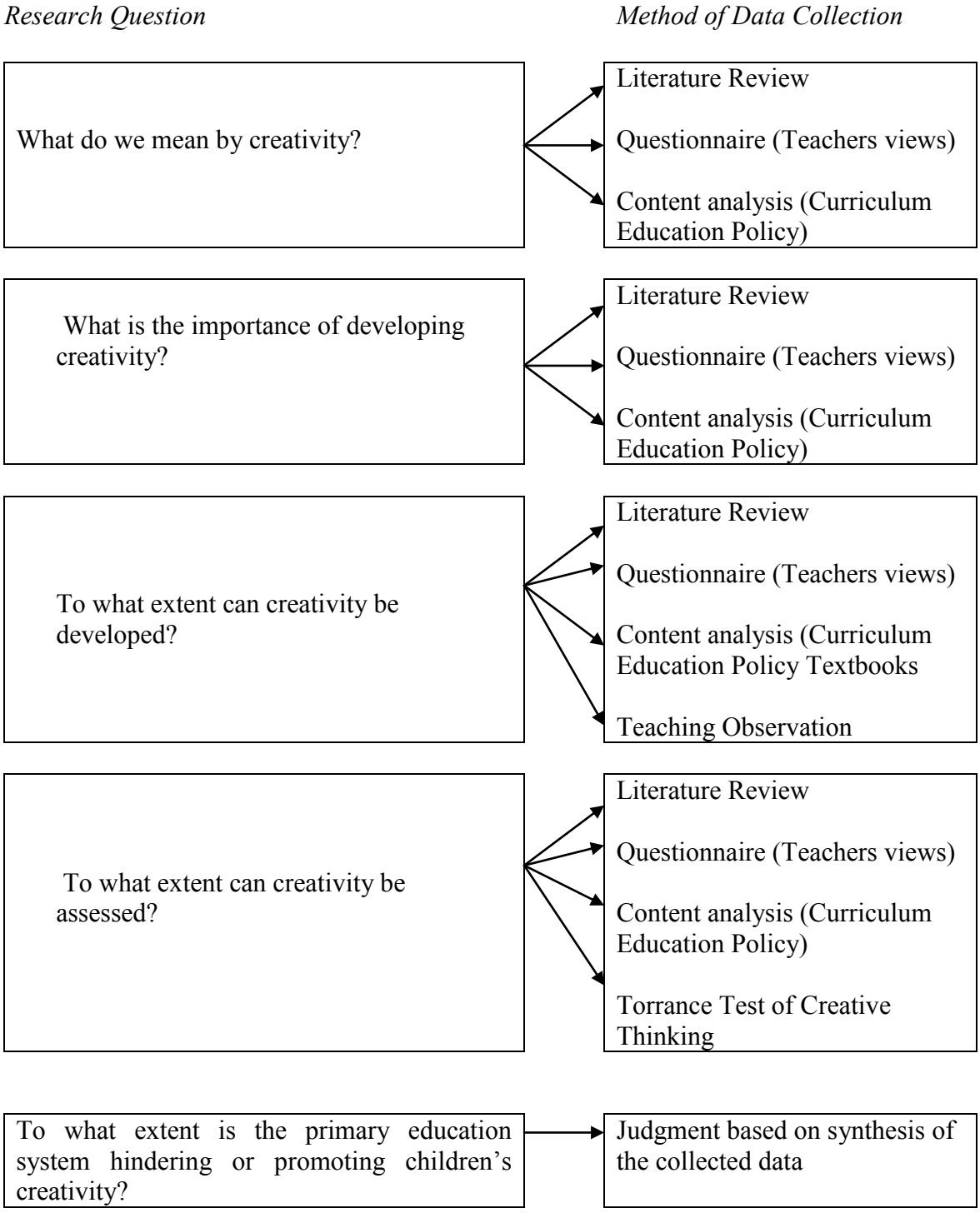
7.1.4: Punjab Examination Commission (PEC)

The Punjab Examination Commission has been established with funding from UNICEF and is responsible for conducting grade eight and five annual examinations in the province. It therefore had the examination data of the children taking these exams. This data was provided for sampling purposes.

7.2: Link between research questions and method used to collect data

Each research question for this study (see Chapter one) was answered using data collected from several sources, so that data from one source was used to answer a number of questions. In this way the study used a combined methods approach because the aim of the research was to explore various components within the primary education system and these required different methods of investigation (for further information on combined methods refer to Gorard and Taylor, 2004). The link between research questions and the methods of data collection to answer these is given in Figure 7.1.

Figure 7.1: The link between research questions and methods of data Collection



The research combined a large-scale teacher survey followed by in-depth data collection using creativity tests, lesson teaching observation, documentary analysis of textbook, curriculum and education policy as well as informal teacher interviews. In order to collect

data about the process of the survey 'daily diaries' of the persons involved in this as well as notes taken during meetings were used. Secondary data was used to collect background information related to the province and districts as well as for sample selection.

7.3: The sample

The focus of the study is primary education because of the researcher's own experience of working in this sector in Pakistan and being familiar with the system. This sector was also chosen because this is the first formal level of education for the majority of the Pakistani children and sets the foundation for further levels, and therefore should also be a starting point for creativity education.

The population for the study was all primary schools in the Punjab province. In order to select these schools secondary data was obtained from the Punjab Examination Commission (PEC) containing the examination scores of class five children. Class five is the last year of primary schooling. In order to verify that the data was suitable a sample of 500 children was first obtained. This was followed by the entire data of 1.2 million children from private, government and non formal schools who sat the class five examinations in 2006 from all 36 districts of the Punjab province. This data contained, for each child, individual scores for the subjects, English, Urdu, Islamic studies, social science, science and mathematics. There was also the total examination score which was the aggregate of these subject scores.

7.3.1: Selection of districts

At the first stage of sampling four districts were selected. For this the mean examination score of each of the 36 districts was calculated using the children's total examination score. The mean examination scores were then ranked in an ascending order. From these four districts were selected one with the lowest mean score, one with the highest mean score and two with

medium mean scores. The districts were selected at this stage keeping in view the fact that context in terms of place, which is 'sometimes overlooked by educational researchers' (Gorard, 1997, p.3), may be a factor affecting children's creativity. The direct selection of schools from the province at this stage would also have run the risk of too much scatter in terms of distance, which given the resource and time constraints was not deemed practical in that 'the cost of conducting the survey will be unduly increased by the distance…'(Sapsford and Jupp, 2006, p.35).

7.3.2: School selection for the survey

The mean examination score for each of the schools within each district was calculated. The schools were then ranked in an ascending order of the mean score. From these, 84 schools were chosen with the lowest mean scores, 168 schools with medium scores and 84 with the highest scores, giving a total of 336 schools per district and 1344 in total for the survey. The respondents selected for the survey were class five teachers because the research is focused on the last year of primary schooling. The purpose of a large-scale survey was to identify the perceptions, practice and experience of class five primary school teachers regarding definitions, identification, assessment, importance and development of children's creativity through primary education.

7.3.3: School selection for the TTCT/Classroom observation and informal interviews

From the 1344 schools in the survey, a sub-sample was selected to administer the TTCT, do classroom observation and informal interviews. Four schools were selected from each district, one with the lowest mean score, two with medium mean scores and one with the highest mean score. In this way 16 schools for the four districts were selected. The class five was selected for observation and administration of TTCT and class five teachers for interviews.

7.3.4: Selection of textbook/curriculum

There are five textbooks used in class five - English, Urdu, Mathematics, Social Studies, Science and Islamic Studies. From these the science textbook was selected for content analysis because this was easier to understand as compared to others. Similarly there are separate curricula for each of the subjects named above. From these the curricula selected for content analysis were English, Mathematics and Science because these were in English as opposed to Urdu and therefore easier to comprehend. All are core subjects.

7.3.5: Selection of children for administration of TTCT

The children of class five were selected for administering the TTCT and it was decided to administer the test to 160 children in total, or 40 children per district, and 10 per school on average. This was based on the Punjab Education Management Information System school data. The selection criteria for choosing children from within the class was based on their academic performance, including those who are low performing, average performing and high performing.

Once the schools were selected as described above, the school lists were compiled for each district and their addresses verified. Accompanying the lists sent to the districts (in Pakistan) was background information describing the research study. Once the lists were returned to the researcher the schools for which no addresses were given or were identified as 'non-functional' were removed and the lists revised. The total schools removed were 207 which included 128 private and 79 government schools. More schools were removed from the Kasur list as compared to the other three districts as shown in Table 7.1. The schools for the survey were reduced from 1344 to 1137. This is a reduction by 15% to the original sample. This of course shows the changing nature of the school market particularly in the private sector

because 62% of the schools removed from the list were private schools. The removed schools were not replaced because this would have involved repeating the rigorous verification process which was not possible due to time constraints. So, there remains a 15% non-response rate, lower (and so better) than in much published research.

Table 7.1: Number of schools eliminated from the original sample after address verification

	Districts				
School sector	Ludhran	Vehari	Faisalabad	Kasur	Total
Private	20	26	22	60	128
Government	8	1	14	56	79
Total	28	27	36	116	207
Total schools remaining after verification	308	309	300	220	1137

The remaining schools (1137) were allocated a unique identification code, and for the final study the lists for all districts were rearranged and organized into a uniform format to maintain consistency across districts. The format designed was such that it could also be used for follow-up and monitoring of data collection as well monitoring progress of data entry. A summary of the number of schools selected for collecting data from the different sources is given in Table 7.2.

Table 7.2: Detail of schools used for sampling and those selected for the survey, observation and administration of TTCT

District	No. of schools	Sampled schools for survey	Percentage of total schools	Sampled Schools for TTCT/observation and teacher interviews	No. of class five children for TTCT
Faisalabad	7,154	336	5	4	40
Kasur	2,728	336	12	4	40
Vehari	2,180	336	15	4	40
Ludhran	961	336	35	4	40
Total	13,023	1,344	10	16	160

7.4: Teacher survey

7.4.1: Questionnaire design

The questionnaire used for the survey was original and specifically designed for this study about teacher definitions of creativity, methods used to identify, assess and enhance as well as factors which may inhibit development of children's creativity. The teachers were asked about their practice rather than perceptions so that some of this could be verified through observation. Also included were questions related to reasons for developing creativity and background information both of the teachers and schools. The type of questions used included both open and closed ended as well as a few 'routing questions' (Gillham, 2000, p.33). The questionnaire was made flexible by allowing an opportunity for respondents to provide additional comments by including the 'any other' category. For the closed ended questions a list of response items were provided. These were identified using the creativity literature and responses received from pre-testing in the open comment sections. At the initial stages friends and family members were also asked to pre-pilot. The Punjab Education Management Information System (PEMIS) was used to select response items related for background information to make them specific to the Pakistani teachers and schools.

The response items selected from literature included all aspects of creativity related to the creative product, person, process and environment, aiming for a holistic view. These, once identified, were reviewed, categorized and duplications eliminated and this became an iterative process until the final version. Difficult terminology was avoided and 'natural…and familiar' (Gorard, 2003, p.104) language was used to avoid ambiguity and any vocabulary which may act as a barrier for the respondents. The response items were randomly arranged, else categorization may emerge during analysis, which may also provide a cross verification of any existing categorization. It was expected that the respondents would consider each item

individually. The response items were presented as a single element because including more than one idea makes it difficult to assess the response (Fryer and Collings, 1991).

Different scales were experimented with, ranging from just allowing the respondents to tick as many of the response items to a three point scale such as 'very important, important and not important'. However the problem with this was that the scaled responses varied for different questions and with many sections and questions in the questionnaire some form of consistency was required. Eventually a two point scale (yes, no) was used for all such questions.

The questions were phrased in a manner which would prompt experience based answers. In order to clarify the objective, a pre-amble and a stem-phrase was added at the beginning of each question. The stem-phrase was used so that respondents could remind themselves what the response items were referring to such as for example 'creative child…..' in the section on identifying creativity. Since the study is limited to primary education the questions were asked within this context. However the question related to definition of creativity was asked in general terms, because it may be that these remain the same irrespective of group or age. Questions which were more appealing, inviting and demanding (in terms of time) were placed at the beginning. Those requiring background information and which may appear to be more intrusive were placed towards the end.

The number of questions included in the questionnaire was kept to a minimum to make the instrument more manageable, requiring no more than 30 minutes to complete. One of the methods used for reducing questions was to ask a more general question. For example instead of asking about creativity being included in pre-service and in-service training a general question related to training for developing creativity and methods taught during training.

Questions were not asked if data could be obtained from secondary sources such as name and address of school. Asking for teachers names raised issues of anonymity and was therefore avoided.

Particular attention was paid to developing the cover page because it was used to convey to the respondents information about the research (the aims, context, reasons), instructions for completing the questionnaire, issues of confidentiality and anonymity. The titling of the questionnaire made it focused giving it an identity. The method of administration determined the instructions on the cover page, their presentation and amount of detail contained. The instructions were presented in bullet points rather than chunks of text for ease of reading.

The layout pattern remained consistent and simple. Each section was titled, all questions with response items were concluded with the 'any other' category and sufficient space was provided for the responses. The response items related to each questions did not flow over onto the next page, tick boxes were aligned with their response items. There was uniform labeling and positioning throughout the questionnaire.

It is important to mention here that during the development process the various drafts were sent to different people working within education and creativity in education. However to my amazement there was no feedback received. Some academics even went as far as advising that they could not advise anyone outside their university. This attitude was very disappointing especially for a new researcher, and not what was expected of a UK and international academic community. Sources of feedback included family members, NCHD and supervisory meetings which enabled the researcher to momentarily step outside the development process. Many of the revisions made were a result of this feedback including adding the question on factors inhibiting creativity as well as the presentation aspect of the instrument such as

phrasing of questions preceding response items. Other suggestions included rethinking what information was really required and if too much information was being asked for as well as reducing the length (too many response items).

7.4.2: Translation of the questionnaire

The questionnaire was developed in English with translation in mind. As it was being developed the researcher mentally determined the possible Urdu equivalent but did not write a parallel Urdu version. The first formal translation was done by a family member. This was because she agreed to do it immediately, voluntarily and there was no need for rapport building and persuasion. She was bilingual, fluent both in Urdu and English, as well as having knowledge of the education sector and the level of language best suited for Pakistani primary school teachers. During an initial discussion her willingness for the translation was acquired, orientation to the task was provided and a time scale agreed for completing the translation. She was emailed the questionnaire and given a detailed background to the research, the questionnaire and the intended respondents. Instructions for translation were verbally given which included keeping it simple and avoiding ambiguity. During translation there was continuous discussion and feedback which made the translation process very interactive. Once the first translation was completed it was reviewed by the researcher. In this it was found that some of the text had not been translated such as 'knowledgeable,' 'inspiration' and 'assertive'. Other text not translated included response items such as options for teacher qualifications. These were better left in English and not translated just for the sake of 100% translation. There were also instances where the text was a bilingual sentence (containing a mixture of Urdu and English words).

After reviewing the first translation the researcher sent it to a second translator, together with guidelines for translation. The purpose of this was to verify that the translation did convey what was intended, improve the language used, make grammatical corrections and the translation more conceptual rather than literal (for more detail on these terms and translating refer to Behling and Law, 2000). The second translation, once completed, was returned to the researcher. This was reviewed and it was found that a number of changes had been made. In some cases there was a complete retranslation of words and phrases. Some words used in the first translation were replaced with more relevant, commonly used, precise, easier to understand and self-explicable words such as words for 'survey,' 'conventions' and 'humor'. Some words/phrases which were not translated by the first translator (still in English) had been translated. In some cases additional phrases were added (elaboration) in Urdu (which were not in the source text) to make it more meaningful and overcome the too precise translation, such as the word 'persistent' for which one word was insufficient in Urdu. There were also cases where the translation was changed to make it more directed at the respondent. For example 'in what ways do **you** develop children's creativity,' 'what method do **you** use to enhance children's creativity in **your** class?'. In some cases the researcher noticed that a retranslation was incorrect as in the case of 'produces original work/ideas' and needed to be revised.

One of the major changes which were required in this second version of the translation was an alternative word/phrase for 'encouragement,' used in the section on developing children's creativity. In the English version every option given in this section denoted that by doing this named activity creativity can be enhanced. However the word 'encouragement' was translated as 'appreciation' in Urdu. Translated this way conveyed giving appreciation for doing the activity rather than giving opportunity to do the activity, which is what the researcher wanted

to convey. Hence the problem was not in the translation but rather in the English word used in the English version. The translation had to be therefore reworded to mean 'to provide opportunities for'.

In some translations there appeared a gender bias in the items, for example 'he does…' which was changed to apply to both male and female. There was also an item 'asks unusual questions' which in the translated version may be interpreted as something negative, therefore it was elaborated and changed to 'asks uncommon/new questions'. The translation for the word 'Any other,' had to be elaborated because on its own it seemed meaningless. Some items appeared very similar after translation and were removed in order to avoid duplication. A common term was coined to represent both for example 'assertive and holding strong opinion'. One of the common and to the researcher the most important issue with both the first and second versions of the translation was that different words were being used for the word creativity. Both translators used words such as creative abilities, creative skills, and creative process. The word most commonly used in both was 'creative abilities' and this was selected for consistent use as the equivalent to the word 'creativity'. This version was now in the questionnaire format, similar to the English version and was used for pretesting.

Once pre-tested, the researcher revised the translation by working face-to-face with the pre-testing team at NCHD, in Pakistan and not from distance (as was the case before pre-testing). The translators who worked on this final version were not involved in the first or second level translation. The purpose of revising the translation at this phase was not only to check that inputs added after pre-testing were correct in terms of language but also to verify that the text in the questionnaire was understood as intended. Although it would have been ideal to do this with teachers it was not possible due to time constraints. The method adopted for this was that

the translator and the researcher both had identical copies of the questionnaire. The researcher read out the Urdu text from the questionnaire to the translator and asked her to explain what she understood. She was also asked to provide advice on the language used, grammar, spellings etc. If the translators understanding corresponded with what the researcher had intended then the text was not changed but if not then it was changed to convey the intended meaning. Once the changes were made the researcher worked with the Urdu typist to finalize the format, correct grammatical errors before sending to the printers.

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7.4.3: Pre-testing of the questionnaire

The questionnaire was pre-tested to check that instructions for completion were clear, the questions are interpreted as intended, answer categories devised were sufficient, design a data base, analyze preliminary data, identify problems, present initial findings and redraft the questionnaire for the final survey. The pre-testing was carried out initially in England using the English version of the questionnaire and then in Pakistan using the Urdu version.

In the UK the first pre-testing was done with one year three primary school teacher. This was a local school (attended by my daughter) and as a parent with a CRB clearance, it was easily accessible. However the access to the teacher was obtained through meetings with and co-operation of the head teacher followed up by informal and then formal meetings with the teacher. During the pre-testing the researcher provided a brief introduction to the study and the purpose of pre-testing. The face-to-face method of delivery was adopted. The teacher completed the questionnaire in the presence of the researcher. Initially the researcher read out the response items and recorded the responses on the questionnaire. However after the first two questions the questionnaire was handed over to the teacher leaving her to respond independently. This change was felt necessary because the first approach was disturbing the

teacher's flow of thought and she did not have total control. The teacher also preferred this approach which, according to her, enabled her to respond as she desired while also having the opportunity to ask the researcher questions. This took 30 minutes to complete.

The findings from the pre-testing included the following. The questionnaire in general was easy to understand, follow and complete. The option lists were extensive. It was user friendly, straightforward to do, the layout was fine, the option lists were very extensive and the length was adequate. Some questions lacked instruction as the teacher asked with reference to the response items 'there is no limit to how many I can tick is there?.' Some questions, such as definitions of creativity, were not asked with specific reference to children and the teacher agreed with this saying that 'no it was fine the way it was because it sets the scene for the remaining questions, it should remain general'. Some of the response items such as 'criticizes constructively' as an indicator of a creative child was said to be an 'advanced skill beyond the child's level'. Some of the response items and questions were regarded as ambiguous or were not understood as intended such as 'teachers joining in activities to model their own creativity'. The teacher suggested that it should be rephrased to 'teachers model their own creativity'. The following shows her interpretation:

> If it means teachers getting involved in activities and showing children how something is to be done or made and as a result everybody makes exactly the same thing, for example she shows them how to make an aero-plane and everybody makes the exact aero-plane shown to them, then it is not a way to encourage creativity but if they are shown by teachers how to be creative, for example teachers model how to be creative, how to respond in unusual ways, then this encourages creativity.

While some questions were closed-ended with response items others were just open ended and for some, such as barriers to creativity, it was suggested that response items should be provided. This, it was said, would help teachers to express themselves as some may be less experienced than others. Some questions such as those related to textbooks did not apply to the teacher and responses could not be provided. Some of the questions the teacher felt could be answered with both a 'yes' and a 'no' and needed rephrasing, as she said 'it is a yes and a no, because the education department does in a way require it [creativity] but it does not make it [creativity] a priority'.

In some cases it was suggested that extra questions should be added, for example:

> If you had a wish list for developing children's creativity what would you do or give examples of what people could do.

In one of the sections, the importance of creativity, the teacher did not understand what was being asked for and the question needed to be further developed. In some background questions the response items were not exhaustive such as the question related to qualifications which did not include the teacher's qualification and it was suggested that the category 'others' be added. The open comment sections of the questions with response items provided the teacher with opportunity to clarify and elaborate her ideas and also to judge if enough space was provided. However in this the teacher often stopped to ask the researcher if what she was saying made sense, which may act as a limitation of the face-to-face delivery method of the questionnaire. For example responding to the open comment section on the questions about definitions of creativity, the teacher explained:

> I don't know if this is the right word, but what I mean is that creativity is usually linked to arts, but I think it is linked to all curriculum areas.

The second group of respondents involved in pre-testing in the UK included 24 second year BA Education Studies students from the University of York. The purpose of this was for the researcher to obtain firsthand knowledge of the process for subsequent use to redraft the questionnaire and also prepare guidelines for pre-testing in Pakistan. The researcher used the questionnaire as an example in her teaching sessions on research methods. The students were handed out the questionnaire to provide comments on it as an instrument including, the clarity of instructions, the format, as well as to act as respondents and complete it. Although some of the questions were very specific and applicable to teachers in Pakistan only, such as use of textbook, the students were able to respond to most. Their questionnaires were collected for analysis and redrafting. Some of the feedback from this pre-testing is outlined below.

There were layout problems in terms of the response items not being aligned to the selection boxes. Some of the positive feedback was that the questionnaire was well presented, professional, polite and concise. The cover page was regarded as clear since a brief background to the research was given and asking the respondents if they wanted a summary of the research was also well taken as one student said:

> I like this because it shows that you care about the teacher being able to see the results of taking the time to fill out the questionnaire.

However some sections were found to be too long and it was suggested that these be divided into subsections while too many response items contained the same starting word such as 'encouraging them' in the question on developing children's creativity. Some of the scales

given were criticized and regarded as insufficient to allow the respondent more flexibility in their response as one student said:

> I wanted to say 'some time' to some questions but I couldn't, some [response items] I felt were more important than others, but the options were not given.

Some of the questions, it was said, were too general such as those on developing and identifying creativity, and some questions contained 'far too many' response items for identifying creativity, so much so that the stem of the question was forgotten and options are 'ticked without thinking'. One of the suggestions for overcoming this was to add 'creative child' at the beginning of each item so that the respondent remembers. Towards the end of the questionnaire the respondents were asked for their personal information so that they could receive the research summary, some of the students said this compromised anonymity and confidentiality.

For pre-testing in Pakistan a number of strategies were considered but the one finally adopted is described next. One person from the NCHD conducted the pre-testing according to guidelines prepared by the researcher based on the pre-testing carried out in the UK. Three schools were selected in the sub-district Murray within the Rawalpindi district in Punjab. The pre-testing was conducted in one day. The schools consisted of one private mixed gender, one government girl's primary and one government boy's high school. All three schools were in rural areas. There were nine class five teachers, (1 male and 8 female). These schools were selected on the basis of 'first found open' on the day. Each of the three schools was visited and access was negotiated by meeting the head teacher. During this meeting there was an introduction to the research, the organization involved (NCHD) and the purpose of the visit. The questionnaire was either sent to the class five teachers for completion or the class five

teacher was called into the head teacher's office and given a briefing. The questionnaire was then taken away, consulted with other teachers, completed and then returned. It took each teacher 20-25 minutes. As a result of the meeting with the teachers, the pre-tester explains that 'there were many things [in the questionnaire] which they were aware of but they either could not understand them or could not express them'. He gives an example in support of this:

> One of the questions asked about [in the questionnaire] was if they [teachers] kept a record of children's assessment. Many teachers answered 'No' and some answered 'Yes', so when I asked them [during the meeting] how they kept a record, they told me that the school has given all the teachers diaries in which they keep a record of children's abilities or they keep a record of the children's drawings.

7.4.4: Revision of the questionnaire after pre-testing

After pre-testing the following changes were made to the questionnaire for the final study. On the cover page extra information was added related to district, school name and Id code. Instructions requesting the respondents to answer the questions in the given order were also added. A two point scale was provided as opposed to the respondents just ticking as many of the response items they agreed with. The major changes were a reduction in questions in general and change of question type from open-ended to close-ended with response items taken from the responses obtained from pre-testing for assessment, reasons for developing creativity and obstacles faced. Also questions asked were revised to ask about the teacher's current practice rather than perception. Questions related to textbooks were also reduced and rephrased to obtain information about the textbooks the teachers teach and feel develop creativity. The questions related to training were reduced and a general question related to training for developing creativity and methods taught, was added. Information related to

confidentiality and anonymity was omitted because it was experienced, during pre-testing in Pakistan that this clause resulted in teachers reacting with suspicion. Also removed was the university name, logo, the researcher name and university address. Name and address of teachers was also not required and hence removed. Some other questions omitted were the support required by teachers for developing creativity.

At the time of pre-testing the strategy which was intended to be used for conducting the survey was that someone would go to each school, explain research purpose and get the questionnaire filled in and bring it back. However this strategy was changed and some of the instructions were removed from the cover page such as:

> For any clarification please feel free to ask the person visiting the school for this purpose.

In the background information 'semi-urban' as an option was omitted, while 'less than a year' was added as an option to the question related to 'How long have you been teaching?' and the options 'None and others' were added to academic/professional qualification (refer to Appendix 1 for both English and Urdu versions of the questionnaire).

7.4.5: Data entry of data obtained from pre-testing

The data obtained from 34 respondents involved in pre-testing was entered into a data base specifically designed for this purpose using SPSS. The purpose was to pre-test the design and format of the database for final data entry. The data variables (103) and their sequence corresponded to the questions and their sequence in the questionnaire. The variable names were derived from the section title or the questions in the questionnaire. The labels for each variable were the actual statements or questions used in the questionnaire. The data type was

all ‘numeric’. The code values were given for all except two variables (code and length of teaching). The values used for the variables corresponded to the choice of responses given in the questionnaire. For example if the response options were yes/no then these were the values used. If the response options were for example levels of qualification then these were used as values. When the data was entered into the first version of the data base it was found that revisions were required for some of the data received. The database was revised again after the questionnaire was revised after pre-testing. In this more variables were added along with the names of the participating 1137 schools and their Id codes. The reason for entering both codes and school names into the data base before entering data was to ensure the codes and school names corresponded. The variables for district and sub-district were also added. The variable Id was slightly changed from the previous versions of the database.

The open ended questions were also numeric type because it was decided at the time of designing this version of the database that they would act as flag variables and returned to for identifying questionnaires with responses to open ended questions and then these responses would be coded. The data received from pre-testing was also analyzed to pre-test the analysis plan. The first level was generating frequencies, ranking the items then grouping the responses according to the same frequency. The second level was cross tabulating the responses with each of the background variables. These steps were successful.

7.4.6: Strategy for conducting the survey

There were a number of strategies prepared for conducting the survey. The first strategy was for the MC to visit each school, meet class five teachers, distribute and re-collect the questionnaire. The DPME was to supervise the field work. The training was to be conducted by the researcher. For this roles and responsibilities were developed for the DPME and the

MC. The benefit of this strategy was that the survey would be completed in approximately four weeks. This strategy was however abandoned because it was regarded as staff and time intensive by the NCHD and would affect the routine work of the organization.

The second strategy was less dependent on the NCHD district staff and involved them working in collaboration with the district education department. The district education department has a mechanism whereby there are 'Monthly Meetings' held at the beginning of each month. These are conducted at the various administrative tiers within the department and the purpose of meetings is to disseminate and collect information, provide training and discuss issues. At the Markaz level the AEOs conduct these meetings with the Centre Heads. The Centre Heads then conduct meetings at the Centre School with the head teachers of the attached schools. The head teachers then return to their schools to hold meetings with their staff. With this mechanism already in place it was decided to use this for conducting the survey. Another reason for working with the education department was because the NCHD already works in partnership with the department to provide support for enrollment, retention and quality education.

The researcher worked with the NCHD district staff (General Manager, District Program Officer, Markaz Coordinator and the Coordinator Primary Education) who worked with the education department personnel (Executive District Officer (EDO), District Education Officer (DEO), Deputy District Education Officer (DDEO), Assistant Education Officer (AEO), Centre school head teachers, school head teachers, and class five teachers. The researcher was advised to remain in the background to prevent the department from feeling 'threatened'. This liaison was left to the district teams, who were best suited to do this due to working in the area and having a district level agreement with the district government.

7.4.7: Preparation of training material

Training materials were prepared for conducting the survey. These included an introduction (in Urdu) to the research and the survey as well as an overview of the questions contained within the questionnaire. This was a generic document to be used by everyone involved in the training and the implementation of the survey activities and could simply be read out by the trainers to the trainees. Also included in the training material were the roles and responsibilities of the Provincial Coordinator, DPME, MC from the NCHD and AEO and the class five teachers from the education department. Other documents included the strategy for conducting the survey in government and private schools, lists of participating schools and the total schools in each district as well as format for follow-up and monitoring of the questionnaire distribution and return. This material together with the questionnaires was sent to the Provincial Coordinator and the HDSUs in the districts for training and implementation of the activities, (for training material refer to Appendix 2).

7.4.8: Training and conducting the survey

The researcher first trained the Provincial Coordinator at the NCHD head office. In order to confirm that the instructions had been understood he was asked to repeat his roles and responsibilities and the description of activities. This was a means of verification and to identify any gaps. Then a third person, listening to the Provincial Coordinator, was asked to repeat the heard instructions. It was found that the strategy for private schools had not been understood and required further clarification which was provided. It was important at this stage to ensure that the strategy had been understood to minimize miscommunication or wrong communication which would have been detrimental considering the different levels at which the training had to be conducted. Once the PC was trained he informed the GMs in the study districts about the research to ensure the research activities were conducted as planned

and the researcher was provided support during field work. The researcher also held briefing and debriefing meetings in three districts with the GMs who were instrumental in stressing the importance of the research to their staff, providing motivation, ensuring effective planning and implementation by the district staff, as well as advising the researcher on the local conditions and traditions.

After intimating the GMs the Provincial Coordinator then provided face-to-face training to the DPMEs from Kasur and Faisalabad district at the Provincial Office. However the DPMEs from Vehari and Ludhran were trained through telephone. The researcher also trained the DPME Ludhran and Vehari. This was possible, although not part of the training plan, because the researcher's field visits coincided with those of district trainings. One of the advantages of conducting training of staff from two districts together (Vehari and Ludhran) was that both teams were able to discuss common areas of concern and generate and share each other's solutions.

The DPMEs once trained reviewed the training strategy and revised it to suit their local circumstances. They also identified gaps and generated solutions for these. For example, in Ludhran district they found that the training material contained no strategy for High Schools (with primary sections). They decided that these would be visited by the MCs and the questionnaires not channeled through the monthly meeting mechanism. It was felt that using this mechanism for High Schools may risk the head teachers completing the questionnaire rather than class five teachers and it would also be more time consuming and complicated. The teams also decided to add school code, tehsil and district name to the questionnaire before distribution. This, it was felt, would save the teacher time. The mechanism to distribute questionnaires to elementary schools was also not included in the original training strategy.

Hence it was decided, by the DPME Vehari, that this could be through the monthly meetings conducted by the DDEO, attended by the elementary school head teachers. There was also lack of clarity concerning the time scale for completing the survey. This was clarified by the researcher and the PC. The changes suggested by district teams to the original strategy were agreed to by the researcher as they were best acquainted with the local conditions and mechanisms.

Once the DPMEs revised the strategy they trained the MCs with the help of the CPEs, during their regular 'weekly meetings'. During the training it was emphasized that the survey needed to be completed 'quickly' and 'needs to be given priority'. In this the MCs were required to gain support of the district Education Department who would use the mechanism of 'monthly meetings' for distributing the questionnaires to the teachers. The schools were allocated to the concerned MC according to their area of working. This in some cases was done by reading out school names and the MCs indicating which schools were in their area. The researcher was able to attend the MCs training session only in Ludhran and a review session in Faisalabad. In both of these meetings it was stressed that the ultimate task of the MC was to ensure that the questionnaire is distributed to the selected class five teachers and returned. In this it was clarified that care must be taken to ensure that support is not provided in completing the questionnaire but rather it was an exercise to gather the teachers' views.

Once the DPME and MC received training they trained the personnel from district education department. The first step in this was telling the management at the education department about the research and gaining consent to work with the AEOs and the teachers for conducting the training and the survey. For example, in Ludhran district the DPME held a meeting with the EDO and discussed the research. It was discussed that the research may

result in material development to enhance children's creativity and that the final report will be shared with the Education Department. These meetings were then followed up by the MCs holding training meetings with the AEOs and in some districts with the DDEO (these were not included in the initial strategy as trainers). During these meetings a description of their roles and responsibilities was provided and the MCs also helped the AEOs and the DDEOs to prepare for the training of the teachers by inviting suggestions on ways to approach the task.

In some districts separate meetings/trainings were held for male and female AEOs. This is because the male AEOs are responsible for the boys' schools and female AEOs for girls' schools. The AEOs and DDEOs then trained the teachers. The DDEOs held meetings with elementary school head teachers at tehsil level and in some cases with centre school head teachers at Markaz level. The AEOs held meetings with either centre school head teachers, school head teachers, class five teachers or elementary school head teachers. In cases where class five teachers attended the training the questionnaires were distributed and completed. However if the class five teachers did not attend the meetings then the questionnaires were given to the head teachers for onward submission to the relevant teachers. In some cases the monthly meetings had already been conducted and therefore the questionnaires were directly sent to schools.

During the teachers training the DDEOs and AEOs discussed the questionnaire, emphasizing that class five teachers from selected schools would complete these, as well as explaining the contents and in some cases ways to complete it. The background to the research was also explained. It was said that the survey was part of educational research aimed at finding out about and enhancing children's creativity. One MC documented the DDEO as saying:

> …the questionnaire is about obtaining information about creativity… in this way it is a research about you.

Another MC documented an AEO as saying:

> …it is to obtain teachers opinion about enhancing children's creativity…to assess children's creativity which will be used for further research.

It was also emphasized that 'all questions must be responded to' and that the teachers can 'respond openly with their views' as the 'questionnaire was very important and needed to be completed and taken seriously'. The teachers could 'tick or cross' the responses or express their opinion using 'yes or no'. They were also requested to write the school name but not the code number, which would be added by the MCs. In some cases the questionnaire was read out and clarifications given as required. In the meetings which were not attended by class five teachers the names of participating schools were read out and the Centre School Head teachers took note of these, collecting the questionnaires for onward distribution. The questionnaires were distributed to the centre heads as per the list for onward distribution to schools. For some female schools the questionnaires were collected by the centre heads from boy's schools. They were given the responsibility of distributing to and recollecting these from the female teachers.

The mechanism for returning the questionnaire was also discussed as well as the deadline for completion, as one MC documented in his diary:

> The AEO said it is to be returned to AEO office by 7th November (2007). However through a mutual agreement it was decided that teachers will return the questionnaires to their Center Schools and the Center Head would forward these to the AEO.

Some government schools were visited by the MCs and in some cases this was done jointly with the AEO, to distribute and re-collect the questionnaire. The reasons for this were that some teachers did not participate in the monthly meetings and in some cases there was shortage of time, as one MC said:

> For this I made a plan with the AEO because the number of schools was high and there were two days to complete it, which was very little time.

In some cases intermediate support was sought to access schools. For example in order to access a Non Formal Basic Centre (NFBE) the MC and AEO first met the head teacher whose sister was running this centre. They discussed the questionnaire with him and then accompanied him to the centre. They could not directly approach the female teacher because she has 'purdah' which means not meeting unknown males. In order to overcome this, the head teacher took the questionnaire to the teacher who completed and returned it. In another case in Faisalabad there was no AEO in a Markaz and the MC met the 'office clerks' and the head teachers from the participating schools were called for a meeting and trained.

The strategy for private schools was that the MCs visit each school and get the questionnaire completed. In order to obtain access to the schools various strategies were adopted by the MCs using their own initiatives, such as for example contacting the president of the Private Schools Association and obtaining a letter or visiting card to show to the schools. Although the role of the education department was to channelize questionnaires to the government they also helped to access private schools. One MC said that the AEO 'insisted…private schools are near the centre schools and questionnaires will be sent to these through centre heads and returned'. Some MCs made joint visits with the AEO's to private schools as one MC described:

> On our way to Government Primary School…, the MC and AEO first visited … private school and met the head teacher. The AEO discussed the questionnaire with him and mentioned that UNICEF is conducting a survey on quality education. He said 'for this a questionnaire has been sent which also includes the response items and you have to tick the right responses. It is to be completed by class five teachers'. The head teacher called the class five teacher and asked her to complete the questionnaire.

Some AEOs also helped in areas in which no MC was working and some DDEOs called a meeting of the private schools participating in the research and having the questionnaires completed. Some AEOs also took the responsibility for distributing and collecting private school questionnaires to private schools through their government schools. In majority of the cases however the MCs visited the private schools. In this some explained during the introduction that the questionnaire 'contained nothing confidential'. Another explained that the questionnaire is to be completed 'in the light of his experiences'. An example of an introduction is given below:

> The Ministry of Education has included various schools, government, private and non-formal and has sent questionnaires to be filled in. The total number of these schools is 309. These will be filled in by class five teachers. The purpose of this questionnaire is research.

Some MCs also explained that the teachers should respond to the questions according to their own understanding, ticking the responses which expressed their opinion. The objective was to obtain their 'expert opinion' and the purpose was 'research…to enhance children's creative ability and to benefit from their opinions and knowledge…and nothing else'.

7.4.9: Monitoring of training and implementation

A format was designed for monitoring training and implementation of the survey activities, and provided to the districts. They were required to record the status of each questionnaire, for example if it had been completed and returned and if not to state the reason. This format was combined with the list of schools to reduce workload of the district teams. The training also included instructions for DPME to follow-up progress from MCs and MCs to follow-up with AEOs. For this majority of the MCs attended the training meetings conducted by the AEOs and other education department personnel. The Provincial Coordinator received feedback through telephone from the districts and the researcher was also able to monitor training of MCs first hand in Vehari and Ludhran and follow-up with the districts and the Provincial Coordinator through telephone. The researcher also followed up from districts to ensure that completed questionnaires were returned in time. The districts were given strict deadlines to complete the data collection which was conveyed to the education department and deadlines were set during trainings, such as three days by one AEO, as well as mechanism to be used for return of the questionnaire. The DPME were also strict on giving deadlines as one DPME said the questionnaires should be returned in the next weekly meeting.

7.4.10: Checking the returned questionnaires

The number of questionnaires sent out to the four districts was 1137 and the number returned was 1008 which gives a return rate of 89% (Table 7.3). The 129 questionnaires which were not returned included schools from government, private and non-formal sector, with 47% being private schools. Included in the returned questionnaires were some (23) from schools which were not in the initial list. These were selected by the districts to replace those in which questionnaire could not be completed or to which questionnaires were not sent.

Table 7.3: Number of questionnaires sent out and returned from districts

	Districts				
	Ludhran	Vehari	Faisalabad	Kasur	Total
Total questionnaires sent	308	309	300	220	1137
Total questionnaires returned	290	297	233	188	1008
Return rate (%)	94	96	78	85	89

The reasons given by the districts for not returning some questionnaires included schools being closed and incorrect addresses.

The questionnaires once received from the schools were first checked by the Markaz Coordinators in the districts. This, as one MC said, was to ensure 'that all questions had been answered' and to remove 'any mistakes' as well as adding background details such as district and sub-district (tehsil) name. After the questionnaires were received from the districts they were checked again by the researcher. The purpose of this was to 'ensure quality through reduction of error and bias' (Sapsford & Jupp, 2006, p.173). The researcher was partly supported in this by one other person from NCHD.

First, this involved counting the total questionnaires received, rearranging these according to Id code (in ascending order), verifying that Id codes correspond with school names, adding sub-district and district name and Id code (if not included) as well as removing any other Id codes given, for example the EMIS school code. This stage was necessary because this information was required later for the data entry. If there was a questionnaire without an Id, or if there was more than one questionnaire with same code then the original school list was consulted.

The second level of checking was related to the internal parts of the questionnaire, that is, the responses to the questions. Some of the responses given in the open comment sections were

clearly not related to the questions (or even the questionnaire) while some were just repetition of the response items. These were dealt with by 'crossing out the answer' (Sapsford & Jupp, 2006, p.174). Other type of errors included respondents failing to 'record the answer according to instructions' (Sapsford & Jupp, 2006, p.173). This included ticking both 'yes' and 'no' boxes, circling or crossing instead of ticking, ticking one and crossing out the other box. Some respondents had used 'x' in the 'yes' response box, this was taken to mean 'no' so the 'no' response box was ticked. A few had used 'question mark' against a response option which was taken as meaning 'no'. Some of the writing (for example ticks) was very faint which was darkened. In some cases teachers added their names, which was not required and crossed out. If writing, such as the Id code, was not clear it was rewritten.

It is said that sometimes 'missing information can be filled at this stage if the answer to a question is present somewhere else in a questionnaire' (Sapsford & Jupp, 2006, p.174). This was done for cases where school gender was missing, but known otherwise. On the question related to years of teaching some of the respondents had written the start date of their teaching. This was replaced by calculating the number of years. In the question 'Duration of teaching' if the response was for example 'approximately 15' the word 'approximately' was removed to simplify data entry. Also if the number was written in words it was changed to a numeral. The instructions given on the question related to qualifications was to select the highest qualification. However some teachers had selected more than one. In this case the highest qualification selected was made more prominent by crossing out others. For example in one questionnaire both B.Ed and CT were selected and in this case B.Ed was highlighted.

7.4.11: Coding and data entry

All of the questions within the questionnaire had been pre-coded as part of the questionnaire. As Gorard says the 'coding system is implicit in the schedule' (Gorard, 1997, p.109). The data was then entered into an SPSS database. The data base designed during pre-testing was revised for this purpose because it was found that the format was problematic, that is entering data across 144 cells increased the risk of errors during data entry. For this purpose a data entry interface was created. The data entry was done in Pakistan by several data entry operators trained and supervised by the NCHD database manager. It took two months to complete. This was monitored by the researcher through correspondence with the data database manager and the Director Education. The dataset was sent to the researcher in the UK together with the original questionnaires.

The four datasets, one per district, were merged to create one database for the analysis. This was followed by 100% cross-checking of all the data entered with the original questionnaires and errors removed. This decision was taken after a preliminary analysis showed many questionnaires with missing responses, for example 687 for one of the questions. Most of the inconsistencies were related to school location (urban/rural), teacher gender and years of teaching as well as data being entered in the wrong column. There were a few cases where the questionnaire was not available and could not be verified. As a result of the verification process a number of changes were also made to the database, for example cases for which no responses were given were dealt with by inserting a 'missing value' code (Sapsford & Jupp, 2006, p.174). The process of verification increased the researcher's confidence in the correctness of the data entered.

7.4.12: Analysis of survey data

Various methods of analysis and modeling for the survey data were experimented with, such as factor analysis. However, the final simpler analysis included generating frequencies for all coded variables. This excluded open ended questions. Since a 'frequency count alone is not a very good summary of the data...' the percentages were also calculated because these can be used for comparison purposes 'across surveys with different number of cases' (Norusis, 2006, p.50). A number of questions consisted of several response items. In such cases the percentages generated were arranged in a descending order.

The univariate analysis was followed by a bivariate analysis. Each of the variables above was cross tabulated with each of the background variables. This was done because looking at the first level of analysis it was found that there was a high level of agreement amongst teachers on many of the response items for each question. Cross tabulation was therefore used to identify any variation in the responses across background variables. The 'compare means' was also used with categorical and a numerical variables such as 'duration of teaching'. Each of the background variables were also cross tabulated with each other.

The responses from the open ended questions were translated from Urdu to English and recorded into an excel worksheet. For each question a separate worksheet was created. Many teachers had provided multiple responses and these were therefore separated into single responses. On the basis of my own judgment and understanding the responses regarded as repetitions of those already used as response items were eliminated to prevent double counting. Responses related to other sections or those that seemed very vague or inappropriate were also removed before further analysis. This purging of the original responses left a list of new and relevant responses for each question.

The coding of open ended questions was done by 'hand-listing' (Sapsford & Jupp, 2006, p.166). These were then categorized based on their commonness. The same responses, occurring more than once, were grouped and frequency recorded. For example in the section on developing creativity there were 98 responses and after grouping this left 55 new responses. In the section on indicators of creativity there were 47 responses which were categorized into 18 and then further categorized into three. Once the number of responses was counted for each category then the percentage of total responses for each category was calculated. These were then sorted in descending order.

This chapter has described the methods used to collect data to answer each of the research questions, the sample selection, and the procedure used to design and conduct the survey. The next chapter describes the procedure adopted for assessing children's creativity, classroom observation, teacher interviews, analysis of documents and the ethical considerations.

CHAPTER 8

METHODS (II)

This chapter describes the Torrance Tests of Creative Thinking, the translation of the test into Urdu, the pre-testing process of the Urdu version, and the administration and scoring procedure. This is followed by a discussion of the instruments used for classroom observation, teacher interviews, documentary analysis and ethical considerations. Also included are the methods used for analysis of this data. For results relating to children's performance on the TTCT refer to Chapter 14.

8.1: Torrance Tests of Creative Thinking (TTCT)

8.1.1: Description of the TTCT

Primary school children's creativity was assessed using the TTCT (Torrance, 1966). The results obtained will act as a baseline for any further research and most importantly as a baseline for the government to use to evaluate any future intervention and its impact on children's creativity. The Torrance Tests of Creative Thinking (TTCT) was used because these tests have been said to be developed for 'use in all cultures…' (Torrance, Ball and Safter, 2008, p.2) and can be administered to all ages, and are recommended for use in education (Kim, 2006).

There are two versions of the test, TTCT-Verbal and TTCT-Figural. This study uses the TTCT-Figural version because it involves minimum writing. It requires the respondents to draw but an ability to draw formally is not required to receive the 'credit' (Kim, 2006, p.4). This version has two Forms, A and B. In the study Form A was administered because this is used before an

intervention while Form B is used for post intervention and since no intervention was made this seemed more appropriate.

Form A consists of three activities:

Activity 1: Picture Construction

Activity 2: Picture Completion

Activity 3: Pairs of Lines

In each of these three activities a shape or a number of shapes are given as a stimulus. In activity one there is an egg shape, in activity two there are 10 incomplete figures and in activity three there are 30 pairs (three pages) of vertical parallel lines. The respondent is instructed in each activity to use the given shapes to draw something, (picture, object). The essential thing is to make these shapes part of the drawing. The instructions urge the respondent to think of something which no one else will think of and to keep adding ideas so that the drawing tells an interesting and exciting story. Once the drawing is complete they are required to add a title which is 'clever' and 'unusual,' helping to tell the story already started in the drawing. The three activities 'tap somewhat different aspect of creative functioning' and represent 'at least three different creative tendencies' (Torrance, Ball and Safter, 2008, p.2; for more details refer to Torrance, 1979; Torrance and Safter, 1999).

Activity one is about 'finding a purpose for something that has no definite purpose and to elaborate it so that a purpose is developed'. Activity two 'creates tension in the beholder, who must control this tension long enough to make the mental leap necessary to get away from the obvious and commonplace'. In activity three 'repetition of a single [pair of lines] stimulus

requires an ability to return to the same stimulus again and again, perceiving it differently each time…in order to create something new' (Torrance, Ball and Safter, 2008, p.2). The test requires 30 minutes working time, 10 minutes for each activity. Additional time is required for initial interaction with the children.

8.1.2: Translation of the TTCT

The test booklet was translated into Urdu and recomposed. This makes it the 38th language into which the TTCT has been translated so far. The instructions related to the test activities were partially translated by the researcher. These were very 'wordy' and did not appear to be attractive for use with young children. Therefore the translation was redone by another person in Pakistan and then checked and revised by a second person. In some cases where literal translation did not impart the intended meaning then the ideas which needed to be conveyed were translated. The aim was to ensure conceptual clarity which at times resulted in more detail than given in the English version of the TTCT. Instructions for translation were given to both translators which included keeping the translation simple and unambiguous to minimize misunderstanding.

The translation received from the second translator was used for pre-testing. This was then revised in the light of the findings by the researcher working face-to-face in Pakistan with two other translators who had pre-tested the Urdu version of TTCT. Before revising the TTCT the pre-testing experiences were discussed to identify how well the test instructions had been understood by the pre-testers of what, in their view, was being conveyed. During discussion the researcher found that it was sometimes difficult to explain some of the concepts contained within the test activities. Therefore illustrative examples were provided to help the translators to visualize the concept. For example the idea of 'keep adding ideas to your first idea,' (Torrance,

Ball and Safter, 2008, P.2) was compared to throwing a stone in water and watching one wave make another until we see a complete pattern. The team then generated translations based on their understanding. This became an iterative process until the best possible version was agreed upon. It was also found that reading out the text and in a tone used with children was also helpful to decide upon the most befitting words for translation (refer to Appendix 3 for Urdu and English version of TTCT and instructions for administration).

8.1.3: Pre-testing of the TTCT

The Urdu version of the TTCT was pre-tested in the UK and in Pakistan. The purpose was to check if the Urdu instructions could be understood and used by the children to identify words and phrases that needed to be changed, and to create experience of the scoring procedures.

The researcher pre-tested the test in the UK by working with her 10 year old daughter, a similar age to the children who would ultimately take the test. The three test activities were separately administered over three evenings, and care was taken to ensure the instructions were understood by the respondent, the time duration was clarified and carefully monitored.

After pre-testing the Urdu TTCT was revised. In this the language was simplified and the administration procedure also modified. These modifications included asking children to repeat the instructions, continually repeating some instructions to them such as ‘make something new, original that no one has ever made,’ continual encouragement to avoid the children feeling that they can’t do the activity or feel ‘silly’ doing it and to check the test booklets after the test to ensure the titles appeared meaningful. Other modifications included administering the test when children are not tired, using children’s native language and making the test more interesting.

In Pakistan the pre-testing was conducted by two persons from the NCHD, involving 30 class five children, from three schools. The children were of mixed academic performance. There were 24 girls and six boys. Most of the children were aged between 10-11 years of age. A report of the pre-testing was prepared and sent to the researcher in the UK. It was reported that the translation, particularly the instruction manual, was too difficult to follow. There was a need to design familiarization activities as part of the instructions according to the local context, and the activities used by the pre-testers were henceforth to be included. The procedure for selecting children was refined as a result of the pre-testing as well as the form for recording the teachers ranking of the children in terms of their creativeness.

8.1.4: Administering the TTCT

The list of schools for administering the TTCT and the visit dates were sent to the districts as part of the training material. These were allocated to the concerned MCs by the DPME according to their working area. The MCs contacted the schools, in many cases through personal visits, and provided information about the research and the visit dates. The pre-planned dates for two schools had to be rescheduled because in one the children were taking exams and in the second there was a visit by the Chief Minister. There was no problem in locating or accessing any of the schools or the children mainly because of the MCs existing knowledge of the area and close collaboration with the schools. However in one private school very few children were allowed to participate. This was overcome by the CPE, accompanying the researcher, offering to provide the head teacher with a letter from the Education Department. The advance intimation to schools allowed more time for conducting the test and less time had to be spent on the introduction. In

schools where the questionnaires had already been completed there was already awareness about the research. This was used as a starting point for discussion for administering the test.

All schools were visited by the researcher, often accompanied by an MC/CPE or DPME. Once in schools an introductory meeting was held with either the head teacher/teacher in charge or all the teachers in the school. During this the purpose of the test was discussed as well as the number of activities and time required to administer the test. It was also discussed that class five children would participate, the criteria for selection of these children and the number of children required. The teachers were requested for a suitable room/place and the test booklet was also shared. This was followed by selection of children. If there were more than 10 children in the class then a group was selected consisting of academically high, average and low performing. In mixed sex schools an attempt was made to select an equal number of both girls and boys for each of the three categories. All the children participated in schools where there were fewer than 10 children in the year group.

Due to some schools having very few children in class five, more children were selected from schools with high enrolment, in order to meet the total target, plus one case of a school not in the sample. In this way an effort was made to balance the number of children participating in each district, (40), as planned. It must be mentioned here that if the test was conducted before the classroom observation then the teacher was asked to select children according to the criteria. If it was conducted after classroom observation then the researcher was able to negotiate the selection of children who seemed to be struggling with class work. The teachers were often reluctant to select these children.

The selected children were introduced to the researcher and in some cases briefed by their teachers about the test activities and taken to the room/place where the test was to be administered. Here they were seated and provided with stationery. Due to differing school conditions, facilities and equipment, various types of seating were used including mats, benches, tables and chairs or a combination of these. The important thing to consider for the seating arrangements was to ensure that there was sufficient space for the test booklet and between each child to prevent copying. In schools where tables were not available children used their hardback books or 'takhtees' to lean their test booklet on.

Familiarization activities were conducted for rapport building with the children. In this the researcher was supported by the MC or CPE. This support was required because they were able to speak the local language better and already had experience of working with the children in the local schools. The purpose of the familiarization activities was to create a more relaxed, friendly and non evaluative atmosphere. The activities included introductions, telling jokes, discussing likes, favorite TV programs, celebrities, cricket and a magic trick. The children could easily relate to and talk on these topics without hesitation or shyness. One of the things which helped to develop a closer rapport was the researcher also sharing information about herself and answering the questions asked by the children as well relating to them as their 'baji' (elder sister) rather than a teacher or researcher. As an introduction to the test type activities the children were asked to describe ways in which they could improve their schools. This was aimed at stimulating the children to think in the manner required for the TTCT activities. Another step towards this was asking them if they do drawing.

Each child was then given the test booklet and asked to fill in their identification information on the front page such as name, age and gender. The researcher confirmed that children were all aware of their age and the date. In most cases the date, tehsil and district name was written on the blackboard. Some children did not understand the Urdu word used for 'gender'. They were therefore told to write 'boy' or 'girl'. The booklets were checked to ensure that the required details had been added.

Once the identification information was added the children were asked to look at the picture on the cover page of the test booklet and generate as many ideas about what the picture could possibly represent. They could share ideas with each other and work in groups for discussion. It was emphasized that there were no wrong responses and everybody's answer could be different. The drawing could represent anything and everybody must try to think of something different. The house keeping rules were also set at this stage, such as raising hands and taking turns. For children who found this activity difficult, the researcher pointed to sections of the picture and asked what they thought it could be or generated the first idea. The children's responses were noted down and used as a means to appreciate and encourage their ability to generate ideas. After this the test activities were administered.

For each activity the children were asked to turn to the required page. The researcher also showed the page, indicating to the stimulus and the accompanying instructions. The instructions were read out loud from the Urdu instructions manual and the children followed the written text from their own test booklets. The children then read the instructions either silently or aloud. Some children were asked to repeat the instructions. Effort was made to ask those children who it was felt may not have understood. This was also a means of verification to check that the instructions

had been understood and if not they were repeated again both in Urdu and the local language. Children were encouraged to ask if they did not understand instructions or the meaning of any words. For example in one school one girl asked what the word 'ajeeb-o-ghareeb' that is 'unusual, original' meant.

It was felt that conceptually some of the instructions did not convey the meaning and were not understood by the children such as for example 'using the stimulus to make a picture,' 'adding ideas to ideas to tell a story' and 'connecting ideas'. In this regard efforts were made to find examples to clarify the instructions. Some of these examples included, finding a word to complete a sentence, arm being part of the body, threading bead after bead to make a necklace. In a school where the building was without a roof, this was used as an example of the building being incomplete until the roof was added.

Children were encouraged to ask questions even during the activities and in order to answer these the researcher went to them to prevent others from being disturbed. Those who did not start immediately or at all were encouraged to draw anything. Continuous encouragement and motivation was given throughout the test and instructions were reinforced, particularly if they were making random drawings and not using the stimulus. Some children repeatedly erased their drawings so much so that erasers were taken from them so that they concentrated more on their drawing rather than erasing. This may have been due to the children being unsure of their drawings being 'right' or appropriate such as heart, alcohol bottle, or simply that it wasn't a good drawing.

If children had writing problems they were advised to complete the pictures first and then after the test were helped to write the suggested titles. Since writing seemed to be a problem for a number of children in different schools the researcher included as part of the instructions to write without worrying about spelling. It was hoped that the fear of misspelling a word would not prevent the children from doing the activities. There is a culture of patting children on their backs or on their heads as a gesture of appreciation and this was also used particularly to encourage more shy or reluctant children. Some children had to be reminded to complete the pictures on the last page for activity three. One of the instructions which were included as part of the guidelines for administering the test but not read out to children was:

> …if you run out of ideas before time is called, sit quietly and wait until you are told to turn to the next page.

This was because the researcher wanted to encourage the children to think and work until time was called. In case children finished before time they were encouraged to continue adding more detail as some had the habit of working quickly, usually the children regarded as bright. In order to explain that there was a time fixed for each activity but at the same time trying not to create a test like atmosphere examples were given where timings are important, for example, one day cricket match and school timings. Some children were very keen to work beyond the activity time and were worried that they had not finished. When two boys were asked to stop drawing and give titles they said ‘we haven’t finished pictures yet, how can we write the titles’. The time for each of the three activities was 10 minutes each. However the total time taken from familiarization activities to completing the third activity varied ranging from 33 minutes to 2:25 hours. In one school the activities were spread over two days on the insistence of the school. In another school

break had to be given between activities and in a third school activities had to be conducted during break time.

Once the three activities were completed the researcher checked each child's booklet. The purpose of this was to ensure that all titles had been added and writing was legible. If children had difficulty with writing the researcher supported by writing down the titles suggested. If a title was not added but picture drawn then the child was asked to add a title. Some of the children had written titles in the local language such as Saraikee and could not be understood. In this case the children themselves were asked to elaborate or the MC/CPE asked to translate. The booklets of children who were shy or seemed to be easily intimidated were checked last and not in the presence of other class children.

8.1.5: Scoring of the TTCT

The test booklets were scored using the guidelines provided (Torrance, Ball and Safter, 2008). The scoring provides information about the 'creative functioning of a child' (Torrance, Ball and Safter, 2008, p.1) and results in five norm referenced and thirteen criterion referenced measures. The norm referenced measures are fluency, originality, elaboration, abstractness of titles and resistance to premature closure. The criterion referenced measures (the checklist of creative strengths) are emotional expressiveness, storytelling articulateness, movement or action, expressiveness of titles, synthesis of incomplete figures, synthesis of lines, unusual visualization, internal visualization, extending or breaking boundaries, humor, richness of imagery, colorfulness of imagery, and fantasy.

Each test booklet and its corresponding scoring sheet (Scholastic Testing Services, 2006) were first given a unique identification code. This was for reference purposes and data entry. The child's identification information, such as name and age was copied from the test booklet onto the scoring sheet. Each booklet was then scored for the measures given above which is described next.

8.1.5.1: Scoring for fluency

Activities two and three were scored for fluency but not activity one.

i) Activity 2

For activity two each response was evaluated and if the stimulus was used as part of the drawing then a fluency score of '1' was given, if not then no score was given and a '0' recorded in the scoring sheet. If two or more of the figures were combined to make one drawing then the score given was according to the number of figures used. For example if two figures were used then a score of two was given. All the '1's were counted and the total recorded. The maximum fluency score that can be obtained for activity two is 10.

There were four types of responses which received fluency scores which are:

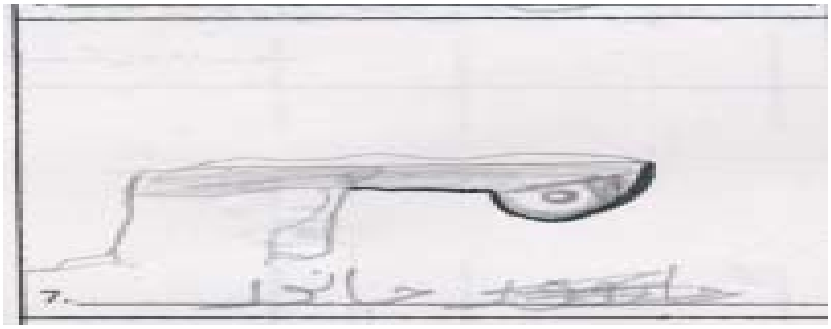
- If different stimuli were used to make different pictures but all were given the same title. This is shown in example two in which the child has drawn six different pictures but the title given to each one is 'map'.

- If the stimulus was redrawn and then used to make a drawing. This is shown in example three in which the child has drawn a picture of sun coming up from behind the mountains.

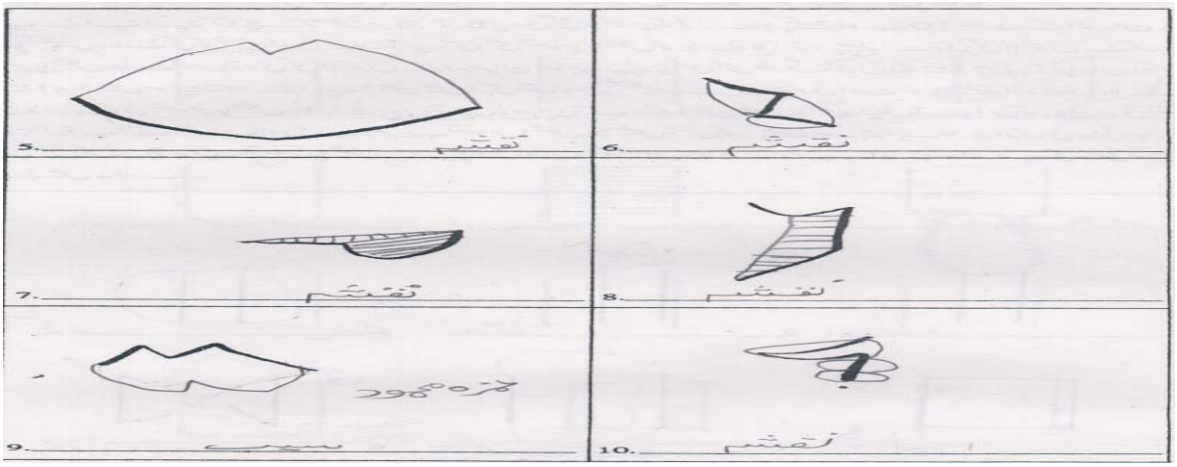
- If the stimulus was used as part of the picture but the title given did not match the picture drawn. This is shown in example four in which the child has drawn a picture of a kite but the title is ‘color’.

- If the stimulus was used as part of the picture. This is shown in example one in which the child has drawn a picture of an ‘animal’.

Example 1: Stimulus part of the overall picture of an ‘animal’

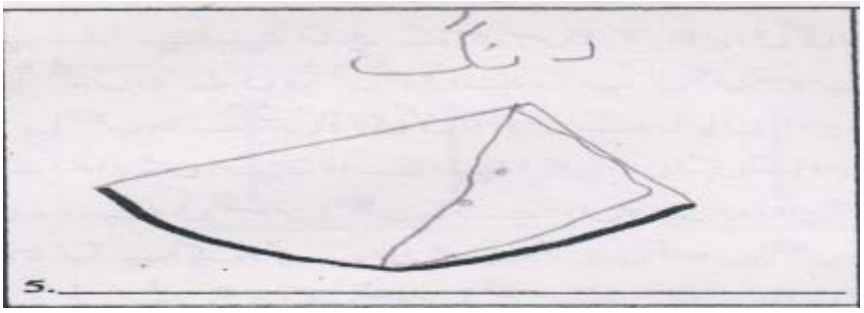


Example 2: Each figure is used to make a different picture but titles, ‘map’, are the same for all



Example 3: Stimulus redrawn and extended to make a picture of 'mountain and sun'

Example 4: Stimulus used to make a picture of a 'kite' but the title 'color' does not correspond



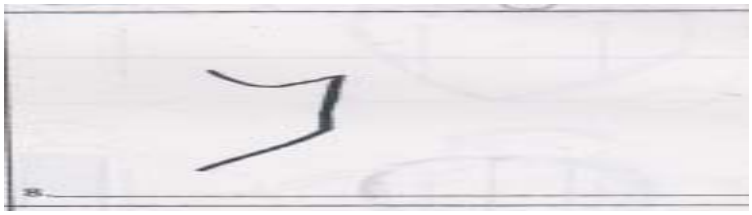
There were no guidelines in the scoring manual (Torrance, Ball and Safter, 2008) for the type of responses given in examples 2, 3 and 4. For the response in example two clarification was sought from the publishers (Scholastic Testing Services) and for response given in example three the researcher decided to score these based on the understanding that the children interpreted the instruction 'use the stimulus' to mean redraw it first and then use it to draw a picture.

There were four types of responses that did not receive a fluency score which are:

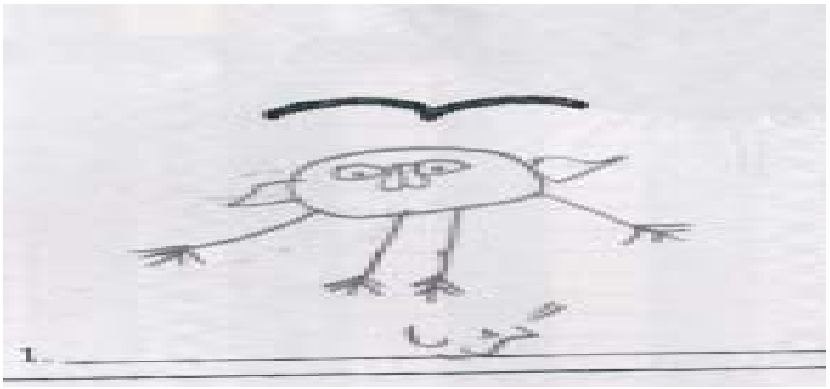
- If the figure was left in its original form, as in example five.

- If a picture was drawn but the stimulus was not included in it as shown in example six, in which the child has drawn a picture of a ‘doll’.
- If the response was just a duplication of the original stimulus as in example seven in which the child has made the letter ‘y’.
- If the stimulus was used to make a meaningless or abstract drawing such as given in example eight. This is difficult to interpret particularly because no title has been given either.

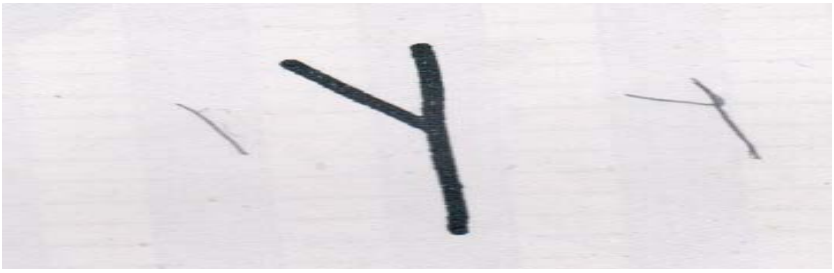
Example 5: Figure not used to make a drawing



Examples 6: Picture of a ‘doll’ but drawn independent from the stimulus



Examples 7: The response drawn, 'Y' is just a simple copy of the original figure



Examples 8: An abstract drawing made using the original figure

ii) Activity 3

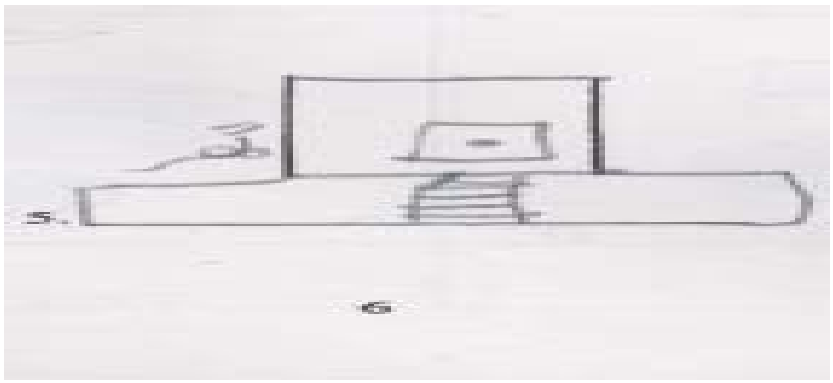
For activity three each response was evaluated in the same manner as in activity two, that is if the pair of lines were used as part of the drawing then a fluency score of '1' was given and recorded, if not then no score was given and a '0' was recorded. All the '1's obtained were counted and the total score recorded. The maximum score that could be obtained was 30. There were seven types of responses which were given fluency score and these are:

- If the pair of lines was used as part of the drawing such as shown in example nine, in which the child has drawn a picture of a 'house'.
- If more than one set of pair of lines were combined such as shown in example 10, in which the child has made a picture of a 'river'.

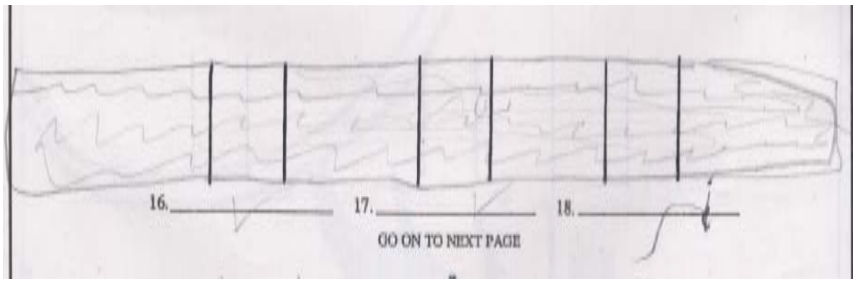
- If a picture was drawn using the stimulus but a title was not given and could still be interpreted such as given in example 11 which appears to be a ‘ladder’.
- If a number of drawings looked very similar but the titles given were different as shown in example 12 in which the object appears to be a ‘candle’ but the titles are ‘radish,’ ‘a saw’ and ‘candle’.
- If one of the pair of lines was used to draw one picture and the second line was used to draw something else such as shown in example 13 in which one line is used to draw a ‘flower’ and the other a ‘flag’.
- If only one of the pair of lines was used to make a drawing such as shown in example 14 in which the letter ‘k’ has been made.
- If drawings were made which physically just touched the tip of the pair of lines such as in example 15 in which the pair of lines form the stem of a ‘flower’.

The guidelines for the first three types of responses are included in the scoring manual however for fourth advice had to taken from the publishers and for the remaining the researcher used her own discretion.

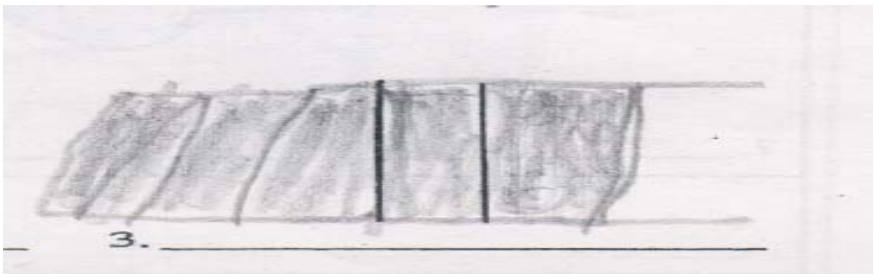
Example 9: Pair of lines used to draw a ‘house’



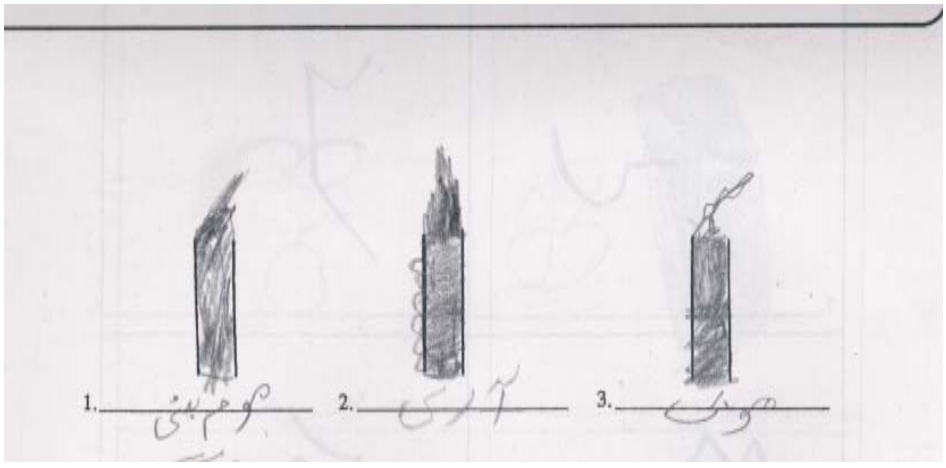
Example 10: Combining three sets of lines to draw a ‘river’



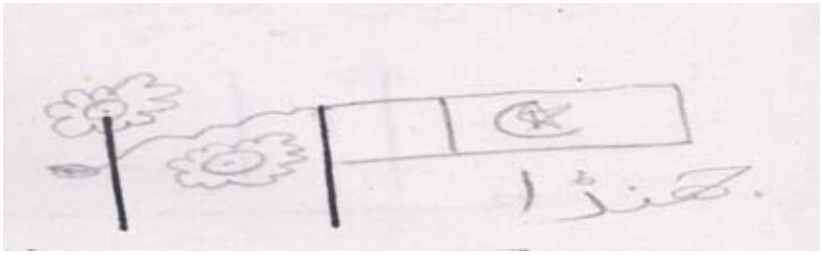
Example 11: Pair of lines used to draw a ‘ladder’ but no title is given



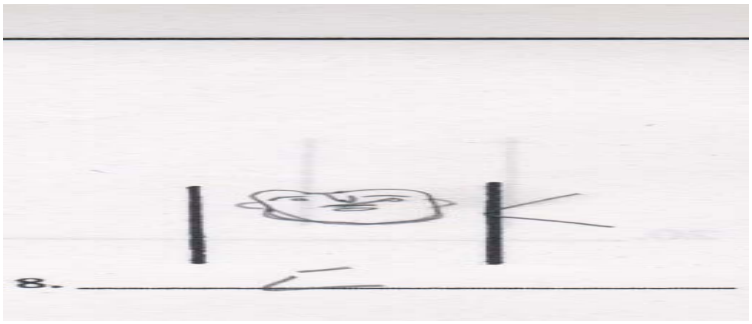
Example 12: Pair of lines used to draw similar pictures (‘candles’) but different titles



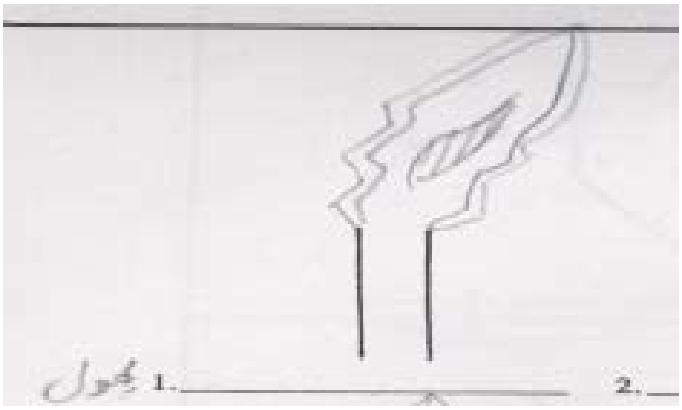
Example 13: One of the pair of lines is used to make a ‘flower’ and the other a ‘flag’



Example 14: One line from the pair of lines used to draw the letter ‘k’



Example 15: Pair of lines used to form the stem in a picture of a ‘flower’



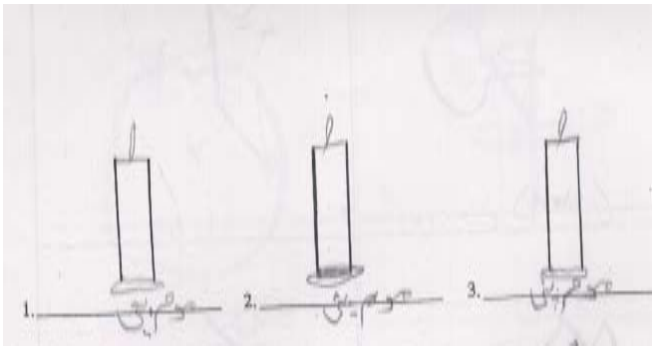
There were five types of responses which did not score for fluency:

- If the response was drawn between the parallel lines but the lines were not part of the drawing such as example 16 in which a ‘kettle’ is drawn.

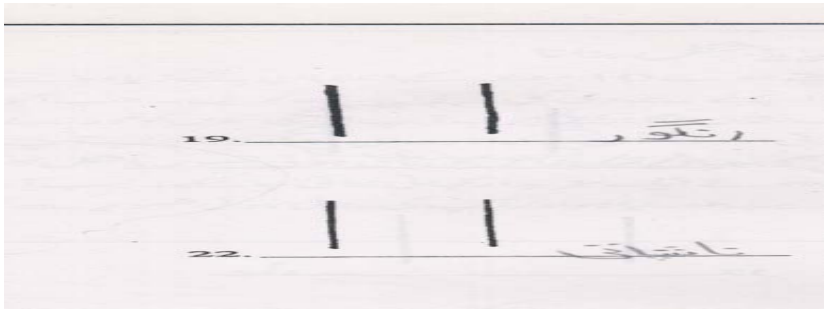
- If there is duplication of both picture and title such as in example 17 in which a candle is drawn and the title is also ‘candle’.
- If pair of lines have not been used to make a drawing but the titles have been given such as in example 18 in which the titles are ‘grapes’ and ‘pear’.
- If the stimulus has not been used at all such as in example 19.
- If the lines have been used to make an abstract and meaningless drawing and there is no title given which makes it difficult to interpret such as in example 20.

Example 16: Drawing of a kettle but independent of the pair of lines

Example 17: Pair of lines used to make drawing of a candle repeatedly and each picture is given the same title (candle)



Example 18: Pair of lines not used to make a drawing but title is given



Example 19: Pair of lines not used to make any drawing

Example 20: Pair of lines used to make an abstract/meaningless drawing

Fluency was the first stage for scoring the responses in activity two and three. Any response not scored was eliminated from further scoring. For example if eight of the ten stimuli were scored then only eight would be scored on the remaining criteria as described next.

8.1.5.2: Scoring for originality

The second scoring criterion was originality. The responses for activity one, two and three were scored for originality. Contained within the 'Scoring Guide' (Torrance, Ball and Safter, 2008) are lists of responses for all the activities which are used to judge if the response given is original or not. This means that if the response generated appears in the list then it is not scored. If the response does not appear in the list then it is deemed original and given a score of '1'. The total originality score for each activity is a simple count of all responses receiving a score of '1'. The maximum originality score that can be obtained for activity one is one, activity two is 10 and activity three is 30. These scores can only be obtained if all responses have been scored for fluency for each of the three activities.

If any of the responses given in activity two or three combine more than one stimulus to make drawings then 'Bonus Points for Originality' are given (Torrance and Safter, 2008, p.9). These are awarded on the basis of the number of stimuli used for a drawing. In order to obtain the bonus points for activity two the simple formula is to add one to the number of figures combined, for example if two figures are combined then three points are given, if three are combined then four points are given and continued in this way. In order to obtain the bonus points for activity three then if two sets of pair of lines are combined a score of one is given, 3-5 sets then two points, 6-10 then three points, 11-15 then four points, and if 16 sets are combined then a score of five is given (Torrance, Ball and Safter, 2008). If any of the responses using a combination of figures (activity 2) or pairs of lines (activity 3) are not given an originality score these are still given bonus points. The maximum bonus points that can be obtained for activity two are 11 and activity three is five.

It is important to mention here that there are no instructions given to the respondent that they can or cannot combine lines or figures. This it is said has been done deliberately and the rationale is that it is 'testing the respondent's willingness to use his freedom without self-imposed restrictions or inhibitions' (Torrance, Ball and Safter, 2008, p.23).

The type of responses which were given an originality score have been given next.

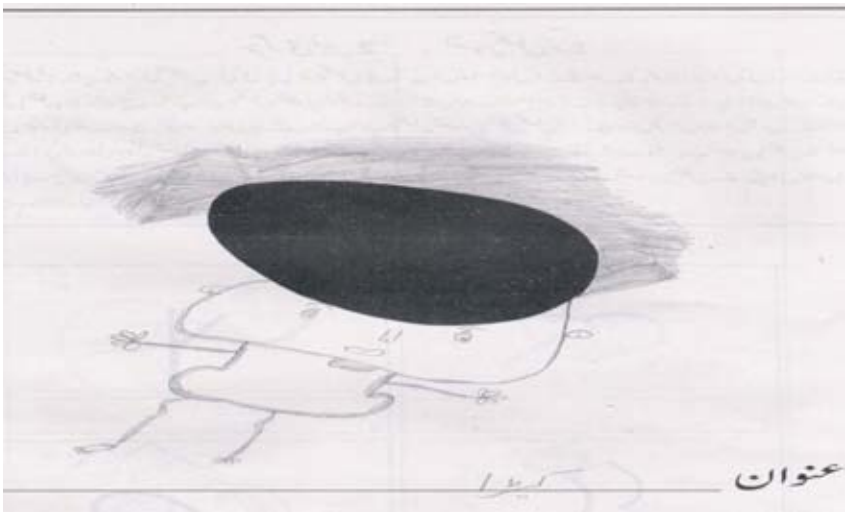
i) Activity one

In scoring for originality just making the stimulus part of the drawing was not enough to gain a score. If the 'egg' shaped stimulus was used as part of the drawing but the response was a 'circle', 'egg' 'human face or figure' or 'tear drop' then it was not given a score. Any other drawings using the stimulus were given an originality score. There were two types of responses scored for originality in activity one:

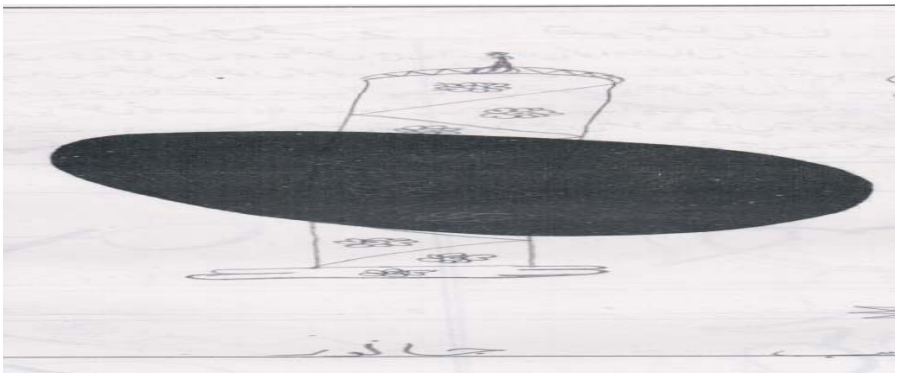
- A type of response such as that given in example 21 in which firstly the 'egg' shaped stimulus has been used as part of the picture, and secondly the response 'insect' does not appear in the list.

- If something was drawn inside the egg shaped stimulus such as the response in example 22 'candle' was scored because the space of the stimulus has been used.

Example 21: The shape used to make the head in the picture of an 'insect'



Example 22: The picture of a candle drawn through the egg shape and given the title 'animal'

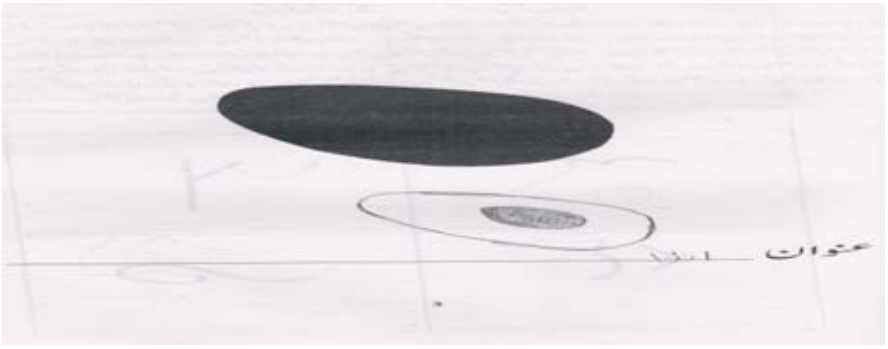


The type of responses which did not score for originality are:

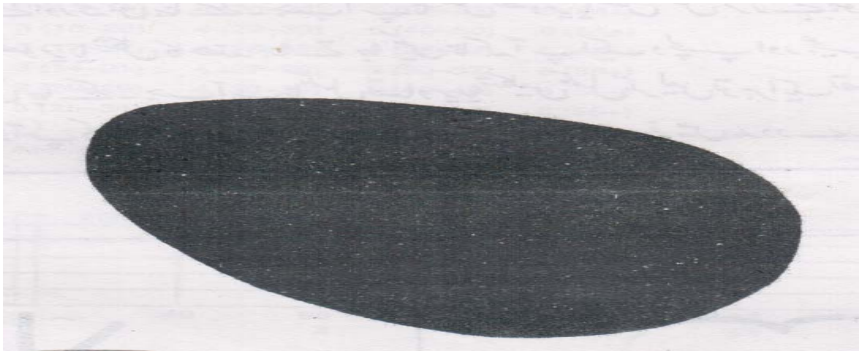
- If the original shape was redrawn, then used to make some drawing which was included in the list such as shown in example 23, which is titled 'egg' but looks like an egg yolk.
- If the stimulus was not used at all, such as shown in example 24.
- If the response did not use the stimulus although many other pictures were drawn around it, such as shown in example 25.

- If the stimulus was used to make something but it was an abstract/meaningless drawing such as the response shown in example 26.

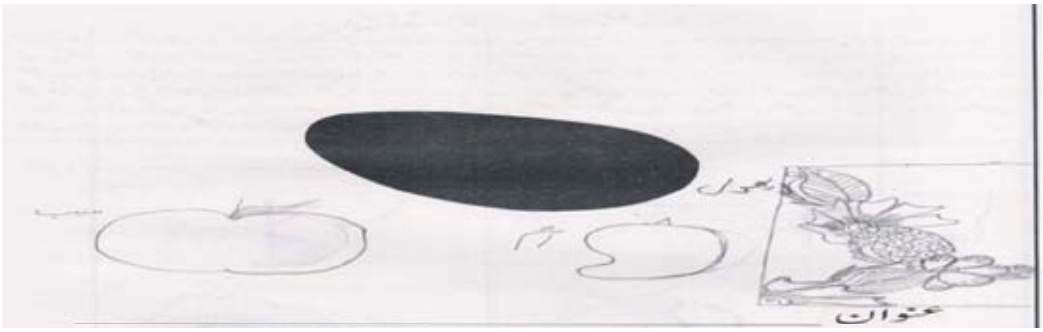
Example 23: Redrawing the stimulus and using it to make a drawing 'egg'



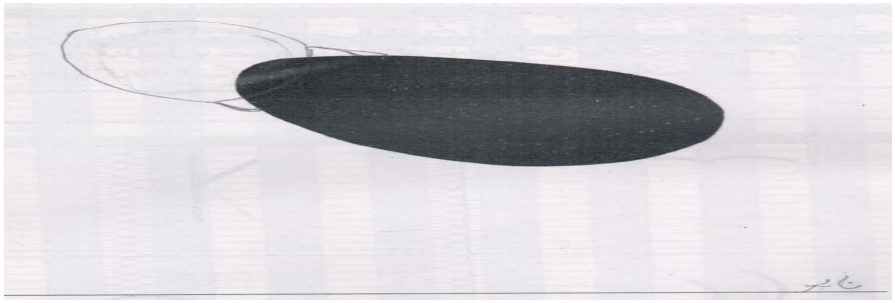
Example 24: Stimulus not used to make a drawing



Example 25: Drawings made but not using the stimulus



Example 26: Abstract/meaningless drawing



ii) Activity two

The type of responses which do not score for originality for each of the 10 figures in activity two are:

Figure 1: Bird, heart, human face, letter, numerals.

Figure 2: Human face/figure, letter, numerals, slingshot and tree.

Figure 3: Human face/figure, letters and numerals.

Figure 4: Human face/figure, letters and numerals, animal (unspecified), snail.

Figure 5: Boat, bowl, circle, human face/figure, letters and numerals.

Figure 6: Lightening, steps or staircase, human face/figure, letters and numerals.

Figure 7: Baby carriage or buggy, snake, question mark, human face/figure, letters and numerals.

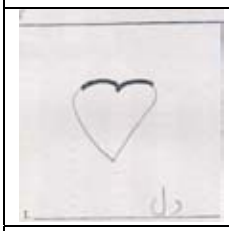
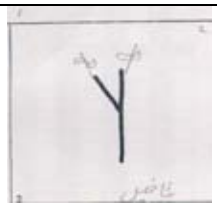
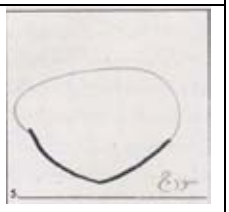
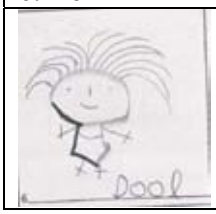
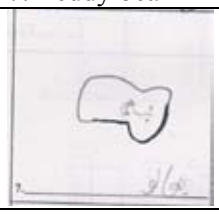
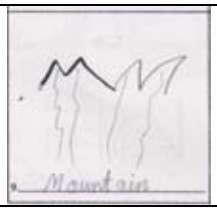
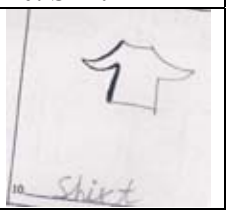
Figure 8: Stick person human face/figure, letters and numerals.

Figure 9: Mountains, nun, owl, rabbit, rocket, human face/figure, letters and numerals.

Figure 10: Anteater, duck, nose, tree, human face/figure, letters and numerals (Torrance, Ball and Safter, 2008).

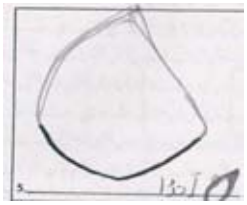
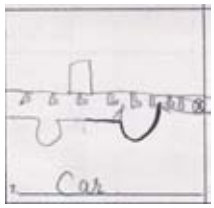
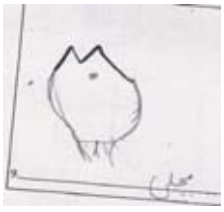
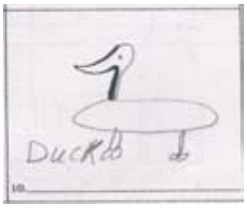
Some examples of drawings which were not scored for originality, for each figure, have been given in Table 8.1.

Table 8.1: Examples of responses for activity two not scored for originality

Drawings not scored for originality (Figures 1-10)				
1. Heart	2. Branches	3. Letter 'H'	4. Girl	5. Sun
				
6. Doll	7. Teddy bear	8. Mouth	9. Mountain	10. Shirt
				

Some examples of drawings which were scored for originality, for each figure, have been given in Table 8.2.

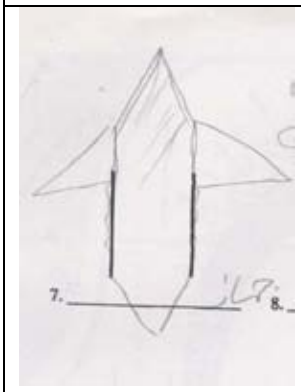
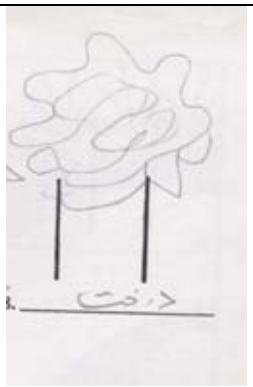
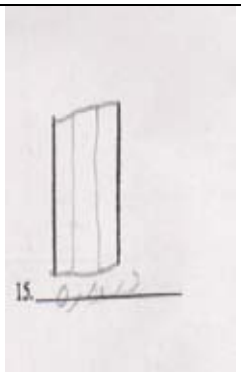
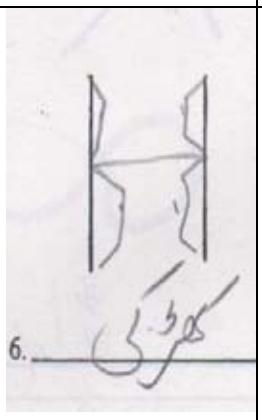
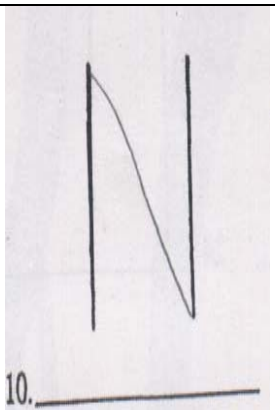
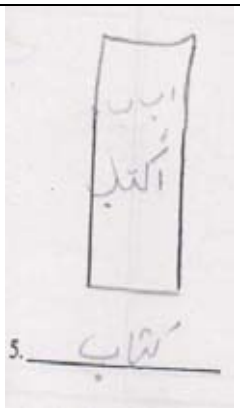
Table 8.2: Examples of responses for activity two scored for originality

Drawings scored for originality (Figures 1-10)				
1. Ice-cream	2.Umbrella	3.Pencil	4. Cigarette	5. Egg
				
6. Book	7. Car	8. Pen	9. Fish	10. Duck
				

iii) Activity three

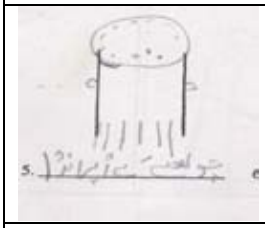
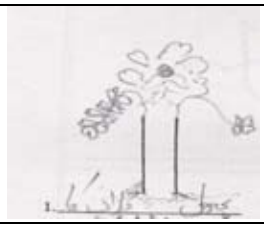
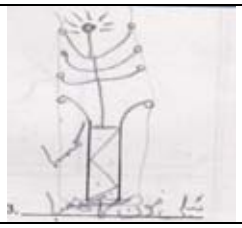
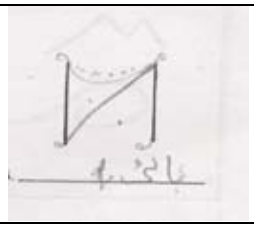
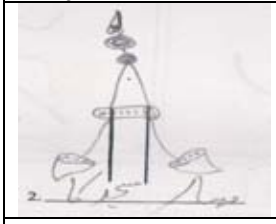
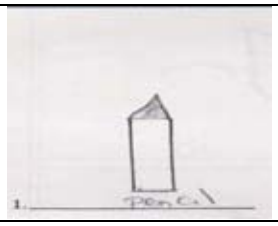
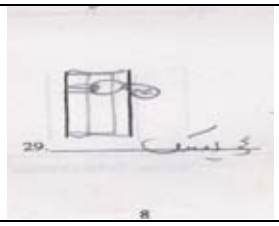
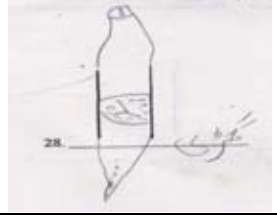
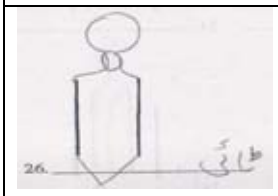
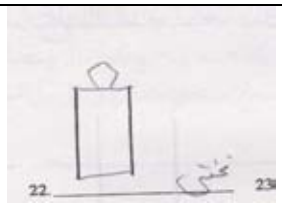
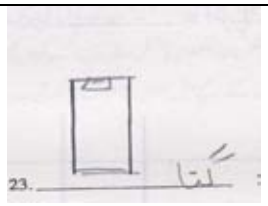
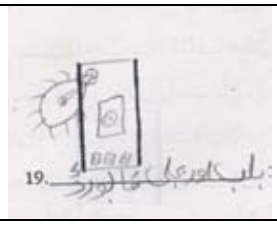
The response which were not scored for originality for activity three were book, box, geometric shape, house, human face/figure, ladder, letter of alphabet, numeral, picture frame, present, gift, rocket, stick person tree window. All other responses were given an originality score.

Table 8.3: Examples of drawings not given an originality score in activity three

Aero plane	Trees	Stairs	Door
			
House	Window	Letter 'N'	Book
			

Examples of the type of responses which were given originality score for activity three are given in Table 8.4.

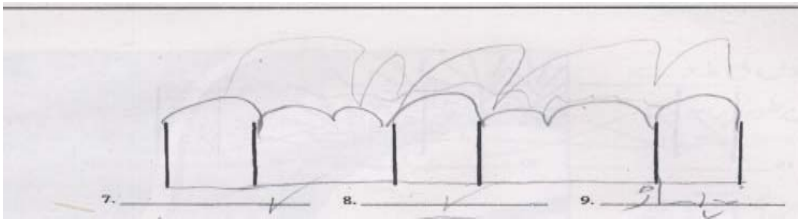
Table 8.4: Examples of drawings scored for originality for activity three

Egg placed over cooker	Flower vase	Telecom tower	Bucket
			
Masjid Minaret	Pencil	Desk	Watch
			
Tie	Takhtee	Clip board	Electricity board with bulb
			

8.1.5.3: Scoring for bonus points for originality

The responses in activity two and three were also scored for 'bonus points for originality'. Some children did combine set of lines for activity three to make a drawing but no child combined two or more figures for activity two. Example 27 shows a response in which three pairs of lines have been combined and a score of two was given.

Example 27: Combination of three pair of lines to make one drawing of a 'mountain'

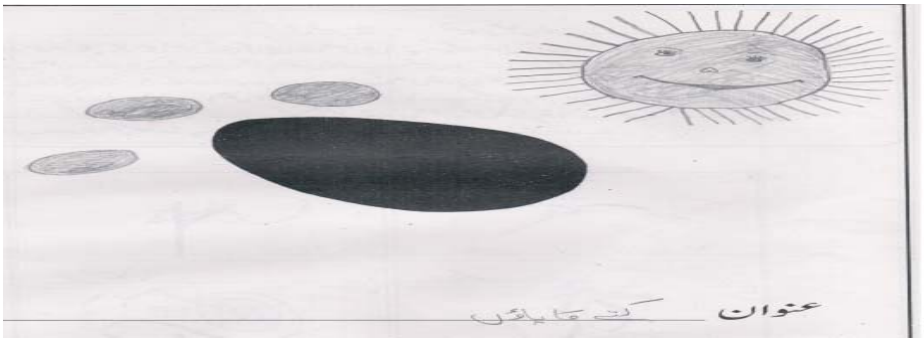


8.1.5.4: Scoring for elaboration

Once the responses were scored for originality they were next scored for elaboration. This is the 'ability to develop, embroider, embellish, carry out ideas' (Torrance and Safter, 1999, p.109). All three activities were scored for elaboration. Each different detail or idea in the responses for activity one, two and then three were counted, then depending upon the number of details found the corresponding score on the scoring sheet was circled. Although it is suggested in the scoring guidelines that in order to obtain an elaboration score it does not require the scorer to make a 'precise count' (Torrance, Ball and Safter, 2008, p.10) of the details it was easier to go through each response and identify each detail. In this way it was ensured that all the details were counted and hence no child was scored lower than deserved. The following are examples of responses which obtained various elaboration scores. The higher score means that more ideas and variety have been added. The highest score that can be obtained is 6.

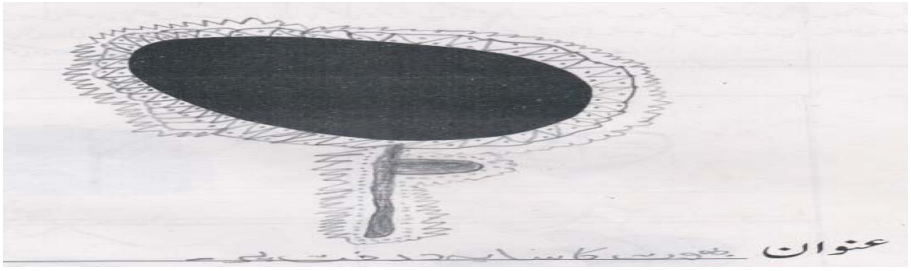
a) The response shown in example 28 was given an elaboration score of one, because the details added to it ranged from 0-5. These details include simple shading, making a smiling face on the sun, shading the sun, making sparkling rays around the sun. The title given to this drawing is 'dogs paws'.

Example 28: Elaboration score received=1



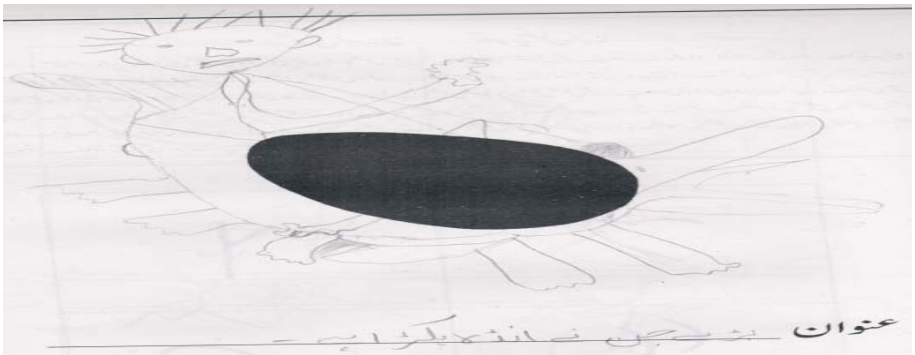
b) The response in example 29 was given an elaboration score of two, because the details added to it ranged from 6-12. These details included shading, the zigzag lines around the shape, the little dots within the triangle shapes around the black shape, the little dots surrounding the stem of the shape and the idea of a shadow of a ghost on a tree. The title given to this drawing is 'the shadow of a ghost on the tree'.

Example 29: Elaboration score received= 2



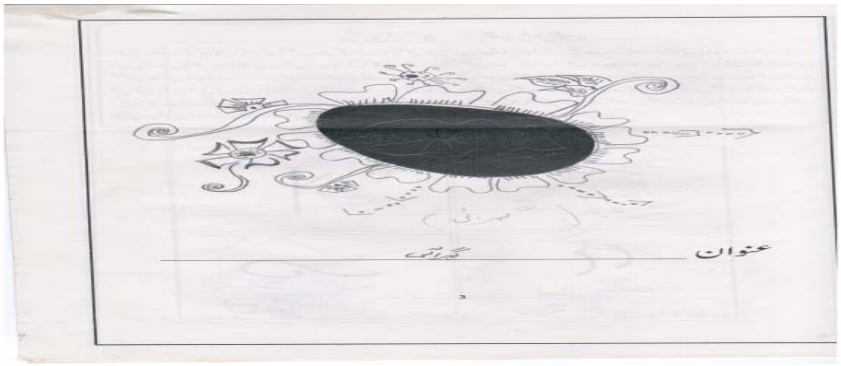
c) The type of response shown in example 30 was given an elaboration score of three. This is because it has 13-19 details some of which include the ways in which the hair is drawn, shape of the mouth, the detail on the hands and feet, the idea of holding the egg in the hand, the lines used to shade some parts and the block shading used in other parts. The title given to this drawing is 'the big devil is holding an egg in his hand'.

Example 30: Elaboration score received = 3



d) The type of response illustrated in example 31 was given an elaboration score of four. This is because there is a lot of variety in the response. For example the different shaped petals, the detail in the leaves, the shading and the drawing within the black shape. The title given to this drawing is ‘depth’.

Example 31: Elaboration score received= 4



8.1.5.5: Scoring for abstractness of title

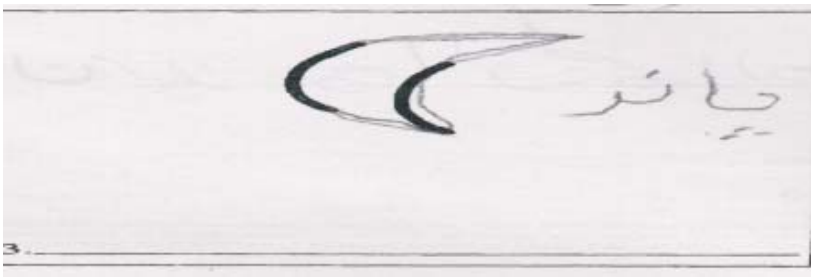
The scoring for elaboration is followed by scoring for abstractness of title. The titles given to the pictures drawn for activity one and two were scored. Any titles which were not at first sight understood were looked up in the Urdu dictionary (Ferozsons, undated) to confirm that they were not just abstract words and then scored accordingly. For this any titles not understood were not scored although effort was made to comprehend what the child may have been trying to convey through the title. Example of titles that scored zero include object names such as ‘doll’ or ‘tree,’ ‘dogs foot,’ ‘hockey and ball’. Titles which scored two included ‘house of ghosts’ and those that scored three included titles such as ‘big devil holding an egg,’ ‘shadow of a ghost on a tree’ and ‘this is a big fat electric egg’. In very few cases some children made drawings but had not given

titles. However by looking at the picture a title was given by the researcher by asking the question ‘what could this be’ and then scored.

8.1.5.6: Scoring for premature closure

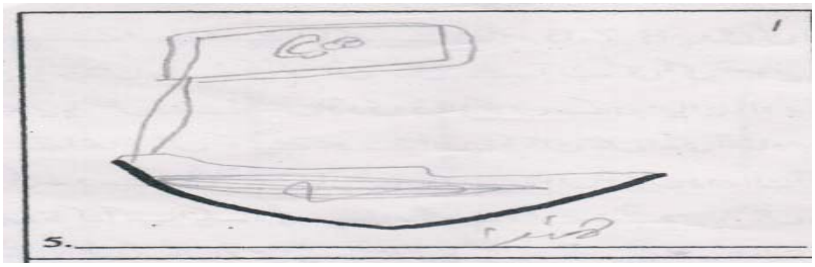
Scoring for abstractness of title was followed by scoring for resistance to premature closure. Resistance to premature closure means keeping ‘open’ to make the ‘mental leap that makes original ideas possible’ (Torrance, Ball and Safter, 2008, p.13). The maximum score that can be obtained is 20 but that is only possible if all responses have been scored for fluency. Each response in activity two was evaluated to determine the extent to which there was resistance to premature closure. The type of responses which received a ‘zero’ score is shown in example 32. The child in this case has closed the picture by the quickest, easiest and most direct route using a curved line. Other such responses which were given a zero score included letters of the alphabet and numerals.

Example 32: A picture of a ‘moon’ scoring zero



The type of response given in example 33 received a score of ‘1’ because although the shape has been closed the picture made has gone beyond this closure of the shape to make a picture of a ‘flag’.

Example 33: A picture of a 'flag' scoring 1



The type of response which obtained full scores is given in example 34. In this the original shape has not been closed at all and used as part of a picture of a 'flower'.

Example 34: A picture of a 'flower' scoring 2

8.1.5.7: Scoring checklist of creative strengths

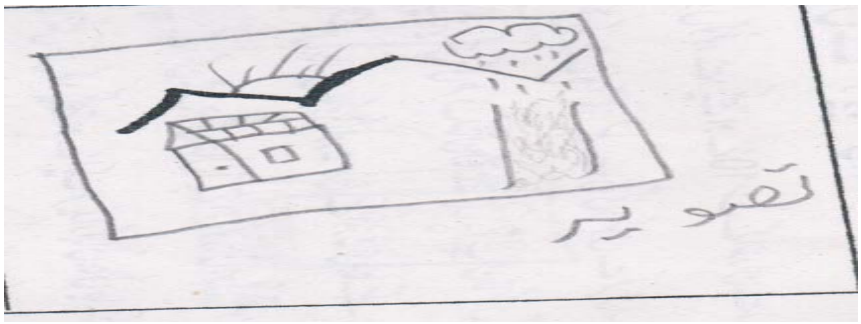
Lastly the responses for all the activities were scored on the checklist of creative strengths. The presence of any of these in all the three activities was indicated by a plus sign (+) on the scoring sheet. If the strength appeared three or more times, then this was indicated by two plus signs (++). However for the creative strength 'richness of imagery' if it appeared three or four times one plus sign was used and if it appeared five or more times then two plus signs were used (++). One plus sign is equal to a score of one and two plus signs indicate a score of two. All the plus signs were counted to obtain a score for the 13 creative strengths and recorded on the blank space

for ‘Bonus’ on the scoring sheet. It is important to mention here that activity one and three are not scored for synthesis of incomplete figures and activity one and two are not scored for synthesis of lines and extending boundaries, only activity three is. The total score that can be obtained is 26.

The following are examples of the type of responses which received score for each of the creative strengths.

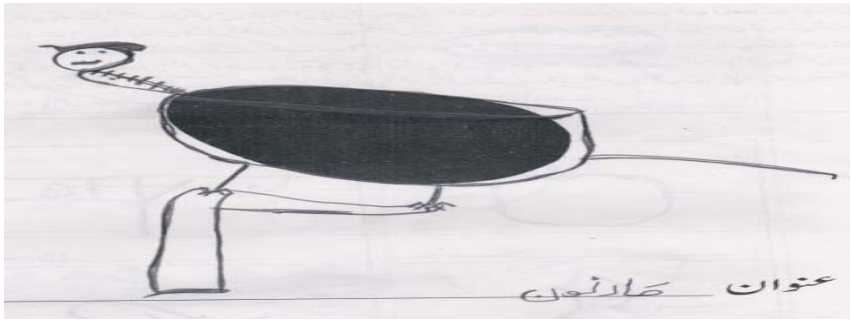
The type of response in example 35 illustrates ‘story telling articulateness’ in which a whole story is being communicated which includes house, sun behind the mountains, clouds and rain.

Example 35: Story telling articulateness



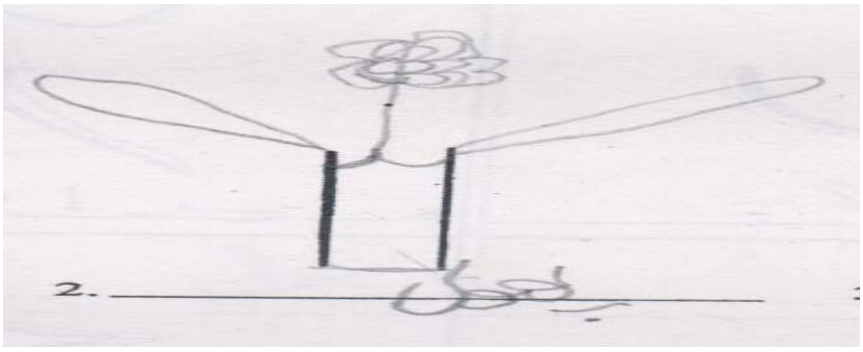
The response shown in example 36 illustrates the creative strength ‘fantasy’ where the respondent has drawn some type of a ‘cartoon’.

Example 36: Fantasy



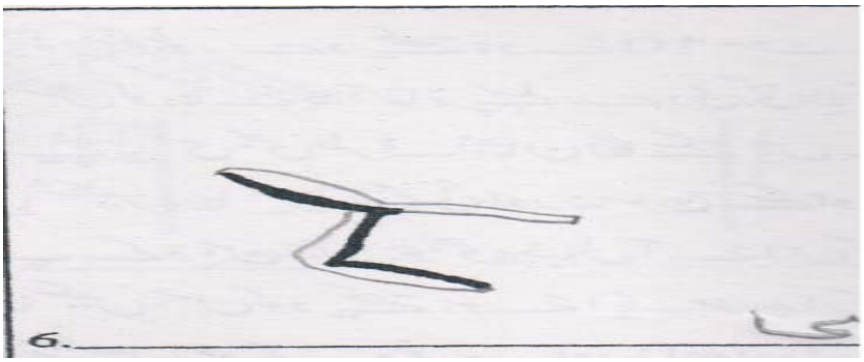
The response shown in example 37 illustrates the concept of 'extending boundaries'. In this the respondent has moved beyond the initial shape to make a picture of a 'flower'.

Example 37: Extending Boundaries



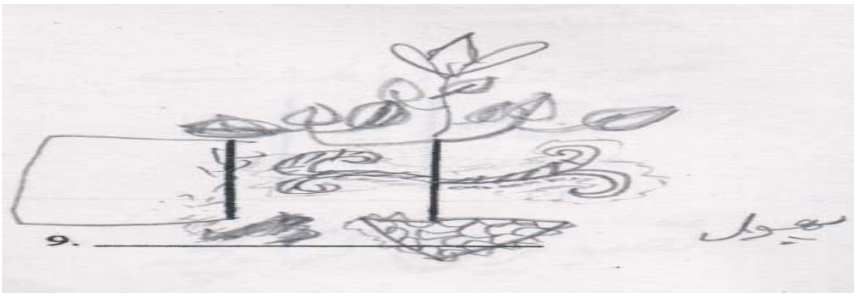
The side of a chair shown in example 38 is an example of the type of response scored for 'unusual visualization'. It is unusual visualization because it is not shown from a straight common view.

Example 38: Unusual visualization (chair)



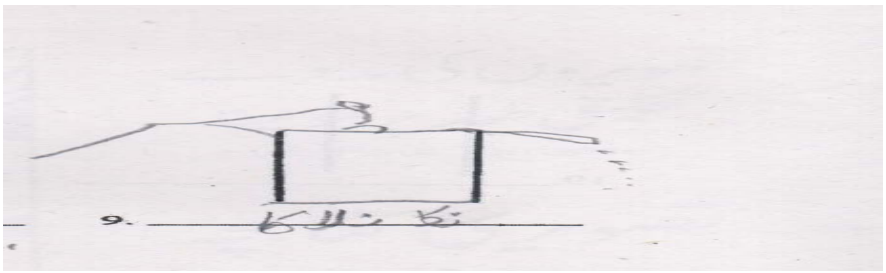
Internal visualization is shown in the response given in example 39. In this the roots of the plant are shown. It is titled ‘flower’.

Example 39: Internal visualization



Example 40 shows a response in which there is evidence of ‘movement.’ It is a picture of a ‘hand water pump’ and there is water pouring out of the pipe on to the floor.

Example 40: Movement



Example 41 shows a human face which appears to be smiling and such responses were scored for 'emotional expressiveness'.

Example 41: Emotional expressiveness

Once the responses were scored for creative strengths the raw scores were calculated as per the guidelines, standard scores and creativity index were determined. These are discussed next.

8.1.5.8: Determining the raw scores, standard scores and creativity index

The raw score is the total score obtained for all activities under each of the five criteria. To calculate this for fluency the total obtained for activity two and activity three were added together. For originality the raw score is the total of originality score for activity one, two, three and the bonus score for activity two and three. The maximum raw scores possible are for fluency 40, originality 41, elaboration 18, premature closure 20 and abstractness of title 33.

Once the raw scores were calculated then the standard scores and national percentiles were determined using the grade 5 'norms tables' (Torrance, 2008, p.8; also refer to Wallach, 1968). The norms table contains a range of raw scores from 1-45 and for each of these a corresponding standard score and the national percentile is provided for fluency, originality, elaboration, closure and titles. It is not possible to calculate the creativity index without obtaining the standard scores

for these. In order to obtain the national percentile for fluency the fluency raw score obtained on the test is first located on the norms table, then moving horizontally across the table in the fluency column under 'NP' is the national percentile for fluency. This once located is recorded on the scoring sheet in the National Percentile column next to the fluency raw score. Next to the national percentile is the fluency standard scores for the same raw score, this once located is also recorded on the scoring sheet next to the national percentile score. In this same way the national percentile and standard scores for originality, elaboration, closure, titles is determined. The five criteria on the norms table are arranged in the same order as on the scoring sheet so it is easy to identify and record these.

Once the standard scores were obtained this was followed by calculating the sum of standard scores by adding all the standard scores for fluency, originality, elaboration, abstractness of titles and resistance to premature closure. Then the average standard score was calculated by dividing the sum of standard score by five and this was recorded in the box on the scoring sheet. If the value of the average standard score involved a fraction it was rounded to a whole number. If the average standard score obtained by a child was below the lowest average score given in the norms table then this lowest value was used to determine any scores required from the norms table. The national percentile for average standard score was determined from the norms table. Once the average score was obtained this was recorded in the box given at the bottom of the scoring sheet next to the 'creativity index: Average standard score'. To this score was added Bonus score obtained for the creative strengths. This determines the creativity index. The national percentile for the creativity index was obtained from the norms table by locating the score for creativity index on the column SS/CI and tracing across to the column CI/NP.

8.1.5.9: Recording the scores

All the scores were recorded on the scoring sheet (Scholastic Testing Service, 2006). In this the fluency and originality score for each stimulus was recorded followed by total for each. However for the remaining criteria only total scores were recorded because recording scores for each response was very time consuming and of little benefit. This is because only the total scores were used for further calculations. For elaboration recording the score for each response was not possible because the elaborations were all counted together for all responses in each activity and then the total recorded. One scoring sheet per child was used to record the scores obtained.

8.1.6: Data entry and checking of children's scores obtained on the TTCT

The scores obtained were entered into an Excel data base and then converted into SPSS. During data entry any mistakes noticed in scoring were also corrected such as uncounted scores, wrong calculation, and children's incorrect background information. Other data entered included district name, school name, sector, school gender and child's gender as well as teacher comments about creative and uncreative children and the observations made during scoring of each child's test.

8.1.7: Analysis of TTCT Data

The first phase of analysis was categorization of the pictures drawn using the stimuli. This included first compiling a list for responses to each stimulus using excel, sorting these in alphabetic order and then counting the same responses. This resulted in a list of pictures drawn and the number of children drawing each of these pictures. The number and percentage of children producing responses for each stimulus was also calculated. These lists were reviewed and the responses categorized according to their similarities. In case where objects could not be grouped they were categorized under 'others'. Another group which was created was where more

than one object had been combined to make a picture for example ‘heart-melon’. A category was created if there was more than one object belonging to that category, otherwise the response remained in ‘others’ category.

This was followed by generating frequencies for the children’s background information and the scores obtained for fluency, originality, elaboration, premature closure and abstractness of titles and each of the 13 checklists of creative strengths. Frequencies were also generated for scores obtained on each activity as well as raw scores. The frequencies generated for sum of standard scores, average standard score and the national percentile, creativity index and the national percentile were further categorized because of the many scores, for example there were 128 different sum of standard scores which were reduced to 6 categories. Once frequencies were generated the mean scores and standard deviation were also calculated for each individual variable. The mean scores for originality, fluency, elaboration, abstractness of titles, premature closure, average standard score, creativity index and the creative strengths were also calculated against the background variables as well as against the teacher’s views on children’s creativity and their level of academic performance.

Following the above analysis the percentage of children obtaining the various scores was also calculated. In order to calculate the percentage of scores, the total scores obtainable for each criteria and activity had to be calculated first. Lastly the inter-correlations among the separate assessments of creativity, fluency, originality, elaboration, abstractness of title, resistance along with correlation of each with the creativity index were calculated.

8.2: Classroom observation

There were three reasons for doing the classroom observation:

- To identify what and how the textbook contents are being used.
- To verify if the methods indicated by the teachers as being used to develop children's creativity in the survey are actually used during teaching.
- To determine the extent to which the events in the classrooms are developing/inhibiting children's creativity.

The Classroom Creativity Observation Schedule (CCOS), (Denny, 1969) was selected for classroom observation because it provided readymade categories for recording and later analysis of the observation data. The observation categories were related to children, teachers and the surrounding classroom environment, all of which are deemed important for creativity. The CCOS was the most comprehensive instrument found for classroom observation (for more detail refer to Denny 1968; Denny, 1966; refer to Appendix 4 for the CCOS instrument). It was also selected because it provided an opportunity to observe many indicators within the limited observation time available. The observation was conducted as follows.

Introductory meetings were first held with the class five teachers. In this they were asked what time they teach the science lesson. If this was immediately after the meeting then this lesson was observed. If it was later in the day other lessons before this were also observed. If the science lesson had already been taught then other subject lessons were observed. Before doing the observation its purpose was discussed with the teachers as well as how it would be recorded. The

seating of the researcher was also discussed as well as the fact that the lesson to be observed should be conducted as it normally would be.

Once in the classroom, the researcher firstly noted the start time of the lesson and the name of the subject being taught. This was followed by making extensive written notes on what was said by the teacher, the children and the non verbal behavior of both. In specific notes were taken in relation to the CCOS indicators. During the lesson, times were specifically noted for different parts of the lesson such as for example when the children started and ended their independent reading. In order to hear what was being said by both the teacher and the children the researcher seated herself at the back of the class or the side. If anything could not be heard the teacher was asked or the researcher reseated herself closer to the children and the teacher. Once the observation notes were completed for each school they were used immediately after the school visit to extract information related to each of the CCOS indicators for that school.

The written notes taken during observation were reviewed and information (chunks of text) was extracted for each school for each of the CCOS indicators, motivation, divergence, control of instruction, pupil teacher relationship, pupil-pupil relationship, teacher pupil relationship, teacher group approach and encouragement of unusual responses. This extracted information was reviewed again to identify patterns and subcategories. The observation data was also used to verify the responses given by teachers in the questionnaire for developing children's creativity.

8.3: Informal teacher interviews

An informal schedule was used to interview teachers. This contained questions related to the definition of creativity, teaching methods and textbooks. Once the teachers provided a response

related to the textbooks which develop creativity they were also asked about chapters within these and the end of chapter questions that develop children's creativity the most. In order to create school profiles they were also asked about school building, conditions, facilities, number of teachers and children. The interview responses were written down by the researcher.

As part of the interview all teachers were asked about children who participated in the TTCT. They were asked to rank each child's academic performance according to high, medium or low academic performing, if the child was creative or not and reasons for saying this. These were recorded on a pre-designed format. The length of the interview varied depending upon the time available both with the teacher and the researcher. The written notes taken during teacher interviews were reviewed and text extracted related to what teachers said about textbooks and textbook chapters, methods they use to teach and their definitions of creativity. The information related to schools was used to create school profiles.

8.4: Content analysis of textbook, curriculum and policy documents

8.4.1: Instrument used - Blooms Taxonomy of Educational Objectives

In order to analyze the class five science textbook and the primary science curriculum the list of 'Outcome-Illustrating Verbs' (krummefamily, 2009), from the Blooms Taxonomy (1956) were used (also refer to Pearson Education, 2007). This list was used to identify which category in the taxonomy the questions in the textbook and the learning outcomes in the curriculum belonged to. The verbs were used because of the simplicity and easiness in tracing these in the texts. However before these were used they were verified from the original publication containing the work on the taxonomy 'The Taxonomy of Educational Objectives, The Classification of Educational Goals, Handbook I: Cognitive Domain' (1956). Blooms Taxonomy was used due to its wide use

(for more details ref Anderson et al, 2001; Bloom, 1956) as well its use in analysis of textbooks for creativity (Wechter, 1996).

The taxonomy is organized into 'six major classes' which are knowledge, comprehension, application, analysis, synthesis and evaluation. Synthesis is the category which 'most clearly provides for creative behavior on the part of the learner'. It is the 'putting together of elements and parts so as to form a whole and combining them in such a way as to constitute a pattern or structure not clearly there before'. This would involve a 'recombination of parts of previous experience with new material, reconstructed into a new and more or less well-integrated whole' (Bloom, 1956, p.162). There is less emphasis upon uniqueness and originality in the comprehension, application and analysis category.

8.4.2: Procedure for content analysis of text book

The textbook is divided into units and within each unit there is text relating to a particular science topic which is followed by questions and activities. The text in each unit was first read followed by reading of the activities and the questions. Then the answer to each question was traced from the text. Information was noted onto a format designed for this purpose. This was followed by copying the questions from each unit into an excel worksheet. The lists of verbs for each category in the taxonomy were searched for in each of these questions and the findings recorded. For each unit, the percentage of questions belonging to each of the six categories, were calculated. This was followed by calculation of percentage of questions in the whole book belonging to each category.

8.4.3: Procedure for content analysis of curriculum

The primary curriculums for Science, Mathematics and English were analyzed. In this the introduction, goals, aims, and objectives were reviewed to identify mention of creativity, including information related to definition, its importance as well as methods to develop and assess it. The science curriculum was reviewed in more detail by evaluating the student learning outcomes using the same list of verbs from the Blooms Taxonomy as used to evaluate the questions in the science textbook described above. Then the percentage of outcomes in each of these categories was calculated. The six categories were grouped into two sub-categories, 'lower level thinking skills' containing knowledge, comprehension and application and 'higher level thinking skills' containing analysis, synthesis and evaluation. The percentage of verbs in each of these two subcategories was then calculated (for further information on content analysis refer to Weber, 1990).

8.4.4: Procedure for content analysis of policy documents

The other documents analyzed were the National Education Policy (1998-2010), the Green Paper (2006) and the White Papers (2006, 2007) for review of this policy. In the National Education Policy the section on elementary education was analyzed. The entire section was read to identify areas which mentioned the word 'creativity' or any similar term. Similarly the section on ideology, aims and objectives of education were also analyzed. This process was repeated to review the Green and White Papers.

8.5: Ethical considerations

Every effort was made to ensure that the research complied with the required ethical considerations. The following is a descriptions of the ways in which the ethical issues were

handled, starting from the sampling procedure to conducting the teacher survey and administration of the TTCT to class five children.

The sampling data was obtained from the Punjab Examination Commission (PEC) and the organization was given every assurance that the information would remain confidential and used only by the researcher. All the children's personal information was removed at a very early stage in the sampling procedure.

For the teachers involved in the survey, consent for their participation was obtained at several levels. This was at the administrative levels within the district education department, from the school head teachers and the teachers themselves. At all these levels there was an introduction to the research including the objectives, the intended outcomes, research instruments and use of the findings. Both the administrative and teaching staff was reassured that their anonymity would be maintained. In this regard they were not required to provide their personal information and the school names were replaced by ID Codes. The school list containing both codes and school names was kept with the researcher.

During pre-testing it was found that the statement on the front page of the questionnaire, giving assurance about respondent's confidentiality and anonymity, caused the teachers to react with suspicion about the research intentions. As a precautionary step this was removed and overcome through verbal reassurances and obtaining of consent as described above. The respondents were also made aware that they have complete choice and freedom to refuse to participate and opt out of the process. However it must be mentioned here that the teachers concern was not so much their confidentiality but the fact that their 'officers' (employers) consent for their participation

had been taken by the researcher. In fact taking part in the research was deemed as an 'honor'. The teachers were happy that their opinions were being asked for with the intention of being used for developing children's creativity.

The teachers from the 16 schools, visited by the researcher for classroom observation and administration of the TTCT, were provided back ground to the research and the TTCT. Permission and consent was sought for their own participation as well as for administering the TTCT to the children. The children who participated in the TTCT were also asked for consent and provided the option of opting out. In fact the teacher's permission on behalf of the children is regarded as more important as they are given same if not higher status than the parents.

Before any photographs were taken consent was again sought both to take the photograph and use it as evidence in the thesis. In response to this some female teachers and girl students opted out and did not give consent due societal and family implications which this may have for them. However majority of the children were very keen to be included in the TTCT and in the photographs. In fact in one school the issue was not of children's anonymity or permission but the fact that the time taken up by the TTCT would affect their regular classroom work. There was apprehension that the parents would complain and teachers would need to spend extra time helping children to catch up. It was not possible to obtain written consent from parents as many were not accessible and also would not have been able to give written consent due to being unable to read and write. In a few schools where the researcher was able to meet some parents it was found that they regarded their children's participation as something that was honorable for the school, teachers, themselves and would benefit their children.

The researcher is aware of the United Nations Convention on the Rights of the Child, with the principles including 'respect for the views of children...and to give primary consideration to the child's best interests...' (DCSF, 2009, p.1) and every effort has been made in this regard despite the contextual, cultural and social constraints faced in the process of this research. These show the tensions that emerge between the ethical guidelines (set often for research in Western societies and their culture), their application and problems of adherence to within other cultures where anonymity is not the issue but permission from figures of authority is more of a concern and it is considered as an honor for a child's name and photo to be featured in documents and referenced to by others.

In this chapter the instruments and procedures used for classroom observation, teacher interviews, documentary analysis, assessment of children's creativity and ethical considerations have been described. This ends the section on methods used to conduct this research. The next section is related to the findings and begins with the quality of the sample and other background variables.

CHAPTER 9

QUALITY OF SAMPLE

This chapter considers the quality and characteristics of the achieved sample. The background information is related to the schools involved in the survey, and then to those involved in the classroom observation and the Torrance Tests of Creative Thinking (TTCT).

9.1: Information related to the survey

9.1.1: Distribution of schools

Table 9.1: Percentage of schools in the sample as compared to the Punjab

	Sector			Location		Gender		
	Public	Private	Other public	Rural	Urban	Boys	Girls	Mixed
Sample N=1008	69	29	1	75	19	33	29	36
Punjab N=55904	80	18	2	83	17	40	42	18

Source: Punjab information from AEPM, 2008 and sample information from teacher survey

The distribution of schools in the sample across sectors, location and gender are on the whole representative of the situation in the Punjab (Table 9.1). There are more schools from the public sector and rural locations followed by the private sector and urban locations while there are very few schools from the other public sector. However there are slight variations in the sample as compared to the Punjab which may be due to the sampling procedure used. These include less girls' schools from the public sector and none from the other public sector, proportionally more from the private sector and almost twice as many mixed sex schools. This is perhaps explained by the fact that private schools are mostly mixed sex. There are mixed sex schools from the public sector in the sample which is surprising as the Punjab educational data purportedly contains no such schools. This may be explained by fact that

there are schools which allow enrolment of both boys and girls although they are officially designated as single sex schools.

Table 9.2: District distribution of schools across sector, location and gender in the sample (in percentages)

	Sector			Location		Gender			Total
District	Public	Private	Other public	Rural	Urban	Boys	Girls	Mixed	
Ludhran	25	3	0.6	25	3	9	9	10	29
Vehari	20	9	0.3	23	5	10	9	10	30
Faisalabad	11	11.8	0.3	13	8	6	5.2	11	23
Kasur	13	6	0	13	4	8	5	5	19

There are an almost equal proportion of schools from districts Ludhran and Vehari, whereas there were fewer schools from Faisalabad and Kasur. This is because the initial number of schools for each district varied. The majority of the schools are from public sector and rural areas in all districts except Faisalabad where almost one third are from urban areas and slightly more from the private sector. There are similar percentage of boys, girls and mixed sex schools within each district except Faisalabad in which mixed sex schools are almost twice as many. The fewest schools from the private sector are in Ludhran where there are more schools from the public sector.

Although there is representation of schools from all the sub-districts (tehsil) of each district there is an unequal distribution except in district Vehari where the schools are almost equally distributed amongst the three tehsil (Table 9.3).

Table 9.3: Percentage of schools from each tehsil within each district

Sub-district/tehsil	Ludhran			
Ludhran	10			
Dunyapur	13			
Kehror Paca	6			
		Vehari		
Vehari		9		
Burewala		9		
Mailsi		11		
			Faisalabad	
Faisalabad			11	
Jhumran			1	
Samundari			3	
Tandinwala			3	
				Kasur
Kasur				11
Chunian				2
Pattoki				2
Kot Radha Kishan				1
Jaranwala				6

Source: Teacher survey N=1008

9.1.2: Distribution of teachers

Table 9.4: Percentage of teachers in the sample (each district and total) as compared to the Punjab

Gender	Ludhran	Vehari	Faisalabad	Kasur	Total sample	Punjab
Male	13	14	9	9	45	43
Female	15	14	14	8	51	57

Source: Teacher Survey N=1008

The percentage of male and female teachers in the sample is very similar to that in the Punjab as a whole (Table 9.4). There is almost the same percentage of male and female teachers from each district, although there are slightly more female teachers from Faisalabad and Ludhran.

Table 9.5: Distribution of male and female teachers in the sample across sector, location and gender as compared to the Punjab (in percentages)

		Sector			Location		Gender		
		Public	Private	Other public	Rural	Urban	Boys	Girls	Mixed
Sample	Male	34	11	0.2	36	7	30	2	13
	Female	33	17	0.9	37	12	6	27	22
Punjab	Male	39	4	0.2	36	8			
	Female	33	23	0.5	36	20			

The urban and rural distribution of male teachers in the sample is very similar to that in the Punjab, however the few differences which exist in the sample include less female teachers from urban schools, proportionally more teachers from private sector, and more male teachers in the boy's schools, which indicates the gender segregation. In mixed sex schools there are more female teachers (Table 9.5).

Table 9.6: Percentage of teachers and their professional qualification within the total sample, across districts and comparison with Punjab

Professional qualification	Ludhran	Vehari	Faisalabad	Kasur	Total in sample	Punjab
None	2	2	3	1	7	N/A
PTC	11	12	6	7	36	58
CT	4	4	4	4	17	15
B.Ed	8	8	6	5	28	19
M.Ed	2	1	0.4	1	5	3
Other	0.2	1	1	0.1	2	1

Source: Teacher Survey N=1008

The distribution of teachers with different professional qualifications in the total sample as well as across districts is similar to the situation in Punjab for some of the qualifications, but there are more teachers in the sample with a B.Ed qualification and fewer with PTC qualification. There are also teachers with no professional qualification in the sample, while such teachers reportedly do not exist in the Punjab data. These teachers are perhaps from

other public sector or private sector. The Punjab data on teachers only includes public schools (Table 9.6) therefore a complete comparison is not possible.

Table 9.7: Teachers academic qualifications and the percentage in each district

Academic Qualification	Ludhran	Vehari	Faisalabad	Kasur	Total in sample	Punjab
Under matric	0.2	0	0.2	0	0.4	N/A
Matric	8	8	4	4	24	44
FA/FSc	6	6	5	4	21	16
BA/BSc	9	9	9	7	34	25
MA/MSc	6	6	3	3	18	13
Other	0.1	0	0.4	0	0.5	2

Source: Teacher Survey N=1008

The sample includes a similar percentage of teachers with various academic qualifications but there are far fewer teachers with a qualification of Matric than in the Punjab. There are also teachers in the sample with below matric qualification but not in the Punjab. This may be because the Punjab figures do not include academic qualification of teachers from private and other public sector (Table 9.7). More teachers from within each district had BA/BSc academic qualification and there were very few teachers who were 'Under Matric,' that is below the lowest formal academic qualification (matriculate).

Table 9.8: Duration of teaching in the total sample and across districts

Years of Teaching	Ludhran	Vehari	Faisalabad	Kasur	Total in sample
1-5	11	12	13	6	41
6-10	5	4	3	5	16
11-15	6	5	2	2	15
16-20	3	3	2	2	10
21-25	2	3	1	0.4	6
26-30	0.2	0.6	0.3	0.1	1
31-35	0.3	0.5	0.1	0.1	0.9
36-40	0	.1	0.1	0	0.2
Over 41	0	.1	0	0.1	0.2

Source Teacher Survey N=1008 (1-5 also includes those who have been teaching for less than a year)

The sample contains teachers with various years of experience (Table 9.8). However, the percentage of teachers within each range of years varies with the highest percentage of teachers in the sample having experience of up to five years across all districts. This may show that the teachers in general in primary schools are relatively young. Ludhran and Vehari also have a high percentage of teachers as compared to other two districts who have been teaching for up to fifteen years. The data on teaching duration was not available for Punjab.

9.2: Information related to schools and children participating in the classroom observation and TTCT

9.2.1: School profiles

The details of the 16 schools involved in the classroom observation and the TTCT are given in Table 9.9. These are a subset of those in the first stage of the sample, and consisted of a mixture of boys, girls and mixed sex schools, located in urban and rural areas and from the government and private sector. The majority of the schools had the basic facilities although there were some with no furniture or playground. Most schools had a few rooms although private schools had more, at least one per class or one room for two classes, while government schools used the playground/open space and veranda for seating. There were in general more teachers in private schools than government ones.

Table 9.9: Profiles of schools participating in the TTCT/classroom observation and teacher interviews

	Districts				Total
School Description	Ludhran	Vehari	Faisalabad	Kasur	
Boys	2	2	2	0	6
Mixed	1	1	2	3	7
Girls	1	1	0	1	3
Urban	0	2	1	1	4
Rural	4	2	3	3	12
Government	4	3	2	1	9
Private	0	1	2	3	6
Veranda	4	4	3	3	14
Water	3	4	4	4	15
Bathroom	3	4	3	4	14
Playground	3	4	3	2	12
Electricity	4	4	4	3	15
Boundary Wall	3	4	3	4	14
Furniture for children	3	2	3	4	12
Furniture for teachers	4	4	4	4	16

Source: Data collected from school visits by the researcher (total schools were 16)

9.2.2: Distribution of children across schools for TTCT

There were 154 children who took the TTCT (6 less than the target), from 17 schools rather than the planned 16. The fewest children were from Ludhran while there were almost equal numbers from the other three districts (Table 9.10).

Table 9.10: Percentage of children participating in the TTCT from each district

District	Percentage of children from each district that participated in the TTCT
Ludhran	9
Vehari	29
Faisalabad	28
Kasur	25

Source: Information from the tests (TTCT) N=154

There were 33% children from urban schools, 67% from rural, 55% from government and 45% from private schools. One third of the children were girls (31%) as compared to 69% boys. The majority were either from boys or mixed sex schools with very few from all girls schools (Table 9.11)

Table 9.11: Percentage of children from boys, girls and mixed gender schools

School Gender	Percentage children from each type of school
Girls	8
Boys	48
Mixed	44

Source: Information from the tests (TTCT) N=154

It is important to mention that while the total children tested was very near to those planned, the number of children taking the test in each school was not 10. The distribution of children in each of the 17 schools is given in Table 9.12.

Table 9.12: School wise distribution of children participating in the TTCT

School participating in the TTCT	Number of children participating in the TTCT from each school
1	1
2	8
3	12
4	8
5	12
6	1
7	5
8	15
9	11
10	12
11	8
12	11
13	12
14	4
15	8
16	10
17	16

Source: Information compiled using the tests (TTCT)

The age of children varied ranging from 9 to 16 years, with the ages of the majority ranging from 10-13 (81%). There were also those with higher age limits than one would expect of children in primary school, which perhaps indicates late enrolment or repetition. There were also children from 14 to 16 years but this was a smaller percentage of 10% as compared to other ages. The average age was 12 years (Table 9.13).

Table 9.13: Age distribution of children participating in the TTCT

Children's age (in years)	Percentage of children in each age group
9	10
10	19
11	21
12	25
13	15
14	5
15	4
16	1

Source: Information from the tests (TTCT) N=154

This chapter has described the sample, shown its quality as broadly representative of the situation in the Punjab, across the four districts, public and private sector, urban and rural locations and different school genders. The next chapters deal with the findings in relation to the research questions starting with the definitions and perceived importance of creativity.

CHAPTER 10

HOW HAS CREATIVITY BEEN DEFINED AND ITS IMPORTANCE?

This chapter presents the findings related to the general definitions of creativity uncovered by this new study. These are based on the data obtained from policy documents, curriculum and the teacher survey. There is also a comparison of findings from this study with other relevant research, and identification of links between policy documents and the conceptualisation of creativity. Future chapters will present the more substantive findings about the teaching of creativity in primary schools. In the latter part of this chapter the teachers' views on the reasons for developing children's creativity when they are in primary education are presented.

10.1: Definition of creativity in the policy documents

In the National Education Policy (1998-2010) the word 'creativity' is only mentioned in the section 'Innovations in teachers training'. Here it is stated that 'new concepts such as...**creativity** shall be encouraged' (Government of Pakistan, 1998, p.31). However, what the word actually means is not further explained. The Green Paper for the review of this policy describes it as a 'human attribute' (Aly, 2006, p.4) which implies it is innate and of universal nature.

The White Paper, for the review of the above mentioned education policy, does not use the word 'creativity' but rather 'creative' (Aly, 2007, p.4) in describing the kind of individuals which should be raised by the education system. The Paper states that the 'vision' and 'purpose' of an education system should be to:

> …raise highly knowledgeable, skilful, productive, **creative** and confident individuals who have advanced reasoning and perception of problem solving skills; are committed

> to democratic values and human rights; are open to new ideas; have a sense of personal responsibility; are committed to moral values; have assimilated the national culture; are able to tolerate and value differences in opinion, faith and culture; have empathy towards all of humanity; and can participate in the productive (Aly, 2007, pp.4-5).

From the above we get an insight into the policy meaning of creativity as described from the person perspective, that is the characteristics of a creative individual who has the skills of 'problem solving' and is 'open to new ideas' (Aly, 2007, pp.4-5). On the basis of this White Paper the 'National Education Policy 2009' was published, which includes as part of the 'aims and objectives':

> To develop a self reliant individual, capable of analytical and **original thinking**, a responsible member of society and a global citizen.
>
> To aim at nurturing the total personality of the individual, dynamic, **creative** and capable of facing the truth as it emerges from the objective study of reality (Ministry of Education, 2009, p.18).

In this there is a further proposal of the individual qualities of a person such as 'original thinking,' 'self reliant' and 'dynamic' (Ministry of Education, 2009, p.18). These are not described under the umbrella term of 'creative' but as separate terms alongside it. So what this new policy also does is use many terms to describe what is required from education including producing a 'creative' person but fails to explain much further what is meant by this.

10.2: Definition of creativity in the national curriculum

The three curricula analysed showed that the English and the Mathematics curriculum use the words 'creativity' and the General Science curriculum uses 'creatively'. However these words are not further explained or defined. This is similar to the findings in the policy documents discussed above. For example in the National Curriculum for Mathematics it is stated that the teacher's role is:

> ...planning investigative tasks, managing a cooperative environment and supporting students' **creativity** in developing rational understanding of the concepts of mathematics (Ministry of Education, 2006, p.2).

In this it is implied that creativity is a means for doing something, in this case 'developing understanding' (Ministry of Education, 2006, p.2).

The National Curriculum for General Science promotes an 'inquiry-based curriculum' which:

> ...dictates inquiry approaches in teaching, if the development and enhancement of students' ability to think scientifically, critically, and **creatively** is an expected outcome (Ministry of Education, 2006, p.6).

In this creativity is, a thinking ability and an outcome.

In the National Curriculum for English Language it is stated that:

> Such activities are to be incorporated at each grade that cater for the progressive cognitive development from lower level intellectual skills of simple knowledge and comprehension to higher order skills of analysis, synthesis and evaluation so as to

> nurture the ability of reasoning, problem solving, critical thinking and **creativity** (Ministry of Education, 2006, p.3).

In this, creativity is seen as an 'ability' alongside other abilities such as problem solving and critical thinking, which in the creativity literature are often not discussed as separate entities from creativity but elements which define it.

The reason why there is a need to provide an operational definition in the curriculum and policy documents is that the textbook developers in Pakistan follow the curriculum guidelines. The textbooks are in most cases the only teaching material used by teachers and assessment is based on the contents of these. Hence only mentioning and not spelling out what creativity means may have implications for its inclusion in these textbooks. The textbook developers may not design any activities which would promote creativity in children and if activities are included they may be based on an inconsistent understanding across different material developers which would have implications for assessment.

The fact that creativity is mentioned across policy and curriculum documents suggests that the government wants to include this in the education system. It is regarded as an essential quality, something that is educatable, and to educate children for it as an aim of the present education system. The use of different terms also shows diversity of interpretation across the subject curriculums. One of the reasons for this may be that each curriculum has been developed by a different group of people. Another may be that the concept is defined in each curriculum document appropriately to the specific curriculum subject. However the use of unclear terminology brings into question the understanding of its meaning by policy and curriculum developers. This may reflect that creativity is being mentioned because it is a current fashionable educational concept rather than a concept which has been deliberated

over. This raises the question of how it will be systemically implemented in educational practice without having a clearer understanding of what it means.

As a summary, the policy and curriculum documents do not provide one clear operational definition of creativity and the term varies in use across the curriculum documents for the different primary subjects. These early conclusions are very similar to some more detailed studies of policy documents and primary curricula in other countries (O'Donnell and Micklethwaite 1999; Odena, 2001). The absence of definitions, or weak attempts, in policy documents have also been documented elsewhere (McWilliam and Dawson, 2008; Craft, 2004), therefore this is not specific to Pakistan (for further details refer to Chapter three). It is said in this regard that it is critical that:

> ...all involved embrace complementary perspectives on creativity...It is at least a reasonable possibility that those who are involved most directly with schools and children may have ideas about creativity that differ from those who set policy and provide resources to carry it out effectively (Feldman and Benjamin 2006, p.332).

10.3: Teachers' definitions of creativity

Teachers' definitions of creativity, as identified from the survey, are presented in two parts, first the findings from the closed response section and secondly the responses from the open comment question of the questionnaire. This is followed by some responses obtained during teacher interviews.

Individual teachers report many over-lapping definitions of creativity. This is indicated by their high level of agreement on many of the possible defining characteristics shown in Table 10.1. The top rated definitions include 'using imagination,' and 'a process which leads to

change and development' which are agreed with by over 90% of the teachers. These are followed by a further 11 descriptions agreed by over 80% of the teachers. These are related to problem solving, thinking skills, self-expression, producing things which are new, useful as well as improving and combining ideas/things. Also included in this group are taking risks, generating ideas and exploring the unknown. More teachers regarded producing something 'new' rather than 'useful' as a definition. This, if taken in the context of children, may be understood from the view point that what is produced by the children may be unlikely to benefit anyone. The latter has been rated much lower in other studies (Diakidoy & Kanari, 1999).

Table 10.1: Teacher definitions of creativity as provided in the closed response section of the questionnaire

Definitions of creativity	Percentage of teachers agreeing with each as a definition
Using imagination	93
A process which leads to change and development	92
Producing something new	88
Higher-level thinking skills	88
Taking risks (try out things even if they might not work)	87
Generating alternatives	87
Advance form of learning	86
Solving problems	85
Exploring the unknown	85
Improving something	84
Recombining ideas/materials	84
Self-expression	83
Producing something useful	82
Inspiration	77
Indentifying problems	77
Using intuition	73
Making connections	66
Being independent	63
Preference for complexity/obscurity	63
Spiritual process	56
Going against conventions	48

Source: Teacher survey N=1008

There is a second group of definitions agreed by over 70% of the teachers and these include inspiration, using intuition and identifying problems. Identifying problems is perhaps rated lower than solving problems because children are best considered to be given problems to solve rather than identify them. This may indicate routine teaching practice within the society where identifying problems may be considered as inviting trouble.

The third group consists of five definitions, which are agreed by less than 70% of the teachers. These include making connections, being independent, preference for complexity, spiritual process and going against convention. Making connections may be lower rated because the concept may not have been understood which could be attributed to the way it was worded or simply that it is a new concept. Also preference for complexity is low rated because it may not be regarded as applicable to children. For example primary school children may prefer easy things and can do easy things rather than something complex. It is important to mention here that the question was not specifically asked in terms of children, but may have been understood to mean so because the remaining questions in the questionnaire were very specific to primary school children.

Spiritualism is rated lower as a definition perhaps because teachers may have linked it with religion. Religion is a strong component of Pakistani society and teachers may have found it difficult to link it to creativity although theories and ideas about creativity are said to be found in the Muslim traditions (Craft, 2001) and one of the differences between the Eastern and Western concepts of creativity is 'religious self-expression' (Sen and Sharma, 2004, p.153).

An explanation which can be offered for the lowest rated definition, 'going against convention' is that Pakistani society is very conventional and children are encouraged to

follow the existing rules and regulations. They are also preferred to be obedient rather than independent, which is why 'being independent' is perhaps rated low. However if on the one hand there is high percentage of teachers defining creativity as producing something new and using imagination and on the other many teachers rating going against conventions and independence lower then there is a question of the kind of creativity which may emerge with this understanding of what creativity is. It is possible that a society with such an interpretation will not change, if creativity is taken to mean change, and may remain within the confines of its rigid conventions resulting in unable to cope with many problems for which creativity is being claimed to be the solution to as discussed in Chapter three. Other research (Craft 1997) showed, on the contrary, that 'breaking with tradition' is a major definition of creativity.

One of the overall distinctions between this and other teacher studies is the response pattern. It is noted from the findings that over 70% of the teachers have rated 16 of the given 21 options as definitions of creativity whereas in the Fryer and Collings study, for example, the top three definitions only are responded to by over 70% of the teachers. This indicates that Pakistani teachers perhaps do not see creativity as consisting of one element but rather being made up of group of items.

Very little variation was found in the teachers' definitions across the background variables. It must be mentioned that higher volatility was observed in cases where there were fewer participants such as teachers from the 'other public sector,' or those with lowest and highest qualifications. One of the definitions which was higher rated in some districts, as well as by teachers from urban schools, was 'being independent' however this was rated lower by teachers with a Masters qualification who also rated lower 'going against conventions'. The

slight district differences may have been due to differences in literacy rate, level of industrialisation and urbanisation, all of which may influence the teachers' views.

In the open comment section the definitions given included creativity being some form of ability, thinking, creation/product, learning, personal characteristic and as a catalyst. Many ideas were related to personal characteristics (38%), followed by those related to ability (19%), thinking (11%) and creation/product (10%). Examples of each are given in Table 10.2.

Table 10.2: Teacher definitions of creativity as provided in the open response section of the questionnaire

Creativity as an ability	Creativity as type of thinking	Creativity as a catalyst	Creativity as a personal attribute
To invent (outside tradition	Islamic thinking	Basis for invention	Being able to adapt to situations
To reflect	Positive thinking	Adds to human creative abilities	Confident
To be critical	Critical thinking	To improve work	Thinking about others
To concentrate	Progressive thinking	Support in progress	Being diligent
To think	Good thinking	Lead to better change	Having a resolute mind
To create		Reduce harmful effects	Leadership qualities
		Leads to having complete control over ideas/thinking	Being able to compromise
			A positive attitude/behaviour
			Not getting perturbed over any problems

Source: Teacher Survey, open response comments (N=79)

All of the descriptions outlined above are positive which suggests that creativity is not seen as something negative. Some teachers provided definitions specifically related to education which included creativity as ‘quality education’ and ‘anything related to education’. Other definitions given were related to children including:

> A process during which a child gives practical shape to his/her thoughts.
>
> Mental development so that children understand things comprehensively and act upon them.
>
> Children finding faults with already created things.

And the rather surprising:

> I think creative ability is that children do their work in a way that they rote learn the given material and use to maximum their mental abilities.

But several concluded that creativity is hard to sum up:

> We cannot define creative ability in one or a number of words, it means we cannot describe it in a nutshell and cannot explain the whole thing in a brief manner.
>
> Creativity is an ambiguous term.

There is some cohesion and pattern in the responses, but the many definitions of creativity described above indicate the diverse range of understandings amongst teachers. In summary what creativity means to Pakistani primary school teachers appears to encompass anything and everything that perhaps teachers could think of at the time of completing the questionnaire. This suggests two things, one that it is a very complicated and diverse concept,

and hence the responses indicate a range of understanding or that there is no real understanding and the teachers have responded because a response was required. The literature in this regard supports the fact that creativity is a complex thing (Taylor, 1988), its conceptualisation is diverse, (Feldhusan and Goh, 1995) and it can mean 'something different to every person' (Klein, 1982, pp.256-257).

Some of the teachers' views are very similar to findings in other studies such as Fryer and Collings (1991), even though the respondents in this study were all primary school teachers while those in Fryer and Collings consisted of teachers from various levels. Both studies included seven common definitions as part of the list of response items. Within this, 'imagination' and 'producing something new' were top rated in both studies (also the case in other studies discussed in Chapter three), while making connections was rated by almost same percentage of teachers (Table 10.3).

Table 10.3: Comparison of teachers views about definitions of creativity across surveys

	Current Study	Fryer and Collings (1991)
Definition	Percentage of teachers regarding each as a definition	Percentage of teachers regarding each as a definition
Imagination	93	88
Producing something original/new	88	80
Combining ideas/materials	88	50
Self expression	83	74
Producing something useful/valuable ideas	82	33
Inspiration	77	47
Making connections	66	65
Fryer and Collings, 1991	N=1008	N=1028

One of the reasons why these findings are perhaps similar across studies may be because similar instruments and response items have been used including similar arrangements within the instruments. Whereas in studies using for example interviews the meanings of creativity

are much more diverse and include elements such as producing practical /applicable ideas and even creativity as rote memorisation (refer to Sen and Sharma, 2004). This means that giving response items may be a way of spoon feeding the respondents which may not provide a true picture but more so this highlights the importance of combining methods to obtain a better view of the phenomenon under study, which may not distort the findings. The approaches are complementary, or triangulating in the sense intended by Gorard with Taylor (2004). However, the question to ask here is would the diverse range of definitions remain if instruments such as interviews were used with a bigger sample size.

This completes the discussion on the definitions of creativity as identified in this study. Described next are the reasons for developing creativity as identified from the policy, curriculum documents and teacher survey.

10.4: Importance of creativity in the policy and curriculum documents

Creativity is mentioned in the current education policy, National Education Policy (1998-2010), and the National Curricula of the primary subjects as something that should be developed in children. However, the reasons, indicating its importance, for why it should be developed and specifically developed through primary education are not stated. This indicates that policy makers are aware about the concept and desirous of its inclusion into education. However not mentioning the reasons perhaps shows that a global rhetorical trend is being blindly followed and the desire to include creativity into education has not been based on a careful analysis of the needs of the country and how these will be met if development of creativity is an expected outcome of education.

10.5: Teachers' views on the importance of developing creativity in primary school children

However unlike the policy documents the teachers certainly have a view on the importance of developing creativity as shown by the many reasons they have agreed to in the survey. This is shown by the high rating of each of the reasons given in Table 10.4.

Table 10.4: Percentage of teachers reporting the reasons for developing primary school children's creativity (closed response section)

Reasons for developing creativity	Percentage of teachers reporting each reason
A child's foundation is set at primary that is why in order to strengthen this foundation it is important to develop children's creativity	97
These things need to be taught at the start, this way it becomes easier at higher levels of education	96
Children can use their creativity to learn better	96
Development of creativity is a secret to a nations progress	95
To develop children's innovative thinking	95
Until creativity is developed it will be difficult to practically progress in the field of education	94
To develop confidence in children	94
To develop children's interest in learning	94
To make learning interesting and fun	92
To develop independence in children	91
To develop individuality in children	88
If a child has creativity he/she can use the information they have to do the given task, even if they have never done it before	87
At primary level of schooling child's thinking is still flexible	84

Source: Teacher survey N=1008

Most of the reasons (10) have been rated by over 90% of the teachers and the remaining three by over 80%. If true this means that creativity is regarded as a comprehensive and multifaceted tool which can be developed to benefit the child's own development such as confidence, independence and individuality, as well benefiting the education system and ultimately the society. Some of the lower rated reasons, in comparison to others, include development of independence and individuality, which is interesting because both are deemed

essential for creativity. But it seems that these two characteristic are perhaps not appreciated in Pakistani society as these have also been low rated as a definition (63%) and as an indicator of children's creativity (80%) which implies that conformity is perhaps more preferred which is believed to inhibit creativity (refer to Chapter four).

The reasons given in the open comment section (Table 10.5) also indicate that developing creativity appears to be cure for all illnesses, showing how powerful a tool it is regarded by the teachers (or how undiscriminating they are). Surprisingly, developing creativity is not seen as a reason for doing anything negative which again shows that it is a positively perceived concept. It is as one teacher said a measure to prevent 'abilities being used for destructive purposes'. Its value is indicated for the individual, the disadvantaged and the nation. It appears that besides the value of developing creativity being related to commercial success and development, there is also a humane side to developing it as well, in terms of making us better 'human beings'. More so than this it is again seen as a tool for developing other abilities. This would imply that once creativity is developed other abilities can be developed in children as well, hence it is acting as a catalyst.

Table 10.5: Percentage of teachers reporting the reasons for developing primary school children's creativity (open comment section)

Reasons for developing creativity	Percentage of responses for each reason
To develop productive citizens including those from poor and illiterate backgrounds	20
To enhance children's mental/thinking/understanding abilities	16
To make a better person/human being	9
Guarantee for success in all fields of life	9
To solve future problems	7
To enable children to express their views	7
To achieve the aims/ high quality of education	7
To compete with developed nations	7
To achieve scientific and technological progress	4

To bring change (positive)	4
To produce a better work force	2
To prevent using abilities for destruction purposes	2
To develop constructive thinking in children	2
To develop citizens who are not just followers	2
To prevent society from becoming inactive and halting progress	2
To produce good scientists	2

Source: Teacher Survey N=45

Many of the findings described above have also been reported in other studies, namely that teachers have agreed that it is important to develop creativity. The reasons given for this include being able to solve problems, develop thinking, independence, enabling success, retaining interest and ensuring better understanding (Sarsani, 1999; Sen and Sharma, 2004; Fischman et al, 2006). The difference in this study has been in the fact that the question was asked about developing children's creativity when they are in primary education. However some of the things which have not been mentioned by teachers in this study include increasing imagination, or 'novel views' as reported by Sarsani (1999). Many of the views expressed by teachers in this study are also similar to the statements included in other countries policy documents on reasons for developing creativity.

This chapter has described the definitions of creativity as found in the policy and curriculum documents, as well as teachers' conceptualisation. The findings from both have been compared with prior research to identify similarities and differences. Also described have been the various reasons outlined by the teachers for developing children's creativity. The next section describes the indicators teachers reported using to help them identify children's creativity.

CHAPTER 11

HOW IS CREATIVITY BEING IDENTIFIED?

This section presents the findings related to how teachers identify children's creativity. These are based on the data from the teacher survey and the characteristics of creative and non-creative children as outlined by teachers from the 16 schools that participated in the Torrance Tests of Creative Thinking (TTCT). There is also a comparison of definitions and indicators of creativity as outlined by teachers in the study. The test scores obtained on the TTCT are used to compare and identify any differences or similarities between reportedly creative and uncreative children. Lastly there is a discussion for comparison of findings with other studies.

11.1: Indicators used by teachers to identify children's creativity as reported in the survey

Over 90% of the teachers reported that they use, or would use, original work/ideas, curiosity and the ability to use existing learning to identify children's creativity (Table 11.1)

Table 11.1: Percentage of teachers using the indicators to identify children's creativity (from closed response section)

Indicators of creativity	Percentage of teachers using each indicator
Produces original work/ideas	95
Likes finding out about things	94
Can use things already learned to help in doing further work	91
Modifies and changes ideas/work	89
Is persistent and likes to work	89
Can think of unusual and new ways of doing things	88
Self Confident	88
Can rote memorise	88
Can follow instructions	88
Can compare things and make unusual connections	86
Looks at things from different points of view	86
Express's feelings without hesitation	84
Asks unusual questions	82

Shares ideas with others	81
Shows independence	80
Stops to review work	79
Can spot problems and ways of dealing with them	79
Holds strong opinion	79
Thinks Critically	78
Can create things in the mind (imagine)	77
Tries out things even if they might not work	76
Is knowledgeable	76
Can see if the work produced has achieved its purpose	75

Source: Teacher survey N=1008

There are 12 indicators in the second group which over 80% of the teachers have reported using. These include children being able to rote memorize and follow instructions (both rather surprising, suggestive either of a non-standard interpretation of 'creativity' or a willingness to agree with almost any survey item – see Chapter 10). The third group consists of eight indicators reported by over 70% of the teachers. These include indicators which require children to evaluate such as reviewing work, thinking critically and seeing if the work done has achieved its purpose. These indicators are perhaps lower rated because teachers see it as their responsibility to check children's work which shows that teaching is very much teacher led. This also shows that students evaluating their own work is regarded as less important an indicator of their creativity.

In order to produce something new (top rated indicator) other traits such as being independent, taking risks and having a strong opinion may be important, but the findings show that these are less used to identify children's creativity. This could be explained by the fact that there are set boundaries within which children can work and that these further traits are not regarded as favourable in children. Being knowledgeable is one of the lowest rated indicators which perhaps shows that having knowledge is not important to being creative. This is a surprising finding considering that the emphasis of the education system is entirely

on giving and testing knowledge. However this finding is consistent with some other studies in which teachers regarded the focus on acquiring knowledge as one of the reasons for not being successful in encouraging creativity in schools (Diakidoy & Kanari, 1999) (refer to Chapter four for more details on knowledge and creativity).

What is perhaps more important is that the majority of the teachers have reported using most indicators, showing that they use many ways to identify creativity or that a creative child possesses many attributes. Just as there is no one definition of creativity there is similarly no one indicator for identifying it. One possible explanation for these high ratings all round is that since the questionnaires were sent to the teachers through the education department they regarded this as their evaluation, (as seen during the survey). Since the question asked was 'which of these do you use to identify children's creativity?' it is possible that the teachers wanted to show that they use most of the given indicators to satisfy the department. So the key issue is not which are reported being used but which are the most important to different kinds of teachers.

There was very little variation across the background variables in the indicators that teachers have reported using. Some of these, although very slight, include fewer teachers from district Ludhran and urban schools reporting using many of the indicators. The indicator 'thinks critically' was rated by same percentage of teachers from boys, girls and mixed gender schools (78%). One interesting variation was for the indicator 'holds strong opinion' which was rated by fewer by female teachers. This may be explained by the fact that children having a strong opinion is generally not favoured and in particular perhaps not appreciated in girls. Teachers with either a very low qualification or a Masters Degree showed more variations in their response which included rating lower the indicators 'can create things in the mind-

imagine,' 'can see if the work has produced its purpose' and 'tries things out even if they might not work'. One possible explanation for these variations is that there are fewer cases, however another explanation is that the level of academic and professional education does have some influence on how teachers respond and also perhaps in their reported practice. Perhaps training can make a difference.

Table 11.2: Percentage of teachers reporting using each indicator to identify creativity (from open comment section)

Creativity Indicators	Percentage of teachers reporting using the indicator
Practical ideas/thinking	13
Aware/alert	11
Intelligent	11
Good attitude	9
Detailed	9
Require teacher guidance	9
Answer/ask questions	6
Moral values	6
Understands	6
Perturbed/restless	4
Have empathy	2
Healthy	2
Modern	2
Make predictions	2
Copy adults	2
Think about themselves	2
Not always more intelligent	2
Individualistic	2

Source: Teacher Survey N=47

The indicators outlined in the open comment section are given in Table 11.2. Amongst the top rated indicators is practical ideas/thinking which is similar to the finding in the open comment section in the question on definitions of creativity (refer to Chapter 10). These appear to be indicators of a good student, rather than much beyond this. What is interesting is that some teachers have regarded being intelligent as an indicator of a creative child, while others have also reported that creative children are not always more intelligent. This shows that there are

not set and defined indicators - rather these are based on perhaps personal opinion, experience and values. Also outlined were indicators related to moral values such as not lying, obedience and respecting teachers. Some indicators were in contrast to those in Table 11.1 such as asking questions for clarification rather than unusual questions and copying as opposed to producing something new.

One of the finding which is immediately striking from the responses in Table 11.2 is that teachers have also reported negative or not so ideal and teaching/teacher led indicators. These negative indicators include a creative child being perturbed and having a restless temperament. This indicates as one teacher aptly highlighted:

> Creative children have both positive and negative tendencies.

The teaching and teacher led indicators are related to the support required by children and include teachers providing care, love, affection and guidance. However both the negative and teacher/teaching indicators are few in comparison to the positive. This shows that teachers mostly look for ideal, positive characteristics when identifying creativity and in this respect creativity is regarded as something positive. Another explanation for this is that perhaps the teachers were influenced by the largely positive indicators provided as response items immediately preceding the open comment section.

11.2: Indicators used by teachers to identify children's creativity as reported in the teacher interviews

This section provides the findings from teacher interviews on the characteristics of creative and uncreative children who participated in the TTCT.

11.2.1: Indicators of creative children

Children regarded as creative were said to have the characteristics given in Table 11.3. The majority of these are positive traits while some are negative/not so ideal and a few are teacher/teaching led.

Table 11.3: Indicators of a creative child

Category of indicators	Percentage of responses for each indicator
Works well	17
Good attitude	11
Doesn't/unable to do/learn work	7
Intelligent	6
Asks/answers questions	6
Moral values	6
Can learn to rote memorize/recite	4
Attentative	4
Requires teacher attention and guidance	4
Understands	3
Good at core subjects	3
Participate in activities	3
Neat writing	3
Responsible	3
Independent	3
Careless/less attentative	3
Well Spoken	2
Cant memorise /recall	2
Empathy	2
Not confident	2
Detailed	1
Not good at reading and writing	1
Not participate in extra-curricula activities, e.g. drama, dance	0.5
Good at drawing	0.5
Do not ask questions	0.5
Not intelligent	0.5
Naughty	0.5
Not quick to understand	0.5

Source: Teachers interviews N= 177

The positive indicators are related to work, intelligence, being good at core subjects (science, maths, Urdu), drawing, attitude, participation, understanding, questioning, speaking, reading,

writing, show of exceptional performance, attention, moral values, empathy and motivation. Many of these are most valued pupil characteristics found in the Indian study by Sen and Sharma (2004), but not the most valued in other studies such as Fryer and Collings (1991), Stoycheva (1994) and government programs (refer to Chapter five). The indicators in these studies are more similar to those in Table 11.1 for which the response items came from for much of this research so it is perhaps not surprising that the findings are similar.

In the interviews more negative indicators were outlined than those in the open comment section of the survey. This could be explained by the fact that there was a difference in these groups of children who the teachers were asked about and these responses are based on their teaching experience rather than a general response to the question in the survey. The not so ideal indicators are mainly the obverse of the positive indicators such as not being able to memorise/recall learned material, not intelligent, do not understand, are not confident, do not participate, do not ask questions, shy and sensitive. But it must be emphasised that the positive indicators far outweigh the other indicators which shows that although creative children may exhibit a mixed range of characteristics there is a bias towards the more ideal.

There are indicators outlined such as ‘child not being able to do the work’ and ‘being able to do the work’ with the former being outlined by fewer teachers. This shows that to be regarded as creative, producing something is more important although not being able to produce something does not necessarily mean children are not creative. The major focus of these teachers on the children being able to do the given work shows that creativity is seen from the ‘product’ point of view. However the focus is not on producing something unique rather it is regurgitation of learned material here. For example, in writing the reported objective is neatness, ‘no cutting’ but not the content or its originality. Some of the indicators outlined,

although by fewer teachers, point to a 'process' interpretation of creativity. But the process is more related to children doing work in which they show a certain attitude of interest, enthusiasm, participation, understanding and speed. Many of these are the least valued characteristics in some other studies such as Torrance Experts given in Sen and Sharma (2004) and Stoycheva (1996). Indicators related to morality, such as 'obedience' and 'well mannered,' also feature highly as responses just as in open comment section. It is worth mentioning that these are also emphasised in the National Education Policy of Pakistan, under character building (Government of Pakistan, 1998) which shows the priority of the society being reflected in the policy documents.

When the findings from the survey (Table 11.1) and interviews were compared it was found that the only indicator which was common between both was 'rote memorisation' and some related to independence. The use of different instruments yielding different findings has also been documented by Stoycheva, (1996) from a study in Sofia which asked teachers to describe their students so that a new teacher could become familiar with them. In this it was found that creativity was not 'among the most important student's characteristics' and few mentioned 'creativity relevant traits or behaviours' (Stoycheva, 1996, p.6; for more details refer to Chapter five).

However the complexity of actually pinpointing what it is that makes a child creative is highlighted by one teacher who when asked why she said a child was creative replied:

> There is no reason for saying why the child has creativity.

11.2.2: Indicators of uncreative children

Indicators of uncreative or less creative children are given in Table 11.4. These are opposite to the positive indicators of creative children already discussed. Some of the same indicators have been outlined for both uncreative and creative children. But the major difference in the indicators given for uncreative children is that almost all are negative or not so ideal except 'tries hard' and 'good at extra-curricular activities, dance /drama'. This implies that a child who is unable to do the things required and valued by the teacher is uncreative. It is almost as if the uncreative are the educationally weak. This in a sense emphasises that creativity and its indicators are synonymous with the characteristics of a good student, for these teachers. One of the interesting indicators of uncreative children is that they are good at extra curricula activities such as dance and drama, both regarded as highly creative subjects in the creativity literature but in the Pakistani society these are not taken seriously in comparison to other subjects such as science and mathematics.

Table 11.4: Indicators of non/less creative children

Category of indicators	Percentage of responses for each indicator
Cant rote/recite	16
Only able to do given work nothing more	16
Carless	13
Not intelligent	6
Takes time to understand	6
Mistakes in dictation/writing	6
Physically/mentally weak	6
Not participate in activities	6
Good at extra curricula activities (drama dance)	6
Not concentrate	3
Tries hard	3
Not ask for clarification	3
Lacks confidence	3
Unable to do reading	3
Can't do home work	3

Source: Teacher Interviews N=32

The teachers have clearly indicated that there is a difference in the indicators of creative and uncreative children but they have also indicated that creative children possess some non ideal characteristics. The indicators outlined in the open response and closed response section of the questionnaire as well as the teacher interviews all to some extent show a different picture which indicates the need for mixed methods to cross verify the responses to give a clear, more realistic picture.

11. 3: Creative and uncreative children and their creativity scores on the TTCT

A comparison of the TTCT scores showed no major difference between children judged by teachers as being creative, and not creative. However the scores of children judged as being less creative were lower in comparison to both not creative and creative (Table 11.5). This is surprising as one would expect these scores to be higher than not creative children. The deemed creative children show a slightly higher mean score for originality, fluency, abstractness of titles and premature closure while both creative and uncreative show the same scores on elaboration and creative strengths (for a description of the TTCT and each assessment criteria refer to Chapter eight). On the overall measure of creativity, the Creativity Index (CI), the difference in scores is far greater between creative and less creative children but almost none between creative and not creative. The difference in scores may be volatility due to the small number of students in some categories. So while the Pakistani teachers clearly categorised the creative and non creative children according to certain characteristics, these children showed little difference based on measures of creativity using the TTCT criteria. An explanation which can be offered for this variation is that there is no one way of identifying creative and non creative children. This, as it has been shown, will depend upon what is valued and the understanding of what creativity is which means that its indicators are not universal. It is possible that a test which examined children on indicators outlined by the

teachers interviewed would produce a distinct difference between creative and non creative children. It must be mentioned that TTCT measures of creativity were not mentioned by the teachers interviewed as indicators of creativity, such as originality (producing unique ideas) and fluency (producing many ideas). Another possibility is that the test itself is not a good and valid measure of creativity. An even more likely explanation is that teachers in Pakistan have little competence in identifying creative children.

Table 11.5: TTCT scores of children judged by teachers as creative and uncreative

TTCT Creativity measures	Creativity scores of children					
	Creative (N=119)		Less Creative (N=16)		Not Creative(N=12)	
	Mean Score	Sd	Mean Score	Sd	Mean Score	Sd
Fluency	20	9	16	4	19	8
Originality	15	8	9	5	13	7
Elaboration	6	3	5	2	6	2
Titles	1	2	0.7	2	2	3
Closure	6	4	4	4	4	2
Creative Strengths	5	3	4	3	5	3
Creativity Index	80	24	68	14	79	22

Source: TTCT Scores of 154 Pakistani children

11.4: Comparison of teacher definition of creativity and indicators used to identify creativity

Some of the elements of creativity used to identify teacher views on indicators of creativity were also used to identify their views on definitions of creativity (refer to Chapter 10 Table 10.1). A comparison of these is shown in Table 11.6 and in this regard three patterns emerge.

Table 11.6: Comparison of definitions of creativity and indicators used to identify creativity

Elements of creativity	Percentage of teachers using each indicator of creativity	Definition	Percentage of teachers rating each element as a definition of creativity
Produces original work/ideas	95	Producing something new	88
Modifies and changes ideas/work	89	Modifies and changes ideas	84
Shares ideas with others	81	Self expression	84
Shows independence	80	Being independent	63
Can create things in the mind (imagine)	77	Using imagination	93
Tries out things even if they might not work	76	Taking risks	87

Source: Teacher Survey N=1008

The first is that some items are rated higher as indicators than definitions such as 'shows independence'. Second, some items are rated higher as definitions but not reported to be used as indicators such as 'imagination' and 'try out things even if they might not work - risk taking' by as many teachers. Third, some elements are regarded as both definitions and reported to be used as indicators by almost same percentage of teachers such as 'producing something new,' 'modifies and changes ideas' and 'self-expression' (share ideas with others). Of course these variations, showing both differences and similarities, may be related to the way each response item was translated, interpreted and understood in both sections by the teachers.

The inconsistencies in the responses to the same elements under different sections of the questionnaire indicate that what the teachers believe is the meaning of creativity does not necessarily translate into the actual practice of recognising it, as shown. The importance of

this is that we cannot then assume that what teachers believe is what they will practice because they can have a view of creativity but their practice may not be shaped by this. Rather teachers may identify those aspects which are valued in their teaching such as for example 'rote memorisation'. The indicators which the teachers identify or are identifying are perhaps dependent upon what they are used to seeing or are expected to see in children as part of what is valued in their teaching and what is assessed. In a study on teacher views and science education Johnston (2005) also reports that 'there was very little correlation between their [teachers] espoused views, [on science education] planning and practice' (p.95).

In this chapter the findings related to the indicators of creativity used by teachers to identify children's creativity have been described. This leads to the question of methods used by the Pakistani teachers to develop creativity which is discussed in the next chapter.

CHAPTER 12

HOW IS CHILDREN'S CREATIVTY BEING DEVELOPED?

In this chapter findings are presented about the development of creativity. These draw upon the data from the policy documents (including the National Curriculum), teacher survey, science textbook, and classroom observation. The findings from the survey are compared with those from classroom observation. The findings from classroom observation are presented using the indicators of the Classroom Creativity Observation Schedule. The findings are also compared with those from other research. Lastly there is a discussion which includes comparison of guidelines as given in the policy documents, national curriculum, scope in the textbooks and the actual classroom practice.

12.1: National Education Policy and National Curriculum

In the National Education Policy, 1998-2010, the section on Innovations in Teacher Training in elementary education states as the second of the twelve points that:

> The new concepts such as active learning, development of critical thinking and creativity shall be encouraged (Government of Pakistan, 1998, p.31).

This policy does not discuss anywhere else the issue of developing creativity in children, although it states that 'character building, oriented towards humanism, tolerance, and moral build up on Islamic lines at elementary level shall be assigned top priority' (Government of Pakistan, 1998, p.28). This perhaps indicates the not so high place offered to creativity in education. The Green Paper for the review of the above education policy states that:

> ...if the policy makers primarily respond to the economics only, they will end up

> producing pupils with great earning abilities. However, this does not ensure the pupils thus trained would have sufficient other human attributes like integrity, moral values, compassion, imagination, creativity, critical thinking and understanding (Aly, 2006, p.4).

The White Paper for the review of the same education policy also states that the vision and purpose of an education system should be to:

> ...raise highly knowledgeable, skilful, productive, creative and confident individuals who have advanced reasoning and perception of problem solving skills; are committed to democratic values and human rights; are open to new ideas; have a sense of personal responsibility; are committed to moral values; have assimilated the national culture; are able to tolerate and value differences in opinion, faith and culture; have empathy towards all of humanity; and can participate in the productive (Aly, 2007, pp.4-5).

As can be seen, policy documents propose an education system that produces students who exhibit many attributes, including creativity. Creativity is not a priority, but it is regarded as an essential quality.

The curriculum documents also suggest developing creativity as part of teaching the subjects. For example, in the National Curriculum for Mathematics it is stated that:

> ...teachers' role has been rerouted that shifts from dispensing information to planning investigative tasks, managing a cooperative environment and supporting students' creativity in developing rational understanding of the concepts of mathematics (Ministry of Education, 2006, p.2).

The National Curriculum for General Science promotes an 'inquiry-based curriculum' which, it is stated:

> ...dictates inquiry approaches in teaching, if the development and enhancement of students' ability to think scientifically, critically, and creatively is an expected outcome (Ministry of Education, 2006, p.6).

The Science Curriculum also states that it:

> ...intends to engage students in asking and answering meaningful questions. The teacher will pose some of these questions, while the students will generate others. Generally these questions are: why...? How...? and should... And there are three basic processes used to answer these questions. Scientific inquiry addresses why questions. How questions are answered by engaging in the problem solving process and should questions are answered by engaging in decision making (Ministry of Education, 2006, p.6).

Problem solving is further elaborated upon as involving:

> Proposing, creating and testing of prototypes, products and techniques in an attempt to reach an optimum solution to a given problem (Ministry of Education, 2006, p.7).

In the National Curriculum for English Language it is stated that:

> Such activities are to be incorporated at each grade that cater for the progressive cognitive development from lower level intellectual skills of simple knowledge and comprehension to higher order skills of analysis, synthesis and evaluation so as to

nurture the ability of reasoning, problem solving, critical thinking and creativity (Ministry of Education, 2006, p.3).

All three of the curriculum examples, given above, include making arrangements for the development of children's creativity. A fuller analysis of the class five science curriculum, however, showed that 70% of the learning outcomes (Table 12.1) belong to the lower level thinking type which includes knowledge, comprehension and application. These place less emphasis upon uniqueness and originality. This indicates that this curriculum, as an example, accords a lower priority to developing higher level thinking skills because only 11% of the outcomes belong to the synthesis category which 'most clearly provides for creative behaviour' (Bloom, 1956, p.162).

Table 12.1: Classification of student learning outcomes from the National Curriculum for General Science (class five)

Category of learning outcomes	Verbs used to define learning outcomes	Percentage of outcomes in each category
Lower level thinking skills		
Knowledge	Define, Describe, Identify, List	38
Comprehension	Differentiate, Distinguish, Explain	27
Application	Classify, Demonstrate	7
Total		*72*
Higher level thinking skills		
Analysis	Compare Investigate	15
Synthesis	Plan Make Conduct Suggest	11
Evaluation	Predict	2
Total		*28*

Source: National Curriculum for General Science, Grades iv-viii N=81 (Student Learning outcomes)

12.2: Methods reported by teachers for developing children's creativity (survey)

Teachers reported that children's creativity *can* be developed when they are in primary education (95% N=1008) and this finding was consistent across the background variables. This indicates that teachers believe both that creativity can be enhanced and it can be

enhanced for children when they are in primary education. The former is similar to the findings in other studies (Diakidoy, & Kanari, 1999; Fryer and Collings, 1991, Sarsani, 1999; refer to Chapter four for more details). However some of the teachers in this study were also of the opinion that creativity is 'god given ability,' meaning that one either has it or does not. If such is the case then the question of its development becomes meaningless. The belief, however, of the majority of the teachers that creativity is educatable is perhaps the first step towards actually educating children for it.

Table 12.2: Reported methods used for enhancing children's creativity (closed response)

Reported methods used for enhancing children's creativity	Percentage of teachers reporting using each method
Encouraging them to give and receive feedback	97
Appreciating their (original) ideas and work	96
Competition amongst children	95
Friendly teacher student relationship	96
Making children confident	94
Teachers expertise/knowledge of teaching subject	93
Maintaining children's interest and attention	92
Supporting individual interests	92
Experiments	91
Training of teachers about creativity	91
Encouraging them to share and debate ideas and work with others	91
Encouraging them to acquire knowledge	91
Teachers joining in activities to model their own creativity	91
Teachers providing satisfactory answers to children's questions	90
Encouraging them to modify and alter ideas	90
Giving them time to develop ideas	90
Stimulating their imagination	90
Reciting Poetry	90
Using textbook lessons to teach	89
Providing sufficient space and resources	89
Through group work	88
Encouraging their curiosity	88
Encouraging commitment and hard work	87
Games	87
Encouraging them to see possible implications of ideas/solutions	87
Trips	86

Using humour	85
Decorating classroom	85
Encouraging them to compare things and make unusual connections	84
Encouraging them to make decisions	84
Allowing mistakes and encouraging them to try again	83
Encouraging independence	81
Encouraging them to ask unusual questions	80
Encouraging them to question rules and facts	76
High teacher expectations	63

Source: Teacher Survey N=1008

The methods which teachers have reported using to develop children's creativity are given in Table 12.2. The majority have reported using most of these, which suggests that they employ a diverse range of methods (or would like others to think that they do). This may indicate that there is no single way to stimulate creativity and a wide range of methods are required. In fact from the 35 response items provided 90% or more teachers agreed that they used 18 of these. Included amongst these is encouraging children to give and receive feedback and appreciating original work/ideas. And 80% or more teachers agreed that they use a further 15 methods. The methods which fewer teachers reported using include allowing children to make mistakes, encourage independence, ask unusual questions or question rules and facts (critical thinking), all of which are usually assumed to be at the core of developing creativity. This may give an insight into the rigid and routine structure under which children and teachers work. It is interesting to note that fewer teachers reported having high expectations. It was seen during the classroom observations that teachers not only had high expectations for academic performance but also for good behaviour in class and for things like high respect for parents and saying prayers. They have equally high expectations from all the children to perform well irrespective of ability. The low rating for expectations may have been due to the statement being misunderstood and perhaps taken to mean expectations from children such as gifts or favours, a common occurrence in Pakistani schools.

There were slight variations in the teachers' opinions across the background variables, however more variation was found within the responses of teachers from other public sector as compared to government and private sector. For example, teachers from this sector rated lowest 'working in groups,' 67% as compared to 81% from the private sector and 92% from the government. This may be that their teaching does not involve using many of the above methods.

The methods included in Table 12.2 consist of a mixture of categories, related to teaching, teachers and the surrounding environment. The teacher responses do not show categorization according to these. This perhaps indicates that there is not a preference for a category of methods, rather a mixture is used depending upon what works for the teachers and is seen to be effective to achieve the purpose. The methods related to teachers, for example their competence, training, interaction with children, and modelling their own creativity are rated higher than factors related to improving environment such as decorating classrooms, providing sufficient space and resources. This implies that the value the teachers place on themselves in the classroom and their role in developing children's creativity is greater than the role of the environment although one teacher was of the opinion that teachers should:

> Start from their surrounding environment and culture and then advance from here on.

The top five responses for developing children's creativity in the open comment section are given in Table 12.3. Included amongst these are a free environment and making things, as well as parental support which shows that factors outside school are also important.

Table 12.3: Reported methods used for enhancing children's creativity (open comments)

Reported methods used for enhancing children's creativity	Percentage of teachers reporting each method
Good/free -not constrained- environment	10
Making things	7
Rewarding children	6
Obtaining parental support/cooperation	5
Giving opportunity to participate in extra curricula activities	4

Source: Teacher N=98

Overall the responses in the open comment section were related to teachers, teaching, environment and children.

Table 12.4: Across research comparison of teacher views on ways to develop creativity

Cyprus Diakidoy, & Kanari, (1999) N=49	UK Fryer and Collings (1991) N=1028	Current study (closed response items) N=1008	Current study (open comment section) N=98
Imagination (100) Autonomy/ independence (100) Opportunities to correct own mistakes (92) Self-confidence (91) Critical thinking (81) Collaborative learning (57) Frequent and detailed feedback (28) Frequent praise (28) Use of external rewards (24) Emphasis on competition (18) Emphasis on knowledge acquisition (14)	Building confidence (98) Encouraging pupils to ask questions (97) Supportive family (88) Permissive atmosphere	Encouraging to give and receive feedback (97) Appreciating (original) ideas and work (96) Competition amongst children (95) Making children confident (94) Encourage to acquire knowledge (91) Stimulating imagination (90) Group work (88) Allowing mistakes and to try again (83) Encouraging independence (81) Encourage to ask unusual questions (80 Encourage to question rules and facts (76)	Free -not constrained- environment (10) Rewarding children (6) Obtaining parental support/cooperation (5)

(Figures in brackets show the percentage)

Imagination and confidence were rated very high both in this and other studies as a means of developing creativity. However independence, allowing mistakes, encouraging questions and

critical thinking were rated by fewer teachers in this study compared to others (Table 12.4). The major difference between this study and others is that competition, acquiring knowledge, feedback and providing appreciation/praise are rated lowest in other studies whereas in this study they are rated highly by over 80% of the teachers.

12.3: Cross verification of findings from the survey with findings from classroom observation

As already mentioned the majority of the teachers in the survey reported that they used most of the methods given in Table 12.1. In fact 80% or more reported using 33 of the 35 methods listed. During classroom observation, however, it was found that 11 of these were not used at all, 20 were used in some limited form and four had the potential to be used. There is a need to be cautious in these findings because they are only from 14 schools as compared to the survey which was conducted in 1008 schools. Nevertheless, the differences are substantial.

The potential methods shown below were *not* being used by any of the teachers observed:

- Reciting Poetry
- Encouraging them to see possible implications of ideas/solutions
- Encouraging their curiosity
- Encouraging them to question rules and facts
- Competition amongst children
- Encouraging them to compare things and make unusual connections
- Encouraging them to ask unusual questions
- Giving them time to develop ideas
- Experiments
- Supporting individual interests

- Games

Many of these methods, if used, are said to be more conducive to developing creativity. In fact methods such as games were said by one teacher to be disapproved by parents as they are of the opinion that 'children play games all day and school is for studying'.

The methods for which potential existed are as follows:

- Encouraging them to modify and alter ideas
- Stimulating their imagination
- Encouraging them to share and debate ideas and work with others
- Teachers joining in activities to model their own creativity

However, these were not encouraged as observed in one of the schools during an Urdu lesson. In this children were required to write a story 'autobiography of a book'. The class was divided into two groups where they had the potential opportunity to generate ideas, use their imagination, share ideas with each other and for the teacher to model her own creativity. These opportunities were not availed by the teacher; rather the children were instructed to look at the original story, 'autobiography of a pencil' and substitute the word 'pencil' for 'book' or to copy the story given in the 'guidebook'. This is a book, for each textbook, containing the answers to end of unit questions and is used because, as one teacher said:

> ...the text given in the textbook is difficult to understand so the guide is used. Students can learn and rote memorise the answers from the guide, because the exam questions are set from the guide.

Another teacher said that:

> The longer answers are given in simplified form in the guide, which is why it is used.

In another school the teacher demonstrated her own creativity in the way she referred to social studies and science. She has called social studies ‘travelling the country’ and children are told to ‘travel the country by studying social studies’. Science she has called ‘journey of the sky’ and tells children to travel through space when reading science. However such phrases were not observed being used during actual teaching. It is believed that if there is lack of creativity in their teaching teachers will ‘structure and control all aspects of learning’ and this restricts creativity (Johnston, 2005, p.99).

The methods which were observed being used in some form are the following:

- High teacher expectations
- Allowing mistakes and encouraging them to try again
- Decorating classroom
- Trips
- Using humour
- Encouraging commitment and hard work
- Using textbook lessons to teach
- Providing sufficient space and resources
- Through group work
- Encouraging them to acquire knowledge
- Teachers providing satisfactory answers to children’s questions
- Friendly teacher student relationship

- Making children confident
- Teachers expertise/knowledge of teaching subject
- Maintaining children's interest and attention
- Training of teachers about creativity
- Appreciating their (original) ideas and work
- Encouraging them to make decisions
- Encouraging independence
- Encouraging them to give and receive feedback

These were not used for developing children's creativity but as assistance for rote learning and regurgitating information given in the textbooks. A detailed discussion of classroom observation is given after the findings from the textbook analysis.

12.4: Teacher training

Majority of the teachers (91%) in the survey reported that training about creativity was used for developing children's creativity, and 31% of these named 35 organisations working for this purpose between them. Included amongst these are government training institutes such as Directorate of Staff Development (DSD), semi government organisations such as National Commission for Human Development (NCHD), NGOs such as the National Rural Support Program (NRSP) and individual schools. The top rated organisations included DSD, which is responsible for teacher training in Punjab and NCHD. NCHD and DSD have collaborated to develop creativity related material including potential teaching methods as well as conduct training (researcher's own experience). However since research was not conducted in this area it is difficult to make further comments about the quality of material or implementation of training.

12.5: Primary school textbooks

More teachers in the interviews (N=8) and the survey, (over 60%), reported that the science textbook develops children's creativity (Table 12.5), which is far more than any other reported textbook. Other textbooks were also mentioned which shows that perhaps many of these contain material to stimulate children's creativity. This finding is different to some other studies in which science was regarded as less creative than other subjects such as English, and maths was regarded as least creative (Johnston, 2005).

Table 12.5: Percentage of teachers reporting textbooks that help to develop children's creativity

Class 5 textbooks	Percentage of teachers reporting each textbook
Science	61
Mathematics	13
Social studies	11
Islamic Studies	10
Urdu	9
English	7

Source: Teacher Survey N=1008

Some of the teacher's comments about certain textbooks are as follow:

> Creativity is enhanced by Urdu because it is the national language, Islamic studies because it teaches things related to Islam and from Science children learn how to experiment.

> It is not just through teaching of Science that children's creativity can be enhanced but rather it is a combination of other subjects as well.

Another teacher felt the science textbook enhanced creativity because:

> Children get to for example experiment, get to learn new things.

Teachers were also asked which textbook chapters developed children's creativity. In this more teachers outlined chapters from the Science textbook and the top three, rated for developing children's creativity, are shown in Table 12.6.

Table 12.6: Chapters in the science textbooks that enhance children's creativity

Top 3 reported topics that enhance creativity	Percentage of responses for each chapter
Structure of Plant	14
Sound	9
Changes that take place in matter	9

Source: Teacher Survey N=418 Science

The science textbook was further analysed by the researcher, and it was found that the structure of all the chapters was very similar and the questions and activities contained at the end of each were framed in such a way as to stimulate lower level thinking skills of knowledge and comprehension. This suggests the aim of the textbook is knowledge acquisition. Only 4% of the questions belong to the synthesis category which is related to developing creativity (Table 12.7). This low occurrence of creativity promoting material in the textbook has also been reported in other studies from other countries although these were not science textbooks (Wechter, 1996; Nurse, 1969; Yeap, 2002; refer to Chapter four for more details).

Table 12.7: Classification of questions from the science textbook

Category of questions	Percentage of questions in each category
Knowledge	75
Comprehension	10
Application	2
Analysis	4
Synthesis	4
Evaluation	5

Source: Science textbook, 2006 N=128

Some examples of questions belonging to each of the six categories above are given in Table 12.8

Table 12.8: Examples of questions of comprehension, application, analysis, synthesis and evaluation from class 5 science textbook

Category	Examples of questions
Comprehension	What is energy, describe with examples describe with examples from your surrounding the change in energy from one form into another Separate conductors from non conductors.(options given)
Application	When a hot iron rod is cooled what happens to its length.
Analysis	Write a note on the relationship between living things and energy How is rocket different from aeroplane? Explain the difference between conductors and insulators
Synthesis	What happens if vinegar is added into baking powder How can we prevent water from being polluted State one activity to explain that material medium is needed to transfer sound from one place to another.
Evaluation	Prove that the forces for action and reaction are equal and work in opposite directions Prove that heat transfers from hot things to cold thing How will you prove that some surfaces reflect more light than and others less How will you prove that current can only flow through a complete circuit?

Source: Punjab Textbook Board, 2006, Class 5 Science Textbook

During teacher interviews there were diverse views related to the type of questions in the textbooks which develop creativity. Some reported that all questions and exercises enhance children's creativity, others specified questions requiring 'yes/no answers,' and a few said 'straight forward' questions which require children to give an answer such as the following questions:

- Write a definition of fertilization
- How do fruits and flowers disperse?
- Write names of asexual reproduction in plants?
- What is meant by grafting?

- Fruits and seeds leave the plant before ripening (tick is correct or cross if incorrect)

It is interesting to note that all questions outlined are the knowledge type or 'closed questions' where children are expected to recall the given knowledge and which are used to 'check the retention of previously learned material' (Blosser, 2000, pp.3-4). There was divided opinion on questions which required children to identify true/false statements but MCQs were not regarded as conducive to development of creativity.

Diagrams, it was said, enhance creativity because they 'illustrate everything' and show 'how things work'. Some of the diagrams referred to included 'internal structure of a flower and fruit'. These illustrations are labelled in detail in the textbook with names of the various parts of the flower and fruit such as seeds, oval, anther, stigma, ovary, pollen tube, pollen grains. Another example given was the diagram to illustrate steps for grafting (Punjab Textbook Board, 2006, pp.1, 6). These diagrams are pictorial representations of the information in the text and very detailed, but just having the diagrams is not sufficient to enhance creativity. Presumably, it depends upon how these are used.

Although teachers have indicated that activities requiring practical work/experiments develop creativity, (something also widely claimed by other authorities for example Craft, 1997; Klein, 1982), it was found in classroom observation that such activities are not actually implemented. There were no experiments observed even in lessons which required children to do so. Instructions for experiments were treated like other text in the textbook and the questions accompanying the activities requiring children to do experiments were answered and explained by the teacher. For example in one school there was an activity in the textbook instructing children to conduct the following experiment:

> Take a piece of ice in your hand
>
> You will see that this will soon change into water. Just think why ice has turned into water?

Then an answer is given in the text as:

> The heat from the hands has melted the ice. From this we can say that heat and ice reacted which resulted in water.

The teacher in this school dealt with this activity like this:

> ...take a piece of ice, if there is wind it will turn into water, you see that don't you (referring to children seeing this happening in homes), the children answered yes.

The second activity was 'can you tell why wax melts?' (referring to a picture of lit candle with the flame and candle labelled). The teacher referring to melting of wax said 'if you haven't seen this then when you go home observe this happening'. One of the obstacles highlighted by many teachers was that science equipment for experiments was not available in schools.

12.6: Classroom observation

The findings from the classroom observation are presented within the CCOS framework of motivational climate, teacher role in encouraging convergent and divergent thinking, pupil initiative in control of instruction, pupil teacher relationship, pupil-pupil relationship, teacher pupil relationship, teacher group approach and teacher encouragement of unusual responses.

12.6.1: Motivational climate

The teachers actually did not take any special measures to motivate children. The latter seemed to be self motivated and regularised into the teaching pattern, familiar with the routine and happily participated in the very structured activities. The positive motivation from the teacher was in the form of appreciation by saying 'well done,' 'ok,' 'sit down,' a nod or a slight smile. These were all in recognition of children doing as instructed and producing correct answers or reciting correctly. However, even these were very rare and the children appeared satisfied when they did something correctly and received instruction for what to do next. This could just be a set daily routine which children have become used to and participate in because they are expected to.

There was harsher treatment for those who made mistakes but this did not seem to de-motivate the children. Rather it seemed to act as a motivation to relearn and redo. When children did not know their 'sabaq' there was instant disapproval, shown in the teachers facial gestures, tone of voice and making verbal comments such as 'why have you not learnt it,' 'don't you learn your sabaq properly,' 'don't you remember,' 'did you learn it from home, no you didn't do it did you' and asking the children to stand up, learn it and recite again. Some teachers had the following to say to children not performing as expected:

> How will you complete the syllabus... punishing you all the time doesn't look good.
>
> No, this is not correct, remove the scarf from your mouth, sit up straight ...stand up and learn it.

Motivation was also developed by creating a sense of urgency such as:

> Please hurry up, you still have to read science.

The emphasis on punishment showed the harsher side of the teachers. For example, one of the teachers was heard hitting a child (not an uncommon occurrence in schools) and saying 'you have never seen a slate before, you are not a human being you are an animal'. This would seem very harsh and not show a friendly teacher student relationship. It is considered a way for the teachers to ensure that the children performed and developed good behaviour. It is difficult to say what impact this had on the learning motivation of children. In a few cases in which this was observed the children recovered very quickly and returned to their work. In conclusion the motivational climate seemed to be high, children were at all times charged and ready to do the given work, but again one of the problems was the style of work they were doing which was not obviously conducive to the development of their creativity.

12.6.2: Teacher role in encouraging convergent and divergent thinking

The role of teachers was only allowing children the opportunities for convergent thinking, which on their own will not stimulate creativity. Divergent thinking is also required. The purpose of the lessons was solely presenting information from the textbooks. The children rote learn this and recite it back. The emphasis was on producing correct answers. There was no opportunity or time given for children to produce original ideas, express their opinions, speculate, identify implications, experiment, suggest improvements or find different uses for common objects. There were no activities which would take children towards divergent thinking such as for example writing original stories or finding different ways to solve a problem.

In two schools it was observed that there was the potential opportunity for children to express their opinion and some space for divergent thinking. For example, in one government boy's

school the teacher was teaching ‘sexual and asexual reproduction’ in plants in the science lesson. Speaking about ‘dispersion’ he asked the children:

> Well how is it that you don’t sow seeds and things just grow?

This question had the potential to stimulate children’s thinking and generate a number of possible answers. However, the teacher did not wait for children to respond and provided the answer. In another government girls school the teacher was teaching the Urdu lesson. In this the story being used was about the life experiences of a pencil, and the pencil was the character narrating the story. In comparison to much other material this had the potential of stimulating children’s imagination and act as a stimulant for encouraging children to be creative. The teacher used this material in exactly the same way as any other material, which is, giving information and getting children to learn and recite it. Even for one of the questions where children were required to write a story, ‘autobiography of a book,’ the teacher told them what to write rather than leaving them to use their imagination to produce something original.

12.6.3: Pupil initiative in control of instruction

All activities were teacher directed, in total control throughout the lessons, delivering very structured lessons. The decision as to what to do in the classroom was also taken by the teacher, although at times children were asked if the amount of text given for rote memorising was enough but even in these cases very few children responded. The general lesson format for all subjects was children reciting the previous day’s material and the teacher giving new text/answers to learn for the next day. Lessons were usually whole class activities in which children were given instructions for what to do.

The teachers announced an activity/assignment and then presented material from the textbook by reading it to the children, or asking them to read from the textbook, giving passages or answers to rote learn and then children worked independently. Even in these cases teachers closely supervised. For example, in one school noticing that the children started their independent reading in a fast manner, the teacher said 'read slowly, slowly'.

The following is an example of children reading out the text while the remaining class followed. This was a class four Islamic Studies lesson. The teacher said:

> 'Today we will read about things which have been created by Allah. First tell me without looking at the book what things have been created.' The teacher quickly provided the answers saying 'Allah has created air, water, without which we would not be able to live'. She then asked a pupil to stand up and read the text from the textbook. The teacher followed the text from the textbook in her hand and corrected the girl when she made any reading mistakes, asking her to re-read some words again as they were difficult. As one girl read the text the remaining were told to listen carefully. Once all the girls had taken turns to read, the teacher said 'can everybody read this, will you be able to rote learn this much?' The teacher also explained the text in her own words as well. She gave the children the amount of text they had to learn, and instructed them to re-read it once more independently and ask if they don't understand.

There were no pupil questions (expect for clarification and understanding) or suggestions which may have showed students taking control either of the content, speed, direction or method of teacher instruction. Hence there was no question of teacher taking this into account, becoming flexible to adapt the lessons and direct activities to suit emerging student

suggestions, needs and interests. However a few teachers did mention children participating in extra curricula activities according to their interests and competence such as dancing, singing and taking part in plays.

12.6.4: Pupil-pupil relationship

12.6.4.1: Children refer positively to success of others/ Children refer negatively to success of others

It was found that in only two of the 14 schools were children referring positively to each other's success. This was non-verbal, in the form of children exchanging smiles when they successfully recited a piece of text or an answer to the teacher. In the remaining schools children were neither referring positively nor negatively to each other's success. However when children gave a wrong answer or could not answer there was a reaction from other children in that they raised their hands to answer.

12.6.4.2: Children help each other/ Children are reluctant to help each other

Mostly the students were dependent upon the teacher for help or the teaching was so structured that there was not an opportunity for children to work together, support and help each other. Some examples of children helping each other were seen when they were doing the work given by the teacher, or were about to go to the teacher for recitation. They also asked each other about home work (what was it or how much they had to learn). For example in one private school when the students were going one by one to the teacher to recite their sabaq, one of the girls who was next in turn asked her friend some words from the textbook. In another private school there was a maths lesson, the teacher gave a question and asked children to solve it. The children gathered around the student who could help and they worked together.

Children were observed being reluctant to help each other in a few schools but this was either in test type situations or in situations where they were required to work individually and there was strict supervision. An example of a school where children were reluctant to ask and get help from each other and turned to the teacher was a government boy's school. In this the teacher had read some part of the science textbook to the whole class while the students followed the text from their own textbooks. After finishing they were instructed to return to their seats and learn this text. The teacher was watching and supervising the children so closely that they very rarely spoke to each other. When there was an exchange between the students they first looked to see if the teacher was watching them. The teacher on catching anyone talking would remind them to concentrate with comments such as 'learn the sabaq it is difficult'. As the supervision relaxed the frequency of exchanges amongst children increased. But it is fair to say that children were expected to work individually in learning the given work and help was readily available from the teacher, so students perhaps did not need to ask each other for help anyway.

12.6.4.3: Children accept without comment differences in individual capability or response/ Children make fun of or speak about others because of difference in capability or response

During teaching all children were observed getting along with each other without making any comments about each other's differences. However during the administration of the TTCT children did make fun of each other. For example in a private school one of the boys had recently enrolled into this school from another location. His accent was different to the local children speaking Punjabi in his own dialect rather than Urdu. One of the girls upon hearing him speak commented 'Miss we don't understand his language'. In another private school one

of the girls who seemed to be the academically weak was addressed by her friend as if she was inferior to her.

12.6.4.4: Children express appreciation of classmates unusual or different responses /Children make derisive comments or laugh at unusual and different responses of classmates.

The teaching did not require children to generate unusual responses therefore the children's reactions to these could not be observed. However when the TTCT was administered some children did provide unusual responses or what seemed more unusual to the other children. In a government boys school one of the boys who appeared to be academically weak and had reading and writing difficulties became centre of attention when he needed help to write titles and also when he generated titles such as 'cartoon'. This resulted in children bursting into laughter of ridicule. The child became embarrassed at what he had said. This shows that generating anything out of the ordinary is unusual for the children and for those that may want to it is not a safe environment which is so necessary to encourage children to take risks which is seen as an important determinant of creativity.

12.6.5: Pupil interest (Pupil-teacher relationship)

12.6.5.1: Responds eagerly/reluctant to respond (do not volunteer) (students)

Almost all children responded promptly to their teacher irrespective of whether the issue was academic or related to discipline. This reflects the teacher authority and the children's respect and obedience for this authority. Some teachers appeared more matter of fact maintaining the authority and ensuring the children did their work while others seemed more approachable for the students. The aim of the teachers was not so much to focus on establishing a friendly relationship with the children but on ensuring children achieved what they were expected to.

However this does not mean to say that they did not show care or affection. For example a student, while reciting her sabaq, said ‘I feel scared’ and the teacher replied ‘my dear what is there to be scared of, just recite the sabaq’.

The children responding promptly also shows their readiness and preparedness which indicates to the very structured nature of the lessons where children are very much aware of what is expected of them. This raises the question of the extent to which children would respond eagerly in situations which were not as structured and children were expected to move beyond just reproduction of learned facts. It was found in this regard that during the TTCT, when children were asked about the picture on the front page of the test booklet, there was a slow start with very few children eagerly responding. This shows that there is an atmosphere of being pre-prepared and then ready to respond rather than respond in uncertain situations for which they are unprepared.

Children were expected to respond to and did so promptly, to teacher instructions and questions. Responding to teacher instructions was in the form of coming to the teacher either as a group or individually. In both situations it was to take new sabaq or recite old sabaq, or do both. In this regard the instructions consisted of ‘open your book to...’ for example ‘structure of the plant’ and ‘take out your copies’ (for checking homework) or ‘take out the sabaq for the test,’ ‘show me which chapter it is,’ ‘do you know the sabaq or will you need to learn it,’ ‘close your books,’ or ‘after five minutes I will take your test’ and then after this time the teacher told the class ‘close your copy no matter how much you have done’ and the class did so. From these observations it appears that teachers ensured that they were heard and the children immediately responded to them. There is an element of compulsion for the teacher and student, for students to ensure that they respond and for the teacher to ensure that

the student does respond. The immediacy with which children responded can be said to be eagerness of the students to respond may be not so much out of interest and pupil-teacher relationship but more so because of the structure they are expected to follow.

The second type of academic situation where students were expected to respond was when asked questions by the teacher. The students responded to questions such as ‘is this enough?’ after the teacher finished giving them some text to learn, in response to which students happily replied ‘yes’. Other questions to which students responded included those related to the sabaq being read. In this case the teacher often first provided the information then asked the question and then children repeated the provided information. The following is an example from a science lesson from a government girl’s school:

> ‘Both living and non living things are part of our environment, what are they part of’ and the children repeated ‘our environment’. Then she said ‘today we will read about plants making their own food’ and then asked the children ‘what are we going to read’, and the children repeated ‘plants make their own food’. She then wrote the title on the blackboard and asked the children again ‘what will we read’ and the children repeated the same again.

Other instances where children responded to the teacher was when they were asked ‘the work that I gave you yesterday to do, have you done it?’ or ‘did everyone read namaz?’ At times when the teacher provided an answer to a question, or just a piece of information, the children responded in affirmation saying ‘yes Miss, yes Miss’. Similarly when the teacher explained something such as structure of a plant the children responded by nodding in agreement and murmuring ‘yes yes’. Some teachers ensured a response by asking individual children, ‘you tell, who will tell’ and one girl put her hand up saying ‘I will’. Discipline issues, although

very few, were quickly dealt with, without causing disruption to the lesson. These included children talking, or not focusing on their work, slouching and not sitting up.

Observation suggests that it is a necessary element that children respond to the teacher in all issues including discipline. This is because the teacher's authority appears to be of paramount importance and any digression may seem a challenge to this authority. No challenge to this authority was observed and may not be seen because there is a culture of respect for elders in the society as a whole. The teacher is regarded as a place of respect which perhaps prevents children from challenging and since the lessons also do not allow or encourage children to challenge then they wouldn't rather they would obey which may be mistaken for children's interest. There were very few examples where students failed to respond promptly and even these were the type where children required more time. The children immediately responding may be due to the compulsion to act upon the teacher's instructions because there is no choice of not responding, rather than respond because of interest in the work/activity. It also highlights the formal student-teacher relation.

12.6.5.2: Make courteous remarks to teacher/Make rude remarks to teacher

The children had a very courteous attitude towards the teacher with no question of making any rude remarks. However this courteousness and lack of or no comments to teacher may produce an atmosphere where children are hesitant or even fearful, which may not be conducive to children's creativity.

12.6.5.3: Receiving teacher criticism in a positive manner/are negative or irritable in response to teacher criticism

During lessons teachers were critical of children over a number of issues. These included not reciting sabaq correctly, making mistakes, not being attentive, misbehaving or not having

correct stationery. The children accepted these without becoming irritated and reacting inappropriately. Rather they responded in a way that the teacher required. One of the only teachers to be critical of children blindly following was from a private school. It was during the maths lesson when she explained a question and while doing so said 'look this way at the blackboard, I have explained this question before'. She did one question on the blackboard and asked the children 'who says this question is complete, I left it incomplete, I thought someone might think about it and realize this is not complete'.

Making mistakes was not encouraged and if mistakes were made children were expected to relearn and redo. Children made mistakes during reciting their sabaq and answering learned questions (written and verbal), as well as during dictation. There was an even greater emphasis on correcting the mistakes made than appreciation for the work done and the effort made. This obviously was a way to discourage children from making future mistakes. In one school the teacher checked children's answers to a science question about 'producers'. He circled incorrect words, wrote corrections for children to rewrite, warned children not to overwrite, cross out or use whitener. This according to the teacher prevented them from forgetting the words and repeating such mistakes in the exams so that no marks are deducted. There was particular emphasis on neatness of writing in all schools. This teacher also preferred good handwriting and children were given extra practice for this as neat writing effects their position in exams. This finding is similar to Sen and Sharma's study (2004) of Indian teachers (refer to Chapter four).

Children were appreciated for producing correct answers or correctly regurgitating learned text and not for producing original ideas and work. This obviously has implications because providing appreciation for correct answers only strengthens the children's belief that this is

what teachers expect from them, which means that they may find anything beyond this as unusual, abnormal and wrong. This was found during administration of the TTCT, when children asked 'what if we get it wrong'. The fear of getting things wrong and being right answer fixated may prevent children from taking risks and doing something new, both important for creativity.

12.6.5.4: Work intently with little sign of attention wandering/are restless, gaze about, doodle, day-dream, whisper

In most schools the children worked intently with little sign of attention wandering. In one school where the lesson was longer than any other observed and the children were just expected to sit and learn a given passage of text, children did show signs of wandering towards the end part of the lesson. This, the teacher immediately took notice of and maintained their attention by refocusing them. In another school the teacher noticing a girl messing around, looked at her and said 'hey what is the matter...can't you sit still'. Besides verbal comments teachers also used non verbal gestures, such as giving a look of disapproval, putting fingers to their lips to indicate to children to keep silent.

The children in many of the schools chanted out loud the text in order to learn it, rocking back and forth and closing their eyes in concentration which also seemed to maintain their attention. The presence of the teacher, sitting at the front of the class watching the children as well as pacing up and down watching as children sat learning their sabaq also helped to ensure the children worked intently.

The interaction during the length of the lesson between the teacher and the children also helped to maintain attention and ensure children worked intently. Also teachers involving the students, asking them if it is enough sabaq, if they had finished revising, asking them to repeat

things, individually being given sabaq and listened to, standing to learn to recite again if made mistakes the first time, all helped to keep children alert and focused. The lessons were tightly controlled, fast paced and short, leaving little opportunity for the student's attention to divert. An example of the fast pace was in one government rural girls school when the teacher was teaching Islamic Studies lesson and finished it in less than 10 minutes before moving onto the Urdu lesson.

12.6.5.5: Promptly take part in activities/Slowly take part in activities

Children in all schools promptly participated in the given activities. These included:

- Being given a text to learn/read
- Learning text to recite
- Dictation
- Group work for story writing
- Reciting previously given sabaq
- Answering a question related to a read text
- Writing an answer to a given question
- Doing maths questions
- Checking own work such as dictation against the original text
- Repeating text after the teacher
- Repeating tables after teacher and learning tables

There were two examples of two girls from two schools, who did not promptly participate at the time the teacher requested them to. For example in one school the children came to the teacher as soon as they were called except one girl who said she was not ready to recite her sabaq. In response to this the teacher said 'whatever you remember just recite it'.

12.6.6: Teacher-Pupil Relationship

12.6.6.1: Teacher responds positively to pupil contribution/Teacher responds abruptly and negatively to pupil contribution

The contribution asked for by the teachers and given by the students was reciting sabaq, answering learned questions or in the case of maths solving a sum. Teachers responded positively to correctly recited answers or text by saying ok, sit down, giving next sabaq, smiling, nodding their head or just saying nothing and moving onto the next child. The questions which did require contribution were one correct answer type. However teachers did respond more and negatively when children didn't recite correctly or made mistakes. An example of a school where a teacher responded positively to pupil contribution was a government rural boy's school. The teacher spoke about sexual and asexual reproduction. He first of all gave examples himself and then asked the children. One child responded with 'potato' as an example of asexual reproduction. The teacher listened and then moved on. In another school the children's contribution was in the form of answering questions which required them to repeat the information given by the teacher. For example, the teacher said 'living and non living are part of our environment' and then asked 'what are they part of' and the children repeated 'our environment'.

12.6.6.2: Teacher using 'we' approach in talking to children/Teacher uses I approach in talking to children

In majority of the cases the teachers used neither 'we' nor 'I' approach when talking to children. The teachers who used the 'we' approach treated the whole class as a group. For example one teacher started the lesson with:

> Today we will read about things which Allah has made...air, water, without which we cannot survive.

Another teacher, as he moved on from the class reading the science text book onto the related questions, said 'we have just read this' and even in referring to the children it was to all the class saying 'come on my sons come on' encouraging them to hurry up as they returned from break. In a girls' school when the teacher was checking the children's written work and upon noticing that a letter was missing she said 'can we see 'lam' (name of an Urdu letter) and upon starting the science lesson she said 'today we will read about plants making their own food' and in the start of the Urdu lesson said 'next we will read autobiography of a pencil'. The teachers who used more of an 'I' approach included one boys school with for example 'the work that I gave you yesterday to do, have you done it' and 'for tomorrow I will give you work'.

Irrespective of whether the terminology used conveyed an 'I' or a 'We' approach the teacher was the authority, although the 'we' approach conveyed a feeling of togetherness of the group but that was because the class was working together although even within this the children were individually treated because of reciting and taking sabaq routine.

12.6.6.3: Teacher is attentive to pupil remarks or questions/teacher is inattentive, cuts off children

Children did ask questions and the teachers were attentive but children did not make any other remarks. They just recited their sabaq or did as instructed. In one school when the students recited answers the teacher was so attentive that she pointed out every time the child missed a word. If the answer to a question was in any way incomplete, or not exact to the original text,

she noticed and asked children to relearn. The teachers remained responsive to the children at all times but only in this limited way.

Children asked clarification questions (although rarely) but not unusual questions and the teachers encouraged the former rather than the latter. The questioning is mostly from the teachers and children were expected to provide answers, but even in these cases teachers were quick to provide the answers themselves. The questions are in relation to the lesson, which as it has already been discussed consists of learning and reciting text. Some examples of teacher questions are as follows:

> ...if you have any problem ask me
>
> ...have you understood?
>
> ...ok does everyone know how to read it?
>
> ...will you manage to learn this?
>
> ...children are there any other questions from this chapter?
>
> ...any other question you did not understand?

The kind of questions which children asked was mostly to verify the instructions or information given by the teacher such as what to do for home work. The teachers satisfied the children by providing them the required answers. For example in one school a child stood up and asked where the answers were for the questions given. The teacher responded by reading from the point where the answer started from the textbook to where it finished. In another school some girls asked for clarification and the teacher satisfied them by saying ‘just a moment I will tell you’. Another child asked about something in the science lesson and the teacher said ‘I will explain this myself’.

12.6.6.4: Teacher asks opinion of children not volunteering information/teacher acts upon the advice of a few children

Teachers did not ask for children's opinion or wait for them to volunteer. The teacher's job was to ensure that every child did what she/he had instructed them to do. In fact they went as far as asking children if they had for example recited their sabaq by saying

> Is there anyone left to recite their sabaq or take their new sabaq?

If in any doubt they asked individual children by saying for example '...come and tell me your sabaq' or 'hey ...come and recite your tables'. In a few cases when for example a teacher asked the children if the text given to learn was enough the teacher just acted upon the response of the first few children that responded.

All children in the class are expected to do the same things. Everyone is expected to perform equally well therefore there is always an expectation and demand for commitment and hard work. Teachers encouraged hard work by using comments such as:

> Well done, learn your sabaq, good learn it well
>
> ...read, read well done
>
> ...learn it, it is difficult
>
> What is the matter....no studying today, are you thinking that the test you have done is enough?
>
> Who went home and had a go at doing it, just one why did the rest of you not do it?

Some teachers also went beyond the school/academic requirements and asked for commitment for saying prayers and being obedient to their parents, as the teacher in one school said:

Did everyone read namaz?

Children all replied ‘yes’

He said ‘tell me honestly’ and a few boys raised their hands.

He emphasized that ‘you should read namaz’ and ‘be obedient to your parents’.

12.6.7: Teacher group approach

12.6.7.1: Materials are ready for immediate use/Materials are not ready for immediate use

All students in all the schools had their own textbooks which is the only teaching material that was used. In two of the schools the teachers used AV aids, which were obtained just before the lesson (science). In some schools children also had their ‘guides’ but not all since it is not compulsory. The children were equipped with takhtees, slates, pencils, copies and other stationary. This immediate use of the set teaching material ensured that teachers could follow a set teaching routine and children were aware of this routine therefore not much instruction was required by the teachers. It is important to mention that none of the teachers had their own textbooks. They borrowed these from the children who were left to share with another child.

The teachers used the textbook mainly to instruct children to rote learn and reproduce the text contained within it. The exact reproduction of the given text is what the teachers expect from children and is a measure of their learning. Other more specific uses of the textbook by the teachers were:

- Reading the text to the children
- Explaining the concepts and diagrams in the textbook
- Instructing children to read the text while the class listened and followed from their textbook.

- Giving the children an amount of text to rote memorize for recitation for the next day
- Giving children text to read independently
- Verifying that children were reciting the text they had learned correctly and correcting any mistakes.
- Dictation of rote learned text

The children used the textbook to:

- Rote learn the text given by the teacher
- Follow the text when the teacher is reading it to them
- Write the text, (by copying and from memory) in lesson and for homework
- Learn the answers to the end of unit questions
- Check and correct their dictation
- Independently read new text
- Ask any words which they cannot read or do not know the meanings of

From the above one thing is clear, that children use the textbook to learn and reproduce the information contained within it and teachers use it to instruct children about what information to learn and check that they have learned it. The following is an example to illustrate one of the ways teachers used the textbook:

> The teacher instructed the children to take out their sabaq, on ‘arteries’ and to read it. The girls took out their textbooks and opened them to the required page. The teacher read some text from the textbook and showed the diagram, reading the labelled information. She then said to the children, ‘ok close your books’. The children all closed their textbooks. She then went around the class, randomly asking girls to recite

> the sabaq they had learned. She helped each child to start by reading to them the first word or few words of the sentence and asking them to recite it from memory from thereon.

At the end of each chapter in the textbook there were activities and questions. The activities were not done and the answers to the questions were given by the teacher through for example marking the beginning and end of text in the textbook, or indicating the section of the text and children highlighting it themselves. Sometimes the teachers said they write answers on the blackboard.

In many of the schools the answers were not learnt from the textbook but rather from what is called a 'Guidebook'. This is a book containing end of unit questions and answers for each textbook. These were not used by teachers in all the schools observed. Some of the questions related to 'Our Body' in the science textbook were checked from this and it was found that these were exactly the same as those in the textbooks followed by comprehensive answers. The reason given by one teacher for using the guides was that:

> The longer answers are given in simplified form in the guide, which is why it is used.

Another teacher said that:

> ...the text given in the textbook is difficult to understand so the guide is used. Students can learn and rote memorise the answers from the guide, because the exam questions are set from the guide.

The following is an example of how the questions were dealt with by one teacher and the possible implications if children could not recite the learned answers:

The teacher instructed the children, ‘open your general science book’ telling them the page number, 116 from the unit on ‘Sound’. The children read in silence. Some closed their eyes for concentration in revising. Then after 5 minutes the teacher said ‘close your books’ and took a book from one of the boys and started selecting children and asking them end of chapter questions. She asked all the children selecting them one at a time sometimes asking the same question more than once.

She asked one boy a question who could not answer it. She waited and in the mean time other children raised their hands, and then selected another child to give the answer. Children who couldn’t answer or recite were made to stand. The teacher moved onto other children and then returned to this child. If the children answered correctly they sat down, if not they remained standing. In one case a boy stood throughout the 45 minute lesson. He, after being unable to answer any of the asked questions, stood with his head down as if in shame.

Another girl was explained the question a number of times after which she was able to recite the right answer and then sat down. The teacher also repeated the question as well as rewording it in some cases if children did not understand. For example to one girl she said ‘I said in what ways does sound travel, in other words which ways it can reach your friends?’ To some children she would give the next word or a few words if they forget and then children would get started and continue to provide the remaining answer.

The teacher became angry when children failed to recite the answers as she said to one boy, ‘what do you mean you haven’t prepared’. To this boy who stood throughout the

period she asked a number of questions and he couldn't answer any and this is what followed afterwards:

> Tell me, is it difficult, didn't I explain it, did you come to school that day, why didn't you say that day you didn't understand. Tell me which question you didn't understand. Everybody which question did you not understand. Did the rest of you understand the question?

In summary the textbook is used for the children as a reading book and to learn answers to the given questions. Whatever type or category the questions belong to they are all treated in the same way, the teachers tell the children answers either by showing them the text from the textbook units or from the 'guidebook'. Hence through this the emphasis is on rote learning and reproduction as an outcome. This is typical of a science lesson and it is totally different from what has been suggested or reported from other studies about teaching of science lessons in a way that also develops children's creativity (Chapter four). As a contrast to this in an ethnographic study it was reported that the science lesson involved developing 'a passion for enquiry, discovery and experimentation...problem solving…opportunities for expression' (Jeffrey and Craft, 2004, p.80). The teachers developed curiosity, provided 'hands on approach' made learning relevant encouraging ownership and control. At the end of the science topic of 'forces' there was a day devoted to the subject, which is described as follows:

> Children move from activity to activity during the day experiencing experiments with 'force'. Children fire syringes of water at each other to see if they can wet each other. There are smiles of concentration and pursed lips as their cold wet fingers pressed harder and harder on the syringes. They push and pull, around the playground, wheeled vehicles they have brought into school, to test the best approach. They

> experiment with a series of pulleys under a covered way. They push and pull carpets, laden with bodies, around the hall. One child rubs an eye with tiredness. They wonder what's going to happen next. They look serious and perplexed. They frown, purse their lips, put fingers on their lips in anticipation and sometimes look worried as they watch the others. They tap the floor with glee, grit their teeth to make the effort, giggle as people fall off the carpets and grin as a 'a traffic jam occurs'. There is a cry of anguish as the children pretend it's hard and of glee as they speed up. They are then put into large boxes and try to push each other around the hall again, experiencing the resistance of friction. They hide in the boxes, peeping out from time to time with giggles and cries of delight. The pushing results in many red faces' (Jeffrey and Woods, 2003, p.84).

Therefore as can be seen the methods and the way the textbook is used takes children to the level of learning prescribed information and not beyond that. It is said that even while teaching contents, which is what the function of the textbook is, opportunities for developing creativity can be provided, in that:

> Content and lessons that expect students to question as well as answer, investigate as well as comprehend, and identify problems as well as solve them allow students to learn important content while exercising their creativity (Starko, 2001, p.314).

The teachers relied heavily upon the textbooks therefore it is very difficult to judge their expertise/knowledge of the subjects, although they seemed to be comfortable with their subjects and had plenty of teaching experience. It would have been interesting to see how they performed, in terms of their knowledge, if children had asked questions beyond the textbooks or if they were tested on their subject knowledge since they seemed so textbook dependent.

12.6.7.2: Teacher builds and sustains pupil interest/Teacher does not build and sustain pupil interest

The teachers sustained children's interest, although there were no fancy activities to build this up, rather it was almost the same routine lesson after lesson which allowed the teacher to achieve the objectives. Students seemed to be accustomed to the mechanical routine and had interest enough to complete each task given and then wait for further instructions. In a few schools it was observed that while this was true for older children the interest of younger children did seem to diminish. Some teachers, very few, seemed to sustain interest with humour, using AV aids, asking questions and giving incentives. The lessons were short and fast paced which also helped to sustain interest. Xiaolei and Yan (2004) also report that in teaching of English in China the class activities are 'fast-paced' (p.172) as part of their strategy to develop creativity. There was a continuous one type of momentum. The lessons were more geared towards what the teacher wanted the children to achieve with no deliberate effort to build up interest.

12.6.7.3: Children are actively involved at high point of interest/children are actively involved at a point after interest is at its peak

It was found that children were actively involved until they finished what they were instructed to do, particularly up to the point of reciting their sabaq after which their interest was maintained but slightly relaxed as they prepared for further tasks or waited for instructions. Children were involved at high points of interest, particularly in the teacher led part of the lesson.

12.6.7.4: Teacher concludes the lesson or phase while interest still holds/conclusion of lesson comes after children appear to be restless

The ultimate aim of the teachers was to ensure that they did with the children what they intended to rather than wind up the lesson early because children were losing interest. This in some schools resulted in children becoming restless and attention wandering. For example in one school the lesson was taught at the same pace throughout. Children were reciting pre-learned answers to the teacher. The children who were not reciting seemed restless, some yawned, some with heads on table and some closing their eyes in sleepiness. However to keep children alert the teacher asked them to follow from their textbooks with a warning that any one of them could be next in turn.

12.6.8: Teacher encouragement of unusual responses

Teachers did not provide opportunities for students to generate unusual responses. They only expected them to rote memorise and recite information learned from the textbooks. Hence since the situation or opportunity for generating unusual response did not exist there was no question of the teacher encouraging children for this. Children were appreciated for producing correct answers or correctly regurgitating learned text and not for producing original ideas and work. This obviously has implications because providing appreciation for correct answers only strengthens the children's belief that this is what teachers expect from them, which means that they may find anything beyond this as unusual, abnormal and wrong. This was found during administration of the TTCT, when children asked 'what if we get it wrong'. The fear of getting things wrong and being right answer fixated may prevent children from taking risks and doing something new, both important for creativity.

12.7: Summary

Having outlined the observations made in the classrooms it can be summarised that much of what is going on in the primary schools is giving prescribed sets of information which students are expected to rote learn from prescribed textbooks and verbally recite to show that it has been learned. In this the children's ability to memorize, read and write (copy, dictation) is the outcome. Blosser (2000) speaking of science education is of the view that:

> ...the ability to memorize information and recall it should not be the only-or the most important objective of science teaching (p.5).

The focus is also on children observing teachers' authority, being obedient and showing good classroom behaviour. The children are all given individual attention, expected to perform equally well, are motivated through appreciation and punishment for not doing well, are expected to produce correct answers and make no mistakes. There is no encouragement of unusual responses namely because much of the material used is not geared towards this. Even in cases where such material exists it is treated as information which children rote memorise. Any incidences of unusual responses by children are treated with ridicule by other children. Children are aware of each other's differences and are not afraid to point out any distinct differences. The relationship between pupils and pupil and teachers is positive. The lessons are totally controlled by teachers and structured to allow no room for student suggestions which may require them to change the lesson. Similar research has shown that teachers who are more controlling pay more attention to the detail and accuracy in children's work, while the low-controlling are more focused on the diversity of pupil ideas (Wodtke and Wallen, 1965). Others have also claimed that approaches which are 'highly structured, teacher-led' are not deemed to be creative as they mainly impart knowledge (Johnston, 2005, p.92).

The observations have revealed that the methods suggested for developing creativity during teaching are not being applied in any of the subjects or the schools. In fact much of what was observed is said to be detrimental to developing creativity (refer to Chapter four). Studies of teachers have shown that many of the teaching methods used by the Pakistani teachers are low rated in other studies for developing creativity, except for the study by Sen and Sharma (2004). Some of the methods suggested by the teachers which were common to other studies and this study are given in Table 12.9.

Table 12.9: Comparison of teacher views on teaching across studies

India Sen and Sharma, 2004	Cyprus Diakidoy, & Kanari, 1999, N=49	UK Fryer and Collings, 1991, N=1028
Explaining concepts practicaly Using (aids) models, maps, making diagrams Encouraging children to draw neat and correct diagrams Helping children to understand the textbook contents Children following teacher instructions	Willingness to accept guidance (12) Frequent evaluation of outcomes (16) Convergent ability (10) Emphasis on following instructions (8) Fear of failure(0) Obedience to rules (0)	Encouraging pupils to work quickly (3)

(Figures in brackets represent percentage)

In conclusion, the findings from the classroom observations show that there is little consistency between teacher views as given in the survey and their practice, something also documented by Johnston, (2005) for teaching of science. In fact if we link the findings from the policy documents, curriculum, textbook and teaching practice it becomes evident that the emphasis on creativity actually decreases as each level moves closer to implementation. For example creativity and its development are in the vision and purpose of education in the policy documents to a limited extent. In the curriculum a certain percentage of learning outcomes are creativity related. However these are not translated into textbook contents to the

same extent. In fact the number of questions in the textbook which are conducive to creativity are fewer than the learning outcomes in the curriculum. The final stage, classroom practice, shows that the process adopted encourages and expects nothing more than rote learning and regurgitation of this learning for all subjects. The teachers are however of the view (as shown in the survey) that they are using creativity conducive methods when in fact the very methods they are using seem to discourage children from being creative.

CHAPTER 13

WHAT OBSTACLES ARE BEING FACED TO DEVELOP CREATIVITY?

This chapter presents the findings related to obstacles facing teachers in developing children's creativity. It draws upon the data from the teacher survey, the Torrance Tests of Creative Thinking (TTCT) scores, classroom observation and the existing literature.

13.1: The many obstacles faced by teachers

It was found from the survey that the teachers in Pakistan reported facing many obstacles when enhancing primary school children's creativity. This is shown by the high level of agreement for many of the response items provided (Table 13.1).

Table 13.1: Reported obstacles to developing children's creativity

Obstacles to primary school children's creativity	Percentage of teachers finding each as an obstacle (N=1008)
Lack of resources and facilities	91
Lack of confidence amongst children to do creative work	90
Children have different interests	90
Parents lack of interest in children's education	88
Lack of time to prepare activities for creativity and teach according to them	88
No provision of pleasant environment	87
Illiteracy amongst parents	86
Lack of teachers training about creativity	86
Different levels of creativity in children	85
Absence of a guide in the form of a better teacher in the school	85
Poverty amongst parents	85
Some activities for creativity create disturbance for other classes	83
Shortage of teachers	82
Children not understanding things	82
Working according to the national curriculum	82
Overcrowded Classroom	81
Children's lack of interest	80
Some children do not enjoy doing creative work	77
Existing form of assessment	75
Difficult to assess creative work	72

A simple explanation for this high level of agreement could be that these are obstacles faced by teachers in general and not necessarily with regard to creativity. Otherwise, if these are the obstacles to enhancing children's creativity then it implies that teaching for creativity is a regular classroom feature, which as it has already been suggested is not the case (refer to Chapter 12). Other explanations include the teachers outlining the 'could' be obstacles if teaching were geared towards enhancing creativity. It may also be that they were compelled to select as many response items as possible thinking that 'yes' meant that their response is correct and 'no' meaning that their response is incorrect. It may also show that just as there does not appear to be a single definition or a method for enhancing creativity similarly there is not one obstacle.

Most teachers said that 'absence of a guide in the form of a better teacher in the school' (85%) and 'lack of teachers training about creativity' (86%) was an obstacle. This is consistent with the views of Esquivel (1995) who after reviewing literature concludes that:

> It seems important, therefore, not only to enhance teachers' creative characteristics and abilities, but also to train them in specific creative teaching competencies (p.191).

The two obstacles which were rated by slightly fewer teachers are related to assessment, 'existing form of assessment' (75%) and 'difficult to assess creative work' (72%). This is perhaps because the existing assessment does not inhibit children's creativity and it is easy to assess creative work, or because little distinction is being drawn between creative and non-creative work. However, it is difficult to further elaborate upon this because this research did not further investigate the existing form of assessment or involve the teachers in assessing work from the creativity aspect.

13.2: School related obstacles

13.2.1: Lack of resources and facilities

The top rated obstacle is lack of resources and facilities which was also reiterated by one of the teachers:

> In order to enhance children's creativity there are less resources and more problems due to which we have to face many problems.

In other teacher surveys, such as Sen and Sharma (2004), Fryer (1991) and Sarsani (1999), inadequate resources were also highlighted as an obstacle. Other authors have also indicated this as a barrier, including Davis (1999), Csikszentmihalyi (1996) and Poole (1980). The teachers in Sen and Sharma's study distinguished between non-teaching and teaching resources, implying that different types of resources are required. The type of resources, which the teachers in this survey felt are required include, teaching aids and materials such as AV aids (popular factor), demonstration aids, models or for some teachers there were just 'incomplete supplies for basic needs'. The equipment required in schools included 'modern facilities' such as computers, library, and laboratory as well as science equipment for experiments, as one teacher said:

> There is no library facility in primary schools where they [children] can read different interesting books so that their imagination is enhanced.

Insufficient financial resources were indicated as an obstacle, also reported by Sarsani (1999). It is worth mentioning that the percentage of spending on education in Pakistan stands at only 2.7% of GDP (Ministry of Education, 2009, p.13). Csikszentmihalyi (1996) regarded the role of resources as 'ambiguous' implying that just having resources is not enough, although

important. This raises the issue of whether attributing not being able to enhance creativity to lack of resources is something of an excuse. Else what is the nature of these needs, what is the minimum basic requirement and does this basic requirement apply to all contexts, irrespective of cultures and spending on education? Poole (1980) says that 'all too often facilities are used as an excuse for not doing something when, in fact, an alternative arrangement can open up a whole new range of possibilities which are more likely to stimulate creative responses from children' (p.199) while:

> There is clearly an inter-relationship between available facilities and the teaching approaches developed in them, but teaching can rise above the limitations of poor facilities, and even the very best facilities cannot ensure quality teaching (p.198).

However we must remember that she speaks in the context of schools which have buildings, classrooms, class displays, furniture and materials, many of which Pakistani schools do not have. Many factors outlined by Craft (2000) for developing creativity are said by the teachers in this survey to be absent from their schools and their absence acts as an obstacle to the development of creativity (refer to Chapter four).

13.2.2: Overcrowded classrooms

Around 81% of the teachers said that overcrowded classrooms were regarded as an obstacle. This study did not collect data on the actual number of children in all classes, for a better understanding of the state of overcrowding. However this data was collected for 14 of the 16 schools observed. It was found that some teachers who indicated that overcrowding was an obstacle did not actually have an overcrowding problem and some who had overcrowded classrooms did not indicate it as an obstacle. In fact 11 of the 14 teachers said that overcrowding was an obstacle. Of the three teachers that said overcrowding was not an

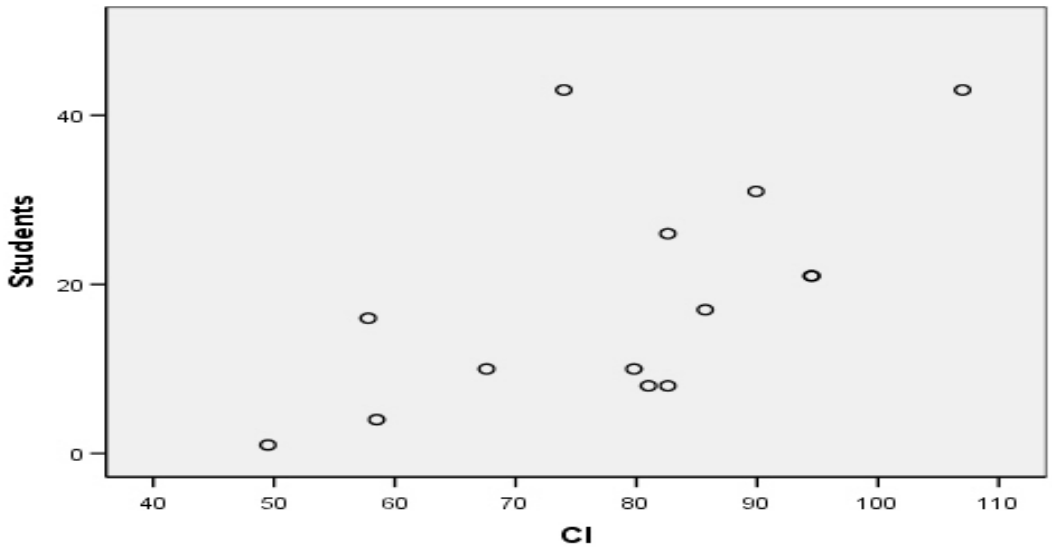
obstacle did actually have a problem of overcrowding as shown in Figures 13.1 and 13.2 below.

Figure: 13.1

Figure: 13.2

In a cross tabulation of number of children in class five and their Creativity Index (CI) score it was found that there appeared to be a scattered but clearly positive relationship between these (Figure 13.3). Hence we need to question whether overcrowding as such is an obstacle, an excuse or whether it relates to the percentage of harder to teach children in any classroom setting.

Figure 13.3: Mean CI score and number of students in class 5



13.2.3: Inadequate environment

Lack of an adequate environment was considered an obstacle by 87% of the teachers. This is less than those that reported resources to be an obstacle. The type of environment was also not elaborated upon to the same extent as resources and facilities. For example there was 'inadequate environment,' 'inappropriate environment' or an environment that was regarded as unpleasant in which 'children when they come to school, do not feel happy'. But then it could also be that physical facilities and resources are more important to enhancing children's creativity and lack of these acts as more of an obstacle. However if the type of environment, which is considered to be conducive to creativity, cannot be defined, then it cannot be planned for and removed as an obstacle. Treffinger (2000) also speaks of the context, what is termed as 'environment or the climate,' in which a person expresses and applies creativity. He says that the 'creative success is influenced by many factors that are outside ourselves, not just from traits that are inside the individual' (p.15). This raises issues of the responsibility that is then placed on the teachers, education systems and the authorities to ensuring provision of such environment and also the fate of the child at the hands of these factors.

The teachers outlining that the inadequate environment is a barrier also says something about the state of the present education system and their expectations of what it should be like. The environment was particularly regarded as an obstacle in rural schools, as one teacher said:

> In rural schools it is not possible to give the same environment which will enable to enhance children's creative abilities.

In this 90% of rural teachers said that an unpleasant environment was an obstacle compared to 79% of urban teachers. It appears that there may be more of a problem of resources and environment in rural areas which perhaps indicates a rural/urban divide. The mean CI scores

of children from rural schools were lower (71) than those from urban schools (93). These findings are similar to those in a study conducted by Madigan et al (2006) who, although using a different form of creativity assessment than used in this study, reported that grade five American and Chinese children from rural settings had lower creativity scores. A comparison of scores is given in Table 13.2.

Table 13.2: Mean creativity scores of children across different countries

	China	USA	Pakistan
Rural	1.26	1.91	70.9
City	1.34	2.23	93.2
City	1.69		
Overall	1.47	2.12	78.3
No. of Children	272	97	154

Source: Madigan, Benjamin, Hsien, 2006. TTCT results from this research

The difference in the performance of urban and rural children is higher for American children than both Pakistani and Chinese, with the lowest being for China. This could either be attributed to the sampling of children from each country or the fact that there really is a smaller difference between urban and rural children in Asian countries. This may be because of the uniformity of certain factors across the population, such as traditions, religion, political systems, uniform teaching practices and teaching material and that there are factors acting more strongly in the US which are causing a greater urban rural difference in children's creativity. Of course, it may be an underlying difference between urban and rural populations rather than a difference in resource as such.

13.3: Child related obstacles

13.3.1: Lack of confidence

Lack of confidence for children was considered as an obstacle by 90% of the teachers. This may imply that a special kind of confidence is required to do creative work as opposed to

normal routine work. Confidence has been discussed by various writers as an important trait for creativity and of creative people. Feist (1999) regards it as a 'social trait' possessed by creative scientists (p.280). Nickerson (1999) says that 'encouraging confidence' is one of the ways of enhancing creativity as 'timidity is not conducive to creativity' and 'fear is seen as a major reason why children hesitate to express their ideas, especially perhaps unconventional ones' (p.413). Shallcross (1981) also states that self confidence is included in the traits which are most commonly considered as helpful 'toward one's creative production' (p.10). However some creative children whom I met during administering the TTCT seemed weaker in their school performance as well as physically weak, and ridiculed by other children because of their unique responses in the TTCT. These are all factors which are enough to knock confidence but their scores were quite high, in fact near or above average. Nevertheless in one example, a child who was regarded as 'not confident' by the teacher had a CI score of 32 and another regarded as confident had a CI score of 99. From these diverse scores it is difficult to conclude the kind of effect confidence was having on their creative performance.

But there appears to be a consistency amongst teachers with most regarding lack of confidence to do creative work as an obstacle and making children confident as a way of enhancing creativity (87%), self confident as a characteristic of creative child (81%) and to develop confidence as a reason for developing children's creativity (87%). From this it seems that children need to be given the confidence, to produce creative work without fearing a reproach, the confidence to share the creative work with others without being intimidated and hushed in response, the confidence to stand by the creative work produced irrespective of others' reactions, and the confidence to withstand negative reactions.

13.3.2: Individual differences

A number of obstacles are related to children's individual differences, including children having different interests (90%) and different levels of creativity (85%). Other such factors outlined in the open comment section include, different psychology and different abilities. This is interesting because if we take creativity to mean doing something different or original then we would expect children having different interests to be a good start and regard the diverse range of interests as an advantage and a good base to work upon. How then is difference a barrier? Again we might understand that teachers are not referring specifically to creativity (as opposed to classroom order, for example). Perhaps teaching for creativity is so far removed from the understanding and practice that they do not understand it in the same way as the researcher. Regarding individual differences as an obstacles may indicate to problems in planning for and teaching a group of children with a range of interests, especially when the teachers are expected to teach according to set books, conform to a set examination pattern, cope with a high student teacher and class teacher-ratio (several classes being taught by one teacher). The classroom observation showed that there is such structured teaching in most cases that individual interests are not taken into account. Teaching methods and contents are the same for everyone. There is preference for conformity and expectations for uniformity rather than diversity. Kaila (2005) outlines that the factor, 'no respect for a child's individuality,' is one of the 'negativities in school education' and contributes to 'killing creativity' (p.2).

There are also indications that children are expected to have certain type of interests out of school and that 'not having [the] right sort of interests after school' are regarded as an obstacle. For example children who become wanderers/vagabond waste their time by watching TV, films, sports. From this we obtain an insight into the seemingly conforming

nature of the environment which defines boundaries according to which children are expected to live. But then looking at this from another perspective, it also means that keeping children in schools is a means of betterment for them as they may not 'become wanderers'.

13.3.3: Children not enjoying creative work

Children not enjoying creative work (77%) and having a lack of interest (80%) regarded as obstacles implies that the element of enjoyment and interest is an important part of the creative process. Perhaps for children to be creative they must do things they enjoy. One of the personal qualities of creative persons as outlined by Shallcross (1981) is enjoyment of experimentation. Lau et al, (2004) are of the view that 'it is only when students enjoy what they are doing that they will continue to take part in such creative activities. Then they can turn creativity into an everyday matter and make life a truly creative experience' (p.191).

13.4: Parent/home related obstacles

13.4.1: Parents lack of interest

Around 88% of the teachers said that parent's lack of interest in their children's education was an obstacle which implies that the more interest parents take in their children's education the more creative they will be. But then there is also a contradiction here in that some teachers felt that the traditional methods which the children are encouraged to use at home creates tension with those used at school, suggesting that traditional methods are not used in schools. But this is not the case as already discussed in Chapter 12. Howe (1999) in his discussion on prodigies and creativity and musicians states that:

> ...no cases were identified of individuals reaching very high standards without substantial early support and encouragement...this was largely provided by the child's own family (p.435).

Some of the teachers reported that there is no interaction between parents and children which affects their education. Miller and Gerard (1979) conclude from their review of research that it 'seems to indicate that parents might facilitate the development of creativity in their children to the extent that they have respect for them as individuals, have confidence in their abilities, and expect them to do well' (p.307). Knowledge in homes was regarded by Pakistani teachers as 'next to nonexistent' which indicates the importance of giving knowledge not just in schools but also being surrounded by it in homes. Knowledge it is said 'does not always lead to creativity...but does appear to be a relatively necessary condition for it...' (Nickerson, 1999, p.408). Cropley (2001) is also of the view that as a way of fostering creativity teachers need to 'support interest in and acquisition of knowledge in a broad variety of different areas' (p.152). Although the importance of knowledge for creativity seems apparent it is not clear what kind of knowledge the Pakistani teachers want to see in homes, which if it existed, would help Pakistani children's creativity.

13.4.2: Parental poverty

Parents' poverty was regarded as an obstacle by 85% of the teachers. Miller and Gerard (1979) found that the social class of parents was positively associated with children's creativity.

The home environment and circumstances were also regarded by the teachers in this study as a potential obstacle. It was said that:

> If children are not given a friendly environment by their parents this can also act as an obstacle to enhancing children's creativity.

The teachers felt that besides poverty there was a 'weakness' in children's upbringing which acts as an obstacle and the solution given to overcome this was to provide education and training to the parents so that they are able to 'educate/train their children correctly and guide them' and 'give them proper upbringing' and in this way then 'children's creative standards will improve'. The need for parental education is perhaps being also highlighted because 86% of teachers regarded parental illiteracy as an obstacle. Lack of literacy is a reality with the adult literacy rate in Pakistan being 49% (Ministry of Education, 2004, p.6). Csikszentmihalyi also indicates to the importance of literacy when he says:

> Even in very poor families, when the parents read books to children, this seems to help the latter to become involved in intellectual pursuits and to break away from their destitute conditions (Csikszentmihalyi, 1999, p.328).

These views about the importance of literate parents, then, if true, seem to support the teacher's view of parental illiteracy as being an obstacle. But is this about creativity or progress at school in general? In the absence of literate parents the responsibility shifts to the schools and teachers, making their role even more vital. This link between parents and their children's education appears to be important to teachers as a factor to enhancing their creativity. However during teacher interviews one teacher in an urban private school was of the view that:

> There are most children whose parents are educated but in these days the educated parents don't seem to have time for their children, sometimes the uneducated parents have more enthusiasm in that they feel that since they have not been educated they are more determined to educate their children.

Parents are also said to not allow their children to do new things because of their illiteracy. This suggests parental control over their children. According to the review by Miller and Gerard:

> …parental vigilance, authoritarianism-control, dominance, and restrictiveness are constantly found to be typical of the parent-child relationships experienced by creative children (Miller and Gerard, 1979, p. 310).

One teacher felt that the children's creativity is killed because of strict command on them by their parents as she said 'children are just like animals to them'. Various researchers in this regard have reported that parents of creative children have been found to be 'giving autonomy relatively non-enforcing and lax with descipline' less 'strict, critical, and punitive'(Miller and Gerard, 1979, p.306).

13.5: The obstacles outlined in the open comment section of the questionnaire

Many of the obstacles given in the open comment section were related to one of the seven categories given in Table 13.3. Some of these have already been discussed but a summary is provided in this table with examples of barriers in each category.

Table 13.3: Barriers to developing creativity from the open comment section

Factors acting as obstacles to creativity	Percentage of teachers regarding each as an obstacle	Examples of obstacles
School/teaching	31	Traditional teaching methods Less extra curricula activities Difference of medium of instruction Too many books
Parents	21	Economic/financial Problems Home environment Parents ignorance Lack of interest of parents Parents not allow their children to do new things

Teachers	18	Lack of interest of teachers Teacher too busy getting children ready for exams than enhance creative abilities/ Scoring exams for rote memorisation not creative ability/ Examination system Teachers too involved in official paperwork/forms
Children	11	Children absenteeism Children with physical disabilities Punishment
Policy	10	Governments changing policies Lack of funding Lack of priority
Society	8	Lack of interest/support from society Rural environment Traditions Marriages into same tribe

Source: Teacher survey

One of the categories of barriers indicated in the above table is 'society'. Societies that have 'material surplus,' for example wealthier societies, are in a 'better position to help the creative process'. They are able to make information readily available, provide rewards, enable implementation of new ideas and allow experimentation. However it is also said that 'it is not enough to have material resources to implement new ideas, it is also important to be interested in them'. Societies with a feudal structure value tradition more than novelty (Csikzentmihalyi, 1999).

13.6: Summary

Since the society sets the standards and values within which children grow, this will obviously influence the extent to which children are allowed to diverge from the norm either at home, in their surroundings and at school. The challenge for a society such as Pakistan is how to maintain the traditions of morality, obedience, respect and also to allow the openness and environment in which children can be creative without fear of punishment or the pressure to perform as the society expects. Nickerson (1999) advocates a balance in that:

> ...environments that are both demanding and supportive are more conducive to the development of creativity than those that have much of one of these characteristics but little of the other (p.419).

In this chapter the many obstacles outlined by teachers to developing creativity have been outlined with comparison from other research studies. In the next chapter the methods used by teachers to assess children's creativity, as outlined in the survey, policy documents and the results of children's performance on the TTCT are presented.

CHAPTER 14

HOW IS CREATIVITY BEING ASSESSED AND HOW CREATIVE ARE PAKISTANI CHILDREN?

This chapter presents the findings related to the question of assessment of creativity. First the findings from the review of the policy and curriculum documents are presented, followed by the teacher survey and lastly the creativity scores obtained from administering the Torrance Tests of Creative Thinking (TTCT).

14.1: Assessment as outlined in the policy documents and national curriculum

The assessment system in Pakistan has been widely criticised in policy documents, as the White Paper states:

> ...the examination system like most others is compartmentalized into a limited role of promoting or failing the student. Even within this limited role there are shortcomings that have serious consequences for the quality of the learner produced in the country ...Since the 'learning' is rote based, assessments simply test the memory
> (Aly, 2007, p.20).

In the Green paper it is stated that:

> In Pakistan the assessment systems are usually designed to measure individual student ability to move further up the system and there are critical examinations at the matriculate and intermediate levels that determine the career options for students. ..there is general criticism that these assessment systems encourage rote learning and selective study (Aly, 2006, p.8).

The National Education Policy, 1998-2010, outlines the assessment mechanisms but not the contents with reference to assessment of creativity (Government of Pakistan, 1998). The White Paper for review of this policy defines the five 'Pillars of Quality' which also include assessment (Aly, 2007, p.17). In reviewing the National Curriculum for Science, Mathematics and English it was found that all three provide assessment guidelines. In the maths curriculum the assessment objectives include developing relationships, identifying patterns, making predictions, hypothesising, deducing relationships, identifying problems, planning and conducting investigations to solve problems, and proposing solutions to problems, all related to creativity. The science curriculum advocates assessment which must be:

> Open-ended, allowing for discussion and revision of new understanding
> Tolerant of divergent thinking and promote the notion of no "one right answer"
> (Ministry of Education, 2006, p.67).

In the science curriculum it is also emphasised that such test items be used which measure students' achievement in problem solving skills, analytical and creative thinking (Ministry of Education, 2006).

The English curriculum outlines a range of assessment methods, including use of multiple choice items. The different types described include 'best answer type,' and 'incomplete statement' type both of which are said to measure 'higher order thinking' and also the multiple response type which is 'used in dealing with questions to which more than one clearly correct answer exists' (Ministry of Education, 2006, p.154). However following this is a contradiction in that:

> It is recommended that only correct answer type and best answer type multiple choice items should be used (Ministry of Education, 2006, p.154).

The English curriculum further states that assessment:

> Requires students to create or produce their own answer in response to a question or task. This allows teachers to gain insight into students' thinking and creative processes, and to assess higher order thinking... (Ministry of Education, 2006, p.155).

It can be seen from the evidence above that the curriculum documents allow some role for creativity in assessment.

14.2: Methods reported by teachers for assessing children's creativity

Table 14.1: Methods used by teachers to assess primary school children's creativity (closed response)

Reported methods of assessing creativity	Percentage of teachers reporting using each method
Asking children different questions	97
Giving children opportunity to speak	94
Observation	93
Practical work	92
Group work	87
Exams	85
Marking or grading children's work	82
Listening to children recite their 'sabaq'	80
Playing games	79

Source: Teacher Survey N=1008

Teachers have reported using a number of methods for assessing children's creativity (Table 14.1). It has been seen from the classroom observation that children are only asked questions which require recitation of previously learned information, they are also only invited to talk for this purpose as well, there is no practical work in class and group work is a rarity. It is

therefore questionable if all these techniques are really used for assessment at all. Teachers do take exams, mark children's work and listen to them recite sabaq verbally, which are the only methods of assessment observed in most schools. It is therefore interesting that more teachers have not reported using these as compared to other methods. The fact that 80% teachers reported that they use reciting previously learned sabaq as a way of assessing children's creativity implies that creativity is rote learning and regurgitating information which shows a different understanding of creativity held by teachers. This would imply that creativity means learning and regurgitating learned facts. There was not very much variation in the teachers views on methods to assess children's creativity, across the background variables, however there were fewer teachers reporting using some of the methods from the other public sector and those with no professional qualification. This research did not involve any further work on assessment in the class room therefore more cannot be said.

Table 14.2: Methods of assessing children's creativity from open response section

Method of assessing creativity	Percentage of teachers reporting using each method
Children obtaining answers to questions (including from outside curriculum)	19
Problem solving activities	16
Holding competition	12
Involving them in extra curricula activities	9
Drawing	9
Holding debates amongst children	7
Speeches	7
Through writing	5
Children designing questions (objective type)	3
Children asking questions (each other and the teacher)	3
Amount of interest shown in work	2
Children doing observations	2
Giving topics beyond the curriculum	2
Giving lesson related assignments	2
Giving topics of interest	2

Source: Teacher Survey N=58

From the open comment section the methods outlined for assessing children's creativity are given in Table 14.2. One of the interesting things is teachers outlining that they use methods in which children do things such as observation, designing questions and asking questions rather than the teachers doing this and also giving children material beyond the curriculum. It is also interesting that teachers are reporting that they assess by getting children to obtain answers whereas in the lessons, as the findings from the classroom observation show (refer to Chapter 12) it is the teachers who give children the answers. Perhaps these are methods not used but suggested for assessing creativity.

14.3: Results of children's creativity as measured using the TTCT

It has been seen that teaching in Pakistani primary schools focuses on rote memorisation and regurgitation of prescribed information from textbooks. Children are not provided opportunities to move beyond the level of knowledge acquisition, which is important and needed for creativity but not sufficient on its own. The classroom practices are not conducive to development of children's creativity which leads one to question how creative the children may be under these conditions. This section presents the results obtained from administration of the TTCT to identify children's creativity and includes their performance on the criteria of fluency, originality, elaboration, abstractness of title, premature closure, creative strengths and the creativity index. Also discussed are the mean scores across the background variables and the inter-correlations among the separate assessments of creativity.

Table 14.3: Maximum obtainable TTCT scores, mean scores and standard deviation of (Pakistani children)

TTCT Assessment Criteria	Maximum score obtainable	Mean scores	Standard Deviation	The mean score as a percentage of maximum score obtainable (%)
Fluency	40	19	8	48
Originality	57	14	7	25
Elaboration	18	6	3	33
Closure	20	6	4	30
Titles	33	1	2	3
Creative strengths	26	5	3	19
Creativity Index (CI)	186	78	23	42

The low mean scores on the Creativity Index (CI), which gives an overall measure of creativity, and on all the other six TTCT assessment criteria, (Table 14.3) indicate that Pakistani children are not very creative. The mean CI score is low, 78, which is less than half (42%) of the maximum score obtainable. The children showed greater ability on the fluency criteria, with the highest mean score of 19 (48% of maximum obtainable score) followed by elaboration and premature closure, with a mean score of 6 each (30% of total obtainable scores). The children showed greater weakness on originality and creative strengths, however the mean score for abstractness of title was the lowest, 5, being only 3% of the total score obtainable. This weak performance is perhaps understandable considering that the teaching, as shown by the findings in Chapter 12, does not include TTCT type activities which were used to assess the children. Also the teachers did not outline any TTCT type assessment activity (Table 14.1 and 14.2) which shows that perhaps children under performed because they are not familiar with such type of assessment. The standard deviation for all the mean scores is high showing the dispersion of the scores. Considering the type of teaching the children are

subjected to in Pakistani schools the results given in Table 14.3 are perhaps not as surprising, however what is surprising is the small difference between these results and those obtained by a sample of American children on the same TTCT criteria, shown in Table 14.4. This perhaps indicates the lack of correlation between type of teaching and the TTCT activities.

Table 14.4: Maximum TTCT score obtainable, mean and standard deviation (American children)

Criteria	Maximum score obtainable	Mean Score	Standard Deviation	The mean score as a percentage of maximum score obtainable (%)
Fluency	40	21	7	53
Originality	57	16	5	28
Elaboration	18	7	1	39
Closure	20	13	4	65
Titles	33	9	3	27
CI	186	110	15	59

Source: Torrance, 2008

A comparison of the mean scores across Pakistani and American children shows little or no difference for fluency, originality and elaboration. However there is a greater difference for mean scores on closure (13) and titles (9), both being higher (Table 14.4) as compared to 6 for closure and 1 for titles for Pakistani children (Table 14.3). These differences obviously affect the CI scores of American children, making it higher, indicating that they are more creative as measured by the TTCT. It must be understood that the American sample consisted of 4335 (Torrance, 2008) grade five children where as there were 154 children in the Pakistani sample. Another difference noticed between the American and Pakistani children is that the standard deviation for all the mean scores is lower for the American sample.

A comparison of mean scores across the background variables for the above criteria showed that the fluency mean score was lower for children in district Ludhran (16) as compared to

other districts. This may be attributed to the fact that the children were all from government schools or that their fluency ability is naturally lower than children from other districts. Children from urban, private, boys and mixed gender schools showed slightly higher mean scores. However it must be remembered that there were more boys in this sample as well as children from private, urban and mixed sex schools. The difference in scores may be attributed to the children's different backgrounds or that they simply better understood the test instructions rather than the teaching in schools which consisted of no activities to support the development of their fluency ability.

The mean originality score was higher for district Vehari (17) compared to for example Ludhran (12), which is perhaps understandable considering that the fluency score was also higher for this district. However while the children in district Ludhran achieved lowest fluency score there was not much difference in originality scores of this district as compared to other districts. There were slightly higher originality scores for children from urban and private schools while for girls only schools this score was lower as compared to boys and mixed gender but then the mean fluency score was also lower for girl's only schools. This shows perhaps a link between fluency and originality. The more fluent you are the more chances there are of being original.

The mean elaboration scores of children from urban, private and mixed sex schools were slightly higher, for example a score of 8 in urban schools as compared to 5 in rural. It is interesting that girls achieved a slightly higher score in elaboration than fluency and originality as compared to boys. The scores for titles were generally low across the districts and schools in different sectors and locations as well as amongst boys and girls. However these scores are slightly less for Ludhran district, rural, government, girls and all girls'

schools. The variation in the mean score for creative strengths was very slight, with district Ludhran having lower mean score than others. Mean scores of children from urban (7) schools were twice as much as children from rural areas (3). The children from private and mixed gender schools had a higher mean score (6) than children from only girl (3) or boys (4) schools.

The mean CI scores across the background variables showed more variation with children from district Ludhran, government and all girls schools obtaining much lower scores than others (Table 14.5) showing that perhaps these sectors and locations hamper children's creativity more than others.

Table 14.5: Mean scores for creativity index across the background variables

	District				Location		School Sector		Child Gender		School Gender		
	Ludhran	Vehari	Faisalabad	Kasur	Rural	Urban	Govt	Pvt	Girls	Boys	Girls	Boys	Mixed
Mean	66	83	80	80	71	93	69	90	78	78	65	75	84
St.D	25	24	23	17	21	18	21	19	23	23	20	25	20

Having discussed the mean scores for the various TTCT criteria the following is a discussion of the percentage of children obtaining the percentage of scores on each of the activities within each criteria starting with fluency scores. This is to identify how children performed in each area and activity in more detail.

14.3. 2: Fluency scores

Most children exhibited some ability to generate ideas and alternatives, shown by their attainment of raw fluency scores, with 25% achieving 50% of the scores, which is the highest percentage of score obtained by highest percentage of children, and some (3%) also obtaining

full scores (Table 14.6). In fact 68% of the children obtained between 40 to 70% of the raw fluency score.

Table 14.6: Percentage of raw fluency scores and percentage of children obtaining these scores

Percentage of children obtaining the raw fluency scores	Percentage of raw fluency scores obtained
1	0
4	10
5	20
8	30
14	40
25	50
19	60
10	70
8	80
3	90
3	100

N=154 N=40

These fluency raw scores when examined independently for each activity showed that there is a positive relationship between the percentage of children and the percentage of fluency scores obtained for activity two as evident from Table 14.7. In fact majority of the children (70%) obtained scores from 70-100%. This may have been due to having more time to complete fewer shapes, that is 10 pictures in 10 minutes or that the stimulus shapes appeared more meaningful and easily triggered children's thinking to generate ideas. Therefore the type of initial shape, the number of shapes and the amount of time given to complete the activity may affect the child's performance on fluency. Almost one third of the children (33%) obtained 100% fluency scores for this activity. These children were from private, government, rural, urban, all boys, as well as mixed sex schools. This shows that having a high level of fluency ability does not perhaps depend upon the school sector, location or gender of students. However no girl from an 'all girls' schools achieved 100% score which may be attributed to

the difference in the school environments. There were more boys achieving 100% fluency score than girls which indicates that boys are perhaps more fluent in their ideas, and that there may be a relationship between the ability to be fluent and the child's sex, or/and the type of school they attend (in terms of student gender). However it must be remembered that there were more boys in the sample. There were also a few children (2%) with zero fluency score which were all from rural schools.

Table 14.7: Percentage of fluency scores for activity 2 and percentage of children obtaining these scores

Percentage of children obtaining the scores	Percentage of fluency scores for activity 2
2	0
2	10
4	20
1	30
4	40
8	50
8	60
12	70
15	80
11	90
33	100

N=154 N=20

For activity three the scores obtained by children are not as high as activity two with the highest percentage of scores (60%) being obtained by only 11% of the children. Only 2% of the children obtained 100% of the scores. These were from both government and private schools from the same district, Faisalabad. Hence it may be that the district location may influence children's fluency ability rather than just school sector. Initially as the scores increase the number of children obtaining these also increases but beyond 40% of the scores this trend then reverses with fewer children obtaining higher scores (Table 14.8). This pattern is in contrast to activity two. One of the reasons for this may be that there were three times as many pictures to complete, 30, but the time given was the same (10 minutes) as in activity

two. Another explanation for this may be that the same stimulus, pair of lines, is repeated each time which may not give fresh food for thought, may reduce interest, motivation and cause boredom. It may also be that this activity required children to rely more on their imagination which was difficult because they are more habitual to recalling and regurgitating facts. Both children and teachers in Pakistani schools are very particular about getting things right and it may be that more children spent more time on each picture in an attempt to get them right while a few who may not be so right answer fixated, and don't usually get things right, worked faster and finished more drawings, hence obtained higher scores.

Table 14.8: Percentage of fluency scores for activity 3 and percentage of children obtaining these scores

Percentage of children obtaining the scores	Percentage of fluency scores for activity 3
1	0
5	10
12	20
18	30
24	40
13	50
11	60
6	70
5	80
3	90
2	100

N=154 N=30

14.3.3: Originality scores

It has been seen that the mean originality score is amongst the lowest scores across the various measures of creativity (refer to Table 14.3). The children's ability to be original is poorer than their fluency ability with majority of the children achieving 40% or less of the total scores and very few achieving a score above 50% (Table 14.9). This decline could perhaps be explained by the fact that children are not into the habit of generating original ideas and work, as observed during teaching (refer to Chapter 12), and therefore have not

performed well. But teaching also does not involve activities which develop children's fluency ability nevertheless children performed better which perhaps means that it is more difficult to be original than fluent and that the ability to be original perhaps comes with more guided practice and not just naturally or just by being able to understand instructions. However understanding instructions may also have been a problem here particularly if the children are not used to hearing the terminology used in the test. There may also be the fear of getting things wrong as many children asked 'what if I get it wrong' and 'can I draw anything,' despite being repeatedly reassured that nothing they draw is wrong and they are free to draw anything.

Table 14.9: Percentage of raw originality scores and percentage of children obtaining these scores

Percentage of children obtaining the scores	Percentage of raw originality scores
1	0
15	10
24	20
32	30
16	40
9	50
2	60
0	70
1	80
0	90
0	100

N=154 N=57

Examination of the originality scores obtained on each of the three activities showed that for activity one only 65% (N=154) children drew something using the stimulus and 65% of these were original (for a description of how a response was judged for originality refer to Chapter eight). The remaining 33% either did not produce any response or drew pictures but not using the stimulus. This perhaps can be attributed to the difficulty of the shape despite being given 10 minutes to work on this single drawing which perhaps highlights the need to give time to

develop ideas to produce something original. It may also be attributed to the fact that since it was the first activity in the test the children may have been nervous, unsure about what to do and out of their comfort zone since they were not being asked to reproduce something previously learned which is what they are habitual to. The pictures drawn by the children for this activity were categorised and it was found that many things drawn were common everyday objects from the children's surrounding environment, such as names of animals, plants, fruits and body parts. However the list used to determine the originality of these responses is not produced based on the Pakistani context which raises the question of the difference it may have made to the originality scores if such a list existed and was used. This is perhaps a limitation of the list itself for use in different contexts. The children also used the stimulus shape to produce a combination of things which shows their ability to move beyond the obvious for example 'bird-balloon,' 'butterfly-spider,' 'chicken egg and a baby inside'. Children producing combination of figures perhaps suggests the freedom allowed by the shape itself.

Children showed more originality on activity 2 shown by higher percentage of children obtaining higher percentage of scores. The highest percentage of children (19%) obtained 50% of scores followed by 18% obtaining 40% and 13% obtaining 80%. There were also children who achieved zero originality scores (6%) which were from all boys, mixed sex, rural, government and private schools. Those who achieved full scores (2%) (Table 14.10) were from rural, urban, government, private, all boys and mixed sex schools. This is interesting since the mean originality score is higher for children from private schools but the two boys obtaining 100% originality scores are from rural government schools, and the girl from mixed sex school, showing that the variation in originality ability is not due to school sector but something else, perhaps the individual child. But the higher mean originality score

for private schools perhaps shows that more children in private schools show the ability to be original than in government, which cannot be due to the teaching, as it is very similar across sectors, therefore it may be linked to the type of children that attend private schools.

Table 14.10: Percentage of originality scores for activity 2 and percentage of children obtaining these scores

Percentage of children obtaining the scores	Percentage of originality scores for activity 2
6	0
3	10
8	20
5	30
12	40
18	50
19	60
8	70
13	80
6	90
2	100

N=154 N=20

The originality scores for activity 3 show that majority of the children scored lower on this activity with the majority obtaining up to 40% of the scores and no child obtaining a score beyond 80% (Table 14.11). This pattern may be explained by the fact that children also performed lower on fluency for activity 3 which left less figures to be scored for originality and /or that the children drew pictures which were less original. There were also 5% children who obtained zero scores who were almost all from rural, government and boys schools. Only 14% obtained scores above 40%.

Table 14.11: Percentage of originality scores for activity 3 and percentage of children obtaining these scores

Percentage of children obtaining the scores	Percentage of originality scores for activity 3
5	0
20	10
23	20
19	30
19	40
5	50
5	60
3	70
1	80
0	90
0	100
N=154	N=30

The originality scores obtained by children for activity two were higher than three. This may be because for activity two children had higher fluency scores. Since the shapes in activity 2 are more suggestive than those in activity 3 one would assume that this may restrict children and prevent them from thinking beyond the obvious and rather recall and reproduce things from their existing experiences than making something new. Whereas in activity three where the shapes are less suggestive one would assume that they provided more freedom for children to let their imagination go wild and come up with weird and wonderful things. But the less suggestive shapes in activity three giving lower fluency and hence originality scores means that children may have felt more comfortable with the clues in the shapes in activity two than thinking for themselves which is something they are not habitual to. This is because all answers are provided by the teachers so children do not have to think for themselves.

Children performed very poorly and obtained a low or no bonus scores for originality. No child obtained any bonus scores for originality for activity 2 which is surprising since children produced combinations of things (the requirement for obtaining bonus scores for originality),

using the stimulus in activity one where they were not required to do so. One of the explanations for this is that they were not provided instructions to do this and following instructions is the core of their teaching. If the children had been told that they could join figures together to make something it would have been interesting to see the results but the children were not to be instructed to do this. For activity three 92% (154) of the children achieved a zero bonus score for originality. The highest percentage of score was 30 (N=13) obtained by 3% of the children (N=154). The two children who obtained 100% bonus score for originality on activity three were from urban private and mixed gender schools. This perhaps shows that a co-education gives a freer environment.

14.3.4: Elaboration scores

The majority of the children obtained a raw elaboration score below 50% with 36% obtaining 40% of the scores which is the highest score obtained by highest percentage of children. Only one percentage obtained full scores (Table 14.12) obtained by a girl from mixed sex urban private school which perhaps suggests that girls may be better at adding detail. There were also children (2%) who obtained zero scores, all from rural government schools. This lower score may be attributed to the fact that children had to work within a limited time which left them less time to add detail to their drawings.

Table 14.12: Percentage of raw elaboration scores and percentage of children obtaining these scores

Percentage of children obtaining the score	Percentage of raw elaboration score
2	0
6	10
8	20
21	30
36	40
18	50
5	60
3	70
0	80
0	90
1	100

N=154 N=18

A comparison of elaboration scores across the three activities showed that these were higher for activities which contained more figures to complete, for example 20% of the scores were obtained by 31% children for activity one where there was only one stimulus, 34% children obtained 20% of the scores for activity 2 where there were 10 figures but 60% of the scores were obtained by 38% of the children for activity 3 where there were 30 figures (Table 14.13). This perhaps suggests that the more choice there is for elaboration and more opportunities there are to exhibit this ability and therefore the children perform better.

Table 14.13: Elaboration scores for activity 1, 2 and 3

	Percentage of children obtaining the score		
Percentage elaboration Score	Activity 1	Activity 2	Activity 3
0	31	4	4
20	31	34	9
40	29	29	22
60	7	28	38
80	2	5	26
100			1

N=6 N=154

14.3.5: Abstractness of title scores

The children seemed least able on this measure of creativity, to give abstract titles to the pictures drawn as evidenced by 60% obtaining a zero score and only 3% of the children obtaining 30% of the scores, which was the highest obtained (Table 14.14).

Table 14.14: Percentage of raw abstractness of titles scores and percentage of children obtaining these scores

Percentage of children obtaining the score	Percentage of raw abstractness of titles score
60	0
28	10
9	20
3	30
	40
	50
	60
	70
	80
	90
	100

N=154 N=33

Although the aggregate score for abstractness of title was low more children had higher score for activity 2 than activity one. This can perhaps be attributed to children having more chances to exhibit this ability in activity 2 because they had more drawings to do than in activity 1. For activity one 81% obtained a zero score and only 8% achieved a score of 3, which was the highest obtainable. Those who achieved the maximum score were more boys and from urban private schools. Although the scores for activity two were higher than for activity one these were still low with the highest being 30% obtained by 2% of the children and 68% obtaining no score (Table 14.15) who were more from private sector schools than government.

Table 14.15: Abstractness of title scores for activity 2

Percentage of children obtaining the score	Percentage of scores for titles
68	0
24	10
6	20
2	30
	40
	50
	60
	70
	80
	90
	100

N=154 N=30

14.3.6: Premature closure scores

The children's performance on premature closure is better than that on the abstractness of titles although still weak with majority of the children obtaining below 50% scores (Table 14.16). The highest percentage of score obtained was 80% by only 1% of the children.

Table 14.16: Percentage of raw premature closure scores and percentage of children obtaining the score

Percent of children obtaining the score	Percentage of score for closure
8	0
15	10
18	20
17	30
14	40
19	50
5	60
3	70
1	80
	90
	100

N=154 N=20

14.3.7: Creative strength scores

Table 14.17: Percentage of creative strengths scores obtained and percentage of children obtaining the scores

Percentage of children obtaining each score	Percentage of scores for creative strengths
5	0
38	10
25	20
20	30
9	40
2	50
1	60
	70
	80
	90
	100

N=154 N=26

Very few children obtained scores on creative strengths above 30% (Table 14.17). Those achieving scores above this were mostly from private, urban and mixed gender schools. These included children who were regarded by teachers to have less than 45% creativity, no creativity and weak in their academic performance. It is interesting that boys from government schools performed better on the creative strengths than girls from government schools. It may be that it is not the single sex schools but the environment in boys schools is much richer than that of single sex girls schools in the government sector or that simply there is a difference in their exposure and openness of expression where boys are exposed to more and it is acceptable for them to express themselves more openly than girls.

The children were very weak in almost all the creative strengths obtaining zero scores, however some did obtain scores on creative strengths such as emotional expressiveness movement/action, internal visualisation and richness of imagery they scored higher. The emotional expressions were mostly happy or sad. Scores for internal visualisation was also

high perhaps because many of the children are from rural areas where they have exposure to for example internal picture of things such as plants which was a commonly drawn object.

14.3. 8: Creativity index

Table 14.18: Percentage of creativity index score and percentage of children achieving the score

Percentage of children obtaining the score	Percentage of creativity index scores
1	0
0	10
3	20
16	30
25	40
27	50
23	60
5	70
	80
	90
	100

N=154 N=186

Almost all children showed some creativity as evidenced by their attainment of scores on the creativity index. However the majority achieved very low scores 50% or below, with only 5% achieving 70% of the CI score which was the highest obtained (Table 14.18). In this there were more boys than girls. All these children were said by the teachers to have creativity but only one was said to be high academic performing while the remaining were rated as average in their studies. Children who achieved scores above 50% were children from private, urban and mixed sex schools.

14.3.9: Inter-correlations among the separate assessments of creativity

Table 14.19: Inter-correlations among the separate assessments of creativity, along with correlation of each with the creativity index (Pakistan)

	Creativity criteria				
Ability	Originality	Elaboration	Abstractness of title	Resistance to premature closure	Creativity index
Fluency	0.7	0.5	0.2	0.5	0.7
Originality		0.5	0.2	0.5	0.7
Elaboration			0.4	0.5	0.8
Abstractness of title				0.3	0.6
Resistance to premature closure					0.7

There is a high correlation between the separate elements of creativity and the overall indicator of creativity (creativity index) (Table 14.19), which is what we may expect considering that each element contributes towards the overall creativity. However there is variation in the contribution of each element which may indicate that children are stronger on some aspects while weaker on others such as the ability to add abstract titles. However it could also be that this is due to weakness in the children's writing ability, that is the ability to express creative thoughts in words, and not the ability to think up abstract titles. Hence it may be that the method being used to test this creative ability is inhibiting children from exhibiting it because of poor writing ability. It could also simply be that children are not required to do such activities hence not trained to think this way and cannot do what is being asked. It may also be due to the fact that children are more hesitant to give unusual titles afraid that they may get them wrong or afraid of the response it may attract. One child wrote 'alcohol' (forbidden in Muslim cultures) and when I asked him to tell me what he had written he whispered this to me. Similarly the correlation of this score with other elements is also low,

with a common variance of 4% to 9% indicating its independence and the fact that it may be testing something different.

The ability to generate ideas and original ideas (fluency and originality) seem to go hand in hand as there is the highest correlation, which can be explained by the fact that more objects/picture are drawn the greater the chance of generating some original ones. It also indicates that creativity, in the sense of producing something original is not a short snappy process but one that involves repeated effort (producing many ideas), hence it could be said that idea generating is a pre-requisite to producing original ideas. What is interesting from the findings when compared to those of other countries such as the USA (Table 14.20) is that the correlations are highest for both, which seems to point to the fact that these elements of creativity are common in children across cultures.

The children in Pakistan may be required to be more particular and detailed in their routine school work partly because of the tradition of learning whole chunks of text and reciting it in lessons or regurgitating it in exams, which may explain the high correlation of elaboration with fluency, originality, and closure as compared to the American scores, with a common variation of 16-25 %, for American children this is 4%. This also shows that children with the ability to embellish their work may be more likely to be fluent in their ideas, original and able to resist the temptation to quickly complete their work in the easiest possible way rather than deeply think about what they are doing. From this it could be said that children who exhibit one type of creative ability are likely to exhibit a number of others. This therefore indicates that separate elements of creativity may vary in their strengths and weaknesses but are likely to be present to some degree with one affecting the other.

Table 14.20: Inter-correlations among the separate assessments of creativity, along with correlation of each with the creativity index (USA)

	Creativity criteria				
Ability	Originality	Elaboration	Abstractness of title	Resistance to premature closure	Creativity index
Fluency	0.8	0.25	0.23	0.61	0.73
Originality		0.26	0.28	0.57	0.75
Elaboration			0.48	0.28	0.68
Abstractness of title				0.39	0.67
Resistance to premature closure					0.74

Source: Torrance, 2008

14.4: Summary

In this chapter the findings have been presented from the policy documents and the teacher survey regarding assessment of creativity. Also presented are the children's creativity scores as obtained on various criteria of the TTCT. In summary it has been found that Pakistani children are not very creative as shown by the low scores on the TTCT measures of creativity. In this they were perhaps disadvantaged as the TTCT type activities are not part of their teaching, hence their performance was based on their understanding of the test instructions. Although the curricula outlines instructions for assessment of children's creativity, the questions contained in the textbooks only requires regurgitation of learned information and although the teachers have outlined methods which in their opinion assess creativity it is difficult to further comment upon this as it was not further explored.

This chapter ends the findings related to the research questions and with these findings it is now possible to answer the overall research question of the factors enhancing or inhibiting primary school children's creativity. This is discussed after the next chapter in which the findings from the research process and use of research instruments are presented.

CHAPTER 15

FINDINGS RELATED TO INSTRUMENTS AND RESEARCH PROCESS

In this chapter the findings related to the research instruments and the research process are presented, as experienced by the researcher or documented by the MCs in their daily dairies.

15.1: The survey and the questionnaire

15.1.1: Questionnaire

The teacher responses to the questionnaire as an instrument were mostly very positive in that it was 'good,' 'effective,' 'extensive' and 'prepared with care and attention, after a lot of thought'. However some teachers found that there were too many response items which made it more complicated and the language used was too difficult so that some said they were unable to understand it either partially or fully and 'give correct answers'. Some of the questions were said to be not clear and not of a high standard and the questionnaire was so lengthy that one teacher said 'one gets bored while filling it in' and it 'required a lot of hard work'. It was suggested to make it short by having 'less options' so that 'selection is easy' while others said it was 'very simple,' 'easily understood' and the questions were of a 'high standard'.

All of the options [response items] given were said by some to point to a positive aspect of creativity and negative aspects should also have been included. The questionnaire was apparently prepared such that all the things related to creativity appeared to be correct and it was 'difficult to sort them and choose them'. Some of the questions can only 'make sense' if answered using the 'yes' option and an additional column between 'yes' or 'no' was suggested because 'some things don't fit into no or yes'. It was also suggested that there

should have been a section about children's own creations and teachers should have been asked about these. Other teachers were of the view that more questions should be added to 'produce enthusiasm in children and to enhance their creativity' while others asked for 'objective of the questionnaire keeping in view the importance of research and creation' to be provided. The researcher also found that there was a design problem with the routing question 'if…' If the response given was 'no' the next question became invalid. This seemed to be something that should have been corrected at the design stage.

15.1.2: Reactions to the survey

In majority of the cases the education department personnel and teachers cooperated in the survey regarding it as 'honour' and 'a reward'. Teachers filled the questionnaire with 'care and responsibility' while the AEOs felt that it was important that opinions from 'grass roots' were being taken for on ward submission to 'higher level'. The DDEO in Faisalabad regarded this activity as a 'personal assignment'.

However while much of the feedback was very positive there were also some concerns which need to be mentioned. Some teachers were apprehensive about the outcome of the survey and had to be reassured by the AEO. As one MC from Vehari explained:

> During this meeting one teacher from…asked if any action will be taken against them as a result of the questionnaire. The AEO clarified that no action will be taken against anyone. He further explained that the questionnaire is part of research being conducted by Government of Pakistan. After being reassured by the AEO all the teachers completed and returned the questionnaires.

Some head teachers questioned the 'benefits' of the questionnaire, as one MC explained:

> The head teacher asked what the benefit of this is. I explained that in the light of this questionnaire the Education Department wants to design a training program…. then he asked why only one teacher should complete it. I explained that this way we can find out about primary school teachers thinking and the way they teach children in class.

The reaction of one AEO from Faisalabad was 'we already have so much work'. Even the response of some of the MCs was that the activities had disturbed their regular planned activities.

The feelings of some of the private schools were indicated in one of the MCs diaries:

> The private schools in the posh areas were included in the survey. The management of these schools did not favor/appreciate this survey. They were of the opinion that this work is that of a government agency who intends to find out about their income.

It was felt by the MCs that the teachers in private schools needed reassurance that consent had been taken from their management for completing the questionnaires. The senior management needed to be taken into confidence. There were also concerns over why only class 5 teachers were expected to participate and not other teachers. One of the MCs documented the following regarding teachers from a boy's government primary school:

> We are rural teachers and we are totally unsure of how to complete it, can you help us fill it in or more so you can fill it in yourself.

In summary, the overwhelming majority of teachers co-operated and found the survey feasible. The reported defects are normal for a study of this scale, involving an instrument used in full for the first time.

15.1.3: Attitude towards the research

The teachers appreciated that research was being conducted on creativity and their views were being given importance:

> It is good to know that you have taken a step in enhancing children's creative abilities according to the demands of the day, this should be done.

Many, however, were of the view that just doing research is not enough. They wanted the government to use this so that 'this process can be practically implemented [creative ability enhancing]'. The research was regarded by some as 'just official paper work' and as one teacher said 'a way of keeping jobs and getting paid at the end of month...it is more important to work rather than just do paper work. This is good work, but this way thousands of forms have been completed already but no progress has been made'. This they said can be done by solving problems such as teacher shortage. Some did not want the questionnaires to be 'disposed of like a piece of waste paper' in the 'waste bin' but rather used to 'bring positive changes' so that 'there can be an end to the system of rote memorisation'. The survey was regarded as an 'assessment' of the teachers and students and the questionnaire as having provided information which is needed to asses children's creative abilities at primary levels.

15.1.4: Problems faced during the survey

One of the problems faced by the MCs was the incorrect or insufficient detail provided in the school lists for some schools which made it difficult and more time consuming to locate them. There were also duplicate school names and addresses given where there were no schools. There were also observations reported of the teachers completing the questionnaire properly 'carelessly' and not taking it seriously, or being completed by the head teacher because there was *no* class five teacher. Some of the teachers discussed the questionnaire contents with

other teachers before completing it. Some of the teachers were not able to complete the questionnaire because they could not 'fully understand it'. Older teachers with low qualification found it harder to complete the questionnaire than new and higher qualified teachers. In a few schools the questionnaire was not distributed because the MC felt that the teacher would not be able to complete it due to low qualification (matriculate), or that he/she was a newly appointed teacher.

In some private schools there were problems of teachers not cooperating and having to be convinced to participate, which was reported to be time consuming. Some private schools did not allow access or did not return the questionnaire on time which required the MCs to make repeated visits. Some teachers were hesitant to complete the questionnaire while others thought they were being assessed and felt 'threatened' and confused about the purpose of questionnaire.

Some private school teachers were also said to have not completed the questionnaires with 'real interest' and responsibility rather 'treated it as something that they had to do, considering it as an extra burden'. Some teachers refused to complete the questionnaires in the absence of the head teacher, as they were 'not allowed'. Some of the MCs reported that 'the teachers of government schools did not show a professional attitude but they did this activity due to the strict instructions from the AEOs. It was regarded as just 'another form and not taken seriously'. Some teachers had not completely filled in the questionnaire.

Many teachers said that after reading the questionnaire they were 'encouraged to think that creativity abilities should be enhanced,' a way to 'improve teachers creative methods' and has provided 'guidance' so that teachers can teach children using various methods, however it is not possible to implement the things contained in it due to shortage of time, restrictions from

management, lack of training and resources. The questionnaire is regarded as a method for instructing teachers as a teaching material so perhaps before introducing a new concept such an instrument should be used to gather views and then ensure that upon this basis further action is taken. In this way the process of research will be seen as something useful and fruitful rather than just a futile exercise.

15.2: Torrance Tests of Creative Thinking

15.2.1: The TTCT

Scoring procedures for the TTCT at times lacked clarity and guidance for which advice was required from the publishers. It therefore raises questions about the universal application and suitability of the scoring guidelines to every context. These may have not been included in existing guidelines because they have not occurred in the places where the TTCT has been administered so far, have not been reported, or reported but not included in the guidelines. For example, in situations in which children had used one stimulus to make two different pictures and given two different titles should two points have been given for fluency?

It is also stressed in the guidelines that 'the scorer should make every reasonable effort to determine what the response is' (Torrance, Ball and Safter, 2008, p.5). Although the interpretation of a 'meaningful' response was taken to mean any response which could be understood during scoring, this interpretation is felt as limiting. This is because a response drawn by the child may be perfectly relevant and meaningful to the child and have its origins in his/her environment. However if the researcher is not familiar with this environment then he/she may not interpret it as meaningful unless the students are spoken to, about each response, after the test, to ensure that there is a common understanding about what the response represents. This would help to prevent disadvantaging children during scoring

because of the researchers own lack of knowledge of the students knowledge and environment. This is being mentioned here because it was found during the conversations with children after the test that some responses were meaningful to the children and not the researcher. This is presumably, just one of the inevitable challenges of trying to 'assess' creativity.

It would have been even more helpful if examples of drawings which scored for elaboration were also given in the guidelines instead of just those that scored zero for elaboration. The use of the scoring sheet and the 'norms table' needed further explanation and guidance on how to use it. More information could be added onto the scoring sheet such as how to work out the average standard score. Although space for each stimulus in each activity was provided for its elaboration score on the scoring sheet this cannot be used because the elaborations are all counted together for all responses in each activity.

The above shows that even instruments which have established reputation globally (such as the TTCT) are prone to short-comings when used in new contexts. Therefore it may be a naivety to think that an instrument is universally applicable in all contexts because it has been used in many languages and countries. It should always be treated as work in progress.

15.2.2: Process of administering the TTCT

It was found that many children were very hesitant in responding. For example in one school I heard a child murmur a response and asked him to repeat it. The child's first reaction was:

Nothing, nothing, no nothing.

Some children found the test activities very difficult as commented by one child:

> I don't understand anything, no I can't think of anything.

In some schools the researcher had problems understanding some of the responses because of the local dialect. In an attempt to understand these children were asked to repeat and explain what they meant. In these cases they became doubtful of their responses – a most unfortunate but understandable reaction. The researcher had to explain that it was not that they were wrong or responses were not appropriate but that the researcher was not familiar with the language. When one of the children during pre-testing was asked what the titles meant she answered 'I just wrote what came in my mind, didn't it say come up with unusual things?' This sheds light on what she understood by 'unusual' and limits of the test in judging creativeness.

15.2.3: Children and teachers reactions to the test

At the end of the test the children were asked how they felt about the activities. Mostly they were enthusiastic and said that they had enjoyed them, as one girl said they were 'very good'. When asked why the girl replied 'because we had to make something new'. Others said that they liked making pictures. Some said they found the activities difficult. The reasons given for this included having to read the instructions first then completing the drawings, lack of time and not being able to understand what the stimulus represented. One child commented:

> We started the first activity and ran out of time then the second activity started and ran out of time again, we made the pictures, there was a lot of burden.

Another child said:

> The pictures were already drawn and we just had to make something.

Some children said this activity was easier than their regular activities and when asked how it was different one child replied:

> We have to memorize the text and then recite it. For this we just had to look at these pictures and draw them.

When children were asked if they wanted to do more of these activities they said no and would prefer to do 'easy ones,' other kind of drawings such as drawing fruits, car, trucks and when asked why they could not draw these in the test one child replied:

> You said to complete these (referring to the stimulus).

Some children had written just abstract titles so when asked what they had written they said 'it's just a title, it is not a name of anything'. It was very difficult getting the children to add titles, often they would say that they did not know. Even after being asked to add a title some children did not do so saying that they did not know what to add. If the researcher asked what they had written because it was not legible the children reacted as if they had incorrectly completed the activity. It was therefore important to reassure them that this was not the case. Some children had to be encouraged to read their original titles without changing them. The children treated this checking of their booklets as an evaluation of their work. The children were very interested to know when their 'test marks' will be given and what will be done with the tests. The children said that they do not do activities similar to the TTCT at home or school.

The teachers felt that the TTCT activities were a way to increase student interest as one teacher said ‘these children are capable of so much more but they are under pressure’. One MC also felt that children from rural schools ‘should be given more time as they are from the rural village and they are less bright’. However there was also apprehension about children’s ability to draw because drawing is not a regular teaching activity, if at all. In this regard the researcher clarified that it is not a test of the children’s drawing ability but rather a way of expressing their ideas through drawing, in the same manner as writing is used. The use of the word ‘test’ was interpreted as an evaluation of the school and the children, resulting in one head teacher commenting as follows:

> Children work according to a syllabus where they are taught things then they practice and hence they are prepared for tests.

This resulted in the researcher using the word ‘test’ cautiously, and often replacing it with ‘drawing activities’ during discussion with teachers. It was also emphasized that in these activities there is no right or wrong answer and the children are at liberty to draw anything they want to. In order to emphasize that the activities were possible without the drawing practice, which some felt was necessary, examples from other schools which had already participated in the TTCT were given.

15.2.4: Problems faced

There was a problem of copying faced in almost all schools but particularly in schools where children were very closely seated. In some cases children had to be constantly reminded not to copy and as a last resort moved to other places or seating arrangements changed to prevent this. The researcher felt that this not only disturbed the child being copied but also prevented the child copying from relying upon him/her self and trusting his/her own abilities to

complete the task. It was observed that children who copied were generally those who struggled in class or were regarded as weaker than others by the teachers. Another problem faced was disturbance caused by noise from classes being taught outside the room in which the test was conducted or people coming in and out of the room or children peering in through the windows. Due to these the children had to be continuously reminded to focus on their activities.

15.3: Classroom creativity observation schedule

I found that my instructions of 'I would like to observe how you are teaching' was interpreted by some teachers as applying to that part of the lesson which they taught, it did not include that part in which the children worked. In majority of the schools the teachers were happy to be observed. However in one school, although the teacher was happy to be observed, she felt that she was being evaluated and asked for an extended explanation of how the data would be used which of course was provided. The time sampling observation procedure suggested in the CCOS was near impossible to do because it required memorisation of each indicator and probably a lot of practice. It was found to be particularly difficult because many of the indicators just did not exist in the class teaching.

15.4: Translation of research instruments

If instruments need to be translated close interaction with translators is necessary to ensure that they understand the concepts and do the translation based upon their conceptual understanding especially if people involved have no knowledge of the topic under study. It is also important to provide a thorough back ground and orientation to the research and guidelines for translation and the detail of the respondents so that translation is done at their

level. It is also important and if possible to do a mental translation by the researcher so that the actual translation, if done by another person, can be checked and verified.

It is also recommended to involve the same persons doing translations to do the pre-testing and then revise translations and implementation strategies based on their local experiences and feedback. The back translation method is not always necessary nor is it always necessary to use one language just for the sake of translation. This should be based upon what would be easiest understood by the participants and the translation should aim at the respondent understanding the idea even if this means more elaboration in the language the original text is being translated into.

During the translation process the researcher found that the reviewing process was very important to ensure that required changes were made by the translators, to reflect upon the translation to convey what was wanted to the translator, to provide them with direction for the revision of the translation, and make the translation process interactive, by encouraging the translator's participation and involvement, for example to ask questions, give their opinions, ask for clarifications. This was in an attempt to provide the translators a better understanding of the text being translated, so that they may translate with some knowledge of the subject, resulting in a better conceptual translation.

This chapter has described the reactions to the research instruments, the problems faced and the attitudes towards research and brings to the close part three of the thesis related to the findings. The next and final chapter summarises the findings and the possible implications of these findings for research, policy and practice.

CHAPTER 16

CONCLUSION AND RECOMMENDATIONS

This research has been carried out with the aim of answering the central question:

> To what extent is the primary education system in Pakistan hindering or promoting children's creativity?

In order to answer this overall question the following questions were addressed:

1. What do we mean by creativity?
2. What is the importance of developing creativity?
3. To what extent can creativity be developed?
4. To what extent can creativity be assessed?

These questions were explored within the framework of the components of Pakistan's primary education system including the education policy, curriculum, textbooks, teacher views, teaching and creativity test results obtained from assessing primary school children.

This chapter presents the contribution to scholarship resulting from this research, a summary of the findings for each of the above questions based upon which recommendations are made for research, policy and practice**.**

16.1: Contribution to scholarship

The contribution to scholarship is threefold, methodical, substantive and theoretical. Each of these is discussed next.

16.1.1: Methodological contribution

The study used the 'systems approach' to creativity, using mixed methods research to study various components within the education system. This was with the aim to provide a more holistic view of the concept without which a distorted picture of the state of creativity within the Pakistani education system may have emerged. The scale of the study, for example 1008 teachers from primary schools participating in a survey, is the largest of its kind. The use of gatekeepers and unconventional methods of data collection is also another contribution, for example the mechanism of 'monthly meetings'.

16.1.2: Substantive contribution

In terms of substantive contribution the study provides a detailed assessment of the state of creativity within the Pakistani primary education system. This is from policy to practice, relating to its definition, development, importance, assessment and obstacles, as well as the level of children's creativity as measured by the TTCT. In this regard the research has provided a benchmark against which the successes or failures of any future interventions can be measured. The TTCT has as a result of this research been translated into the Urdu language for the first time and therefore made accessible for use to a much wider audience.

16.1.3: Theoretical contribution

The theoretical contribution has been in the area of both explicit and implicit theories of creativity. The teachers were given predefined items (identified from previous creativity research and literature) relating to definitions of creativity, methods of its identification, development and assessment, all of which are considered within explicit theories framework. For the implicit theories framework the teachers were given the opportunity to express their views in the open comment section of the survey as well as during interviews where they

were required to outline the characteristics of creative and uncreative children participating in the TTCT. From using both the implicit and explicit theories framework it has become evident that both are important. This is because both have resulted in different findings with the implicit theories framework producing findings which are at times not associated with creativity, such as rote memorization. However findings emerging from the use of explicit theories framework are very much similar to previous creativity research.

16.2: Summary of major findings

16.2.1: What do we mean by creativity?

Creativity is mentioned across Pakistani educational policy and curriculum documents but the term varies in use across these showing an unclear understanding of what it means which may reflect that creativity is being mentioned because it is a current fashionable educational concept rather than a concept which has been deliberated over. It is seen as ability, a means for doing something, a way of thinking and a quality which the individual should possess. In fact the term is discussed as a separate entity alongside other terms which are normally found to be used in defining creativity. However irrespective of the terminology used there is no clear operational definition provided which has implications for its systematic implementation in educational practice. Without an operational definition the textbook developers, (the textbook being the only teaching material and upon which assessment is also based) may not design any activities which would promote creativity in children and if activities are included they may be based on an inconsistent understanding leading to implications for assessment.

In contrast to the policy documents primary school teachers provided many definitions with a high level of agreement on many of the elements of creativity. The definitions belonged to the creative process, effect of the process, the creative product, as a skill, a personality attribute,

form of thinking, learning, and as a catalyst. The many definitions given indicate the diverse range of understandings amongst teachers, encompassing anything and everything, which leads to the conclusion that either creativity is a very complicated and diverse concept or that the teachers have no real understanding about what it means.

16.2.2: What is the importance of developing creativity?

The importance of having and developing creativity is vastly documented across the creativity literature, it has also been acknowledged and the need for it stressed in educational policy documents of many countries and by teachers in previous research studies. However the Pakistani policy documents, while acknowledging the need for the education system to develop creative people do not specifically state the reasons for why this is needed. Nevertheless this has not prevented Pakistani primary school teachers from expressing their views on the issue. They have reported a variety of reasons indicating their belief in creativity being an agent for change at the level of society, school and the child. These changes are at different levels so the question which arises is whether it is one sort of creativity which leads to one type of change and another to another type and this requires further exploration.

16.2.3: To what extent can creativity be developed?

There is an overwhelming confidence, as indicated in the literature, that creativity can be developed through specific methods. This belief and desire is also reflected in the Pakistani policy documents which propose an education system that produces students who possess and exhibit creativity. It is regarded as something that is educatable and to educate children for it as one of the many aims of the education system although not a top priority. The curricula also includes directions for making arrangements for the development of children's creativity, however there are contradictions in suggestions and advice offered which if followed would

actually discourage it. A fuller analysis of the class five science curriculum showed that majority of the learning outcomes were related to knowledge acquisition with very little emphasis upon developing creativity.

Pakistani teachers also widely hold the view expressed in policy documents in that children's creativity can be developed and developed when they are in primary education. The majority reported using a diverse range of methods for this purpose indicating that there is no single way to stimulate creativity. However the methods which are normally considered to be at the core of developing creativity were reported being employed by fewer teachers while others reported using methods which are normally deemed as detrimental to creativity.

The very methods outlined by the teachers in the survey as being used during their teaching were not actually found to be used during classroom observation. The few which were used were as assistance for rote learning and regurgitating information given in the textbooks and not developing creativity. While many teachers said that they use the textbook to develop creativity the analysis of the science textbook revealed that the contents of this teaching material is knowledge acquisition as evident from the type of questions and exercises contained within it. Interestingly the questions which are considered by teachers to develop creativity do nothing more than expect children to recall knowledge and for teachers to check the retention of previously learned material. This brings into question teachers understanding of creativity and raises doubts over their real knowledge about creativity enhancing teaching techniques.

The problem with classroom teaching, which inhibited creativity development, was the type of work involved which required children to only memorize given information and recite it back. There were factors however which could potentially contribute towards a creativity

conducive environment, such as a high motivational climate, close working relationship between the teacher and children, expectation for hard work, commitment and children working intently. However these are far outweighed by factors which act more of an impediment including tightly controlled, fast paced and short lessons, being reprimanded for making mistakes, appreciated for correct answers and neatness only, not being encouraged to produce any unusual response or ask unusual questions, mechanical daily routine, obedience and teacher authority. While these are seen as impediments to creativity according to the creativity literature they are being practiced by Pakistani teachers and in many aspects regarded as conducive to creativity. Teachers have also indicated to barriers they face in developing creativity which are related to children, the school, society and parent/home environment. However since the evidence discussed above shows that creativity is not being developed this then leads to the conclusion that these barriers are perhaps not related to creativity but general obstacles in teaching. In conclusion, the findings show that there is little consistency between teacher views as given in the survey and their practice. In fact if we link the findings from the policy documents, curriculum, textbook and teaching practice it becomes evident that the emphasis on creativity actually decreases as each level moves closer to implementation with the only outcome of learning being new information.

16.2.4: To what extent can creativity be assessed?

Assessment of creativity is an area which is still generally regarded as difficult and problematic despite the development of various measurement methods and instruments. The Pakistani educational policy documents outline the assessment mechanisms but not the contents with reference to assessment of creativity. However the curriculum documents allow some role for creativity in assessment although at times there are contradictions in that the range of assessment methods recommended also contain those which if used would only

assess previously learned material. Pakistani teachers are also of the view that creativity can be assessed, outlining a number of methods. But many of these could easily be used to assess just knowledge. In fact majority of the teachers reported that they use reciting previously learned information as a way of assessing children's creativity which indicates that creativity to them means rote learning. This shows a somewhat different understanding of creativity and brings into question teachers knowledge of techniques which actually assess creativity. This research did not involve any further work on assessment in the class room therefore it is an area for future research.

16.2.5: To what extent is the primary education system in Pakistan hindering or promoting children's creativity?

The TTCT measures of creativity have shown that Pakistani children are not very creative as indicated by the low scores obtained. One of the reasons for this low score is that the TTCT types of activities were new to the children and not part of their existing teaching which may lead some to argue that this factor then puts the children at a disadvantage. It leads one to question if there would have been a difference to the children's scores had they been familiar with the TTCT type activities. But if for a moment we accept the TTCT results as an indication of Pakistani children's creativity to fulfil the purpose of this research, that is to establish a baseline, then based on the evidence discussed above the overall question of the research, factors enhancing or inhibiting children's creativity, can be answered and the TTCT results explained.

So what are the reasons which led to children performing badly and hence may be regarded as factors inhibiting children's creativity. The evidence in this regard suggests that the primary education system is actually not doing much to develop children's creativity. The policy

documents indicate a desire to introduce creativity into the system as evidenced by its mention, suggestions for development during teaching and inclusion in assessment. However this is at a very early and introductory stage with no indication of hard and detailed deliberation over the issue. There is no operational definition, which means it will not be translated into curriculum. Student learning outcomes, as included in the curricula and teaching material are focused on knowledge acquisition, teacher views on indicators of student creativity are also related to acquisition of knowledge and good behaviour. But perhaps the major factor inhibiting children's creativity is the teaching method used, in that children are only expected to rote learn material and recite it back. This then leads to the conclusion that the existing primary education system is doing very little to develop children's creativity and is working at the very basic level of providing knowledge which is important in itself but not sufficient.

With this summary of the findings related to each research question the following are the recommendations.

16.3: Implications for research

16.3.1: Adopting a systems approach to creativity and using mixed methods

This research has reinforced the need for a systems view of creativity, showing that investigating creativity within education is assisted by exploring the components of the education system, in order to provide a more holistic and less distorted view of the phenomenon. A mixed methods approach is useful to cross verify the findings, and reach conclusions which lead to identification of gaps for improvement in policy and practice.

For example, if only a teacher survey had been conducted the findings would have reflected that teachers are practicing much of what is required to develop children's creativity. If there

was only textbook analysis the findings would have shown that much of the content is not conducive to creativity, but the few examples which do exist have the potential to develop creativity. If there was only classroom observation the findings would have shown that the methods being used are mostly detrimental to creativity development. In the light of all these findings it may have been concluded that children have little or no creativity. However the scores from administering the TTCT showed that there were children who, despite being taught in the same system using same teaching methods and materials, were achieving high scores, very similar to those of the American sample. This leads us to another conclusion in that there is something which is orienting children to be creative other than the education system itself. Hence, only investigating the education system and relying upon it totally for developing children's creativity would be unsound.

16.3.2: Use of gatekeepers

It would not have been possible to conduct the current study at this large scale or across the geographical spread without the support of local gatekeepers of authority who were aware of local mechanisms, organisations and conditions. This research has shown that it is possible to use unconventional methods in situations where more conventional methods would have been less effective due to insufficient infrastructure such as no email facilities and poor postal services. For conducting research in countries where there is little confidence in the value of research, which is interpreted as an evaluation and therefore a threat and where the various conflicts within the country give rise to suspicions if foreign/external organisations are involved using non indigenous research instruments then it is recommended that local support from government agencies is acquired in order to avoid suspicions and non participation. As one teacher said:

Our education system is dependent on America and Europe. We are not free in our creations or research, a subjugated nation is not free to do anything of its own choice.

16.4: Implications for policy and practice

This research has shown that although there are weaknesses at both policy and implementation level, the development of creativity is mainly being hindered in the classroom through the teaching methods being used, so it is not necessarily a problem of what is being taught but of how.

16.4.1: Policy/ curriculum level recommendations

The findings from policy documents have shown that there is no deliberate emphasis on creativity. It is mentioned under 'innovations in teacher training' as something that should be encouraged. The major focus on creativity out of all the components analysed is in the curriculum documents. However, the data has shown that there are inconsistencies of terminology and an absence of clear definition. It is recommended that if the concept is to be translated into practice, then a clear and consistent operational definition needs to be provided along with guidelines for developing activities and assessment in the textbooks. Just providing guidelines may not be sufficient but textbook developers will need to be oriented and trained and examiners and examination boards taken on board to ensure that these guidelines have been translated into practice. There is a need to emphasise that creativity will be part of examinations, if teachers are to take this seriously.

16.4.2: Practice level recommendations

The findings have shown that the classroom teaching practices are a major inhibiting factor in developing children's creativity. The entire focus is on teaching content through rote memorization. Under these circumstances the following recommendations are made for

improvement in practice. These are in textbooks, creativity as an extra curriculum subject, teaching methods, training and assessment.

16.4.2.1: Textbooks

The textbook plays a crucial role as the only teaching material both for the student and the teacher and in the light of resource constraints it is a very strong tool which can be modified to change teachers teaching habits. But the teachers have no control over the contents. This is the responsibility of the Textbook Boards. There are two recommendations for textbooks. The first is to ensure that the few activities and questions given in the textbooks which have the potential for developing creativity are used for this purpose rather than just rote memorisation. The second and perhaps the one with long term benefits is to include more creativity-conducive content, exercises and questions in the textbooks. For this, the textbook developers will need to be trained according to the curriculum guidelines. This will prevent having to develop extra supplementary material specifically for development of creativity and will minimize the impression that teacher workload is increasing. In this way the teachers would not have to divert too much from their regular way of teaching and just enough will be added to start developing more of children's creativity.

16.4.2.2: Creativity as additional curriculum subject

An alternative approach is to introduce creativity as a separate subject within the curriculum while the remaining subjects continue to be taught and assessed in the same way. However, for the reasons given, it would be preferable to start with revision of the textbooks.

16.4.2.3: Teaching methods

There are three recommendations for teaching, in general:

a) Introduce short regular exercises, independent of the subject teaching, in which children are provided the opportunity to develop their creativity. This will ease the children into this way of thinking without worrying that they will be assessed on this and the teachers into this way of teaching without worrying about their children's exam results.

b) Use teaching methods which support developing children's creativity throughout the teaching of subject contents, even though the ultimate aim can remain memorisation of information, and in this way assessment is not affected (but see below).

c) Use teaching methods which support in developing children's creativity throughout the teaching of subject contents with the ultimate aim of creativity being a learning outcome which will affect assessment.

16.4.2.4: Assessment

One of the potential problems with the above recommendations (except c) is that teachers may not include any of the above into their teaching if they know that children will not be assessed along these lines. They may resort to their old methods, which will suffice for their short-term aim of preparing children for the requirements of the examination, and be less time consuming. This is unless of course they are convinced of the need and importance of doing this and they understand that this is an interim arrangement for mainstreaming teaching for creativity into regular teaching. However in the long run perhaps assessment must incorporate creativity in which questions are asked in the exams which require them to think and apply the craft learned to become more creative.

16.4.2.5: Teacher training

Any of the above interventions will require the teachers to be trained somewhat differently. Teacher training agencies will need to be involved and provide simple training keeping in mind the lack of time and other resources available to teachers. The kind of resources and spaces spoken of in the creativity literature will not be available at all or in abundance. Therefore the strategy must be more focused on simple yet effective techniques such as questioning. Even in this teachers will need to learn about ways to respond to different type of responses children may generate.

16.4.2.6: Coordination between parents and teachers

Including any new element into teaching and textbooks or even introducing a new curriculum area will have implications for parents, many of whom may also see being able to regurgitate facts as the ultimate aim and outcome of education. If they are to help their children at home then they need to be oriented to what is expected so that children are allowed to think for themselves and generate work without feeling it will be disapproved because it is not consistent with local norms.

In conclusion the overall recommendation is to introduce short term measures to orient teachers, parent and children to the legitimacy and potential importance of enhancing creativity. However, in order to include creativity into the system permanently more structural changes are required within the policy, curriculum, textbooks, teaching and assessment which requires a 'a coordinated movement to enhance creativity among school children' (Feldman and Benjamin, 2006, p.332). These will take time and more detailed planning.

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Appendix 1

Questionnaire (English version)

Code:

District: Sub-district:

School Name: Date:

A Survey of Teacher's Views Regarding Primary School Children's Creativity

Please only complete this questionnaire if you are a 5th grade teacher

Dear Teacher,

This questionnaire is part of a research study which aims to explore the situation regarding children's creativity in primary schools in several districts of the Punjab province of Pakistan. The results of this survey will be used to inform research findings.

- Please attempt to complete every question
- Please feel free to make comments regarding any aspect of the questionnaire
- Please complete the questions in the order given

Thank you for your co-operation and the time taken to complete the questionnaire

Section 1: What is Creativity

Which of the following definitions reflect your views of what is meant by creativity.?

(*please* ✔ *as appropriate)*

	Creativity is:	Yes	No
1	Using imagination		
2	(Sudden) Inspiration		
3	Solving problems		
4	Improving some thing		
5	Identifying problems		
6	Recombining ideas/materials		
7	Making unusual connections		
8	Producing something new		
9	Self Expression		
10	Producing something useful		
11	Taking risks (try out things even if they might not work)		
12	Using intuition (trust own feelings)		
13	Being independent		
14	Going against conventions		
15	Preference for complexity/obscurity		
16	Spiritual process		
17	A process which leads to change and development		
18	Exploring the unknown		
19	Higher-level thinking skill		
20	Generating alternatives		
21	An advanced form of learning		

22 Others (Please state)

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Section 2: Identifying creativity

Which of the following are in your view indicators of primary school children's creativity:

(*please* ✔ *as appropriate*)

	A creative child:	Yes	No
23	Can see if the work produced has achieved it's purpose		
24	Produces original work/ideas		
25	Can use things already learned to help in doing further work		
26	Asks unusual questions		
27	Stops to review work		
28	Tries out things even if they might not work		
29	Likes finding out about things		
30	Can think of unusual and new ways of doing things		
31	Can spot problems and ways of dealing with them		
32	Modifies and changes ideas/work		
33	Can compare things and make unusual connections		
34	Can create things in the mind (imagine)		
35	Shares ideas with others		
36	Looks at things from different points of view		
37	Thinks critically		
38	Self confident		
39	Holds strong opinion		
40	Is persistent and likes to work		
41	Express's feelings without hesitation		
42	Is knowledgeable		
43	Shows independence		
44	Can rote memorize		
45	Can Follow instructions		

46 Others (Please state)

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Which of the following methods do you use in order to assess primary school children's creativity?

(*please* ✔ *as appropriate*)

	In order to assess children's creativity the methods used are:	Yes	No
47	Observation		
48	Making or grading children's work		
49	Asking children different questions		
50	Group work		
51	Playing games		
52	Listening to children recite their 'sabaq'		
53	Practical work		
54	Exams		
55	Giving children opportunity to speak		

56 Others (Please state)

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Section 3: Developing creativity

Which of the following do you use to develop primary school children's creativity?

(*please* ✔ *as appropriate*

	Children's creativity can be developed by:	Yes	No
57	Appreciating their (original) ideas and work		
58	Encouraging them to share and debate ideas and work		
59	High teacher expectations		
60	Allowing mistakes and encouraging them to try again		
61	Friendly teacher student relationship		
62	Using humor		
63	Using textbook lessons to teach		
64	Encouraging them to give and receive feedback		
65	Encouraging them to see possible implications of ideas/solutions		
66	Encouraging them to modify and alter ideas		
67	Encouraging them to acquire knowledge		
68	Encouraging them to ask unusual questions		
69	Encouraging them to question rules and facts		
70	Encouraging them to compare things and make unusual connections		
71	Encouraging them to make decisions		
72	Maintaining children's interest and attention		
73	Encouraging their curiosity		
74	Stimulating their imagination		
75	Giving them time to develop ideas		
76	Teachers joining in activities to model their own creativity		
77	Encouraging commitment and hard work		
78	Encouraging independence		
79	Providing sufficient resources and physical space		
80	Supporting their individual interests		
81	Group work		
82	Reciting poetry		
83	Trips		
84	Making children confident		
85	Competition amongst children		
86	Teachers providing satisfactory answers to children's questions		
87	Experiments		
88	Games		
89	Decorating the classroom		
90	Training of teachers about creativity		
91	Teachers expertise/knowledge of teaching subject		

92 Others (Please state)

_____

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Which of the following obstacles do you face in developing children's creativity?

(*please* ✔ *as appropriate*)

	The obstacles I face in developing children's creativity are:	Yes	No
93	Some children do not enjoy doing creative work		
94	Overcrowded classroom		
95	Working according to the national curriculum		
96	Difficult to assess creative work		
97	Children have different interests		
98	Some activities for creativity create disturbances for other classes		
99	Children's lack of interest		
100	Poverty amongst parents		
101	Illiteracy amongst Parents		
102	Parents lack of interest and support in children's education		
103	Children not understanding things		
104	No provision of pleasant environment		
105	Existing form of assessment		
106	Lack of resources and facilities		
107	Different levels of creativity in children		
108	Lack of time to prepare activities for creativity and teach according to them		
109	Lack of teachers training about creativity		
110	Absence of a guide in the form of a better teacher in the school		
111	Shortage of teachers		
112	Lack of confidence amongst children to do the work		

113 Others (Please state)

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114 Are there any organizations working for developing primary school children's creativity?

Please circle any one of these:

Yes No Don't Know

115 If yes then please outline the name of the organizations

_____

_____

116 Which of these textbooks, that you teach, help to develop children's creativity?

Please circle from following:

English Science Social studies Islamic studies Mathematics Urdu

117 Please outline the textbooks chapters which develop children's creativity

_____

_____

118 Have you received any special training for developing children's creativity?

Please circle any one of these: Yes No

119 If yes then please outline the name methods taught during the training

_____

_____

120 Does your education department encourage you to develop children's creativity?

Please circle any one of these: Yes No

Section 4: Why Develop Creativity

The list below contains some of the reasons for developing children's creativity. Which of these do you consider as important.

(*please* ✔ *as appropriate*)

	It is important to develop primary school children's creativity because:	Yes	No
121	A child's foundation is set at primary that is why in order to strengthen this foundation it is important to develop children's creativity		
122	These things need to be taught at the start this way it becomes easier at higher levels of education		
123	If a child has creativity he/she can use the information they have to do the given task, even if they have not done it before		
124	Development of creativity is a secret to a nations success		
125	Until creativity is developed it will be difficult to practically progress in the field of education		
126	To develop confidence in children		
127	To develop independence in children		
128	To develop individuality in children		
129	To develop children's interest in learning		
130	To develop children's innovative thinking		
131	To make learning interesting and fun		
132	Children can use their creativity to learn better		
133	At primary level of schooling child's thinking is still flexible		

134 Others (Please state)

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135 Can children's creativity be developed when they are in primary education?

Please circle any one of these: Yes No

Section 5: Information related to school

136 School Type (sector wise)*(please tick one)* Government ☐ Private ☐ Other ☐

If other then please state the school type

_____

137 School Type (Gender wise)*(please tick one)* Girls ☐ Boys ☐ Mixed ☐

138 School Location *(please tick one)* Urban ☐ Rural ☐

Section 6: Information related to the teacher

139 Your Gender *(please tick one)* Female ☐ Male ☐

140 How long have you been teaching? Under 1 year ☐ _____ Years

141 Academic qualification *(please tick your highest qualification)*

None ☐ Matric ☐ FA/FS ☐ B.A /B.sc ☐ M.A/Msc ☐ Others ☐

142 Professional qualification *(please tick your highest qualification)*

None ☐ PTC ☐ CT ☐ B.Ed/Bs.Ed ☐ M.Ed ☐ Others ☐

143 Would you like a summary of this research sent to you?

Please circle any one of these: Yes No

144 Please use this space for any other comments you wish to make

_____

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Please take a moment to check that you have responded to all the questions

Thank you for your time and participation in this research study

Questionnaire (Urdu version)

کوڈ:_____

سکول کا نام:_____ تاریخ:_____

پرائمری تعلیم کی سطح پر بچوں میں تخلیقی صلاحیتوں کو اجاگر کرنے کے بارے میں اساتذہ کی رائے

برائے مہربانی اس سوالنامے کو صرف پانچویں جماعت کے اساتذہ پر کریں۔

محترم اساتذہ!

یہ سوالنامہ ایک تعلیمی تحقیق کا حصہ ہے جس کا مقصد پاکستان میں صوبہ پنجاب کے مختلف اضلاع میں پرائمری سکول کے بچوں میں تخلیقی صلاحیتوں کا جائزہ لینا ہے۔ اس جائزے کے نتائج کو مزید تحقیق کے لئے استعمال کیا جائے گا۔

- برائے مہربانی ہر سوال کا جواب دیجئے۔
- آپ اس سوالنامہ کے کسی بھی پہلو پر آزادی سے اپنی رائے کا اظہار کر سکتے ہیں۔
- سوال جس ترتیب میں دیئے گئے ہیں اسی ترتیب میں ان کو مکمل کیجیے۔
- ہم آپ کے تعاون اور وقت دینے پر بہت شکر گزار ہیں۔

☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

1

سیکشن 1

تخلیقی صلاحیت کیا ہے؟

نیچے دی گئی لسٹ میں کون کون سی تخلیقی صلاحیت کی تعریف آپکے خیالات کی عکاسی کرتی ہے۔ مندرجہ ذیل عوامل جو آپ کے خیال کے مطابق صحیح ہیں اس کے ہاں کے ڈبے کے نیچے ٹک کا نشان لگائیں اور جو صحیح نہیں ہیں ان کے نہیں کے ڈبے کے نیچے ٹک کا نشان لگائیں۔

	تخلیقی صلاحیتوں سے مراد ہے:	ہاں	نہیں
1	اپنے تخیل کا استعمال		
2	اچانک نئے خیال کا آنا		
3	مسائل کا حل نکالنا		
4	کسی چیز کو بہتر بنانا		
5	مسائل کی نشاندہی کرنا		
6	خیالات یا چیزوں کی تنظیم نو		
7	چیزوں کے درمیان عجیب وغریب ربط بنانا		
8	نئی چیزیں بنانا		
9	اپنی رائے کا اظہار کرنا		
10	مفید چیزیں بنانا		
11	نئی کوشش کرنی خواہ وہ کامیاب ہو یا نہ ہو		
12	اپنے لاشعوری خیالات کا استعمال کرنا		
13	خود مختار ہونا		
14	روایتوں کے خلاف کام کرنا		
15	مشکل کام کا انتخاب کرنا		
16	روحانی عمل		
17	ایک عمل جو تبدیلی اور ترقی کی طرف لے جاتا ہے		
18	انجانی چیزوں کے بارے میں تحقیق کرنا		
19	اعلیٰ درجہ کی سوچنے کی صلاحیت		
20	ایک سے زیادہ امکانات نکالنا		
21	سیکھنے کا ایک اعلیٰ معیار		
22	اگر آپ کے خیال میں تخلیقی صلاحیت کی کوئی اور تعریف بھی ہے تو دی گئی جگہ میں لکھیں۔		

	بچوں میں تخلیقی صلاحیت اس طرح پیدا کی جاسکتی ہے	ہاں	نہیں
64	بچوں کو رائے لینے اور دینے کا موقع دے کر		
65	اپنے خیالات اور کام کے ممکنہ اثرات کا اندازہ لگانے کا موقع دے کر		
66	خیالات کو تبدیل کرنے اور بہتر بنانے کا موقع دے کر		
67	علم حاصل کرنے کی طرف راغب کر کے		
68	عجیب وغریب اور انوکھے سوال پوچھنے کا موقع دے کر		
69	قوانین اور حقائق پر تنقید کرنے کا موقع دے کر		
70	مختلف چیزوں کے درمیان عجیب وغریب ربط ڈھونڈنے کا موقع دے کر		
71	بچوں کو اپنا فیصلہ کرنے کا اختیار دے کر		
72	بچوں کی توجہ اور دلچسپی برقرار رکھ کر		
73	تجسس پیدا کر کے		
74	تخیل کا استعمال کروا کر		
75	خیال کو تشکیل دینے اور سوچنے کے لیے وقت دے کر		
76	اساتذہ کا طالب علموں کے سامنے اپنی تخلیقی صلاحیت کا مظاہرہ کر کے		
77	محنت کی طرف رغبت دلا کر		
78	خودمختاری کو فروغ دے کر		
79	مناسب جگہ اور وسائل مہیا کر کے		
80	انفرادی دلچسپیوں کی حوصلہ افزائی کر کے		
81	گروپوں میں کام کروا کر		
82	بزم ادب کروا کر		
83	سیر وتفریح پر لے جا کر		
84	اعتماد پیدا کر کے		
85	بچوں کے درمیان مقابلے کروا کر		
86	بچوں کے سوالات کے استاد تسلی بخش جوابات دے کر		
87	تجربات کروا کر		
88	مختلف کھیل میں حصہ لے کر		
89	کلاس روم کی سجاوٹ کر کے		
90	استاد کو تخلیقی صلاحیت کے بارے میں ٹریننگ دے کر		
91	استاد کی پڑھائے جانے والے مضمون میں مہارت پیدا کر کے		

92 اگر آپ بچوں میں تخلیقی صلاحیت پیدا کرنے کا کوئی اور طریقہ کار بتانا چاہتے ہیں تو خالی جگہ پر تحریر کریں۔

نیچے دی گئی فہرست میں کون کون سی رکاوٹیں ہیں جو پرائمری سکول کے بچوں میں تخلیقی صلاحیت کو فروغ دینے میں آپ کو حائل ہوتی ہیں؟ مندرجہ ذیل عوامل جو آپ کے خیال کے مطابق صحیح ہیں اس کے ہاں کے ڈبے کے نیچے ٹک کا نشان لگائیں اور جو صحیح نہیں ہیں ان کے نہیں کے ڈبے کے نیچے ٹک کا نشان لگائیں۔

	بچوں میں تخلیقی صلاحیت کو فروغ دینے میں حائل رکاوٹیں ہیں:	ہاں	نہیں
93	کچھ بچے تخلیقی کام کرنے میں خوشی محسوس نہیں کرتے		
94	کلاس میں بہت زیادہ بچے ہوتے ہیں		
95	قومی نصاب کے مطابق کام کرنا پڑتا ہے		
96	تخلیقی کام کا جائزہ لینا مشکل ہوتا ہے		
97	تمام بچوں کی دلچسپیاں مختلف ہوتی ہیں		
98	کچھ سرگرمیاں جن سے تخلیقی صلاحیت کو فروغ مل سکتا ہے شور کی وجہ سے دوسری کلاسز کیلئے ایک مسئلہ بن جاتی ہیں		
99	بچوں کی دلچسپی کا کم ہونا		
100	والدین کی غربت		
101	والدین کا ناخواندہ ہونا		
102	والدین کا بچوں کے تعلیمی سلسلے میں عدم دلچسپی		
103	کچھ بچے بات کو سمجھ نہیں سکتے		
104	بہترین ماحول میسر نہیں ہوتا		
105	بچوں کا موجودہ جائزہ لینے کا طریقہ		
106	وسائل اور سہولیات کی کمی		
107	مختلف بچوں میں مختلف پیمانے میں تخلیقی صلاحیت کا ہونا		
108	تخلیقی سرگرمیاں تیار کرنے اور ان کے تحت پڑھانے کے لیے کم وقت ہونا		
109	تخلیقی صلاحیتوں کے بارے میں استاد کی ٹریننگ کی کمی		
110	اساتذہ کی رہنمائی کے لیے ماہرین کا سکول میں موجود نہ ہونا جو ان کو بتائے کہ کس طرح بچوں کی معاونت کی جا سکتی ہے		
111	اساتذہ کی کمی		
112	کچھ بچوں میں تخلیقی کام کرنے کے لیے خود اعتمادی کی کمی ہوتی ہے		

113 اگر آپ کو بچوں میں تخلیقی صلاحیت کو فروغ دینے میں کچھ اور رکاوٹیں پیش آتی ہیں تو خالی جگہ پر تحریر کریں۔

سیکشن 2

تخلیقی صلاحیت کی نشاندہی

پرائمری سکول کے بچوں میں تخلیقی صلاحیتوں کی نشاندہی کرنے کے لیے نیچے دی گئی لسٹ میں کون کون سے عوامل ہیں جو آپ استعمال کرتے ہیں۔ مندرجہ ذیل عوامل جو آپ کے خیال کے مطابق صحیح ہیں ان کے ہاں کے ڈبے کے نیچے ٹک کا نشان لگائیں اور جو صحیح نہیں ہیں ان کے نہیں کے ڈبے کے نیچے ٹک کا نشان لگائیں۔

	تخلیقی صلاحیت کے مالک وہ بچے ہیں جو:	ہاں	نہیں
23	دیکھتے ہیں کہ جو کام وہ کر رہے ہیں اس کا مقصد پورا ہو گیا ہے		
24	نیا کام اور نئے خیالات پیش کرتے ہیں		
25	سیکھی ہوئی چیزوں کو مزید کام کرنے کے لیے استعمال کرتے ہیں		
26	عجیب و غریب سوالات پوچھتے ہیں		
27	کام کے دوران رک کر اپنے کام کا دوبارہ تجزیہ کرتے ہیں		
28	نئے کام کو شروع کرتے ہیں خواہ وہ کام قابل عمل ہو یا نہ ہو		
29	چیزوں کے بارے میں جاننے کی کوشش کرتے ہیں		
30	کام کرنے کے نئے طریقے ایجاد کرتے ہیں		
31	مسائل کی نشاندہی کرتے ہیں اور ان کا حل بتاتے ہیں		
32	کام میں تبدیلی اور بہتری پیدا کرتے ہیں		
33	چیزوں کا آپس میں موازنہ کر کے نئے ربط ڈھونڈتے ہیں		
34	تصوراتی سوچ رکھتے ہیں		
35	اپنے خیالات دوسروں کو بتاتے ہیں		
36	ہر کام کو مختلف زاویوں سے دیکھتے ہیں		
37	تنقیدی سوچ رکھتے ہیں		
38	پر اعتماد ہوتے ہیں		
39	اپنے خیالات پر مضبوطی سے قائم رہتے ہیں		
40	کام کو تسلسل اور شوق سے کرتے ہیں		
41	بلا جھجک اپنے جذبات کا اظہار کرتے ہیں		
42	باخبر ہوتے ہیں / علم رکھتے ہیں		
43	خود مختاری کا اظہار کرتے ہیں		
44	سبق یاد کر سکتے ہیں		
45	دی گئی ہدایات پر عمل کر سکتے ہیں		
46	اگر بچوں کی تخلیقی صلاحیت کی نشاندہی آپ کسی اور طریقے سے کرتے ہیں تو نیچے دی گئی جگہ میں لکھیں۔		

114 کیا پرائمری سکول کے بچوں میں تخلیقی صلاحیت کو اجاگر کرنے کیلئے کوئی ادارہ کام کر رہا ہے؟

(کسی ایک پر دائرہ لگائیں) ہاں نہیں معلوم نہیں

115 اگر ہاں تو ادارے کا نام لکھیں اور تخلیقی صلاحیت کو اجاگر کرنے کیلئے جو وہ کام کر رہے ہیں اس کی تفصیل بتائیں

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116 آپ کے خیال میں کون سی کتاب، جو آپ پڑھاتے ہیں، بچوں میں تخلیقی صلاحیت کو فروغ دینے میں مدد دیتی ہیں

(کسی ایک پر دائرہ لگائیں) انگریزی سائنس معاشرتی علوم اسلامیات ریاضی اردو

117 جن کتابوں کو آپ پڑھاتے ہیں ان میں موجود اسباق کے نام لکھیں جن کے ذریعے تخلیقی صلاحیتوں کا فروغ ہوتا ہے؟

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118 کیا آپ کی کوئی خصوصی ٹریننگ ہوئی ہے، بچوں میں تخلیقی صلاحیت کو فروغ دینے کے لیے؟ (کسی ایک پر دائرہ لگائیں) ہاں نہیں

119 اگر ہاں تو تخلیقی صلاحیت کو فروغ دینے کے لیے کون سے طریقے بتائے گئے تھے؟

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120 کیا محکمہ تعلیم بچوں میں تخلیقی صلاحیت کو فروغ دینے کو کہتا ہے؟ (کسی ایک پر دائرہ لگائیں) ہاں نہیں

☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

سیکشن 4

تخلیقی صلاحیتوں کو فروغ دینا کیوں ضروری ہے؟

نیچے دی گئی لسٹ میں، بچوں میں تخلیقی صلاحیت کو فروغ دینے کی کچھ وجوہات بیان کی گئی ہیں، ان میں کون سی وجوہات آپ اہم سمجھتے ہیں۔ مندرجہ ذیل عوامل جو آپ کے خیال کے مطابق صحیح ہیں اس کے ہاں کے ڈبے کے نیچے ٹک کا نشان لگائیں اور جو صحیح نہیں ہیں ان کے نہیں کے ڈبے کے نیچے ٹک کا نشان لگائیں۔

	بچوں کی تخلیقی صلاحیتوں کو فروغ دینا اس لیے اہم کیونکہ:	ہاں	نہیں
121	بچے کی بنیاد پرائمری تعلیم سے شروع ہوتی ہے لہٰذا بچوں کی بنیاد کو مضبوط کرنے کیلئے تخلیقی صلاحیت کو فروغ دینا ضروری ہے		
122	شروع سے ہی ہمیں یہ چیزیں سکھانی چاہیں تا کہ جیسے بچے تعلیم میں آگے بڑھیں تو ان کے لیے آسانی رہے		
123	اگر بچوں میں تخلیقی صلاحیتیں ہیں تو وہ حاصل کردہ معلومات کا استعمال کر کے دیا ہوا کام کر سکیں گے، بے شک پہلے نہ کیا ہو		
124	کسی بھی معاشرے کی ترقی کا راز تخلیقی صلاحیتوں کو اجاگر کرنے میں ہے		
125	جب تک بچوں کی تخلیقی صلاحیتوں کو اجاگر نہیں کیا جائے گا اس وقت تک تعلیمی میدان میں عملی ترقی مشکل ہے		
126	بچوں میں اعتماد پیدا ہوتا ہے		
127	بچوں میں خود مختاری پیدا ہوتی ہے		
128	بچوں میں انفرادیت پیدا ہوتی ہے		
129	بچوں میں سیکھنے کا جذبہ پیدا ہوتا ہے		
130	بچوں میں ایجادی سوچ پیدا ہوتی ہے		
131	سیکھنے کا عمل خوشگوار اور دلچسپ ہوتا ہے		
132	بچے اپنی تخلیقی صلاحیتوں کو استعمال کر کے بہتر طور پر سیکھ سکتے ہیں۔		
133	پرائمری کی سطح پر بچے کی سوچ ابھی پختہ نہیں ہوئی ہوتی		

134 اگر پرائمری سکول کے بچوں میں تخلیقی صلاحیت کو فروغ دینے کی کوئی اور وجہ ہے تو خالی جگہ پر تحریر کریں۔

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135 کیا بچوں کی تخلیقی صلاحیتوں کو پرائمری کی سطح پر فروغ دیا جا سکتا ہے؟ (کسی ایک پر دائرہ لگائیں) ہاں نہیں

☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

سیکشن 5

سکول کے متعلق معلومات

136 سکول کی قسم (کسی ایک پر دائرہ لگائیں) گورنمنٹ پرائیوٹ یا کوئی اور

اگر کوئی اور تو کونسا_____

137 سکول کی قسم (کسی ایک پر دائرہ لگائیں) لڑکوں کا لڑکیوں کا دونوں کا

138 سکول کا محل وقوع (کسی ایک پر دائرہ لگائیں) شہری دیہاتی

☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

سیکشن 6

استاد کے کوائف

139 آپکی جنس (کسی ایک پر دائرہ لگائیں) مرد عورت

140 آپ کتنے عرصے سے پڑھا رہے/رہی ہیں۔ ایک سال سے کم ------سال

141 **تعلیمی قابلیت** (اپنی سب سے اعلیٰ ڈگری پر دائرہ لگائیں)

میٹرک سے کم میٹرک FA / FSc BA BSc MA / MSc کوئی اور

142 **پیشہ ورانہ قابلیت** (اپنی سب سے اعلیٰ ڈگری پر دائرہ لگائیں)

کوئی بھی نہیں PTC CT BEd BS-Ed MEd کوئی اور

143 کیا آپ چاہتے ہیں کہ آپ کے سکول کو اس تحقیق کا خلاصہ بھیجا جائے؟ (کسی ایک پر دائرہ لگائیں) ہاں نہیں

144 اگر آپ اس سوالنامے کے متعلق کچھ بھی تحریر کرنا چاہتے ہیں تو درج ذیل جگہ کا استعمال کریں۔

برائے مہربانی اس بات کا یقینی بنائیں کہ آپ نے تمام سوالوں کے جوابات دے دیئے ہیں۔

اس تحقیق میں ہم آپ کے وقت اور شمولیت کے بے حد مشکور ہیں۔

Appendix 2

Training Material

Instructions for MC administering questionnaire in private schools

These instructions are for the persons visiting the schools for the purpose of the questionnaire

Please follow these instructions as they are given to ensure consistency:

1. **Before visiting the schools please ensure that:**

   The questionnaire has a code and the school name (refer to the school list)

2. **At the school**

   - At the school meet the head teacher and provide an introduction using Document 1. If you need to mention which organisation is supporting the research please say that it is the Federal Government.

   - Ask for the head teachers consent to continue and request him/her if the questionnaire could be completed by the class 5 teacher(s). Clarify that the instructions for completing the questionnaire are given on the front page of the questionnaire. And that it is printed double sides so to ensure that questions on both sides are completed. Ensure that they add **district, tehsil and union council** on the front page.

3. Wait for the teacher(s) to complete and return the questionnaire
4. Check that all questions have been completed
5. Than k them for their cooperation and time
6. Complete the columns in document 3
7. Submit the completed questionnaire to the DPME

Guidelines for data collection

A. Provincial level

The provincial coordinator will ensure that:

1. The following material, provided by head office, is distributed to the districts –

- Questionnaires
- Tests
- A file containing List of Schools and Guidelines for data collection process

The material has been packaged according to the amount required in each district. These packets can be sent as they are received from head office.

The questionnaires are to be distributed to the class 5 teachers using the process given below.

The test are to remain in the office for use at a later stage

2. The provincial coordinator will ensure that guidelines for data collection, as given below, are communicated to the DPME, the questionnaire reaches class 5 teachers, the instructions for completing the questionnaires are conveyed, the teachers complete the questionnaire and the questionnaire is returned within two days of distribution.

3. Return the completed questionnaires received from the districts to the head office for data entry

B. District Level

Responsibilities of the DPME

1. At the district level the DPME will ensure that guidelines provided by the Provincial Coordinator are implemented.
2. Will brief the MC's on the back ground to the research, using Document 1, and the data collection process as given below.
3. Provide the MC's the list of schools in their area taking part in the research, provided in the file.
4. Provided the MC the number of questionnaires required (one per year)
5. Ensure MC's prepare work plan for meeting AEO

6. If there is a **private school** included in the list, this will have to be personally visited by the MC and the questionnaire completed by class 5 teachers. The instructions for administering the questionnaire are attached **(Document 2)**
7. It is the DPME's responsibility to follow up progress from the MC- meetings have been held with AEO, AEO has distributed questionnaires and given time scale for returning them, questionnaires are collected by MC from AEO and MC completes the two columns on the school list **'Questionnaire completed and returned' and 'if not received please state the reason'.**
8. Once all the questionnaires have been completed it is the DPME's responsibility to ensure they are arranged according to union council and tehsil and sent to the provincial coordinator Punjab. The DPME will also provide a summary of number of questionnaires distributed and the number of questionnaires completed and returned.

Responsibilities of the MC

The MC will:

1. Meet the AEO
2. Provide a background to the research and questionnaire to the AEO (using Document 1)
3. Provide a list of schools to the AEO
4. Provide the quantity of questionnaires to the AEO
5. Identify when the next monthly meeting is and request the questionnaires to be completed in this meeting by class 5 teachers
6. It is the MC's responsibility to follow-up with the AEO that the questionnaires have been distributed and completed and collect the completed questionnaires
7. As the questionnaires are received back from the AEO the MC will complete the two columns on the school list : '**questionnaire completed and returned'** and **'if not received please state the reason'**
8. The MC will give the completed questionnaires and the completed list to the DPME

Responsibilities of the AEO's:

1. During the monthly meeting the AEO will provide a background to the research (using document 1) and the questionnaire, using. This is only for those schools included in the list for research.
2. If the class 5 teachers are present in the monthly meeting then it is the AEO's responsibility to ensure that they complete the questionnaire in his/her presence.
3. If the class 5 teachers are not present then the questionnaire is to be delivered to the class 5 teachers, completed and returned to the AEO the next day.
4. Explain that the questionnaire will take 15-20 minutes to complete
5. The completed questionnaire will be returned to the AEO and collected by the MC.

Responsibility of the class 5 teachers

The class 5 teacher is to follow the instructions given on the front page of the questionnaire and complete the questionnaire her/himself. Then return the questionnaire to the AEO. It is important that they write the **district, tehsil and union council** on the front page of the questionnaire and leave **'code'** empty.

(Document 1)

تحقیقی سوالنامے کے لیے تعارف

معیاری تعلیم پروگرام کے حوالے سے پانچ مہارتوں پر توجہ دی جارہی ہے جس میں سب سے اہم تخلیقی مہارت/صلاحیت ہے۔ایک مفروضے کے مطابق ہر بچے میں تخلیقی مہارت/صلاحیت ہوتی ہے لیکن ماحول کے اثرات کی وجہ سے ان میں کمی یا بیشی ہوتی ہے۔ماحول میں گھر،اسکول اور علاقائی ماحول ان مہارتوں کو متاثر کرتا ہے۔

پہلے مرحلے میں اس ریسرچ کے ذریعے ہم یہ دیکھنا چاہتے ہیں کہ اسکول میں کون کون سے عوامل ہیں جو تخلیقی مہارت/صلاحیت میں فروغ یا ان میں کمی کا باعث بنتے ہیں۔اس حوالے سے سب سے پہلے ہم اساتذہ کرام کی رائے معلوم کرنا چاہتے ہیں کہ:

1 ان کی نظر میں تخلیقی مہارتیں/صلاحیتیں کیا ہیں یا وہ کیا سمجھتے ہیں کہ تخلیقی مہارتیں/صلاحیتیں کیا ہیں۔

2 تخلیقی مہارتیں/صلاحیتیں جانچنے کے لیے وہ کون سے طریقے استعمال کرتے ہیں۔

3 کون کون سی سرگرمیاں ایسی ہیں جن کے استعمال کے ذریعے اساتذہ تخلیقی مہارت/صلاحیت پیدا کر سکتے ہیں یا ان کو فروغ دے سکتے ہیں۔

4 تخلیقی مہارتوں/صلاحیتوں کے فروغ میں کون کون سی رکاوٹیں درپیش ہوتی ہیں۔

5 تخلیقی مہارتیں/صلاحیتیں کیوں ضروری سمجھتے ہیں۔

Appendix 3

Torrance Tests of Creative Thinking (English version)

THINKING CREATIVELY WITH PICTURES

By E. Paul Torrance

FIGURAL BOOKLET A

NAME_____

AGE_____ SEX_____

SCHOOL_____

GRADE_____

CITY_____

DATE_____

STS

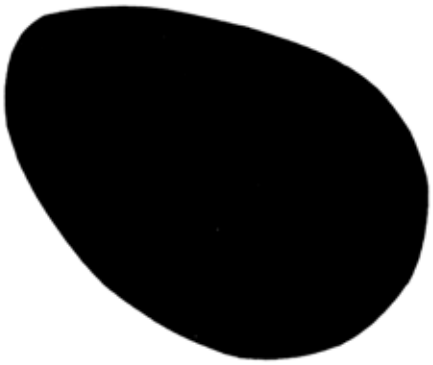
SCHOLASTIC TESTING SERVICE, INC.
480 Meyer Road
Bensenville, IL 60106-1617

Activity 1. PICTURE CONSTRUCTION

On the opposite page is a curved shape. Think of a picture or an object which you can draw with this shape as a part.

Try to think of a picture that no one else will think of. Keep adding new ideas to your first idea to make it tell as interesting and as exciting a story as you can.

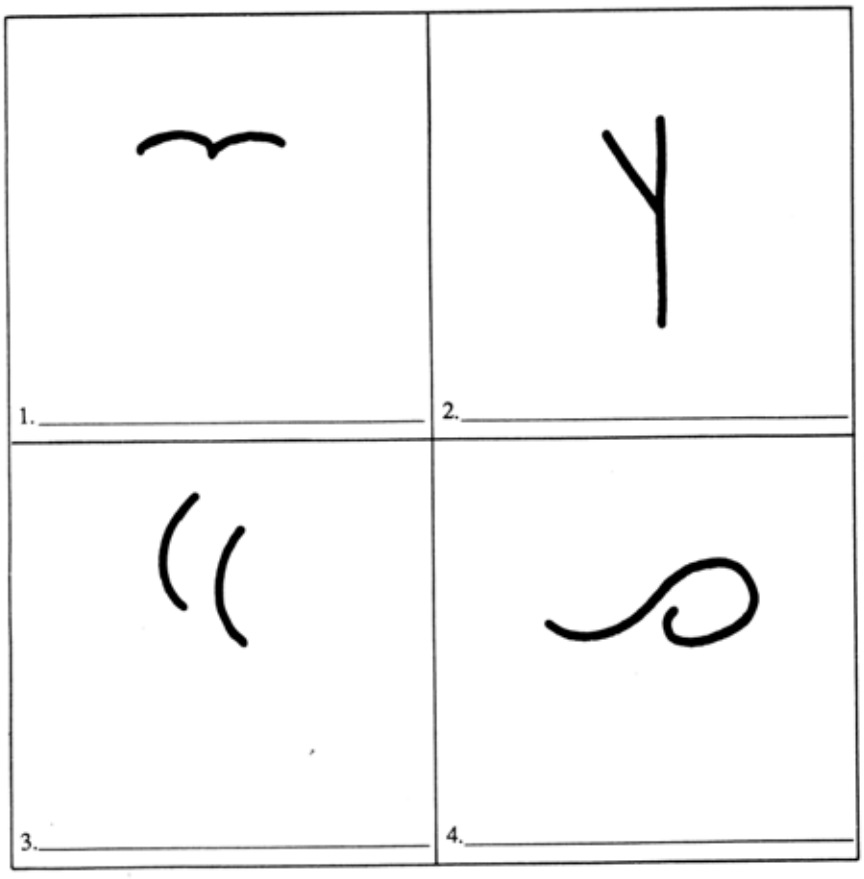
When you have completed your picture, think up a name or title for it and write it at the bottom of the page in the space provided. Make your title as clever and unusual as possible. Use it to help tell your story.



YOUR TITLE: _____

Activity 2. PICTURE COMPLETION

By adding lines to the incomplete figures on this and the next page, you can sketch some interesting objects or pictures. Again, try to think of some picture or object that no one else will think of. Try to make it tell as complete and as interesting a story as you can by adding to and building up your first idea. Make up an interesting title for each of your drawings and write it at the bottom of each block next to the number of the figure.

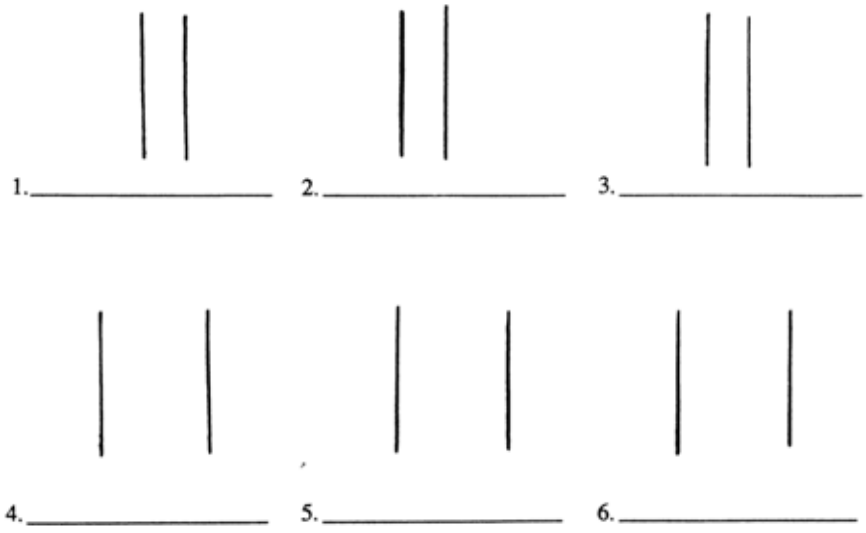


5. 	6. 
7. 	8. 
9. 	10. 

5

Activity 3. LINES

In ten minutes see how many objects or pictures you can make from the pairs of straight lines below and on the next two pages. The pairs of straight lines should be the main part of whatever you make. With pencil or crayon add lines to the pairs of lines to complete your picture. You can place marks between the lines, on the lines, and outside the lines—wherever you want to in order to make your picture. Try to think of things that no one else will think of. Make as many different pictures or objects as you can and put as many ideas as you can in each one. Make them tell as complete and as interesting a story as you can. Add names or titles in the spaces provided.



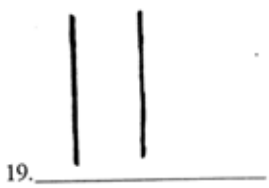
7. _____ 8. _____ 9. _____

10. _____ 11. _____ 12. _____

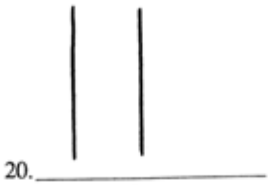
13. _____ 14. _____ 15. _____

16. _____ 17. _____ 18. _____

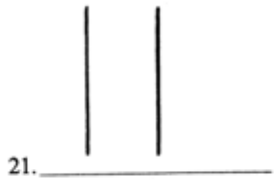
GO ON TO NEXT PAGE



19. _____

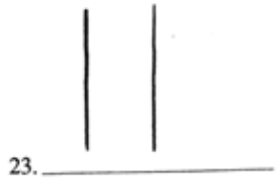


20. _____

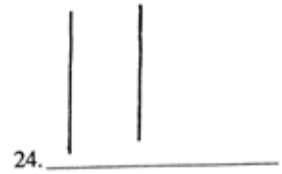


21. _____

22. _____



23. _____



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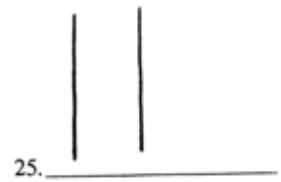
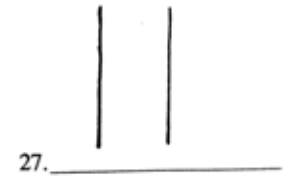
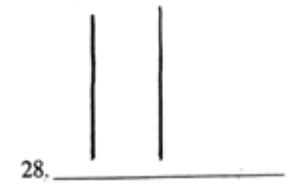


25. _____

26. _____

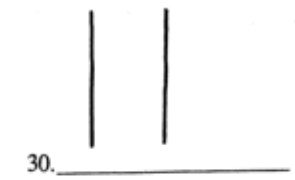


27. _____



28. _____

29. _____



30. _____

STREAMLINED SCORING WORKSHEET—REVISED EDITION
TORRANCE® TESTS OF CREATIVE THINKING, FIGURAL FORMS A and B

Name: _____ Test Date: _____ Form: _____

Grade: _____ Age: _____ Gender: _____ School: _____

		Raw Score	National Percentile	Standard Score
1. Fluency: Act. 2 ____ + Act. 3 ____	=			
2. Originality: Act. 1 ____ + Act. 2 ____ + Bonus ____ + Act. 3 ____ + Bonus ____	=			
3. Elaboration (Circle appropriate number 1–6 for A *or* B)	=			

A	Act. 1:	1 (0–5)	2 (6–12)	3 (13–19)	4 (20–26)	5 (27–33)	6 (34+)
	Act. 2:	1 (0–8)	2 (9–17)	3 (18–28)	4 (29–39)	5 (40–50)	6 (51+)
	Act. 3:	1 (0–7)	2 (8–16)	3 (17–27)	4 (28–37)	5 (38–47)	6 (48+)
B	Act. 1:	1 (0–5)	2 (6–13)	3 (14–21)	4 (22–29)	5 (30–37)	6 (38+)
	Act. 2:	1 (0–9)	2 (10–19)	3 (20–29)	4 (30–39)	5 (40–49)	6 (50+)
	Act. 3:	1 (0–14)	2 (15–24)	3 (25–34)	4 (35–44)	5 (45–54)	6 (55+)

4. Abstractness of Titles: Act. 1 ____ + Act. 2 ____	=			
5. Resistance to Premature Closure: Act. 2 ____	=			
Sum of Standard Scores	=			
Average Standard Score	=			☐

Ability	Interpretation							
1. Fluency								
2. Originality								
3. Elaboration								
4. Abstractness of Titles								
5. Resistance to Premature Closure								
Standard Score	40	60	80	100	120	140	160	180
Percentile		2	16	50	84	98	99+	

Checklist of Creative Strengths:

_____ 1. Emotional Expressiveness (in drawings, titles) 1 or 2 = +, 3 or more = + +

_____ 2. Storytelling Articulateness (context, environment) 1 or 2 = +, 3 or more = + +

_____ 3. Movement or Action (running, dancing, flying, falling, etc.) 1 or 2 = +, 3 or more = + +

_____ 4. Expressiveness of Titles 1 or 2 = +, 3 or more = + +

_____ 5. Synthesis of Incomplete Figures (combination of 2 or more) 1 or 2 combinations = +, 3 or more combinations = + +

_____ 6. Synthesis of Lines (combination of 2 or more sets, Activity 3, Form A) 1 or 2 combinations = +, 3 or more combinations = + + or
Synthesis of Circles (combination of 2 or more, Activity 3, Form B) 1 or 2 combinations = +, 3 more combinations = + +

_____ 7. Unusual Visualization (above, below, at angle, etc.) 1 or 2 = +, 3 or more = + +

_____ 8. Internal Visualization (inside, cross section, etc.) 1 or 2 = +, 3 or more = + +

_____ 9. Extending or Breaking Boundaries (outside the box, lines, circles) 1 or 2 = +, 3 or more = + +

_____ 10. Humor (in titles, captions, drawings, etc.) 1 or 2 = +, 3 or more = + +

_____ 11. Richness of Imagery (variety, vividness, strength, etc.) 3 or 4 responses = +, 5 or more responses = + +

_____ 12. Colorfulness of Imagery (excitingness, earthiness, etc.) 1 or 2 = +, 3 or more = + +

_____ 13. Fantasy (figures in myths, fables, fairy tales, science fiction, etc.) 1 or 2 = +, 3 or more = ++

Creativity Index: Average Standard Score ☐ + Bonus _____ = _____ Creativity Index _____ National Percentile

Comments: _____

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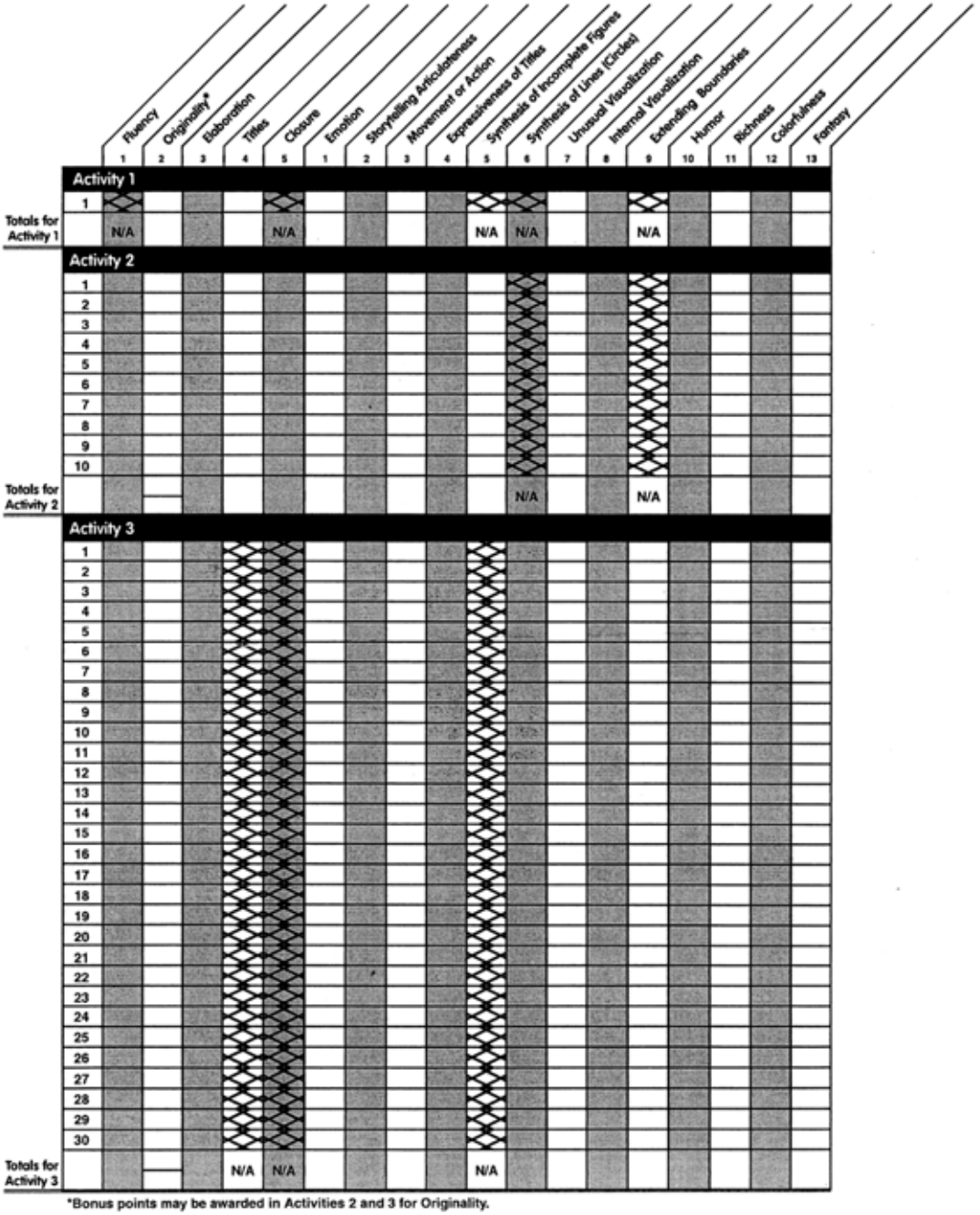


*Bonus points may be awarded in Activities 2 and 3 for Originality.

Torrance Tests of Creative Thinking (Urdu instructions)

(Torrance Test for Creative Thinking)

دی گئی ہدایات ان افراد کے لیے ہیں جو پانچویں جماعت کے بچوں کی تخلیقی صلاحیتوں کا جائزہ لیں گے

1 بچوں میں تخلیقی صلاحیت کا جائزہ لینے سے پہلے کلاس ٹیچر سے ابتدائی بات چیت درج ذیل انداز میں کرنے کی کوشش کریں۔
ٹیچر کے ساتھ سلام و دعا کے تبادلے کے بعد بتائیں:

ہم آپ کے سکول کی پانچویں جماعت کے بچوں کی تخلیقی صلاحیت کا جائزہ لینے کے لیے حاضر ہوئے ہیں۔اس جائزہ کا مقصد یہ جاننا ہے کہ جب بچے پانچویں جماعت میں پہنچتے ہیں تو ان کے اندر تخلیقی صلاحیتیں کس قدر پروان چڑھ چکی ہوتی ہیں۔اس جائزے سے حاصل ہونے والے نتائج کی بنیاد پر یہ طے کرنے میں مدد ملے گی کہ بچوں میں تخلیقی صلاحیتوں کو مزید کس طرح فروغ دیا جاسکتا ہے۔اس تحقیق میں نیشنل کمیشن فار ہیومن ڈویلپمنٹ اور ایجوکیشن ڈپارٹمنٹ مل کر کام کر رہے ہیں تا کہ اس کے نتائج کی بنیاد پر آئندہ کے لیے تعلیمی لائحہ عمل مرتب کرنے میں مدد مل سکے۔

2 بچوں کی تخلیقی صلاحیتوں کے جائزہ کا کتابچہ استاد کو دکھاتے ہوئے درج ذیل انداز میں وضاحت کریں۔

- ☆ اس میں تخلیقی صلاحیت کا جائزہ لینے کے لیے تین سرگرمیاں شامل کی گئی ہیں۔
- ☆ دی گئی سرگرمیوں کو مکمل کرنے کے لیے اندازاً 45 منٹ یا ایک گھنٹہ کا وقت لگے گا۔
- ☆ دی گئی سرگرمیوں پر کام کرنے کے لیے بچے کو پنسل، ربڑ، شارپنر اور ٹیسٹ کے نیچے رکھنے کے لیے کسی کتاب وغیرہ کی بھی ضرورت ہوگی تا کہ وہ آسانی سے کام کر سکے۔

3 استاد سے بچوں کو ایسی جگہ پر بٹھانے کے انتخاب میں مدد لیں جہاں دوسری کلاسیں متاثر ہوں اور نہ ہی جائزہ میں شامل بچے، استاد کی طرف سے منتخب کردہ جگہ پر پانچویں کلاس کے بچوں کو لے جا کر بٹھاتے ہوئے استاد کی اجازت کے بعد دی گئی ہدایات کے مطابق جائزہ لینے کا آغاز کریں۔

1

4 جائزہ لینے کے آغاز سے قبل بچوں کے ساتھ درج ذیل انداز میں بات چیت کرنے کی کوشش کریں۔

☆ سب بچوں کو U شکل یا جیسے مناسب سمجھیں بٹھاتے ہوئے خود ان کے سامنے ایسی جگہ پر کھڑے ہوں جہاں آپ سب بچوں کو دیکھ سکیں اور بچے بھی آپ کو دیکھ سکیں اور آپ کی بات آسانی سے سن سکیں۔

☆ بچوں کو اپنا نام بتائیں اور ان سے کہیں کہ آج ہم سب مل کر مزے مزے کی باتیں اور کام کریں گے۔

☆ بچوں سے باری باری ان کا نام پوچھیں اور تعریف کریں۔

☆ بچوں سے پوچھیں آپ کو اپنے سکول کی کون سی چیز سب سے زیادہ خوبصورت لگتی ہے۔ بچوں کی طرف سے جوابات /آراء آنے پر دوبارہ پوچھیں اگر آپ اپنے سکول کو اور خوبصورت بنانا چاہیں تو اس کے لیے کیا کریں گے۔

☆ بچوں سے پوچھیں آپ میں سے کس کس کو لطائف آتے ہیں؟ ہاتھ اوپر کر کے بتائیں۔ اظہار کرنے والے بچوں سے لطائف سنیں اور حوصلہ افزائی کے لیے تالیاں بجوائیں۔

نوٹ: بے شک یہ ایک ٹیسٹ ہے لیکن اس بات کا خاص خیال رکھیں کہ بچوں کے سامنے لفظ ٹیسٹ ہرگز استعمال نہ کریں ان کے ساتھ مندرجہ بالا ہدایات کو مدنظر رکھتے ہوئے اس انداز میں بات چیت کریں کہ وہ آپ کو اپنا دوست خیال کرتے ہوئے بغیر کسی خوف اور گھبراہٹ کے باتیں کریں اور دی گئی سرگرمیوں میں بھرپور دلچسپی لیتے ہوئے کام کریں۔

5 استاد/معاون کی مدد سے ٹیسٹ کے لیے کتابچہ تقسیم کرنے سے پہلے کتابچہ کے صفحہ نمبر 1 پر بچے سے متعلق کوائف درج کریں تاکہ ٹیسٹ میں موجود سبھی بچوں کو ان کے کوائف والا کتابچہ تقسیم کرنے میں آسانی رہے۔

ٹیسٹ کا آغاز

6 ہر بچے کے نام والا کتابچہ ان میں تقسیم کرنے کے بعد انھیں کچھ وقت دیں تاکہ وہ اسے بغور دیکھ سکیں اس کے بعد سب بچوں کو اپنی طرف متوجہ کرتے ہوئے درج ذیل انداز میں بات چیت کریں۔

پیارے بچوں مجھے اس بات کا یقین ہے کہ جو کام اب ہم شروع کریں گے اس کو کرنے میں آپ کو بہت مزہ آئے گا۔ یہ کام اتنا دلچسپ ہے کہ جس کو کرنے سے آپ کو اندازہ ہوگا کہ آپ نئے خیالات سوچنے اور ان کی تصاویر بنانے میں کتنے اچھے ہیں۔ یہ کام آپ کو بہت دلچسپ لگے گا۔

☆ اس کام کے دوران آپ کو معلوم ہوگا کہ آپ نئے خیال سوچنے اور اپنے مسائل حل کرنے میں کتنے اچھے ہیں۔

☆ جو کام اب آپ کرنے جا رہے ہیں اس میں آپ کو نئے خیالات سوچنے کے لیے اپنے ذہن کو پوری طرح استعمال کرنے کی ضرورت ہوگی۔

☆ اگر یہ کام پورے دھیان سے کریں تو آپ کو بہت مزہ آئے گا۔

☆ اس کتابچہ میں آپ کے کرنے کے لیے 3 دلچسپ سرگرمیاں دی گئی ہیں۔

☆ کام کرنے کے دوران آپ کو موقع دیا جائے گا کہ آپ بالکل نئے انداز میں سوچیں اور اپنے خیالات کو ایک دوسرے سے ملا کر کچھ نیا بنائیں۔

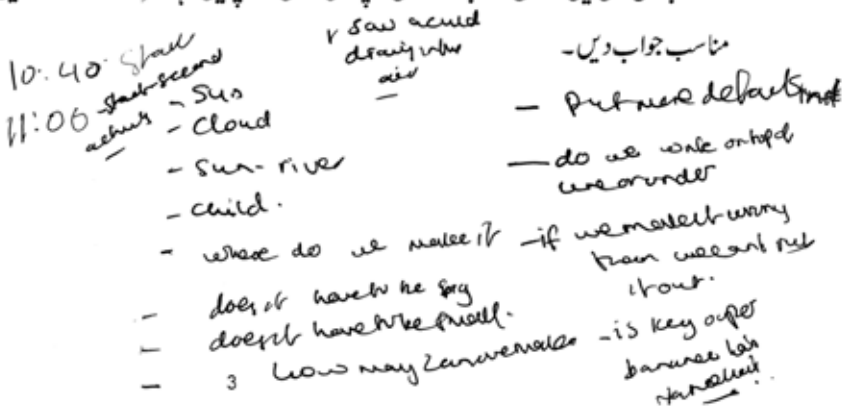
☆ ہم چاہتے ہیں کہ آپ دی گئی سرگرمیوں پر کام کرنے کے لیے دلچسپ اور عجیب وغریب خیالات سوچیں جو اور کوئی نہ سوچ سکے۔

☆ جب کوئی خیال آپ کو ایک دفعہ آجائے تو اس میں اور آنے والے خیالات کو شامل کرتے جائیں تاکہ ان خیالات کی مدد سے بننے والی تصویر کو دیکھ کر آپ ایک کہانی سنا سکیں۔

☆ ہر سرگرمی کو مکمل کرنے کے لیے وقت مقرر ہے اس لیے اپنے وقت کا صحیح استعمال کریں تیزی سے کام کریں لیکن سوچ سمجھ کر کریں اور جلد بازی نہیں کرنی۔ وقت پورا ہونے تک زیادہ سے زیادہ سوچیں لیکن اگر آپ ذہن میں مزید خیالات نہ آئیں تو خاموشی سے بیٹھ جائیں اور انتظار کریں کہ کب اساتذہ صفحہ بدلنے کو کہیں۔

☆ اگر آپ کے ذہن میں کوئی بھی سوال ہو تو بلند آواز میں نہ بولیں صرف ہاتھ کھڑا کریں اور ہم خود آپ کے پاس آئیں گے اور آپ کا سوال حل کرنے میں آپ کی مدد کریں۔

7 اس وقت کوئی سوال نہ ہو تو پہلی سرگرمی کو مکمل کرنے کے لیے کہیں اگر ہدایات کے متعلق کوئی سوال ہو تو ہدایات دہرائیں یا پھر آسان الفاظ میں سمجھا دیں مثالیں دینے سے گریز کریں کیونکہ یہ بچوں کی انفرادیت اور تخلیقیت کو کم کر دیتی ہے سب سے ضروری بات یہ ہے کہ گروپ کے ساتھ دوستانہ اور نرم رویہ رکھیں۔ باقاعدہ سرگرمی کا آغاز کرنے سے پہلے بچوں سے پوچھیں اب تک ہم نے جو باتیں کیں ہیں اگر ان کے بارے میں آپ کوئی سوال کرنا چاہیں تو ہاتھ اٹھاتے ہوئے کریں۔ بچے جو سوال کریں ان کے مناسب جواب دیں۔



کام کروانے کے لیے درج ذیل انداز میں ہدایات دیں

صفحہ نمبر 4 اور صفحہ نمبر 5 پر کچھ ایسی شکلیں دی گئی ہیں جو نامکمل ہیں آپ کچھ اور لائنوں کی مدد سے ایک نئی اور دلچسپ تصویر یا شکل بنا سکتے ہیں آپ ان نامکمل شکلوں کو غور سے دیکھیں اور نئے انداز میں سوچتے ہوئے اپنے ذہن میں ایسی تصاویر یا شکلیں بنائیں جو کوئی اور نہ سوچ سکے اور نہ ہی بنا سکے۔ جب آپ نامکمل تصویر یا شکل مکمل کر رہے ہوں تو اس دوران آپ کے ذہن میں جو بھی خیال آئے اس کو بنائی ہوئی تصویر یا شکل کا حصہ بناتے جائیں تا کہ آپ ایک دلچسپ اور عجیب وغریب تصویر یا شکل بنا سکیں جس کو دیکھتے ہوئے ایک مزیدار کہانی بنائی جا سکے۔ جب آپ نامکمل تصاویر یا شکلیں مکمل کر لیں تو ہر ایک تصویر یا شکل کے نیچے اس کا ایسا نام لکھیں جو عجیب وغریب اور نیا ہو اور آپ کی بنائی ہوئی تصویر یا شکل کو دیکھ کر بننے والی کہانی کے نام کے طور پر منتخب کیا جا سکے۔

نوٹ: بچوں سے پوچھیں کیا آپ دی گئی ہدایات کے بارے میں کوئی سوال کرنا چاہتے ہیں؟ اگر بچے سوال کریں تو ان کے مناسب جواب دیں۔ اس کے بعد بچوں کو بتائیں اس سرگرمی کے لیے آپ کے پاس 10 منٹ وقت ہے اپنا کام شروع کریں۔

دیئے گئے وقت میں اگر کچھ بچے اپنا کام مکمل نہ کر سکیں اور اس کی وجہ سے وہ پریشان نظر آئیں تو ان کے ساتھ درج ذیل انداز میں بات چیت کرنے کی کوشش کریں۔ تا کہ وہ غیر محسوس انداز میں مطمئن ہو جائیں اور اگلی سرگرمیاں بھرپور دلچسپی سے مکمل کریں۔

بچو میں دیکھ رہا تھا کہ آپ سب پوری توجہ سے اور ایک دوسرے سے مختلف کام کرنے کی کوشش کر رہے تھے آپ میں سے کچھ بچوں نے ساری تصاویر مکمل کر لیں ہیں اور بعض بچے کچھ تصاویر مکمل نہیں کر سکے اس میں کسی کو پریشان ہونے کی ضرورت نہیں آپ جس طرح آسانی کے ساتھ اپنا کام کر سکتے ہیں کرنے کی کوشش کریں۔

سرگرمی نمبر 3: کام شروع کروانے سے پہلے کے اقدام

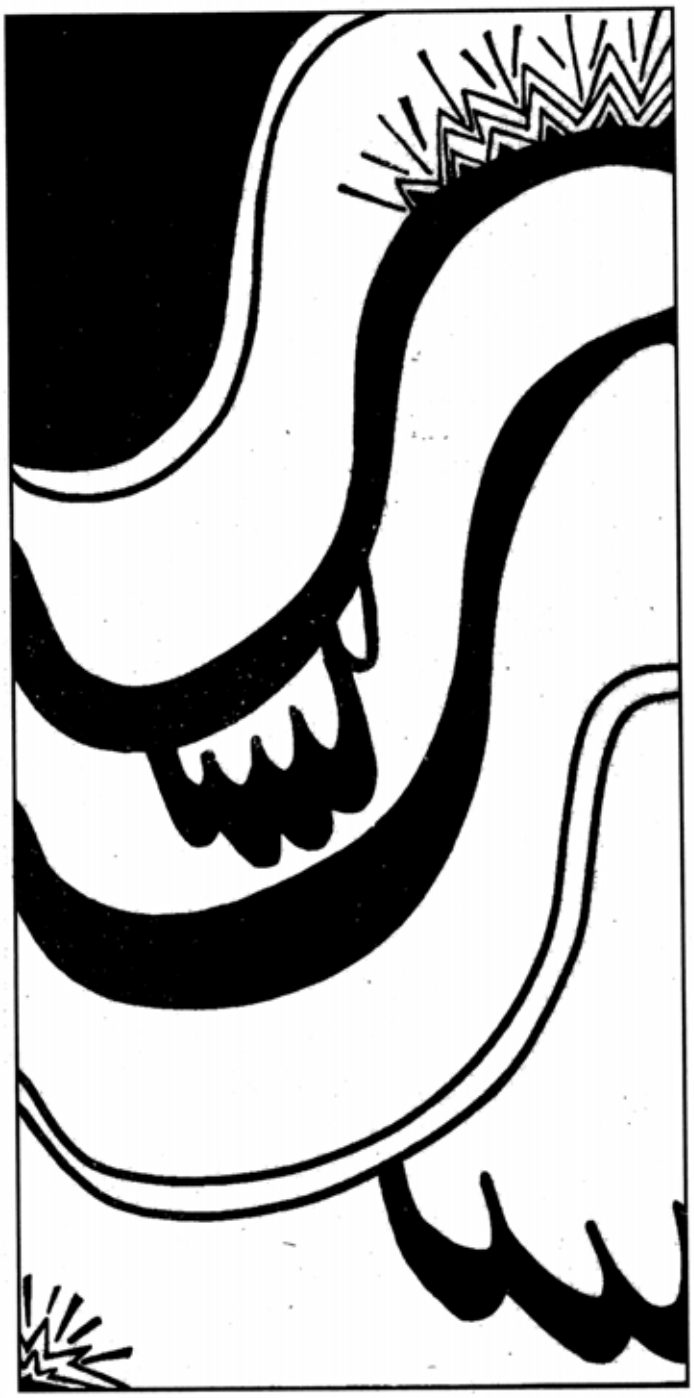
جب بچے سرگرمی نمبر 2 مکمل کر لیں تو ان سے کہیں اب صفحہ نمبر 8,7,6 نکال کر دیکھیں جہاں "لائنوں سے تصویر یا شکل بنانا" والی سرگرمی دی گئی ہے۔ اس کے لیے ہدایت دیتے ہوئے آپ خود بھی صفحہ نمبر 8,7,6 باری باری نکال کر بچوں کو دکھائیں اور اس بات کی تسلی کر لیں کہ سبھی بچوں نے متعلقہ صفحات نکالے ہوں۔

کام کروانے کے لیے درج ذیل انداز میں ہدایات دیں

بچوں اب آپ نے اپنے اپنے کتابچہ کے صفحہ نمبر 8,7,6 پر دی گئی لائنوں کو غور سے دیکھتے ہوئے 10 منٹ کے اندر اندر ان سے زیادہ سے زیادہ تصاویر یا شکلیں بنانے کی کوشش کرنی ہے۔ آپ کسی بھی تصویر یا شکل کو بنانے کا آغاز پہلے سے دی گئی لائنوں سے کریں۔ جب آپ کوئی بھی تصویر یا شکل بنانے لگیں تو دی گئی لائنوں کے درمیان، اوپر، نیچے یا کسی بھی طرف نشان لگا سکتے ہیں۔ آپ ان لائنوں کو غور سے دیکھیں اور نئے انداز میں سوچتے ہوئے اپنے ذہن میں ایسی تصاویر یا شکلیں بنائیں جو کوئی اور نہ سوچ سکے اور نہ ہی بنا سکے۔ جب آپ دی گئی لائنوں کی مدد سے کوئی تصویر یا شکل بنا رہے ہوں تو اس دوران آپ کے ذہن میں جو بھی خیال آئے اس کو بنائی ہوئی تصویر یا شکل کا حصہ بناتے جائیں تا کہ آپ ایک دلچسپ اور عجیب و غریب تصویر یا شکل بنا سکیں جس کو دیکھتے ہوئے ایک مزیدار کہانی بنائی جا سکے۔ جب آپ تصاویر یا شکلیں مکمل کر لیں تو ہر ایک تصویر یا شکل کے نیچے اس کا ایسا نام لکھیں جو عجیب و غریب اور نیاء ہو اور آپ کی بنائی ہوئی تصویر یا شکل کو دیکھ کر بننے والی کہانی کے نام کے طور پر منتخب کیا جا سکے۔

نوٹ: بچوں سے پوچھیں کیا آپ دی گئی ہدایات کے بارے میں کوئی سوال کرنا چاہتے ہیں؟ اگر بچے سوال کریں تو ان کے مناسب جواب دیں۔ سرگرمی کو 10 منٹ کے اندر مکمل کرواتے ہوئے کتابچے واپس لیتے وقت اس بات کی تسلی کریں کہ سبھی بچوں نے اپنی بنائی ہوئی تصاویر کے نام لکھے ہوں اگر کچھ بچوں نے بنائی ہوئی تصاویر کے نام نہ لکھے ہوں تو ان کی مدد کرتے ہوئے صفحہ میں دی ہوئی جگہ پر نام لکھوائیں۔

Torrance Tests of Creative Thinking (Urdu version)



تصویروں کی مدد سے
تخلیقی طور پر سوچنا

(E. Paul Torrance)

تصویری کتابچہ

A

نام _____

عمر _____ جنس _____

سکول _____

جماعت _____

تاریخ _____

تحصیل _____ ضلع _____

SCHOLASTIC TESTING SERVICE, INC.
480 Meyer Road
Bensenville, IL 60106-1617

سرگرمی نمبر: 1 تصویر بنانا

سامنے کے صفحہ پر ایک خاکہ بنا ہوا ہے اس کو غور سے دیکھیں اور سوچیں اس خاکہ کی مدد سے آپ کون سی تصویر یا چیز بنا سکتے ہیں؟ آپ سوچ کر ایسی تصویر یا چیز بنائیں جیسی تصویر کوئی اور نہ بنا سکے۔ جب آپ تصویر بنا رہے ہوں تو اس دوران جو بھی خیالات آپ کے ذہن میں آئیں ان کو صفحہ پر پہلے سے بنی ہوئے خاکہ کا حصہ بناتے جائیں تاکہ آپ ایک دلچسپ اور عجیب و غریب تصویر یا چیز بنا سکیں جس کو دیکھتے ہوئے ایک مزیدار کہانی بنائی جا سکے۔ جب آپ اپنی تصویر مکمل کر لیں تو نیچے دی گئی جگہ میں اس کا ایسا نام لکھیں جو عجیب و غریب اور نیا ہو اور آپ کی بنائی ہوئی تصویر سے بننے والی کہانی سنانے میں مدد دے۔

عنوان _____

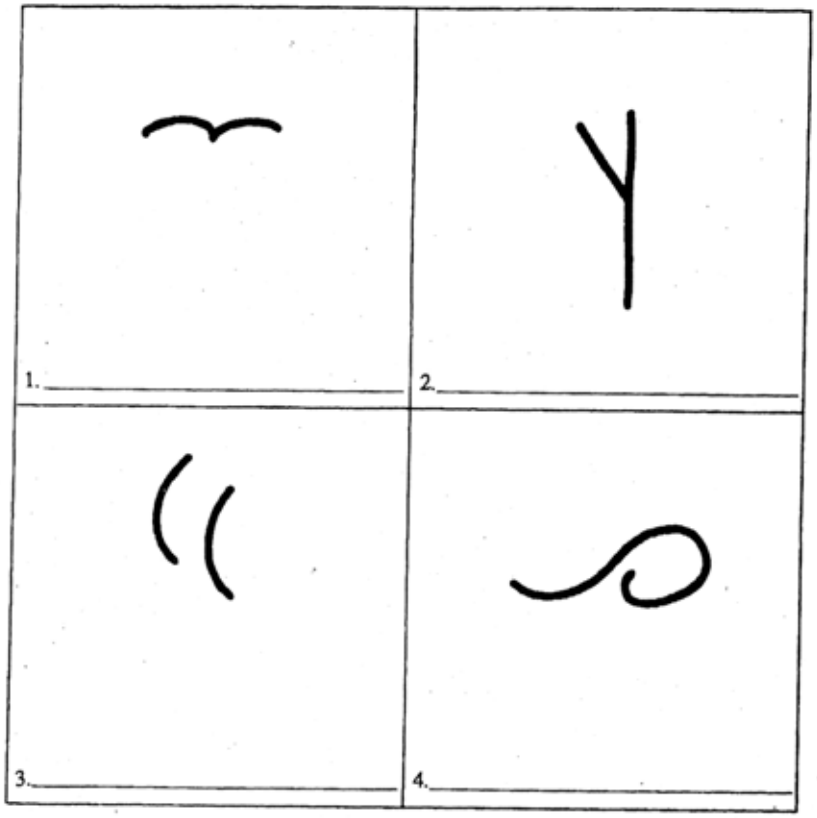
3

عنوان _____

3

سرگرمی نمبر:2 تصویر مکمل کرنا

صفحہ نمبر 4 اور صفحہ نمبر 5 پر کچھ ایسی شکلیں دی گئی ہیں جو نامکمل ہیں آپ ان کو استعمال کرتے ہوئے کچھ اور لائنوں کی مدد سے ایک نئی اور دلچسپ تصویر یا شکل بنا سکتے ہیں۔ آپ ان نامکمل شکلوں کو غور سے دیکھیں اور نئے انداز میں سوچتے ہوئے اپنے ذہن میں ایسی تصاویر یا شکلیں بنائیں جو کوئی اور نہ سوچ سکے اور نہ ہی بنا سکے۔ جب آپ نامکمل تصویر یا شکل مکمل کر رہے ہوں تو اس دوران آپ کے ذہن میں جو بھی خیال آئے اس کو بنائی ہوئی تصویر یا شکل کا حصہ بناتے جائیں تا کہ آپ ایک دلچسپ اور عجیب وغریب تصویر یا شکل بنا سکیں جس کو دیکھتے ہوئے ایک مزیدار کہانی بنائی جا سکے۔ جب آپ نامکمل تصاویر یا شکلیں مکمل کر لیں تو ہر ایک تصویر یا شکل کے نیچے اس کا ایسا نام لکھیں جو عجیب وغریب ہو اور نیا بھی ہو اور آپ کی بنائی ہوئی تصویر سے بننے والی کہانی سنانے میں مدد دے۔



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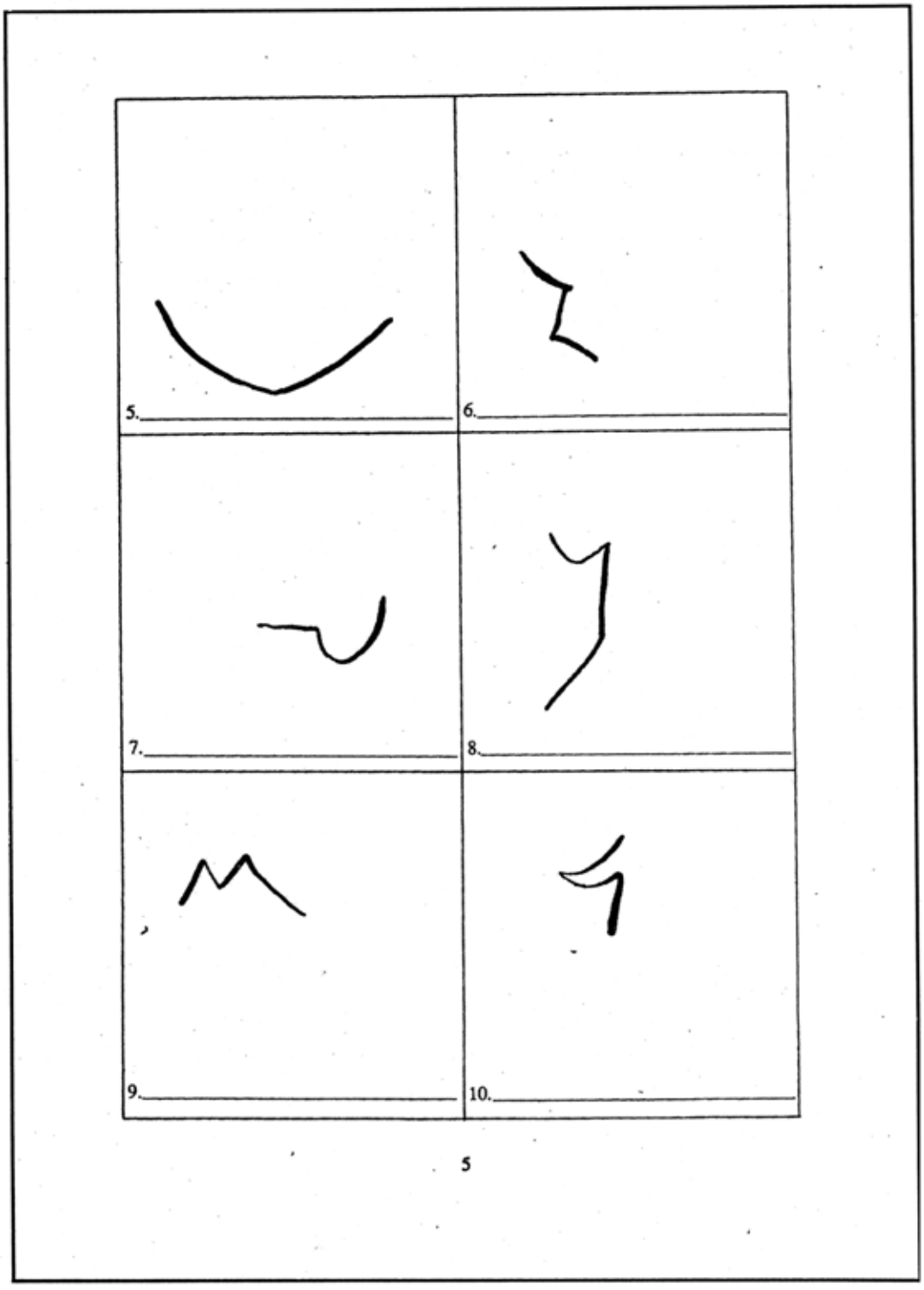
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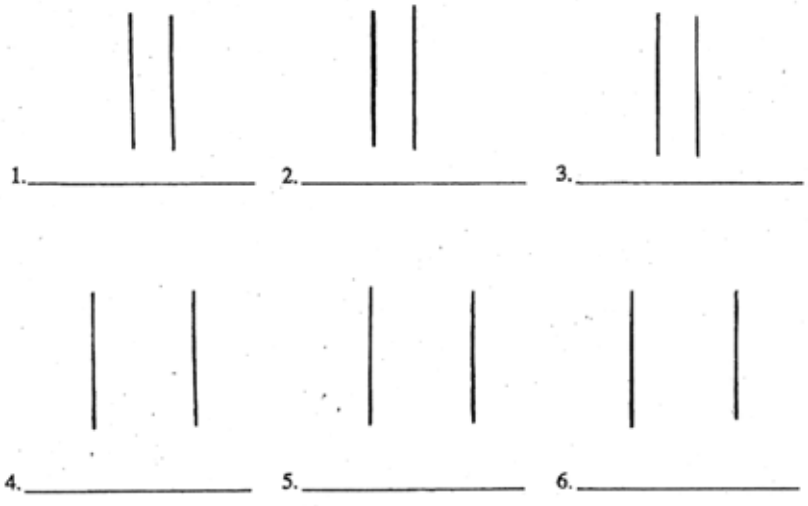
سرگرمی نمبر:3 لائنوں سے تصویر یا شکل بنانا

بچوں اب آپ نے اپنے اپنے کتابچہ کے صفحہ نمبر 8,7,6 پر دی گئی لائنوں کو غور سے دیکھتے ہوئے 10 منٹ کے اندر ان سے زیادہ سے زیادہ تصاویر یا شکلیں بنانے کی کوشش کرنی ہے۔ آپ کسی بھی تصویر یا شکل کو بنانے کا آغاز پہلے سے دی گئی لائنوں سے کریں۔ جب آپ کوئی بھی تصویر یا شکل بنانے لگیں تو دی گئی لائنوں کے درمیان، اوپر، نیچے یا کسی بھی طرف نشان لگا سکتے ہیں۔ آپ ان لائنوں کو غور سے دیکھیں اور نئے انداز میں سوچتے ہوئے اپنے ذہن میں ایسی تصاویر یا شکلیں بنائیں جو کوئی اور نہ سوچ سکے اور نہ ہی بنا سکے۔ جب آپ دی گئی لائنوں کی مدد سے کوئی تصویر یا شکل بنا رہے ہوں تو اس دوران آپ کے ذہن میں جو بھی خیال آئے اس کو بنائی ہوئی تصویر یا شکل کا حصہ بناتے جائیں تا کہ آپ ایک دلچسپ اور عجیب وغریب تصویر یا شکل بنا سکیں جس کو دیکھتے ہوئے ایک مزیدار کہانی بنائی جا سکے۔ جب آپ تصاویر یا شکلیں مکمل کر لیں تو ہر ایک تصویر یا شکل کے نیچے اس کا ایسا نام لکھیں جو عجیب وغریب اور نیا ہو اور آپ کی بنائی ہوئی تصویر سے بننے والی کہانی سنانے میں مدد دے۔



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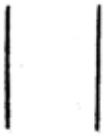

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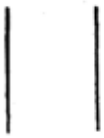

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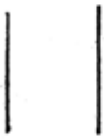

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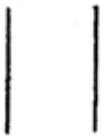

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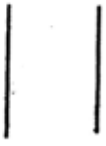

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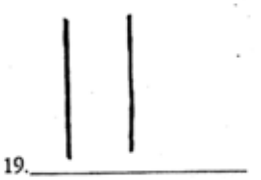

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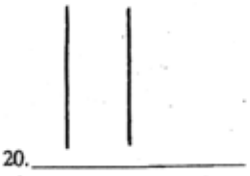

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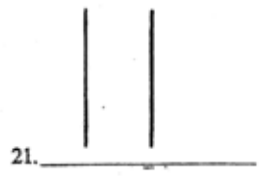

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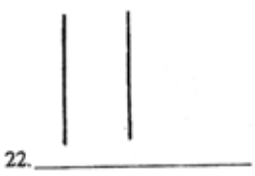

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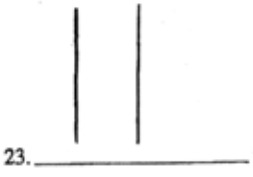

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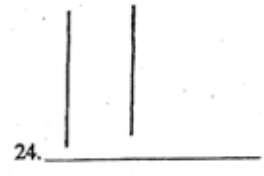

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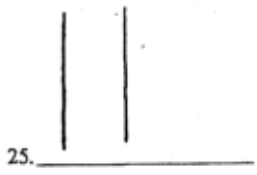

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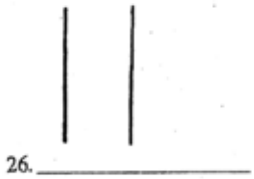

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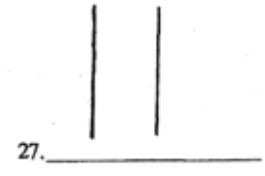

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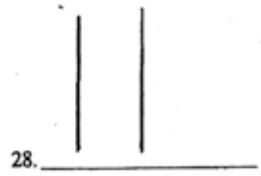

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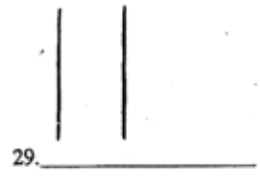

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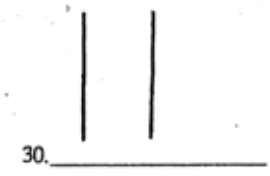

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CAT # TT 171002

Appendix 4

Classroom Creativity Observation Schedule

PREFACE

The purpose of this observation schedule is to gather some objective information concerning teacher-pupil behaviors which relate to pupil creative growth.

The present schedule is a revision of one designed by David Denny, Reuben Rusch and Sammie Ives and reported by Denny as the final report of a USOE Cooperative Research Project entitled A Preliminary Analysis of an Observation Schedule Designed to Identify the Teacher-Classroom Variables Which Facilitate Pupil-Creative Growth (CRP No. 6-8235-2-12-1, Indiana University, 1966, ED 010 194). This revision is based on the findings of the Indiana study and should serve to increase the objectivity, reliability and validity of the schedule. Unreliable or invalid items have been eliminated and scoring procedures revised to effect a higher degree of objectivity and ease of scoring.

As in the original version, alterations of schedules developed by Francis G. Cornell and Associates in An Exploratory Measurement of Individualities of Schools and Classrooms (Bureau of Educational Research, University of Illinois, 1952) are found in items BA and AD and are reproduced with permission.

A limited trial of this revised version was conducted in the spring of 1969 to revise the scoring procedures. The assistance of Miss Barbara Nathan and Miss Judy Gray was greatly appreciated. The revised version has not been investigated for reliability and validity, however, and should be considered a research edition. Formal studies are anticipated to further develop the schedule and interested persons are encouraged to write the author to be informed of these findings. Furthermore, persons wishing to use the schedule will be granted permission upon request to the author and are encouraged to share with him any reliability and validity data so obtained.

D. A. D.
May, 1969
Oneonta, New York

CONTENTS

INTRODUCTION

The background and rationale of the CCOS will be only briefly discussed here. The reader is referred to the sources listed in the bibliography for detailed background data.

The 1969 Revision of the CCOS is based on the Denny, Rusch, Ives Classroom Creativity Observation Schedule developed by Denny in 1966 in Indiana (Denny, 1966; 1968). This schedule was specifically designed to identify teacher behaviors and classroom variables which foster pupil creative development. Thus, this schedule is somewhat unique when compared to the extant schedules most of which were designed to identify prevalent aspects of teacher and/or pupil behavior and then were investigated to determine what product relationships, if any, existed. The reasoning for designing a schedule specifically to identify process to product relationships was the belief that the classroom system is so complex that no simple one-to-one relationship exists between teacher behavior and broad realms of pupil growth. Furthermore, existing schedules appeared to neglect the more intangible, non-verbal behaviors and context and content of acts and statements believed especially important in fostering pupil creativity.

The CCOS is designed to include categories of classroom behavior suggested by psychological literature relating to creativity development and the creative personality, and by prior empirical studies of pupil creative development (Rusch, Denny, Ives, 1965; 1967). Further validity data was provided by examining relationships to teacher characteristics (Turner and Denny, 1968).

The revised schedule consists of eight items designed to assess classroom behavior in an equal number of hypothesized dimensions. The dimensions combine to form two major regions. A diagram of the regions and dimensions is presented in Figure 1. It will be noted that Classroom Climate and Teaching-Learning Structure is sub-divided into two categories, General Provisions for Structuring the Learning Situation, and Specific Structuring for Creative Development. It will be observed that the climate region encloses the structure region indicating Classroom Climate is a prerequisite for structuring to be effective in pupil creative development. In like manner, General Provisions for Teaching-Learning Structure are considered necessary for Specific Structuring to be effective. Code letters in Figure 1 refer to items of the observation schedule which purport to measure the dimensional aspect.

The CCOS assesses both verbal and non-verbal behaviors and considers context of acts. Two types of items are included, a category type in which the observer directly locates behavior on a dimension according to detailed instructions, and a measurement type in which symtomatic behaviors are recorded as signs within defined dimensions. The units of teacher behavior and classroom variables sampled are two minutes in length and behavior occuring during these intervals are categorized.

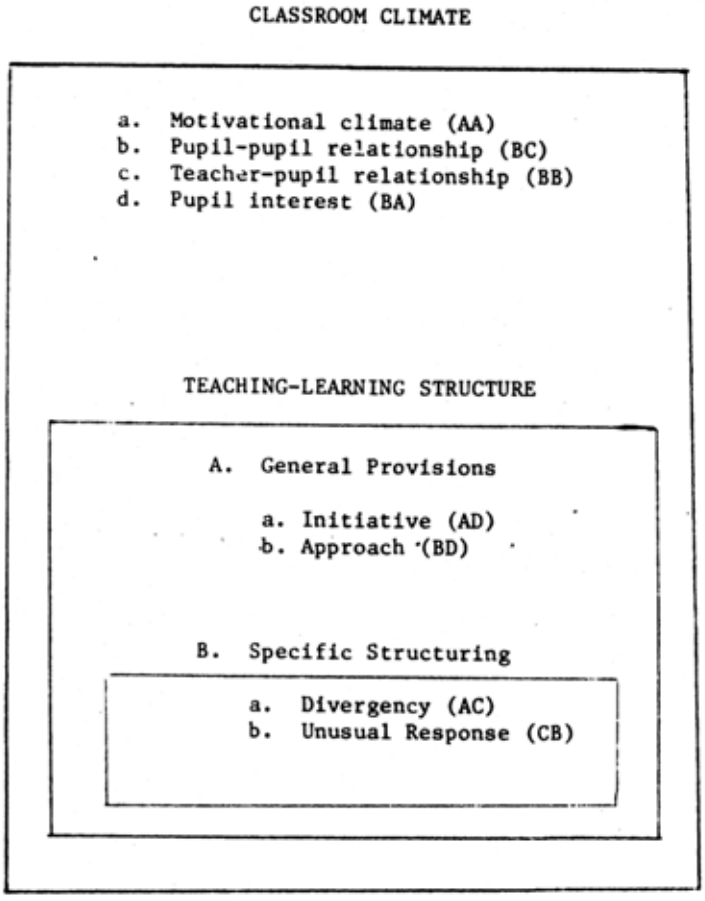


Figure 1. Hypothesized Dimensions of Classroom Interaction

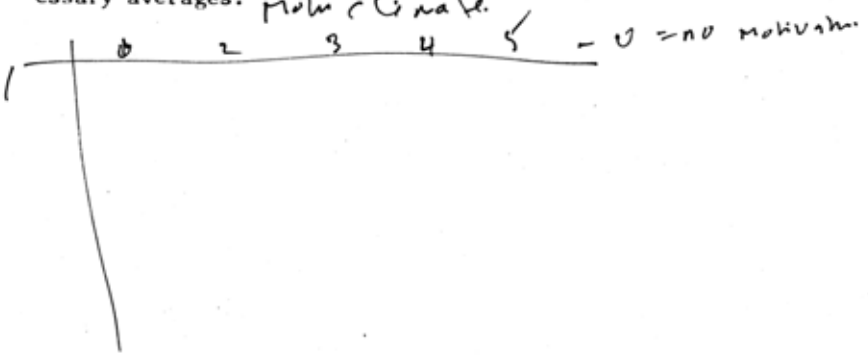
SCORING DIRECTIONS

The total score is obtained by combining the average scores for items of Schedules A and B and the total score for Schedule C. Thus a maximum total score would be 32 plus a score for Schedule C (an unlimited item). Such a high score would be unusual, however.

The average scores for the items in Schedule A are obtained by totaling the codes assigned for each time interval and dividing by the number of intervals observed. The maximum number of intervals provided for on the score sheet is ten.

The average scores for the items in Schedule B are obtained by counting the number of circled numerals and subtracting minus from plus totals. Then dividing by the number of intervals observed. The maximum number of intervals provided for on the score sheet is five. It will be observed that a negative average could be obtained for items in Schedule B. In such cases the negative average is subtracted from the positive average in arriving at the overall total score.

Appendix B of this manual contains an aid for computing the necessary averages.



GENERAL DIRECTIONS

The observation schedule described in this manual is concerned with both verbal and non-verbal behavior of pupils and teachers in a classroom situation. The observer must be aware, therefore, of both the content of the verbal statements made by the teacher and pupils and the physical presence of the teacher and pupils in the classroom. This will necessitate the observer breaking his normal habit of watching the person speaking to also observe the reaction of the person being spoken to. For example, how does the pupil react to a teacher comment or how does the teacher react to a pupil comment? What are the facial expressions; what are the bodily postures which indicate reaction?

Actual physical activities of pupil and teacher are observed. For example, sometimes the teacher might poke the child with a pencil or some other object. At other times the observer might notice the teacher punctuating comments by banging the chalk hard against the board. Or, the observer might find the teacher correcting a child's work. These examples are given here to underline the fact that the observer is concerned not only with the verbal interaction but also the physical interaction of teacher and pupils.

Since the observation schedule is concerned with the development of creativity, the context of a given behavior takes on particular importance in this schedule. The observer must be aware of the content of the lesson as it proceeds and must be able to interpret statements by pupils and teacher in terms of the context in which they are located. For example, a statement of "good" by the teacher takes on one meaning in the context of "put away your books," and another in the context, "I would like some original remarks."

SCHEDULE A

During two minute intervals, on each of the three listed dimensions, (motivational climate, convergent-divergent thinking, and initiative), the observer will categorize behaviors using a five point code. That is, if the observer begins scoring at 2:00, at 2:02 he will place three numbers under interval one, each number representing his best judgment of the extent to which that dimension was present during the two minute interval. At 2:04 he will place three numbers under interval two. Then he will turn to Schedule B during the next two minute interval returning to Schedule A at 2:08 for interval 4, etc.

Please note, in all three parts of Schedule A a zero code (Code 0) may be used when there is no opportunity to assess. This code would be used for that two minute interval in which the observer can not infer the situation from the previous time interval. For example, the observer enters the room and finds the class reading or taking a

test and the teacher seated at the desk. The observer may reserve the right to change a zero category to one of the scored categories if he should discover, subsequent to the initial zero category, the conditions underlying an activity. For example, the observer might enter the room and find the children working quietly at their seats and the teacher doing nothing to indicate motivational climate. After five or ten minutes the teacher might say "Alright, now you've had a chance to study for the test. We will now put away the books and take the test." This would indicate the motivational climate underlying the prior ten minute interval. The same situation might apply in either of the other categories of Schedule A.

The score for Schedule A is the average obtained by dividing the total by the number of two minute intervals observed.

A. Motivational Climate

We are concerned with the entire classroom situation, how the teacher relates to the pupils and how they relate to him. We are interested in hearing what the teacher says and seeing what he does, whether he is negative or positive in his motivation of the children. A distinction should be made here between negative and positive comments such as "yes" and "no" and derogatory or threatening attitudes and statements. The negative and positive comments are not an issue here. We are concerned with the context in terms of its threat to the child. A negative statement by the teacher can be a positive motivation if it is in such a context. For example, in correcting work a "no" is not threatening if the correcting of the work is in the context of pupil-growth rather than in the context of grades and the threat inherent in grades.

Tests should normally be thought of as threatening. However, the context in which a test is given is an important consideration. For instance, if the tests are used to improve the pupil's work or to show where weaknesses exist and scores or grades are not taken, such as mid-week spelling test or a diaghostic arithmetic test, then a three or four positive category should be checked.

It is important to consider behavior other than verbal in motivational climate. In the instance in which there might be no verbal response but the teacher is smiling, approving, and otherwise indicating encouragement, a positive score could be given or vice versa.

In the cases in which the teacher leaves the room the previous motivational climate is considered to maintain through that interval.

0. No opportunity to assess.
1. Continuous negative motivation-motivation, a continuous factor and at all times negative.
2. Predominately negative motivation-motivation, when used is usually negative but not used at all times.

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3. Combination-both negative and positive or neutral motivation used.
4. Predominately positive motivation-motivation, when used is usually positive but not used at all times.
5. Continuous positive motivation-motivation, a continuous factor and at all times positive.

Explanation of Code for Section A. Motivational Climate.

Code 0. No opportunity to assess.

Code 1. - Continuous negative motivation - This code refers to the time interval in which the teacher uses a continuous and negative approach to motivating children. For example, the teacher may warn pupils of possible punishment (directly or indirectly), future failure, etc.: "If you don't hurry up and get busy you'll all be here next year." "Come to think of it, I have to stay here after school anyway and I would be happy to have you join me." The teacher may express negative motivation by shaking her head negatively, recording names for punishment on the board or in a grade book. No positive motivation is used in Code 1.

Code 2. - Predominately negative motivation - During this time interval the motivational techniques are negative, as those examples above, but spasmodic. For example, the teacher may give an assignment and then make one or two negative comments. Few positive comments are made. Code 2 is different from Code 1 in that there is not as much negative motivation and there can be some positive motivation ("Johnny, you're doing a good job"), however, there will not be as much positive motivation as negative. When there is an equal amount of positive and negative motivation Code 3 is used.

Code 3. - Combination - During this period of time the teacher equally uses both negative and positive motivation. For example, there is a direct presentation of the assignment followed with negative and positive comments. ("You may not be able to do this but I'm sure you will try hard,")

Code 4. - Predominately positive motivation - During this time interval the motivational techniques are positive but spasmodic. For example, the teacher speaks of future success of pupils, the teacher encourages by references to self-improvement (growth) and continued progress expected. Failure is referred to as a means of possible growth. Few negative comments may be used, but positive comments are predominant.

Code 5. - Continuous positive motivation - Code 5 is

distinguished by no negative motivation. There can be three different situations, however, which could characterize a Code 5 situation:

1. Code 5 could differ from Code 4 in that the teacher is continuously employing a positive motivation in feed-back form to the children. For example, whenever a child makes a remark the teacher responds rewardingly and failure is referred to as a means of growth.

2. The teacher develops self-motivation by having the children plan cooperatively what it is they are to do. Such a planning situation must be observed for the observer to record a Code 5 during the consequent work period.

3. Freedom to explore through a discovery-question approach will positively motivate children. The teacher using the discovery technique will eliminate the need for any direct or indirect reference to progress. The observer would probably not find the teacher rewarding directly with positive statements. However, the observer would find children being challenged and with curiosity aroused they will be self-motivated. [("How can we find out if white objects absorb more or less heat than dark objects?")

C.* Teacher Role in Encouraging Convergent and Divergent Thinking

The distinction in this item is between divergent and convergent thinking on the part of pupils. By convergent is meant moving toward the accepted or correct, a response that all can agree upon. By divergent is meant a response which is not necessarily the one right answer, a response which is original, a response situation in which there is more than one answer which is suitable. The key in observing this category is the type of questions the teacher asks the children and the kind of subject matter utilized. If the teacher is asking the children questions which are specific and which have one right answer this would be of a convergent nature. If the teacher is asking the children to think of something on their own in an open-ended way, such as asking them what their opinion is or allowing them to speculate, we would be seeing something at the divergent end of the scale. In some cases the teacher

* Rather than using new designations when the original schedule was revised to eliminate some items, the original was retained for comparison purposes.

may, by his selection of concent, provide divergent thinking through the stimulation of the child's imagination. For example, the reading to the class of n imaginary story would be a case in which the teacher by selecting a stimulating story is exciting the imagination of the class. Another example would be the situation in which the class is allowed to read library stories of their own choice without specific assignments to look for facts in these books. This would be another example of the divergent end of the scale. Occasionally the observer will find originality being directly and specifically encouraged. This could be in mathematics where different ways of solving problems are requested or in the area of language arts in which creative writing is being done.

0. No opportunity to assess.
1. Primary convergency - teacher allows only convergent thinking.
2. Encouraged convergency - teacher permits a little divergent thinking while encouraging convergency.
3. Equal divergency-convergency - teacher allows both convergent and divergent response favoring neither.
4. Encouraged divergency - teacher encourages divergent thinking in alternation with convergent.
5. Primary divergency - teacher's main purpose is divergent thinking.

Explanation of Code for Section C. Teacher Role in Encouraging Convergent and Divergent Thinking.

Code 0. - No opportunity to assess.

Code 1. - Primary convergency - Code 1 describes the time interval in which the purpose of the lesson is strictly information presentation and intake. A variety of the following methods and materials may or may not be used; in any case there is no opportunity for children to produce original ideas although they may participate in a discussion to ask questions clarifying information or may present information themselves such as a report on material they have previously gathered. Emphasis in all cases is on the correct or accepted answer or solution. Only convergent thinking is allowed.

For example:
(1) children are reading independently or as a total class to find information.
(2) children are listening to the teacher tell them information.
(3) children are viewing a filmstrip or motion picture without discussion of implications, possibilities, etc.
(4) using maps, charts, etc., to convey information.

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(5) use of opaque projector, overhead projector, tape recorder or disk recorder to present information.
(6) children are presenting learned facts. Correct answers, etc.

Code 2. - Encouraged convergency - Although encouraging convergent thinking, the teacher allows departure from any of the above activities of information presentation and intake to ask or allow a child to express his opinion, to speculate as to cause or possible result, etc. Divergent thinking is allowed but not encouraged. During all such departures the teacher dominates the discussion and allows only limited ideation on the part of the child or may simply ignore divergency without comment. The teacher may cut off the pupil response and insert a value statement regarding the pupil responses - accept or reject the response.

Code 3. - Equal Divergency-Convergency - Code 3 differs from Code 2 and 4 in that the teacher allows both divergent and convergent ideation. The teacher responds similarly to both convergent and divergent thinking. Each kind is encouraged and discouraged equally.

Code 4. - Encouraged divergency - Code 4 describes that period of time in which the teacher purposely encourages and provides time for divergent thinking with convergent thinking (information gathering and idea production). For example, after presenting information, the teacher encourages pupil speculation of possible results and action found in the information gathered, implications, improvements, etc. The teacher might ask the children to write original stories or essays about information gathered, draw pictures to illustrate meaning, make a mural or create a play to illustrate meaning of information presented. In arithmetic, the teacher might ask for other ways of finding the solution to a problem or example. Code 4 thus describes teacher variation of purpose in which a lesson is planned to proceed from information gathering to idea production in an alternating process. Convergent thinking is allowed but not encouraged.

Code 5. - Primary divergency - Code 5 describes that period of time in which the teacher's sole purpose is provision for pupil development of ideas. It differs from Code 4 in that the primary purpose is idea production. Where in Code 4 an alternating process of information gathering (convergent) and idea production (divergent) might be observed during a given two minute interval, in Code 5 we find only divergency during the interval.

For example:
(1) the teacher encourages the children to

analyze - to pull apart the whole to study how it became that whole.

(2) experiences are provided for children to put an object or objects into different uses than those commonly known.

(3) chances are given to experiment with a wide variety of materials or bits of information to produce, or work toward a final original result.

(4) children are encouraged to be original in discussing how to go about doing something (i.e., how to build a model farm; how to set up an experiment).

(5) an art or music experience in which children are encouraged to freely express their ideas.

(6) a creative writing experience in which children are encouraged to express their own ideas on paper.

(7) a situation in which groups of children are encouraged to produce group products which are original (i.e., construction of a mural or bulletin board, preparing a dramatic production, preparing original ways to present a report).

D. Pupil Initiative in Control of Instruction

The focal point of this category is pupil-control of instruction. Concern here is the degree to which the pupil is able to participate in controlling the content, speed, direction or method of instruction. Occasionally this will be found as a result of a direct act on the part of the teacher. For example, the teacher might say: "You may decide which books and materials you wish to use to answer these general questions." However, in most instances pupil initiative will be exerted during a discussion or work period. In these cases the direction can be altered by children volunteering information and by the teacher accepting the volunteered information or responding to the information to answer questions and thus causing side-tracks in the flow of the lesson. Sometimes a whole lesson is composed of numerous side-tracks. This would be volunteered information that is not from the textbook or directly in the content of the lesson. In these cases, by virtue of pupil responses, the actual content, speed, and direction of the lesson is determined in large part by the pupil. This can also be seen during a work period. When a child asks for help he is controlling the type, speed, and direction of content for himself. In cases in which a teacher, during a work period, goes to children who are not asking for help, we would have a situation which is more teacher controlled than pupil controlled. This would also be the situation in a discussion if the teacher is only calling on pupils and not responding to those who volunteer information or questions. In either of these cases, however, (work or discussion) if the teacher elaborates on or spends time with a pupil to whom the teacher first responded without the pupil volunteering, this could well become a situation in which the pupil's reaction is controlling the content.

The observer must be careful to identify situations in which pupils are volunteering information but in which the teacher is not accepting the information or is ignoring it without comment and proceeding with a pre-planned lesson. These cases are different from those previously described.

0. No opportunity to assess.
1. Teacher domination - no pupil participation in control of instruction.
2 Teacher domination - minor pupil participation in control of instruction.
3. Teacher control - major pupil participation in control of instruction.
4. Pupil control - teacher participation in control of instruction.
5. Pupil control - no teacher participation in control of instruction.

Explanation of Code for Section D. Pupil Initiative in Control of Instruction.

Code 0. - No opportunity to assess.

Code 1. - Teacher domination - no pupil participation in control of instruction. This code applies to a situation in which the teacher is exercising autocratic control and little or no opportunity is provided for pupil participation in control of the situation. That is, all activities are dictated by the teacher. Some examples of this are:

(1) Teacher announces assignment, test, or work plan.
(2) Teacher presents learning content.
(3) Teacher recites correct answers to written work.
(4) Pupils recite, work at board, etc., as designated by teacher.
(5) Pupils give a teacher-assigned report.

Code 2. - Teacher domination - minor pupil participation in control of instruction. This code applies to a situation in which the teacher is exercising major control, but pupil questions and suggestions are taken into account and used to direct activities to a limited extent. Examples of this are:

(1) Pupils recite, work at board, etc., after having volunteered.
(2) Pupils raise questions regarding subject matter or procedure after teacher asks for same.

Code 3. - Teacher control - major pupil participation in control of instruction. This code is used for a time interval during which the teacher is controlling the

general situation, but pupil initiative is permitted to exert a great deal of control over specific content and activities. That is, the teacher plans the overall structure of the type of learning which is to take place but is sensitive to pupils' needs, suggestions, questions, and planning to determine specific details. An example of this is the situation in which the teacher announces the topic for study and then lets the students plan how the topic should be attacked. Another example is a class discussion period in which a teacher-assigned subject is discussed but where control over the content and activities of the assignment is in the pupils' direction. Still another situation of this type is one in which the teacher makes a general assignment, and students study whatever material they feel applies to the assignment.

Code 4. - Pupil control - teacher participation in control of instruction. This code is used for a time interval during which the students have almost complete control of the learning situation, and the teacher is merely acting as one of the group. This applies to a pure activity-type program in which the pupils are choosing their own activities and proceeding as they see fit, with only occasional guidance from the teacher. It also applies to a period in a more traditional type school in which the pupils are given control of the class. For instance, Code 4 is used if some pupil spontaneously suggests that the class have a party, provide a Christmas basket for a poor family, or some similar activity, and then the teacher lets them proceed with implementing the suggestion.

Code 5. - Pupil control - no teacher participation in control of instruction. This code applies to all situations of extreme pupil control, with no participation by the teacher. The pupils, of course, never have complete control, for at any time it may be a teacher's decision to permit students more or less independent choices on what they do. This is frequently the case at "recess", where there is no organized or supervised activity. Although recess is not covered in classroom observation, similar situations sometimes occur in classrooms. An example is more or less "free activity" of a class preparing for a Christmas play or a dramatization in connection with the study of literature.

SCHEDULE B

This part of the schedule is recorded alternately with every two of schedule A time periods. When one of the listed behaviors is observed during the interval the observer circles the corresponding numeral in the positive or negative box on the score sheet. Circle only once for any given behavior during a time period.

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For pupil behaviors (sections A and C) a behavior is recorded only when it is very obvious and for at least half of the class. That is, when everyone would agree that a majority (half) the students were "eager" because of their remarks, that the remarks were "courteous" or "rude", etc. It should be emphasized that these are extreme behaviors. Should there be any doubt about an occurence none should be circled. Furthermore, these behaviors are mutually exclusive. It is not possible to circle both a negative and positive numeral. For example the options in BA, Pupil-Teacher are +1, "Responded eagerly" or -1, "Were reluctant to respond" or neither. Items cannot be observed which cancel each other out.

The score for schedule B is the average difference. This is obtained by dividing the difference score obtained by totaling the positive and negative tallies by the number of time intervals observed. A negative score is thus possible.

A. Pupil Interest (Pupil-Teacher Relationship)

Positive	Negative
(Discussion)	
1. Respond eagerly.	1. Reluctant to respond, do not volunteer.
2. Make courteous remarks to teacher.	2. Make rude remarks to teacher.
3. Receive teacher criticism in a positive manner.	3. Are negative or irritable in response to teacher criticism.
(Work-Period)	
4. Work intently with little sign of attention wandering.	4. Are restless, gaze about, doodle, day-dream, whisper.
5. Promptly take part in activities.	5. Slowly take part in activities.

C. Pupil-Pupil Relationship

Positive	Negative
1. Children refer (verbal or non-verbal) positively to success of others.	1. Children refer negatively to success of others.
2. Children help each other.	2. Children are reluctant to help each other.
3. Children accept without comment (or any other overt action) differences in individual capability or response.	3. Children make fun of or speak about others because of difference in capability of response.
4. Children express appreciation of classmates unusual or different response.	4. Children make derisive comments or laugh at unusual and different responses of classmates.

B. Teacher-Pupil Relationship

It is important to note that the teacher response to pupils applies not only in discussion situations but also in work periods. If the teacher ignores the children during the work period busying himself at his desk or on some project unrelated to what children are doing, negative score (-3) would be tallied.

Positive	Negative
1. Teacher responds positively to pupil contributions.	1. Teacher responds abruptly and negatively to pupil contributions.
2. Teacher uses "we" approach in talking to children.	2. Teacher uses "I" approach in talking to children.
3. Teacher is attentive to pupil remarks or questions.	3. Teacher speaks to other children, cuts off child speaking or is otherwise inattentive.
4. Teacher asks opinion of children not volunteering information (not raising hands for help or to give information).	4. Teacher acts upon the advice of a few children - not involving most in the discussion.

D. Teacher Group Approach

It should be noted that some items in this section refer to "phases" or a section of the lesson being observed.

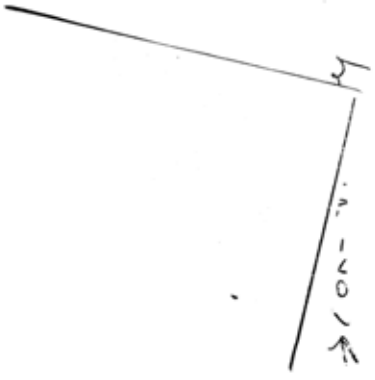
Positive	Negative
1. Teacher builds and sustains pupil interest.	1. Teacher does not build and sustain pupil interest.
2. Materials are ready for immediate use.	2. Materials are not ready for immediate use.
3. Children are actively involved at high point of interest.	3. Children are actively involved at a point after interest is at its peak.
4. Teacher concludes the lesson or phase while interest still holds.	4. Conclusion of lesson or phase comes after children appear to be restless.

SCHEDULE C

B. Teacher Encouragement of Unusual Responses

Record here the tally of times the teacher encourages unusual responses. Record a tally mark at any time during the observation it occurs. Encouragement may be verbal or non-verbal (i.e., smiling or laughing appreciatively). It should be noted that unusual responses may be either of a direct or indirect type and the teacher encouragement may also be direct or indirect. Examples of direct encouragement of direct, unusual responses are: "That was a very good answer, George, it was an idea no one else thought of!"; "Can we have some original ideas?"; "Let's see how many new ways we can think of for doing this."

The observer must beware of teacher use of sarcasm and record only obviously genuine teacher encouragement of unusual responses. In the case in which the teacher has asked for unusual responses and then rewards these responses with brief comments such as "good", "fine", or a smile or nod of the head, these brief rewards in this context would also be tallied as encouragement of unusual responses. An example of indirect unusual responses would be a situation in which a child produces an unusual response in the midst of a discussion or situation in which usual responses are the norm and the teacher approves of his unusual response and rewards him positively for it in an indirect manner rather than squelching this response. For example, the class might be discussing current events and the child might make an unusual suggestion about solving an international problem. The teacher could reward this response by approving of it.



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Classroom Creativity Observation Schedule (CCOS) Total Score _____

Teacher _____ Grade _____

Observer _____ Date _____ From _____ to _____

Total Minutes _____

Schedule A.

	1	2	4	5	7	8	10	11	13	14	Tot.	Aver.
A. Motivational Climate												
C. Divergency												
D. Initiative in Control												

Schedule B.

(Pupil behaviors)

		3	6	9	12	15	Tot.	Dif./ Aver.
A. Pupil Interest (Disc.)								
1. Resp. Eagerly - Reluc. Resp.	+	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	+	
2. Court. Resp. - Rude Resp.								
3. Rcd. Crit. Pos. - Neg. Resp. to Crit. (Work-period)								
4. Wk. Intently - Restless, etc.	-	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	-	
5. Prompt part. - Slowly part.								
C. Pupil-Pupil								
1. Ref. pos. other - Ref. neg. other	+	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	+	
2. Help ea. other - Relu. help oth.								
3. Accep. diff. - Fun. diff.								
4. Exp. appr. unu. - Deri. of unusual	-	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	-	

(Teacher behaviors)

B. Teacher-Pupil								
1. Resp. pos. - Resp. neg. & abru.		1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4		
2. "We" appro. - "I" appro.	+						+	
3. Attn. t pup. - inatten. to pupil								
4. Attn. n-vol. - Dn ask n-vol.		1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4		
	-						-	
D. Teacher Group Approach								
1. Build & Sust. int. - Does not Build & Sust. Int.	+	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	+	
2. Mat. ready - Mat. n-ready								
3. Ch. inv. HPnt. - Ch. inv. after HP-		1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	-	
4. Conc. wh. inter. - Conc. aft. inter.								

Schedule C. (tally as occur)

B. Teacher Encouragement of Unusual Responses

Tally _____ Total _____

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QUICK COMPUTATION TABLE

Dividend	Divisors							
	1	2	3	4	5	6	7	8	9
1		.500	.333	.250	.200	.167	.143	.125	.111
2		1.000	.667	.500	.400	.333	.286	.250	.222
3		1.500	1.000	.750	.600	.500	.429	.375	.333
4		2.000	1.333	1.000	.800	.667	.571	.500	.444
5		2.500	1.667	1.250	1.000	.833	.714	.625	.556
6		3.000	2.000	1.500	1.200	1.000	.857	.750	.667
7		3.500	2.333	1.750	1.400	1.167	1.000	.875	.778
8		4.000	2.667	2.000	1.600	1.333	1.143	1.000	.889
9		4.500	3.000	2.250	1.800	1.500	1.286	1.125	1.000
10		5.000	3.333	2.500	2.000	1.667	1.429	1.250	1.111
11		5.500	3.667	2.750	2.200	1.833	1.571	1.375	1.222
12		6.000	4.000	3.000	2.400	2.000	1.714	1.500	1.333
13		6.500	4.333	3.250	2.600	2.167	1.857	1.625	1.444
14		7.000	4.667	3.500	2.800	2.333	2.000	1.750	1.556
15		7.500	5.000	3.750	3.000	2.500	2.143	1.875	1.667
16		8.000	5.333	4.000	3.200	2.667	2.286	2.000	1.778
17		8.500	5.667	4.250	3.400	2.833	2.429	2.125	1.889
18		9.000	6.000	4.500	3.600	3.000	2.571	2.250	2.000
19		9.500	6.333	4.750	3.800	3.167	2.714	2.375	2.111
20		10.000	6.667	5.000	4.000	3.333	2.857	2.500	2.222
21		10.500	7.000	5.250	4.200	3.500	3.000	2.625	2.333
22		11.000	7.333	5.500	4.400	3.667	3.143	2.750	2.444
23		11.500	7.667	5.750	4.600	3.833	3.286	2.875	2.556
24		12.000	8.000	6.000	4.800	4.000	3.429	3.000	2.667
25		12.500	8.333	6.250	5.000	4.167	3.571	3.125	2.778
26		13.000	8.667	6.500	5.200	4.333	3.714	3.250	2.889
27		13.500	9.000	6.750	5.400	4.500	3.875	3.375	3.000
28		14.000	9.333	7.000	5.600	4.667	4.000	3.500	3.111
29		14.500	9.667	7.250	5.800	4.883	4.143	3.625	3.222
30		15.000	10.000	7.500	6.000	5.000	4.286	3.750	3.333
31		15.500	10.333	7.750	6.200	5.167	4.429	3.875	3.444
32		16.000	10.667	8.000	6.400	5.333	4.571	4.000	3.556
33		16.500	11.000	8.250	6.600	5.500	4.714	4.125	3.667
34		17.000	11.333	8.500	6.800	5.667	4.857	4.250	3.778
35		17.500	11.667	8.750	7.000	5.833	5.000	4.375	3.889

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Dividend	Divisors							
	1	2	3	4	5	6	7	8	9
36		18.000	12.000	9.000	7.200	6.000	5.143	4.500	4.000
37		18.500	12.333	9.250	7.400	6.167	5.286	4.625	4.111
38		19.000	12.667	9.500	7.600	6.333	5.429	4.750	4.222
39		19.500	13.000	9.750	7.800	6.500	5.571	4.875	4.333
40		20.000	13.333	10.000	8.000	6.667	5.714	5.000	4.444
41		20.500	13.667	10.250	8.200	6.833	5.857	5.125	4.556
42		21.000	14.000	10.500	8.400	7.000	6.000	5.250	4.667
43		21.500	14.333	10.750	8.600	7.167	6.143	5.375	4.778
44		22.000	14.667	11.000	8.800	7.333	6.286	5.500	4.889
45		22.500	15.000	11.250	9.000	7.500	6.429	5.625	5.000
46		23.000	15.333	11.500	9.200	7.667	6.571	5.750	5.111
47		23.500	15.667	11.750	9.400	7.833	6.714	5.875	5.222
48		24.000	16.000	12.000	9.600	8.000	6.857	6.000	5.333
49		24.500	16.333	12.250	9.800	8.167	7.000	6.125	5.444
50		25.000	16.667	12.500	10.000	8.333	7.143	6.250	5.556