Journal of Education and Practice
ISSN 2222-1735 (Paper) ISSN 2222-288X (Online)
Vol 3, No 12, 2012

Fostering Creativity: A Four Elemental Model of Creative Pedagogy

Rashmi*
Junior Research Fellow, Department of Education, Patna University, Patna, Bihar, India.
*Email of the corresponding author: rashmipranay06@gmail.com

Abstract

Capacities and qualities of creativity in teaching for quality learning have been identified by researchers and teaching strategies in fostering children's creative thinking skills were proposed to create supportive environments in an educational setting. There is little consistent oratory, however, among these insights and strategies concerning different aspects of fostering creativity. In light of this, a fourfold elemental model of creative pedagogy is proposed to offer a more simple and holistic view of fostering and enhancing creativity through teaching to cover the aspect of creative learning affected by psycho-physical environment which was overlooked in the past and to provide a different explanation to some arguments about teaching creativity. This model is also a starting point for studies which intend to understand the teachers and pupils' and psycho-physical environment responses to creative pedagogy and to provide implications for applying creative pedagogy in an Indian classroom and in Asian context as well.

Keywords: Creative Pedagogy, creative teaching, teaching for creativity, creative learning, Psycho-physical environment

1. Rationale

Although the argument exits for long that whether creativity can be increased, there seems to be a consensus view within the realm of education that creativity is amenable to teaching (Amabile, 1996; Baer & Kaufman, 2006; Craft, 2000; Fryer, 1996; James, Lederman, & Vagt- Traore, 2004; Kaufman & Beghetto, 2009; Runco & Chand, 1995; Torrance, 1963; Wilson, 2005). The attempt of fostering creativity through training was given more attention in the mid twentieth century, when psychometric researchers, such as Guilford, Torrance, put efforts in extending and measuring individual's creativity. Guilford (1952) claimed that "Like most behaviour, creative activity probably represents to some extent many learned skills. There may be limitations set on these skills by heredity; but I am convinced that through learning one can extend the skills within those limitations".

Certain training programmes designed to help stimulate individual's creativity were then proposed, for instance, thinking tools (e.g. six thinking hats, developed by Edward De Bono (1987)) and brainstorming technique, developed by Osborn (Fryer, 1996) were suggested to help people generate diverse thoughts and solutions (Sternberg, 2003). CPS (Creative Problem Solving process) is another model that has been widely applied and researched (Fryer, 1996). In addition to pragmatic techniques of creativity training programmes, cognitive, social psychologists and educational researchers have also generated implications for fostering creativity in school teaching (Amabile, 1996; Esquivel, 1995; Feldman & Benjamin, 2006).

The insights and implications in developing creativity through education can be scrutinized into three aspects. First aspect is concerning about *teaching*, including how to provide creative and innovative practices which stimulates the development of multiple intelligence (Torrance, 1963; Torrance & Myers, 1970; Woods, 1995), possibility thinking (Craft, 2000, 2005) and higher-level thinking (Cropley, 1992; Fryer, 1996; Yeh, 2006) or how to involve the opportunity of exploring and solving problem (Cropley, 1992; Fryer, 1996, 2003; Torrance, 1963). The second aspect of the implications suggests creating an *environment*, both psychological and physical (external) that is stimulating and supportive to learners' motivation and enthusiasm (Collins & Amabile, 1996; Hennesay, 1995, 2007; Woods & Jeffrey, 1996) and creative behaviour (Craft, 2001a; Esquivel, 1995; Lucas, 2001; Torrance, 1995). The third concern of nurturing creativity is about *teacher ethos*, which includes maintaining an open attitude towards creative ideas or behaviours, showing a humanistic pupil control ideology (as opposed to being authoritarian), being flexible and valuing independence thinking (Chen, 2008; Craft, 2001a, 2005, 2007; Cremin, et al. 2009; Esquivel, 1995; Hennessey, 1995; National Advisory Committee on Creative and Cultural Education, 1999).

Although these insights focus on different dimensions of developing creativity and the assumptions behind each view are not opposing and are even consistent, distinctions between pedagogical views were formed and varied terms used referring to a similar conception, due to different research approach. In light of this situation, a four elemental model of creative pedagogy consisting of four interrelated elements is theorized with a confluence approach in attempt to offer a more simple and holistic view of fostering creativity in education.

2. A Convergence Approach

Wehner, Csikszentmihalyi and Magyari-Berck (1991) described the situation within creativity research with the fable of the blind men and the elephant that people touch different parts of the huge animal but claim what they touch and know is the whole picture. As a result of the fractional findings of different approaches of creativity research, a confluence approach which integrated multiple dimensions and factors of creativity, has been developed since the last two decades of 20th century (Sternberg & Lubart, 1999). Complex models, for instance, Amabile's (1996) three factor componential model(Collins & Amabile, 1999), Gruber and his colleagues' developmental evolving- systems model (Gruber & Wallace, 1999) and Csikszentmihalyi's (1996, 1999) systems model were proposed to illustrate the multilevel interactions of different factors for creativity (Baer & Kaufman, 2006). Likewise, confluence approach and complex model can also be found in researching pedagogical practices. In a review of modern conceptions of pedagogy since the 1930s, Watkins and Mortimore (1999) suggested four phases of pedagogy research, including:

- a focus on different types of teachers
- a focus on the contexts of teaching
- a focus on teaching and learning complex models that offer an integrated conceptualization of pedagogy

Woodman, Sawyer and Griffin (1993) took a similar theoretical perspective on creativity in organizations but they extended their model in two additional ways. They included External influences as well as intra-organizational influences and they gave prominence to individual factors in their extra-actionist approach. In their model creative behaviour within organizations is a function of two categories of work environment inputs which are as follows:

- Group characteristics are the norms, group cohesiveness, size, diversity, roles, task characteristics and problem solving approach used in the group.
- Organizational characteristics consist of organizational culture, resources, rewards, strategy, structure and focus on technology.

Given the background conception and implications of convergence approach in creativity research as well as in pedagogy research, it is argued in this paper that the model of creative pedagogy, a model consisting of four interrelated elements in nurturing creativity is able to offer a more holistic view of fostering creativity through education.

3. Theoretical Assumptions of the model

There are varied explanations and theories of creativity. For instance, some psychologists believe creativity to arise from unconscious drives while some psychological researchers defined creativity as a syndrome or a complex (Runco & Sakamoto, 1999). Some other researchers deem creativity as thinking skills, a product of creative thinking or personal qualities (Sternberg, 1999). The varied views and definitions of creativity imply different research approach to creativity. Then what is the view of creativity within education? Although mainly drawing from theories of scholarly field of creativity studies, such as behaviourist, cognitive, social-psychological or humanistic approach, the approach to creativity in education as Craft (2005) suggests that it has unique concerns, including the relationship between creativity and knowledge, curriculum and appropriate pedagogical strategies to foster creativity in the classroom. In one study the significant improvements in the learning environment were attributed to the better attitudes to teaching and learning the improvements in the physical environment created amongst all users (Higgins, Hall, Wall, Woolner & McCaughey 2005).

The perceptions of creativity this approach adopts are hence more relevant to educational values and settings. Generally there are two premises underpinning the approach of creativity in education: first is the view that creativity can be developed (Fryer, 1996; Parnes, 1963; Torrance, 1963; Torrance & Myers, 1970) and second is that all individuals have the potential to be creative (Craft, 2001a; Esquivel, 1995; Feldman & Benjamin, 2006; NACCCE, 1999) and third is that Creativity is widely affected by the psycho-physical environment of the learner (Deci, Koestner & Ryan,1999; Deci & Ryan, 1985a,b).

4. Creativity Can Be Developed

The argument over whether creativity is amenable to education can be dated back to the nineteen century (Baer & Kaufman, 2006) when the studies of human genius and creative achievement were the main concern. Esquivel (1995) emphasizes the role of educators in enhancing the creative potential of every student. In contemporary research, creativity is embraced as a multi-dimensional and developmental construct; it is believed that creativity is a developmental shift and a lifelong process (Craft, 2001a; Esquivel, 1995; Feldman, 1999). In fact, Guilford

(1975) asserted that "the student be taught about the nature of his own intellectual resources, so that he may gain more control over them". Davis (1991) stated that "it is important to help students meta-cognitively to understand the topic of creativity".

To Develop Creativity there are many suggestions in the literature as to how to develop creative abilities from childhood to adulthood in our schools and colleges (Davis & Rimm, 1985; Guilford, 1967b; Karnes, McCoy, Zehrbach, Wollersheim, Clarizio, Costin & Stanley,1961; Olmo, 1977; Parnes & Noller, 1972; Renzulli, 1992; Sternberg & Lubart, 1991; Torrance, 1972; Williams, 1969). For example, Guilford (1967b) and Torrance (1963) observed that creative thinking abilities could be developed through direct instruction. Karnes et al. (1961) suggested that educational programs should be organized flexibly to provide better services, such as enrichment programs, to students.

Teaching techniques that stimulate both convergent and divergent thinking are important for stimulating creative thinking and are more challenging to creative students (Karnes et al., 1961). Individual assignments based on problem solving and problem finding also would stimulate creativity (Davis & Rimm, 1985; Karnes et al., 1961; Subotnik, 1988). Teachers who are amenable to change and who model divergent thinking themselves seem the most effective in stimulating creativity in students (Karnes et al., 1961). Besides using individual assignments to stimulate creativity, teachers should provide situations for students to participate in group activities (Davis, 1991; Davis & Rimm, 1985). These group activities, in addition to enhancing creative thinking and academic performance, should provide students with opportunities for developing peer acceptance (Karnes et al., 1961).

Another technique for developing creativity is the inquiry-discovery or problem-solving approach, which is an indirect teaching method (Feldhusen & Treffinger, 1980). Treffinger (1980) suggested that creativity is related to the discovery process. They stated that "experience with discovery learning enhances creative performance by forcing the learner to manipulate the environment and produce new ideas". Feldhusen & Treffinger (1980) also reported that the creative processes of fluency, flexibility, elaboration and originality were incorporated in the inquiry–discovery approach to teaching.

Cognitive-affective models for encouraging creativity in children also have been developed (Williams, 1969). The cognitive domain consists of knowledge, reasoning skills and what Williams termed algorithmic truths as well as technical skills and special talents. This domain is incorporated generally into teachers' instructional objectives and is dependent on experience and innate abilities of the learner (Hennessey & Amabile, 1987). Davis and Rimm (1985) suggested that stimulating creative thinking should be aimed at "strengthening attitudes conducive to creativity".

Thus, the affective domain would seem to be as important as the cognitive domain in stimulating creativity. In fact Davis and Rimm indicated that "creative attitudes" are taught in all creativity programs. However, Williams noted those classroom practices in 1969. Williams also noted that teachers had difficulty evaluating affective behaviours. Two other issues besides creative attitudes for stimulating creative thinking were mentioned by Davis and Rimm (1985). That is, they believed as Feldhusen and Treffinger (1980) did, that creative *abilities* could be strengthened through practice in creative thinking exercises, such as those that promote divergent thinking (e.g., brainstorming). Davis and Rimm also believed that creative thinking *techniques,* which were divided into personal and standard techniques, could be developed. Personal creative techniques are unique, whereas standard techniques (e.g., brainstorming) are taught in creativity courses (Davis & Rimm, 1985). Davis (1982) developed a four-step model (AUTA) of creativity development. In general, the model suggests that to become a creative person one must

(a) Increase one's creativity consciousness (i.e., one's readiness to think creatively)

(b) Understand the topic of creativity

(c) Use personal and standard creative thinking techniques

(d) Be self-actualized (i.e., reach one's potential) (Davis & Rimm, 1985).

Torrance found that the Osborn-Parnes approach had better results than other approaches, such as using creative arts in developing creativity (e.g., divergent thinking production). However, using the creative arts was effective in teaching children to think creatively. According to Torrance, the most effective techniques for stimulating creativity involved both cognitive and affective factors, as well as provided extrinsic motivation and active learning opportunities. Guilford (1972) reported that, in the schools, most training for creativity was aimed at enhancing divergent thinking and production abilities. However, he suggested that improvement of transformation abilities i.e., revising one's experiences and producing new patterns was also important (Guilford, 1967a).

A developmental theory of creativity proposed by Renzulli (1992) suggests that students should be provided with opportunities to engage in "ideal acts of learning". The learner, teacher and curriculum must all be involved

for these ideal acts of learning to occur. The curriculum also should emphasize the structure of a discipline, which will facilitate the students' thinking in that discipline (Renzulli, 1992). However, Renzulli noted that the curriculum should be appropriately flexible to students' "unique abilities, interests and learning styles". According to Renzulli, this role encourages students to "engage in the kinds of thinking, feeling and doing that characterize the work of the practicing professional" (Renzulli's model in action is the school wide enrichment model (SEM) Renzulli & Reis, 1985). In general, research on the SEM suggests that the model

(a) Stimulates creativity and task commitment in students selected for the program

(b) Facilitates the development of more diverse and sophisticated student creative products (Renzulli & Reis, 1994).

Six resources have been identified as facilitating creativity in children and adults (Sternberg & Lubart, 1991): (a) intelligence, (b) knowledge, (c) intellectual style, (d) personality, (e) motivation and (f) environmental context. According to Sternberg and Lubart (1991) there are two aspects of intelligence that are relevant to creativity: problem definition and redefinition and insight skills. They reported that creative people not only solve problems but also pose the right problems. Thus, teachers need to provide these types of problem finding opportunities for their students. They suggested that teachers should use more ill-structured problems to promote insightful thinking. The second resource, knowledge, is important because an individual must have knowledge of a specific field of study to engage in problem solution and make a creative contribution to that field (Sternberg & Lubart, 1991). Sternberg and Williams (1996) developed 25 strategies to teach creative thinking. Even though these strategies are presented to help develop creativity in all students, Sternberg and Williams noted that it is still a difficult task to enhance creativity.

5. Everyone Has the Potential to Be Creative

As mentioned, more attention was given after the 50's to enhancing creative development and since then several waves of creativity in education occurred (Craft, 2001b; Shaheen, 2010). In the earlier wave of promoting creativity, child centred and innovative pedagogy was called for in the attempt to reform traditional school practice (Esquivel, 1995). Educators hold the view that children are naturally creative, open to experience and tend to be attracted by novel things and this natural quality will diminish unless it is nurtured by favourable environments created by adults (Feldman & Benjamin, 2006; Torrance & Myers, 1970). Humanistic scholars also see creativity as the natural urge of individuals to develop, extend, ex-press and activate their capacities (Maslow, 1996; Rogers, 1954).

The latest wave in enhancing creativity began in the 90's due to the intense social, economic and technological changes nowadays (Craft, 2001b; Shaheen, 2010); creativity is reckoned as a basic capacity for survival as well as for future success (NACCCE, 1999). "In the Renaissance creativity might have been a luxury for the few, but by now it is a necessity for all" (Jackson et al., 2006). At this point, the relationship between creativity and education is more than the previous goal, to encourage personal development and self-actualization, but to equip youngsters with the basic capacity for future life. Yet regardless in the earlier or recent urge for fostering creativity, the belief behind the efforts that every individual has the potential to be creative is unchanged.

6. Creativity is widely affected by psycho-physical environment

The place where one lives is important for fostering and advancement of creativity. One must be able to access the domain in which one plans to work. Certain environments facilitate interaction and provide more excitement and a greater effectiveness of ideas. Creativity can be stimulated by a congenial physical environment. But this is not a simple causal relationship. When creative persons find themselves in beautiful settings, they are more likely to find new connections among ideas, new perspectives on issues they are dealing with. But it is essential to have perspectives on issues we are dealing with, i.e., to have a "prepared mind." Without some insights and perspectives, nothing much is likely to happen. Creativity can be foster and enhanced in positive and supportive psycho-physical environment (Rashmi, 2012).

The physical environment and student achievement Studies about student academic achievement and building condition conclude that the quality of the physical environment significantly affects student achievement. 'There is sufficient research to state without equivocation that the building in which students spends a good deal of their time learning does in fact influence how well they learn' (Earthman, 2004). Desirable designs include having 'friendly and agreeable' entrance areas, supervised private places for students, as well as public spaces that foster a sense of community, with particular attention to the colour used (Fisher, 2000; McGregor, 2004). Today's schools must create spaces that students want to go to, similar to the way cafes attract people, rather than the space being purely functional (Bunting, 2004).

Students will be more motivated when they choose their own tasks. This would make the task meaningful to the individual. They further suggested that educators devote more time to problem finding skills to communicate

to students that this ability is as important as problem solving. Often, though, extrinsic motivators must be used to foster intrinsic motivation. Of importance are Runco and Chand's (1995) argument that "motivation is dependent on cognitive processes". Renzulli's major concern was in how educators can promote a disposition for creative productivity. One variable that may facilitate one's creative production disposition is one's interests (Renzulli, 1992). These interests can be of tasks or objects. Renzulli reported that the more consistent and intense the interests, the more creative were the students. There is also several personality attributes that have been shown to be traits of persons considered to be creative

(a) Tolerance for ambiguity

(b) Willingness to surmount obstacles and persevere

(c) Willingness to grow

(d) Willingness to take risks

(e) Courage of one's convictions and belief in oneself (Sternberg & Lubart, 1991).

Sternberg and Lubart (1991) also indicated that there are two types of motivation important to creativity: intrinsic motivation and the motivation to excel. Basically, creative people are intrinsically motivated to complete a task. The major difficulty is with the grading system in schools, which is a form of extrinsic motivation. It was reported previously (Hennessey & Amabile, 1987) that extrinsic rewards hinder intrinsic motivation. Thus, schools will need to improve their capacity for improving students' intrinsic motivation. Finally, Sternberg and Lubart (1991), as did Torrance (1981), suggested that the environmental context is important in stimulating creativity in three ways:

(a) "Sparking" creative ideas

(b) Encouraging follow-up of creative ideas

(c) Evaluating and rewarding creative ideas

Schools and classrooms can be more than a place to inhabit: they can also acquire an emotional significance. One perspective is that educators play an important role in constructing classrooms and schools and therefore students' identities. An extension of this idea is that children's environments have an effect on their cognitive and behavioural development and on childhood vulnerability (Ellis, 2005). These authors reported that schools do poorly in providing environments that spark creativity. They also reported that schools rarely allow students to "pursue projects that encourage them to develop their creative thinking" (Sternberg & Lubart, 1991). Finally, they reported that teachers rarely rewarded creativity in their classes. Thus, it appears that educators could improve their environmental context in these areas.

Looking at learning space is about more than the structures it is about the social relationships within the space. Space can be conceptualised as being an interaction between physical and social spaces. McGregor claims that the space is 'made' by the social aspects (McGregor, 2004). Bunting also makes the link between the physical school environment influencing general attitudes to learning. He argues that if students do not leave school with a love of learning, they will be disadvantaged in today's 'knowledge society' (Bunting, 2004).

The finding that decision making performance was not influence by environmental factors was more surprising. Judgment and decision making, along with creativity and problem solving, are usually classified as "higher cognitive processes" (Solso, 1991). Higher thinking processes require a variety of cognitive processing abilities, such as problem solving, creativity, memory and decision making (Hogarth, 1987). Both psychological theory and common sense maintain that thinking ability may be impaired under highly stressful conditions. For instance, it has been hypothesized that individuals under stress will exhibit a narrowing of focus and stereotyped responding (Mandler, 1979, 1984).

7. The Four Elemental Model of Creative Pedagogy

Informed by the assumptions and the aspects of creativity nurtured within education, a "*four elemental model*" of creative pedagogy is proposed to illustrates the relationship between creativity, pedagogical practices and Psycho-physical environment. Creative pedagogy is put forward to describe practice that enhances creative development through four interrelated elements like *creative teaching*, *teaching for creativity*, *creative learning and psycho-physical environment.* The four interrelated elements harmonize and result in each other (Figure 1). A supportive climate for developing creative abilities and qualities is created through the interaction between inventive and effective teaching (by the creative facilitator), creative learning (by the active learner) and supportive and positive psycho-physical environment.

8. Creative Teaching and Teaching for Creativity

A distinction is made in the NACCCE report (1999) between *teaching creatively* and *teaching for creativity*, defining the former as "using imaginative approaches to make learning more interesting and effective'" (NACCCE, 1999) while relating the latter to the objective of identifying young people's creative abilities, as well as encouraging and providing opportunities for the development of those capacities (Jeffrey & Craft, 2004). Albeit having different foci, creative teaching focuses on teacher practice, whereas teaching for creativity highlights learner agency (Craft, 2005). The two practices are seen interconnected and interrelated in this presented model. For the features of *creative teaching*, such as imaginative, dynamic and innovative approaches (Jeffrey & Craft, 2004), often inspire children's imagination and new ideas and lead directly to teaching for creativity. On the other hand, the pedagogical strategies of *teaching for creativity that* facilitate children's agency and engagement, such as strategies of learning to learn or to exploring more new possibilities, often seek to be inventive in order to arouse curiosity and learning motivation (Cropley, 1992; Torrance, 1963).

Through teaching creatively, teachers encourage learners' creativity by passing on their enthusiasm, imagination and other talents (Lucas, 2001); while creating a learning context for problem solving and appreciating learners' creative contributions are essential principles of teaching for creativity (Fryer, 1996). The pedagogical principles of foster children's possibility thinking identified by Cremin, Burnard, and Craft (2006), are useful to describe how teachers create a supportive environment through effective strategies that prioritize children's autonomy. They maintain that the three principles, involving *standing back*, *profiling learner agency* and *creating time and space* helps to encourage the children's questioning and active engagement in learning by passing the decision making and the responsibility for learning back to the child.

9. Creative Learning

When considering pedagogy, most research and implications seem to focus on the teacher, classroom context or teaching content and few include the importance of learning until the complex model of pedagogy proposed in recent years (Watkins & Mortimore, 1999). The neglect of a spontaneous and creative learning and its characteristics, such as autonomy, could result in difficulties in fostering children's creativity (Lin, 2011). Torrance (1963) contrasted *learning creatively* with *learning by authority* when arguing about giving children a chance to learn and think creatively. Children learn by authority when they are told what they should learn and accept the ideas from the authority (e.g. teachers, books); whereas in the other process, children learn by means such as questioning, inquiring, searching, manipulating, experimenting and even aimless play. Children explore out of their curiosity, which is natural to human beings. Torrance also connected teaching and learning by suggesting that during the learning process, children's creative skills and methods are required while at the same time the learning context, which is filled with curious problems to explore, stimulates spontaneous learning and flexes the capacities for learning and thinking creatively. This paper suggests that learner's activities and characteristics are important elements in fostering creativity. Therefore *creative learning* is considered a salient feature of creative pedagogy.

In more recent studies, several features of creative learning are revealed including playfulness (Kangas, 2010), collaboration (Mardell, Otami, & Turner 2008), development for imagination and possibility thinking (Craft, et al., 2008) and supportive resourceful context (Oral, 2008). Guilford (1950) stated that "a creative act is an instance of learning and a comprehensive learning theory must take into account both insight and creative activity". In this regard, Guilford (1967a) suggested that transformations of information are a key to understanding insight. These transformations are found in the content categories of Guilford's (1975) SI model and can occur in both convergent and divergent productions. At that time, the relation between information and insight still needed to be addressed. There have been attempts in the past 20 years to expand our understanding of insight.

Insight Jacobs and Dominowski (1981) and Martinsen (1995) suggested that when students solve insight problems, which require students to "use an object in some…unusual way to solve a problem" (Jacobs & Dominowski, 1981). Martinsen suggested that cognitive styles might explain the transfer problem as well as the restructuring process involved n solving insight problems. Martinsen subsequently found that assimilators performed better on insight problems in the high level of experience condition (i.e., experience in problem solving activities) and that explorers performed better in the low level of experience condition. These results suggest that good problem solving occurs "when there is an optimal match between strategic disposition and the task condition" (Martinsen, 1995).

10. Psycho-physical Environment

In general, studies of the ambient features in surrounding environments including noise, lighting, temperature, existence of windows and others suggest that such elements of the physical environment influence individuals attitudes, behaviours, satisfaction and performance (Larsen, Adams, Deal, Kweon, & Tyler 1998; Veitch & Gifford, 1996). Sundstrom, et al., (1994) identified noise as an ambient stressor in the work environment. Effects of control on satisfaction and performance some research has found a positive association between high work control and work satisfaction, work performance and psychological well-being (O'neill, 1994; Sargent & Deborah, 1998). Veitch and Gifford (1996) measured control in terms of lighting control, environmental control and session control.

Huang, Robertson and Chang (2004) measured control over the physical environment as adjustability and layout flexibility. The concept of personal control has spawned vast literatures covering everything from stress inoculation and other determinants of clinical health outcomes to the well known idea of self-efficacy within personal and social psychology.

The link between these situational variables and creativity is thought to be mediated by type of motivation, with intrinsic motivation associated with greater creativity than extrinsic motivation (Amabile, 1983). Thus, environments that undermine intrinsic motivation by imposing deadlines, surveillance or the expectation of evaluation, result in less creative products than environments that enhance intrinsic motivation (Eisenberger & Cameron, 1996).

This paper suggests that individuals surrounding (external) and psychological (internal) termed as psycho-physical environment (as said by Lewin, 1937) affects the activity and of course creativity of an individual because of change in his basic dispositions. That's why for fostering creativity, positive and supportive environment is needed and this makes it an important component of the presented model.

It is important to know that not only individuals' creativity on a task right now, but also how their experience of that task might affect future engagement. The effect of situational circumstances on quality of experience and on creativity might be moderated, however, by individual differences. Specifically, as predicted by self-determination theory, people's general causality orientation is associated with the way they interpret situational factors (Deci, et al., 1999; Deci & Ryan, 1985b). Those who are high in autonomous orientation tend to interpret situational events as opportunities for choice, challenge and personal enjoyment. They then organize their behaviour around these opportunities. By contrast, those high in control orientation tend to orient toward and interpret the environment as offering, rules, contingencies and external constraints. They organize their behaviour around these external structures.

Thus, a situational factor such as the presence or absence of evaluation might have different effects on individuals with different causality orientations.

Balancing environmental demands with the skills and abilities of users to act on their environment is a way of defining optimal workspace for creativity and flow (Csikszentmihalyi, 2003). Studies shows that people's preferences are affected by, among other things, indirect lighting, mechanical ventilation rates, access to natural light, new furniture and aspects of the acoustic environment, as well as some degree of participation in decision-making (Karasek & Theorell, 1990).

The concepts of positive stress (Selye, 1979) and of environmental competence (Sternberg, 2001) are both useful in this context, in that they recognize that some environmental challenge is necessary to ensure active engagement. Environmental control can be mechanical, such as desk and chairs, worktables that are raised and lowered, switchable lights and a door to open and close (Newsham, Veitch, Arsenault, & Duval 2004).

11. The relationship between the Elements of model

In an article of stressing creative and improvisational teaching, Sawyer (2004) criticizes that contemporary reform efforts has associated creative teaching with "scripted instruction", which emphasizes important skills for teachers yet often denies teacher creativity. This scripted approach is considered problematic for it suggests teachers as "solo performers reading from a script, with the students as the passive, observing audience" (Sawyer, 2004). Thus Sawyer conceives of creative teaching as improvisational performance, highlighting the interactional, collaborative and emergent nature of classroom practice.

According to self-determination theory (Deci & Ryan, 1985a), when people feel pressured, when they feel like they have to do something, it is a sign that they are 'externally' motivated that is, that they are engaging in the activity for the sake of some reward or inducement. When they feel relaxed, on the other hand, this is a sign that their motivation is more 'identified' that is, that they are engaging in the activity for reasons that are consistent with their own goals and values. Thus, examining people's experience of creative tasks can give us specific information about individual participants' motivation, beyond the motivational consequences that are, on

average, found to be associated with particular situational factors. Second, people's experience might affect their future motivation for engaging in similar tasks. Feelings of incompetence and pressure or anxiety, for example, can undermine one's intrinsic motivation (Deci & Ryan, 1985a).

Adding to the view of seeing creative teaching as improvisational process that allows "collaborative emergence", it is argued that the creative endeavours of teachers, learners and psycho-physical environment in an effective teaching-learning process are essential. In other words, the four elements of creative pedagogy interact and contribute to each other.

In short, instead of merely addressing one of the aspects of teaching practice that fosters creativity, the proposed model of creative pedagogy embraces four features: *creative teaching, teaching for creativity, creative learning and psycho-physical environment*. It intends to describe the relationship between innovative teaching and effective strategies with positive and supportive psycho-physical environment which facilitate and are responded by children's creative and active engagement as well as to encourage a more comprehensive practice in developing learners' creativity.

The perceptions of applying four elemental model of creative pedagogy theorized are worthwhile to different positions in the educational system, such as academic researchers, policy makers, school principals or parents, teachers in addition to the pupils and pupil teachers in pre-service training programmes. It would also be useful to focus on studying teachers' responses through using creative pedagogy in teacher education to nurture their own creativity in Indian as well as Asian context.

REFERENCES:

Amabile, T.M. (1983). The social psychology of creativity: A componential conceptualization. *Journal of Personality and Social Psychology*, 45, 357–376.

Amabile, T.M. (1996). *Creativity in context*. Boulder: Westview Press.

Baer, J., & Kaufman, J.C. (2006). Creativity research in English-speaking countries. In J. C. Kaufman, & R. J. Sternberg (Eds.), *The international handbook of creativity*. (pp.342-343) New York, NY: Cambridge University Press.

Bunting, A. (2004). Secondary schools designed for a purpose: but which one?,*Teacher*, 154, 10–13.

Chen, L. (2008). *Theories and practices of teaching for creative thinking.* Taipei: Psychological Publishing.

Collins, M. A., & Amabile, T. M. (1999). Motivation and creativity. In R. J. Sternberg (Eds.), *Handbook of creativity*. (pp. 13-18). Cambridge: Cambridge University Press.

Craft, A. (2000). *Creativity across the primary curriculum: Framing and developing practice*. London: Routledge.

Craft, A. (2001a). Little c creativity. In A. Craft, B. Jeffrey, & M. Leibling (Eds.), *Creativity in education.*(pp. 80-87). London: Continuum.

Craft, A. (2001b). *An analysis of research and literature on creativity in education*. Qualification and Curriculum Authority, URL (last checked 12 August 2012) http://www.ncaction.org.uk/creativity/creativity_report.pdf

Craft, A. (2005). *Creativity in schools: Tensions and dilemmas*. London: Routledge. doi:10.4324/9780203357965

Craft, A. (2007). Possibility thinking in the early years and primary classroom. In A. G. Tan (Eds.), *Creativity: A handbook for teacher*. (pp. 81-89). Singapore: World Scientific. doi:10.1142/9789812770868_0013

Craft, A., Cremin, T., Burnard, P., & Chappell, K. (2008). Possibility thinking with children in England aged 3 - 7. In A. Craft, T. Cremin, & P. Burnard (Eds.), *Creative learning And how we document it.* (pp. 3 - 11).Stoke-on-Trent: Trentham. doi:10.1016/j.tsc.2006.07.001

Cremin, T., Barnes, J., & Scoffham, S. (2009). *Creative teaching for tomorrow: Fostering a creative state of mind.* Deal, Kent: Future Creative.

Cremin, T., Burnard, P., & Craft, A. (2006). Pedagogy and possibility thinking in the early years. *International Journal of Thinking Skills and Creativity*, 1, 108-119.

Cropley, A. J. (1992). *More ways than one: Fostering creativity*. Nor-wood, NJ: Ablex Publishing Corporation.

Csikszentmihalyi, M. (1996). *Creativity: Flow and the psychology of discovery and invention*. New York, NY: HarperCollins.

Csikszentmihalyi, M. (1999). Implications of a systems perspective for the study of creativity. In R. J. Sternberg (Ed.), *Handbook of creativity*. (pp. 35-48).Cambridge: Cambridge University Press.

Czikszentmihalyi, M. (2003). *Good Business: Leadership, Flow, and the Making of Meaning*. New York: Viking.

Davis, G. A. (1982). A model for teaching for creative development. *Roeper Review*, 5(2), 27–29.

Davis, G. A. (1991). Teaching creativity thinking. In N. Colangelo & G. A. Davis (Eds.), *Handbook of gifted education*. (pp. 236–244). Boston: Allyn & Bacon.

Davis, G. A., & Rimm, S. B. (1985). *Education of the gifted and talented*. Englewood Cliffs, NJ: Prentice Hall.

De Bono, E. (1987). *Six thinking hats*. London: Penguin.

Deci, E. L., & Ryan, R. M. (1985a). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.

Deci, E. L., & Ryan, R. M. (1985b). The general causality orientations scale: Self determination in personality. *Journal of Research in Personality*, 19, 109–134.

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). The undermining effect is a reality after all extrinsic rewards, task interest, and self-determination: Reply to Eisenberger, Pierce, and Cameron (1999) and Lepper, Henderlong, & Gingras (1999). *Psychological Bulletin*, 125, 692–700.

Earthman, G.I. (2004). Prioritization of 31 Criteria for School Building Adequacy, American Civil Liberties Union Foundation of Maryland. Accessed online on 28/08/12 at http://www.aclu-md.org/aTop%20Issues/Education%20Reform/EarthmanFinal10504.pdf

Eisenberger, R., & Cameron, J. (1996). Detrimental effects of reward: Reality or myth? *American Psychologist*, 51, 1153–1166.

Ellis, J. (2005). Place and Identity for Children in Classrooms and Schools. *Journal of the Canadian Association for Curriculum Studies*, 3(2), 57-61.

Esquivel, G. B. (1995). Teacher behaviours that foster creativity. *Educational Psychology Review*, 7, 185-201. doi:10.1007/BF02212493

Feldhusen, J. F., & Treffinger, D. J. (1980). *Creative thinking and problem solving in gifted education*. Dubuque, IA: Kendall/ Hunt.

Feldman, D. H. (1999). The development of creativity. In R. J. Stern-berg (Eds.), *Handbook of creativity*. (pp. 159-162).Cambridge: Cambridge University Press.

Feldman, D. H., & Benjamin, A. C. (2006). Creativity and education: An American retrospective. *Cambridge Journal of Education*, 36, 319-336. doi:10.1080/03057640600865819

Fisher, K. (2000). Building better outcomes: the impact of school infrastructure on student outcomes and behaviour, *Schooling Issues Digest*, Canberra: Department of Education, Training and Youth Affairs

Fryer, M. (1996). *Creative teaching and learning*. London: Paul Chap-man Publishing Ltd.

Fryer, M. (2003). *Creativity across the curriculum: A review and analysis of programmes designed to develop creativity*. London: Qualifications & Curriculum Authority.

Gruber, H.E., & Wallace, D.B. (1999). The case study method and evolving systems approach for understanding unique creative people at work. In R.J. Sternberg (Ed.), *Handbook of creativity*. (pp. 11-19).Cambridge: Cambridge University Press.

Guilford, J.P. (1967b). *The nature of human intelligence*. New York: McGraw-Hill.

Guilford, J.P. (1972). Intellect and the gifted. *Gifted Child Quarterly*, 16, 175–184, 239–243.

Guilford, J.P. (1975). Varieties of creative giftedness, their measurement and development. *Gifted Child Quarterly*, 19, 107–121.

Hennessey, B. A., & Amabile, T. M. (1987). *Creativity and learning*. Washington, DC: NEA Professional Library.

Hennessey, B.A. (1995). Social, environmental, and developmental issues and creativity. *Educational Psychology Review*, 7, 163-183. doi:10.1007/BF02212492

Hennessey, B.A. (2007). Creativity and motivation in the classroom: A social psychological and multi-cultural perspective. In A. G. Tan (Eds.), *Creativity: A handbook for teachers*. (pp. 27-39).Singapore City: World Scientific.

Higgins, S., Hall, E., Wall, K., Woolner, P. and McCaughey, C. (2005). *The Impact of School Environments: A literature review*, The Centre for Learning and Teaching, School of Education, Communication and Language Science, University of Newcastle. Accessed online on 28/08/12 at http://www.cfbt.com/PDF/91085.pdf.

Hogarth, R. (1987). *Judgment and choice* (2nd eds.). Chichester, U. K.: John Wiley & Sons.

Huang, Y., Robertson, M.M., & Chang, K. (2004). The role of environmental control on environmental satisfaction, communication, and psychological stress: Effects of office ergonomic training. *Environment and Behavior*, 36(5), 617–637.

Jackson, N., Oliver, M., Shaw, M., & Wisdom, J. (Eds.) (2006). *Developing creativity in higher education: An imaginative curriculum*. London: Routledge.

Jacobs, M.K., & Dominowski, R.L. (1981). Learning to solve insight problems. *Bulletin of the Psychonomic Society*, 17, 171–174.

James, V., Lederman, G.R., & Vagt-Traore, B. (2004). Enhancing creativity in the classroom. In M. Orey (Ed.), Emerging perspectives on learning, teaching, and technology. URL (last checked 28 August, 2012) http://www.coe.uga.edu/epltt/creativity.htm.

Jeffrey, B., & Craft, A. (2004). Teaching creatively and teaching for creativity: Distinctions and relationships. *Educational Studies*, 30, 77-87. doi:10.1080/0305569032000159750

Kangas, M. (2010). Creative and playful learning: Learning through game co-creation and games in a playful learning environment. *Thinking Skill and Creativity*, 5, 1-15. doi:10.1016/j.tsc.2009.11.001

Karasek, R., & Theorell, T. (1990). *Healthy Work: Stress, Productivity and the Reconstruction of Working Life*. New York: Basic Books.

Karnes, M.B., McCoy, G.F., Zehrbach, R.R., Wollersheim, J.P., Clarizio, H.F., Costin, L., & Stanley, L.S. (1961). *Factors associated with underachievement and overachievement of intellectually gifted children*. Champaign, IL: Champaign Community Unit Schools.

Kaufman, J.C., & Begehtto, R.A. (2009). Beyond big and little: The four c model of creativity. *Review of General Psychology*, 13, 1-12. doi:10.1037/a0013688

Larsen, L., Adams, J., Deal, B., Kweon, B., & Tyler, E. (1998). Plants in the workplace, The effects of plant density on productivity, attitude, and perceptions. *Environment and Behaviour*, 30(3), 261–281.

Lewin, K. (1943). Defining the "Field at a Given Time." *Psychological Review*. 50: 292-310. Republished in Resolving Social Conflicts & Field Theory in Social Science, Washington, D.C.: American Psychological Association, 1997.

Lin, Y. S. (2011). Fostering Creativity through Education-A Conceptual Framework of Creative Pedagogy Research, *Scientific Research*, 2(3), 149-155, Doi:10.4236/ce.2011.23021

Lucas, B. (2001). Creative teaching, teaching creativity and creative learning. In A. Craft, B. Jeffrey, & M. Leibling (Eds.), *Creativity in education*. London: Continuum.

Mandler, G. (1979). Thought processes, consciousness and stress. In V. Hamilton & D.M. Warburton (Eds.), *Human stress and cognition* (pp. 180-202).Chichester, U. K.: John Wiley & Sons.

Mandler, G. (1984). *Mind and body: Psychology of emotion and stress*. New York: W. W. Norton & Company.

Mardell, B., Otami, S., & Turner, T. (2008). Meta-cognition and creative learning with American 3 to 8 year-olds. In A. Craft, T. Cremin, & P. Burnard (Eds.), *Creative learning And how we document it*. (pp. 3-11). Stoke-on-Trent: Trentham. doi:10.1016/j.tsc.2006.07.001

Martinsen, O. (1995). Cognitive styles and experience in solving insight problems: Replication and extension. *Creativity Research Journal*, 8, 291–298.

McGregor, J. (2004). Spatiality and the Place of the Material in Schools, Pedagogy, *Culture and Society*, 12(3), 347–372.

National Advisory Committee on Creative and Cultural Education. (1999). *All our futures: Creativity, culture & education*. Sudbury, Suffolk: Department for Education and Employment.

Newsham, G., Veitch, J., Arsenault, C., & Duval, C. (2004). *Effect of dimming control on office worker satisfaction and performance* (NRCC-47069). Ottawa: National Research Council Canada.

O'Neill, M. (1994). Work space adjustability, storage, and enclosure as predictors of employee reactions and performance. *Environment and Behaviour*, 26(4), 504–526.

Olmo, B.G. (1977). Fantasy and futurism: Strategies for creative teaching. *High School Journal*, 61, 99–104.

Oral, G. (2008). Creative learning and culture. In A. Craft, T. Cremin, & P. Burnard (Eds.), *Creative learning*. (pp. 3 - 11): And how we document it. Stoke-on-Trent: Trentham. doi:10.1016/j.tsc.2006.07.001

Parnes, S.J. (1963). Education and creativity. In P. E. Vernon (Ed.) (1970), *Creativity: Selected readings*. (pp. 342-343).Middlesex: Penguin Books Ltd.

Parnes, S.J., & Noller, R. B. (1972). Applied creativity: The creative studies project. Part II Results of the two-year program. *Journal of Creative Behaviour*, 6, 164–186.

Renzulli, J.S. (1992). A general theory for the development of creative productivity through the pursuit of ideal acts of learning. *Gifted Child Quarterly*, 36, 170–182.

Renzulli, J.S., & Reis, S. M. (1985). *The schoolwide enrichment model: A comprehensive plan for educational excellence*. Mansfield Center, CT: Creative Learning Press.

Renzulli, J.S., & Reis, S.M. (1994). Research related to the school wide enrichment triad model. *Gifted Child Quarterly*, 38, 7–20.

Runco, M. A., & Chand, I. (1995). Cognition and creativity. Educational psychology review, 7, 243-267. doi:10.1007/BF02213373

Runco, M.A., & Chand, I. (1995). Cognition and creativity. *Educational psychology review*,7, 243-267. doi:10.1007/BF02213373

Runco, M.A., & Sakamoto, S.O. (1999). Experimental studies of creativity. In R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 62-92). Cambridge: Cambridge University Press.

Sargent, L.D., & Deborah, T.J. (1998). The effects of work control and job demands on employee adjustment and work performance. *Journal of Occupational and Organizational Psychology*, 71, 216–236.

Sawyer, R.K. (2004). Creative teaching: Collaborative discussion as disciplined improvisation. *Educational Researcher*, 33, 12-20. doi:10.3102/0013189X033002012

Selye, H. (1979). The stress concept and some of its implications. In V. Hamilton & D.M. Warburton (Eds.), *Human Stress and Cognition: An Information-Processing Approach* (pp. 11-32). London: Wiley,

Shaheen, R. (2010). Creativity and education. *Creative Education*, 1, 166-169. doi:10.4236/ce.2010.13026

Solso, R.L. (1991). *Cognitive psychology* (3rd eds.). Boston: Allyn and Bacon.

Sternberg, E.M. (2001). *The Balance Within: The Science Connecting Health and Emotions*. New York: Henry Holt.

Sternberg, R.J. (2003). Background work on creativity. In R. J. Stern-berg (Ed.), *Wisdom, intelligence and creativity synthesized*. (pp. 62-92).Cam-bridge: Cambridge University Press.

Sternberg, R.J. (Ed.) (1999). *Handbook of creativity*. Cambridge: Cambridge University Press.

Sternberg, R.J., & Lubart, T.I. (1991). Creating creative minds. *Phi Delta Kappan*, 72, 608 614.

Sternberg, R.J., & Lubart, T.I. (1999). The concept of creativity: Prospects and paradigms. In R. J. Sternberg (Ed.), (pp. 62-92).*Handbook of creativity*. Cambridge: Cambridge University Press.

Sternberg, R.J., & Williams, W.M. (1996). *How to develop student creativity*. Alexandria, VA: Association of Supervision and Curriculum Development.

Sundstrom, E., Town, J., Rice, R., Osborn, D., & Brill, M. (1994). Office noise, satisfaction, and performance. *Environment and Behavior*, 26(2), 195–222.

Torrance, E.P. (1963). Education and the creative potential. Minnea-polis, MN: The University of Minnesota Press.

Torrance, E.P. (1972). Can we teach children to think creatively? *Journal of Creative Behavior*, 6, 114–143.

Torrance, E.P. (1981). Creative teaching makes a difference. In J. C. Gowan, J. Khatena, & E. P. Torrance (Eds.), *Creativity: Its educational implications* (2nd eds., pp. 99–108). Dubuque, IA: Kendall/Hunt.

Torrance, E.P. (1995). *Why fly: A philosophy of creativity*. Norwood, NJ: Ablex Publishing Corporation.

Torrance, E.P., & Myers, R.E. (1970). *Creative learning and teaching*. New York, NY: Dodd, Mead & Company.

Treffinger, D.J. (1980). *Encouraging creative learning for the gifted and talented*. Ventura, CA: Ventura County Schools/LTI.

Veitch, J., & Gifford, R. (1996). Choice, perceived control, and performance decrements in the physical environment. *Journal of Environmental Psychology*, 16, 269–276.

Watkins, C., & Mortimore, P. (1999). Pedagogy: What do we know. In P. Mortimore (Eds.), *Understanding pedagogy and its impact on learning*. (pp. 3-8).London: Paul Chapman.

Williams, F.E. (1969). Models of encouraging creativity in the classroom by integrating cognitive-affective behaviors. *Educational Technology*, 9, 7–13.

Wilson, A. (Ed.) (2005). *Creativity in primary education: Theory and practice* (achieving QTS cross-curricular strand). Exeter: Learning Matters Ltd.

Woods, P. & Jeffrey, B. (1996). *Teachable moments: The art of creative teaching in primary schools*. Buckingham: Open University Press.

Woods, P. (1995). *Creative teachers in primary schools*. Buckingham: Open University Press.

Yeh, Y. C. (2006). *Creativity teaching-Past, present, and future*. Taipei: Psychological publishing.

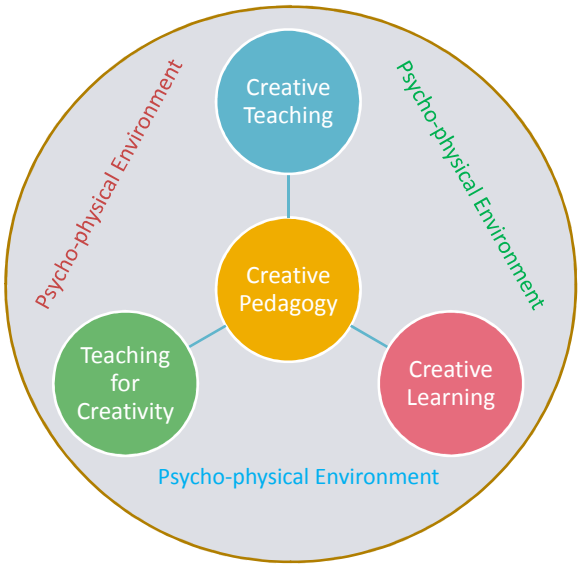

Figure 1: Four Elemental Model of Creative Pedagogy (Rashmi, 2012)