Fostering Creativity among Children in the 21st Century Classroom: The Emerging Perspectives

Bada, Steve Olusegun

Department of Psychology,
Federal University of Education, Kano,
NIGERIA.

bdolusegun@gmail.com

ABSTRACT

Since the dawn of the 21st century, the social demand for creativity has been steadily increasing in almost every field of human activity. Creativity is a crucial aspect of any personality. It helps to analyze things in diverse and uncommon way. Creativity is a unique attribute of humans and distinguishes us from forms of artificial intelligence such as computers and robots. Therefore, this paper provides an overview of the concept and importance of creativity among children, it also discusses the nature and characteristics of creativity and how creative children can be identified. Personality and behavioural characteristics of creative child are also outlined and some barriers to creativity are as well reviewed. In addition, some methods of fostering creativity among children were spelt out and discussed in detail. Finally, conclusions and recommendations were made that proper understanding, identification, and nurturing creative potential is relevant in education and therefore should be taken into account when developing education programs, strategies, and policies to achieve quality education for all children.

Keywords: Fostering, Creativity, Creative thinking, Children

INTRODUCTION

Wide-spread creativity is both the life-blood and the consequence of a free society. When teachers encourage and nurture creativity in their classrooms, students come alive, ideas are bandied about, and “inventions” or “creations” abound. With curious, engaged teachers and equally as curious and engaged students, the classroom becomes a place where divergent thinking, originality, and flexibility is the norm. Insight happens. Every child is born with the potential of being creative. Creativity does not just happen; it needs to be cultivated, and the cultivation of creativity in every kid starts from the classroom.

Creative thinking is both the capacity to combine or synthesize existing ideas, images, or expertise in original ways and the experience of thinking, reacting, and working in an imaginative way characterized by a high degree of innovation, divergent thinking, and risk taking. Our schools are often hostile to ideas. Our tests ask students to come up with one right answer, and the curriculum, pegged to tests, penalizes the creative students rather than reward him/her for the unexpected but thoughtful or even brilliant response (Tough Choices for Tough Times, 2008).

Creativity can mean different things to different people. For some, it means being imaginative or inventive, taking risks or challenging convention. For others, it is about original thinking or producing something that nobody has come up with before. Some believe that the term 'creativity' only applies only to those who possess artistic talents. Traditionally, creativity has been associated with the achievements of extraordinary people such as Mozart, Einstein and Leonardo Da Vinci, and a good deal of the early research into creativity has

ISSN: 2223-9944, e ISSN: 2223-9553

focused on the work of highly creative people or those considered to be geniuses. Focusing on extraordinary individuals, however, simply perpetuates the myth that creativity is about special people doing special things. Research shows that there is no specific personality type associated with creativity. It is possible to be creative in any activity that engages our intelligence because intelligence itself is essentially creative. Creative processes are rooted in the imagination and our lives are shaped by the ideas we use to give them meaning. We all have creative capacities but in many instances we do not know what they are or how to draw on them. Therefore, the focus of this paper will be on fostering creativity among children in the 21st century classroom.

Conceptualizing Creativity and Creative Thinking

Historically, creativity has been seen as a tortured and mystical process, the province of geniuses, artists and eccentrics. Today, we are less in awe of the creative process. Now, creativity is recognised as a practical skill, one which can be taught and which everyone can achieve. It is a way of thinking in which we look at familiar things with a fresh eye, examine a problem with an open mind about how it might be solved, and use our imagination rather than our knowledge to explore new possibilities rather than established approaches.

Creativity is the entire process by which ideas are generated, developed and transformed into value. It comprises what people commonly mean by innovation and entrepreneurship (Kao, 1997). *Creativity is about liberating human energy. Creativity is the process of developing ideas that are original and of value. Creative intelligence is dynamic, diverse and distinct* (Robinson, 2001). According to Cropley (1999), creative thinking is a bastion of human dignity in an age where machines, especially computers seem to be taking over routine skilled activities and everyday thinking. Human creativity is a complex phenomenon (Levin, 2008; &Mumford, 2003) and has been studied by researchers in a variety of fields such as psychology, anthropology, cognitive science, history, neuroscience, artificial intelligence, and sociology. For scientists from such diverse disciplines, traditions, and paradigms, it can be difficult to find a common language and reach an agreement about what human creativity is and how we can utilize it for the "common good".

Since the dawn of the 21st century, the social demand for creativity has been steadily increasing in almost every field of human activity (Dewett, 2007; Lambropoulos, Kampylis, & Bakharia, 2009; Roberts, 2006). Today, creativity is considered to be an essential life skill, which needs to be fostered by the education system" (Craft, 1999) because it has the potential to solve a range of social, political, and economic problems (Burnard & White, 2008).

Worldwide, numerous consulting companies, training programmes, seminars, workshops, and advice books claim to enhance creative thinking at a personal and organizational level. These commercialized ventures constitute a pragmatic approach to the study of creativity (Sternberg, 2006; Sternberg & Lubart, 1996, 1999) and, in most cases, have no solid scientific basis. Thus, a number of creativity researchers (e.g. Nickerson, 1999) question the effectiveness of such one-off and one-size-fits-all training programmes. Some critics (Sternberg & Lubart, 1996, 1999) stress that such training programmes reinforce the aura of mystery and mysticism that has surrounded creativity since antiquity and overshadow the progress of scientific research into it. Others (Plucker & Beghetto, 2003) assert that, although the programmes claim to foster creative thinking as a whole, in practice they attempt to enhance some components of it, such as fluency, flexibility, and originality, which correlates mainly with divergent thinking. In addition, most of these commercial approaches to enhancing creative thinking assume that it is an individual, domain-general ability. Consequently, as several scholars argue (e.g. Sawyer, 2006a), these programmes do not

ISSN: 2223-9944, e ISSN: 2223-9553

sufficiently emphasize the importance of general knowledge, hard work, commitment, persistence, and intrinsic motivation, which are prerequisites for creativity.

Some researchers, such as Kampylis(2008a) point out that it is easier for teachers to enter their local bookstore and find a bestselling advice book on creativity than it is to access contemporary research in the field in scientific journals and books. The result is that teachers remain somewhat uninformed about scientific research on creativity. They therefore formulate diverse and inconsistent implicit theories based on widespread common beliefs that have no scientific basis and often lead to misconceptions about creativity (Al-jughaiman & Mowrer-Reynolds, 2005). These widespread misconceptions are usually reinforced by the biographies of eminent creators. According to Kaufman (2009), the vast majority of such biographies are of creators whose behaviour was outlandish or who suffered from various mental illnesses. On the other hand, the biographies of creative persons who were merely diligent and displayed balanced behaviour are rare.

In recent years researchers and educational writers have extended the general meaning of creativity so that it incorporates ideas about inventiveness and imagination. This reflects a growing acceptance that creativity it is not simply about coming up with big ideas, but coming up with practical solutions to everyday problems and then applying them to real life situations. Everything around us-our homes, cities, medical services, transport and communication systems - are conceived and developed by practical people who know how to implement creative ideas. Creativity can be readily associated with a wide range of everyday tasks and activities, and the importance of creativity at a personal level is often greatly underestimated.

THE IMPORTANCE OF CREATIVITY

Creativity is clearly important on a national and global level for economic growth and development. But there is an increasing recognition that it is key at an individual level also. Creativity improves the self-esteem, motivation and achievement of learners. Pupils who are encouraged to think creatively:

- become more interested in discovering things for themselves
- are more open to new ideas and challenges
- are more able to solve problems
- can work well with others
- become more effective learners
- have greater ownership over their learning.

Identification of Creative Children

The term ‘creativity’ cannot be used synonymously with giftedness. Therefore, we should not make a mistake of considering every gifted child as a creative child. Creativity in its all shapes and forms is the highest expression of giftedness that may or may not be found in a particular gifted child. The problem then lies in the identification of the Creative children. Creative behaviour and expression, like other behaviour patterns, possesses its basic components in the form of cognitive, conative and affective behaviour. Consequently, we can label a child creative to the extent to which he is able to demonstrate creative aspect in his thinking, feeling and doing behaviour. For such labeling, we may employ two different approaches:

(i) making use of tests of creativity, and

ISSN: 2223-9944, e ISSN: 2223-9553

(ii) making use of non-testing devices observation, interview, rating scale, personality inventory, check-list etc.

Nature and Characteristics of Creativity

The nature and characteristics of creativity or creative expression can be summarized as follows:

1. Creativity is universal. Every one of us possesses creative capacity to some degree.
2. Although creative abilities are natural endowments, they are capable of being nourished and nurtured by training or education.
3. Through creative expression, something new or novel is produced. But novelty or newness does not necessarily imply to produce a totally new idea or an object which has never been experienced or produced earlier. To make the fresh and noble combination for the given separate elements or to reshape or rearrange the already known facts or principles or to bring a slight reform and modification in the previously known techniques, are as much the acts of creative expression as the discovery of a new element in chemistry or a new formula in mathematics. The only precaution for naming an expression as creative is that it should not be a mere repetition or reproduction of what has already been experienced or learned by an individual.
4. Any creative expression is the source of joy and satisfaction for the creator. The creator says what he sees or feels in his own way. There is perfect individuality in one's creative expression. He expresses himself, to a great extent, through his creation. It is his own way of looking at things; persons or events and therefore, it is not essential that a creative work may arouse the same feeling or give same satisfaction as experienced by the creator himself.
5. The Creator is the person who is able to make ego-involved statements like, "It is my creation', 'I have solved this problem'. 'It is my ideas'. etc. In creative expressions there is complete ego involvement.
6. Creative thinking cannot be a closed thinking. It must have complete freedom for the multiplicity of responses, choices and lines of action. By traveling on the routine, beaten track, one cannot be able to create but can only reproduce or repeat.
7. The field of creative expression is very wide. It covers all the aspects of human accomplishments like scientific inventions and discoveries, composition of poems, writing of stories and drama and good performance in the fields of dance, music, painting, sculpture, political and social leadership, business, teaching and other professions. Our day- to-day life activities also need creativity. Therefore, in a nutshell, life as a whole present enormous opportunities for creative expression.

The question as to what different cognitive factors constitute creativity has been a subject of excessive experiment, action and research. J.P. Guilford, Torrance, Drevadahl and others have tried to identify the important components of creativity. As a result, ideational fluency, originality flexibility, divergent thinking, persistence, self-confidence, sensitiveness, ability to see relationships and make associations are some of the factors that are found favourable for creative output.

ISSN: 2223-9944, e ISSN: 2223-9553

Personality and Behavioural Characteristics of a Creative Child

The following are put together by Mangal (2013) as personality and behavioural characteristics of a creative child:

1. Demonstrates originality in ideas and actions.
2. Is more adaptable as well as adventurous.
3. Possesses good memory and broad knowledge background.
4. Possesses a high degree of keenness, attentiveness, alertness and power of concentration.
5. Is very curious about nature.
6. Possesses little tolerance for boredom but greater for ambiguity and discomfort.
7. Possesses foresightedness in abundance.
8. Has the capacity to take independent decisions.
9. Shows interest in vague and ambiguous ideas.
10. Enjoys a reputation of having strange and silly ideas.

II. Shows preferences to complexity, incompleteness, asymmetry and open mindedness.

12. Possesses a high degree of sensitivity towards problems.
13. Can express his ideas as fluently as possible.
14. Shows flexibility in his thinking, feeling and doing behaviour.
15. Demonstrates the ability to transfer learning or training from one situation to another.
16. Demonstrates very rich imagination characterized as ‘creative imagination’.
17. Is divergent and diversified in his thinking that is convergent and stereotyped.
18. Possesses ability to elaborate, i.e. to work out the details of a plan, idea or outline.
19. Is not frightened by the unknown, the mysterious and the puzzling and on the contrary is often attracted towards it.
20. Welcomes novelty of designs or new solution to a problem, gets enthused and suggests other ideas.
21. Demonstrates the ability to experience self as creative and the originator of one’s act and takes pride in one’s own creation.
22. Has more of him available for use and employment in creative purposes rather than wasting his time and energy protecting him against his self.
23. Possesses high aesthetic values and good aesthetic judgement.
24. Possesses a high degree of the feeling of self-respect and is self-disciplined, sensitive and intolerant towards injustice. On account of these qualities, is often misunderstood and evaluated disobedient, rebellious and mischief monger.
25. Demonstrates human playfulness, lack of rigidity and relaxation in his behaviour and products.
26. Is always alive to his obligations.
27. Possesses the ability to accept tentativeness and ability to tolerate and integrate the opposites.
28. Has a richer fantasy life and greater involvement in daydreaming.

ISSN: 2223-9944, e ISSN: 2223-9553

29. Shows different brain patterns than the less creative, especially during creative activity.
30. Pays respect to others' opinions and welcomes disagreement to his own suggestions.
31. Is always found to be more spontaneous and expressive.

Barriers to Creativity

Often people are not able to perform at their best because of outside influences that make them feel pressured or insecure:

Reward: When people do not expect a reward, they are more creative and enjoy the process more. An unexpected reward that comes after a project is completed is valuable but not necessary to the creative process.

Intrinsic versus extrinsic motivation: As in the case of reward, external motivation (such as money or special privileges) undermines creativity. Artists say that when they are working for the enjoyment of the process, they are far more effective and productive than when they are commissioned to create for money.

Expected external evaluation: Knowing beforehand that a piece of art is going to be graded can lead to a decrease in creativity.

Peer pressure: There is some evidence that pressure to conform can lead to temporary decreases in creativity.

Surveillance: Being observed by others while engaged in a creative process can undermine creativity

Methods of Fostering Creativity among Children

Creativity, as a natural endowment, needs stimulation and nourishment. Most of the creative talent, if not given proper training, education and opportunities for creative expression, results in wastage. Moreover, creativity, as we have emphasized earlier, is universal. It is not the monopoly of a genius only. Every one of us, to a certain degree, possesses creative abilities. In a democratic set up like ours, it is not only the geniuses who are needed to create, manifest and produce. Others, whether mediocre or below average, are also required to think constructively and creatively (Mangal, 2013).

Therefore, it becomes essential for the teachers as well as parents to realize the need of providing proper environment and creating conditions for complete growth and development of the creative abilities of children. The problem is vital, but there is a solution. It lies in the proper stimulation and nurturing of the abilities that seem related to develop creativity, originality, ideational fluency, divergent thinking, self confidence, persistence, sensitiveness, ability to see relationship and make associations etc. are some of the abilities that are attached to creative output. The following few suggestions as highlighted by Mangal (2013) can work satisfactorily in the stimulation and nourishment of these abilities:

Freedom to Respond: Most often we, teachers and parents, expect a routine type fixed response from our children and thus kill the very creative spark by breeding conformity and passivity. Therefore, we should ado's adequate freedom to our children in responding to a situation. They should be encouraged to think about as many ideas as they may for the solution of a problem. Also we must let them base their own way when they strongly need a particular sort of novel expression

ISSN: 2223-9944, e ISSN: 2223-9553

Opportunity for Ego Involvement: The feelings like,"It is my creation", "I have solved it", give much satisfaction to children. Actually, they can only be expected to put their determined efforts in creative activities when their ego is involved, i.e. when they feel that a particular creative work stands on account of their efforts. Therefore, we should provide opportunities for children to derive satisfaction from being a cause.

***Encouraging Originality and Flexibility*:** Originality on the part of children in any form should be encouraged. Constant submission to acts, unadulterated copying, passive reception, rote-memorization discourage creative expression and therefore, it should be checked as far as possible. In solving a problem or earning a task if the need to change their methods of learning or solving the problem, they should essentially be encouraged to do it.

***Removal of Hesitation and Fear*:** Most of the time (particularly in countries like ours where there is too much inferiority complex) there is a great hesitation mixed with a sense of inferiority and fear in taking initiative for a creative expression. We, generally, listen to the comments like "I know what I mean, but cannot write or speak before others." The causes of such hesitation and fear should be discovered and removed as far as possible. The teachers and parents should persuade such children to say or write something, anything, no matter how crude it may be.

Providing Appropriate Opportunities and Atmosphere for Creative Expression: A healthyfavourable atmosphere for creative thinking and expression is an essential condition for the stimulation and nourishment of creativity among children. There is a need to balance the rate of learning with its application, the passive receptivity with challenging productivity, and the stable certainty with risk and adventure. There is a need for sympathetic atmosphere in schools as well as at homes. For providing opportunities for creative expression, we can make use of the co curricular activities in schools. Our social festivals, religious and social get-togethers, exhibitions etc. can also provide the opportunity for creative expression. A regular class work can be arranged in such a way as to stimulate and develop creative thinking among children.

Developing Healthy Habits among Children: Industriousness, persistence, reliance and self-confidence are some of the qualities that are helpful in creative output. Therefore, children should be helped to imbibe these qualities. Moreover, they should be made to stand against the criticism of their creative expression. They should be made to feel that whatever they create is unique and it expresses what they desired to express.

Using the Creative Resources of the Community: Children should be made to Visit the centers of creativity for scientific and industrial creative works. It can stimulate and inspire them for doing some creative work. Occasionally, creative artists, scientists and creative persons from other fields may also be invited to schools. It can be helpful in enhancing the span of the knowledge of our children and kindle the spark of creativity among them.

***Avoidance of Blocks to Creative Thinking*:** The factors like conservatism, faulty methods of teaching, unsympathetic treatment, fixed and rigid habits of work, anxiety and frustration, high standards of achievement for low levels of work, overemphasis on school marks, authoritarian attitudes of teachers and parents etc. are known to be detrimental towards fostering creativity among children. Therefore, as far as possible parents and teachers should try to avoid such factors in upbringing and educating the children.

Proper Organization of the Curriculum: Learning experiences in the form of curriculum should be so designed that it fosters creativity among children. For this purpose we should organize the school curriculum primarily on the basis of concepts rather than facts. It should

ISSN: 2223-9944, e ISSN: 2223-9553

also cater to the individual needs of the students rather than to the generalized needs of every student. It should also follow the general philosophy that truth is something to be sought for rather than something to be revealed. It should be quite flexible and have provision for studying and doing something without the threat of evaluation. In a nut shell, the curriculum should reflect what is desired from the creative children in terms of fluency, flexibility, originality, divergent thinking, inventiveness and elaboration etc.

Reform in the Evaluation System: Our education system is totally examination-ridden. Therefore, for making efforts to nurture creativity we must have suitable reforms in our evaluation system. The emphasis on rote memory, fixed and rigid single responses, and convergent thinking etc, which kill the creativity of the children, should be abandoned and a proper system of evaluation for encouraging complete and balanced experiences in developing their creative behaviour should be adopted.

Use of Special Techniques for Fostering Creativity: Researchers in the field of creativity have suggested some special techniques and methods for fostering creativity among children. A few of these are mentioned below:

Brainstorming: Brainstorming is a strategy or technique for allowing a group to explore ideas without judgement or censure. In actual practice children may be asked to sit in a group for solving a problem and attacking it without any inhibition from many angles, in fact literally storming it by a number of possible ideas and solutions.

Use of Teaching Models: Some of the teaching models developed by educationists may prove quite beneficial in developing creativity among children. For example, Bruner's Concept Attainment Model helps in developing creativity in children for the attainment of various concepts. Similarly, Suchman's Inquiry Training very helpful in developing creativity among children besides imparting training in the acquisition of scientific inquiry skills.

Use of Play Way, Problem Solving and Quiz: Gaming techniques, in a play way spirit, help the children in the development of creative aspects. These techniques provide valuable learning experience in a very relaxed, untimed and evaluative situation. The stimulus material used in such techniques is both verbal as well as non verbal.

Providing the Self-Example and Ideals: There is a truth in the saying that 'Self example is better than precept: Children are very imitative. The teachers and parents, who themselves travel on the beaten track and do not show any originality by taking the risk of being wrong or never experience an excitement of creating a novel act, fail to cultivate creativity among their children. Therefore, the teachers and parents must try to develop the habit of creative thinking among themselves. They should believe in change, novelty and originality, and experience the creative process themselves. Their teaching, their mode of behaviour must reflect their love for creativity. Then and only then can they inspire children for being creative.

CONCLUSION AND RECOMMENDATIONS

Understanding, identifying, and nurturing the creative potential is relevant in education if we want students able to solve academic and personal problems and challenges, to find innovative solutions and alternatives, and to have better tools and resources for success in a fast-changing world. Creative thinking not only enhances our ability to adapt to our environment and circumstances but also allows us to transform those environment and circumstances. Creativity has been identified as a key component for survival and resilience. If our goal is to teach and nurture future scientists, artists, engineers, entrepreneurs we need to understand and nurture the creative potential because creativity has provided the

ISSN: 2223-9944, e ISSN: 2223-9553

foundation for art, science, philosophy, and technology. If we want to teach children to become productive human beings, and more satisfied with what they do with their lives we need to support them in the process of discovering and enjoying their creative potential. Children, particularly younger children, are inherently creative. Around the age of 8-10, the opinions of others become more important, the fear of failure emerges and they lose their willingness to try new things - they want to know 'the right answer'. The challenge for educators is to nourish and develop children's natural creativity, not stifle it. The following approaches are recommended to help practitioners promote creativity in their learners such as providing regular opportunities for hands-on experimentation, problem solving, discussion and collaborative work; actively encouraging pupils to question, make connections, envisaging what might be possible and exploring ideas; using failure or setbacks as opportunities to learn; facilitating open discussion of the problems pupils are facing and how they can solve them, asking open-ended questions such as 'What if…?' and 'How might you…?'; ensuring that assessment procedures reflect and reward creativity, enterprise and innovation.

REFERENCES

[1]. Craft, A. (1999). Creative development in the early years: Some implications of policy for practice. *The Curriculum Journal, 10,* 135-150.

[2]. Burnard, P., & White, J. (2008). Creativity and performativity: counterpoints in British and Australian Education. *British Educational Research Journal, 34*(5), 667-682.

[3]. Cropley, A. J. (1999). Creativity and cognition: Producing effective novelty. *Roeper Review, 21,* 253-261.

[4]. Cropley, A. J. (1999). Definitions of creativity. In M. A. Runco and S. R. Pritzker (Eds.), *Encyclopedia of Creativity* (Vol. *1*, pp. 511-524). San Diego: Academic Press.

[5]. Dewett, T. (2007). Linking intrinsic motivation, risk taking, and employee creativity in an R&D environment.*R&D Management,37*: 197–208

[6]. Kampylis, P. (2010). *Fostering creative thinking - The role of primary teachers*(Jyväskylä Studies in Computing No. 115, S. Puuronen, Ed.). Jyväskylä, Finland: University of Jyväskylä. Available online at: http://urn.fi/URN:ISBN:978-951-39-3940-3.

[7]. Kao, J. J. (1997). The art & discipline of business creativity. *Strategy and Leadership, 25* (4), 6-11

[8]. Kaufman, J. C., Baer, J., & Cole, J. C. (2009). Expertise, Domains, and the Consensual Assessment Technique. *Journal of Creative Behavior, 43*(4), 223-233.

[9]. Lambropoulos, N., Kampylis, P., & Bakharia, A. (2009). *User innovation networks &research challenges*. In A. Ozok & P. Zaphiris (Eds.), Lecture Notes in Computer Science.

[10]. Levin, B. (2008). How to Change 5000 Schools: *A Practical and Positive Approach for Leading Change at Every Level*. Cambridge, MA: Harvard Education Press.

[11]. Mangal, S.K. (2013). *Essentials of Educational Psychology,* Delhi: Asoke Gosh Publishers

ISSN: 2223-9944, e ISSN: 2223-9553

[12]. Mumford, M. D. (2003). Where have we been, where are we going? Taking stock in creativity research. *Creativity Research Journal, 15* (2 and 3), 107-120.

[13]. Nickerson, R. S. (1999). *Enhancing creativity.* In R. J. Sternberg (Ed.), Handbook of Creativity. Cambridge: Cambridge Press.

[14]. Plucker, J. A., & Beghetto, R. A. (2004).*Why creativity is domain general, why it looks domain specific, and why the distinction does not matter*. In R. J. Sternberg & E. L. Grigorenko (Eds.), Creativity: From potential to realization(pp. 153–167). Washington, DC: Ameri-can Psychological Association.

[15]. Roberts, P. (2006).*Nurturing Creativity in Young People. A Report to Government to Inform Future Policy*. London: Department for Culture, Media and Sport.

[16]. Robinson, K. (2001). *Unlocking creativity*: A strategy for development. Belfast: Department of Culture Arts and Leisure.

[17]. Sternberg R. J., & Lubart, T. I. (1996). Investing in creativity, *American Psychologist, 51*, 677-688.

[18]. Sternberg, R. J. (2006). Creativity is a habit.*Education Week*,*25*(24),47–64.

[19]. Sternberg, R. J., & Lubart, T. I. (1999).*The concept of creativity:* Prospects and Paradigms. In R.J. Sternberg (ed.) Handbook of Creativity, pp. 3-16. London: Cambridge University Press.

[20]. Tough Choices for Tough Times (2008).

ISSN: 2223-9944, e ISSN: 2223-9553