Abstract

The paper focused on enhancing creativity using Information Communication Technology (ICT). Creativity can be enhanced using ICT by developing specific teaching and learning skills such as dynamic interaction and collaborative learning. Creative skills – divergent thinking, cognitive flexibility are better fostered using ICT. Notwithstanding the importance of ICT towards improving creativity, teacher’s attitude, inadequate electricity supply, lock-up step matching of the school time table and low tele density in the country inhibit the use of ICT in the schools. The paper also examines the relationship between creativity and ICT and suggests ways of ensuring that ICT is used to develop creativity of the students.

Most research on enhancing creativity using Information and Communication Technology (ICT); have been almost conducted only in the Western context. The context examines more effects of electronic environment on various forms of creativity – idea generation, problem solving, expressive writings and artistic production (Yang 2003, DeRosa, Smith, and Hantula 2007). Creativity is central to social/economic development and has received little direct attention in development research. Moreover, it has received very little attention on how it can serve as economic driver using ICT as a tool.

Successful education and training in the 21st Century depends on the confident, competent and innovative use of ICT. The 21st century education system should transform the educational objectives, curriculum, pedagogies and assessment to help equip students with the need for work, citizenship and self actualization. The transformation of society, consequent on the creativity and innovation and in promotion of organizational change has led to increased economic, business and social changes using ICT. ICT therefore is a vital tool for encouraging, stimulating and assisting students to enhance their creativity.
Creativity can be learnt and encouraged using ICT by developing specific teaching and learning skills such as dynamic interaction among students and teachers, metacognition, collaborative learning and conceptual blending. Creativity focuses on problem definition, divergent thinking and cognitive flexibility (Flach 1990) which are better developed and nurtured using ICT.

The Federal Government of Nigeria in 2012 announced the linking of some Federal Universities to the internet. This is with a view to enhancing the creativity of both students and teachers by improving the quality of education and bringing the needs of the knowledge society into a lifelong learning context. ICT based content, services and pedagogies will be a catalyst for creative problem solving, discovery, learning by doing, experiential learning and critical thinking.

This paper examines the meaning of creativity, ICT, blocks to the use of ICT, relationship between Creativity and ICT including the suggestions for using ICT to enhance creativity.

**Meaning of Creativity**
Generating new and valuable ideas (creativity) is at the centre of individual and group ability to adapt to change and to envision and bring about change (Runco, 2004). Creativity is a complex multi-faced process which has little conceptual clarity (Mgboro, 2004). It is the ability to generate different alternative solutions to a given problem. Creativity is therefore one of many important skills people use to reason, solve problem, make decisions and add meaning and value to life. Creativity research focus on diverse areas like conceptual (seeking to explain what the concept is about with a view to bringing out clarity in the field), developmental (problem definition, problem solving, divergent thinking, tolerance for ambiguity and cognitive flexibility) areas. It has also been examined as economic driver because of the role in innovation and entrepreneurship (Runco, 2004). Development applications of creativity concepts are useful in unleashing more creative responses in development projects. For instance creative arts (drama and painting) can help to create awareness of issues like child trafficking, tuberculosis and AIDS. Creativity is also useful in industries where technical and scientific innovation can provide employment and broaden the economic base; and where the individual want to think differently in order to create a new society and look at alternatives for further development (Alkire 2002). Creativity studies are categorized into four main categories (Rhodes 1987). These are person – traits, abilities, motivational and affective states that are correlated with creativity (Amabile, 1990); process – cognitive and social dynamics that determine the generation, expression and acceptance and adaption of new ideas (Csikszentmihalyi, 2003).
- Pressure – in the social and material environment that enhance or inhibit creativity, for instance, access to resources, organizational structure (Amabile, 1990)
- Product – creative outputs like publications and art work.

Other disciplinary focus outside the categories above have been identified as cultural difference in creativity, connections between social processes and creativity (Amabile 1990) including family structure and creativity (Harrington, Block and Block 1983). What it means is that there is no simple way of categorizing/characterizing creativity.

**Concept of Information Communication Technology (ICT)**

Stakeholders in education sectors often interchange the definition and uses of Information Technology (IT) and ICT (Olorundare, 2006). He noted that IT focuses on electronic generation, storage, retrieval, utilization and protection of information. ICT on the other hand compasses different types of technologies which are utilized for processing, transmitting or communicating data and information. To this end computers, internet, e-mail, varieties of softwares and materials form parts of ICT. ICT is concerned more with studying the concepts, skills, processes and application of electronic devices (Olorundare, 2006). Furthermore ICT is also defined as computer based tools that are utilized for the information and communication needs of organizations and individuals (Milken Foundations 2011). Such tools include computer networking, video, multimedia and internet.

Central to ICT is the concept of communication. Communication is carried out when information is shared interchangeably between teachers and students (Sender and Receiver). Information is thus transmitted and used when it is accessed and relayed through communication. Communication is therefore an interactive process used to change and influence the learners behaviour towards intended outcomes (Olorundare 2006) because all the communication activities/task which students learn involve communication.

Technology is a concept that is not easy to define. Broadly speaking it is a problem solving process which is focused on improving the quantity of human life. Technology is not just machinery or electronic gadgets but a system that expand human potential (Yang, 2003). Technology can therefore be viewed as the frame of mind and one’s ability to operate critical thinking and problem solving skills; it is an understanding that solutions to current problems are only in a tentative form, after all in technology the concern is not “specific right answer” but only best solutions for the time (Olorundare 2006: 4). The existence and frequency of problem solving and
critical thinking skills in technology makes ICT unavoidable partner in enhancing creativity in the school system.

**Blocks in Using ICT to Enhance Creativity**

Notwithstanding the importance of ICT as a partner in enhancing creativity of students, so many blocks exist which inhibit the use of ICT tools for teaching and learning.

Many teachers especially in the rural areas where most of the schools are situated are not aware of how to use ICT tools in teaching and learning. It follows that students are continuously taught using the conventional method of “talking and telling” while academic achievement is tested only by the essay and objective test which sometimes lack the standard techniques. Besides, teacher’s attitude, beliefs and perceptions do not encourage the use of ICT in the classroom (Yusuf 2005). Moreover, the time table as it is presently organized does not accommodate the use of ICT. Changing the time table implies a change in the curriculum and course content including the scope of examination. Furthermore the inadequate and epileptic electricity supply and the non-existence of electricity in the rural areas coupled with the low density in the country (Olorundare, 2006) do not boost the utilization of ICT resources for enhancing creativity in the education system.

**Using ICT to Enhance Creativity**

You would recall that creativity was described as a skill used to reason, solve problems, make decisions and add meaning and value to life while ICT is concerned with studying concepts, skills, processes and application of electronic devices to improve students creativity. It follows that there is a close relationship between creativity and ICT. It is this relationship we will examine in this section with a view to discover how ICT enhances students creativity.

The use of ICT enables multi lateral network support for building partnership and the networking of communities thereby exchanging ideas and experiences related to creativity. It follows that collaboration which is a trait used by creative individuals is further enhanced with the use of ICT.

The ability to filter huge amounts of information, extracting information useful for decision making and problem solving is further enhanced by ICT. ICT provides enormous amount of data for accessing, managing, integrating and evaluating useful ideas needed by the individual or group.

Dede (2008) identified further, some novel ideas/skills which ICT can enhance as creative abilities.

- Play (experimenting with ones surrounding as a form of problem solving);
- Performance (adopting alternative identities for purposes of improvisation and discovery);
Enhancing Creativity through Information Communication Technology (ICT)  
- Chibuze U. Mgboro, Ph.D

- Multi-tasking (Scanning ones environment and shifting focus to salient details);
- Distributed cognition (Interacting meaningfully with tools that expand mental capacities);
- Judgement (Evaluating the reliability and credibility of different sources of information)
- Trans-media Navigation (following the flow of stories and information across multiple modalities)
- Networking (searching for, synthesizing and disseminating information);

ICT utilization in the classroom enhance more the creativity of students because all the skills that lead to creative development, nurturing and production are encouraged and further strengthened using ICT. Specifically in the classroom setting (Olorundare 2006) noted that teachers using ICT will discover that;
- It accelerates and deepens students basic skills in reading, mathematics and sciences;
- It challenges students to learn independently and be responsible for their failures/success. Responsibility means the ability to absorb shock, take risk and engage in tasks whether they have immediate value or not.
- It prepares the learners to economically survive and become productive in present and future work oriented society. Provision of work for oneself after education is the essence of entrepreneurship education recently introduced in the school curriculum.
- Individual differences in students learning are better handled by teachers using ICT. Groups and individuals at risk of exclusion – drop out, slow learners and even fast learners – are identified and ICT forms an innovative catalyst for creativity in lifelong learning.
- It offers close co-operation with colleagues in the same field and other fields through networking and internet services. Teachers, administrators, parents, local business executives can plan to develop and improve student’s educational outcomes. In such a situation, individual differences in language, gender, culture, socioeconomic status, subject specific pedagogy and student engagement are some of the barriers which are reduced or eliminated using ICT.
- One major criticism of conventional instruction is the low rate of transfer of knowledge generated (the application of learnt information in another situation). ICT addresses this challenge by making the setting in which learning takes place similar to the real-world context of work and personal life (Dede 2008)
- ICT shifts the focus from teacher activity to learner activity. The focus of education and consequently creativity is what the learner achieves/does. Using ICT, students actively participate in classroom transactions because
they produce (Technology) and share (Communication) knowledge (Information). The situation further encourages students to take responsibility for their action.

- As a correlate of the above point ICT enables teachers to act as facilitators, collaborators and guide in teaching/learning environment. Teachers are no more sole knowledge dispensers. Their energy is thereby conserved and can be channeled to other productive ventures, which further reduces the time spent on teaching few concepts while it increases the economic output of the society.

Suggestions for Using ICT to Enhance Creativity

- Almost all the current woes in the present Nigerian society are blamed on the education system which some have noted stifle the creative and economic development of the students. It is not surprising that Government has introduced entrepreneurship education to checkmate the problems. But the mere introduction of entrepreneurship education without equipping teachers and students with the necessary tools/skills will not help to achieve the desired goal. This paper therefore suggests the following steps for using ICT to enhance creativity.

- Teacher’s attitude, perception and personal feelings about ICT use in the classroom should be addressed. They need to be trained on how to use ICT thereby providing them with the evidence that ICT works for the interest of everybody.

- Provision of electricity to all the schools. As at now most schools are not connected to electricity such that even when the computers are supplied to some schools they are neatly packed in the school stores.

- Creativity develops in an atmosphere of freedom with little restriction and guidance. The time table as it is now, does not allow for this. The present time table allows for a lock-up step matching in teaching and learning with little room (if ever) for creative development using ICT. Curriculum experts should therefore change the syllabus content and restructure the time table to enable students gain from ICT.

- The use of ICT should focus on how it will help develop the locally framed creativity. The local creativity is revealed in our language – process of metaphor, analogy and folklores. ICT should therefore focus on developing these cultural aspects in order to establish cultural and economic policies that promote artistic, technical or industrial growth. Adopting such local content strategies will promote indigenous technology and hence economic growth.
Enhancing Creativity through Information Communication Technology (ICT)
- Chibueze Mgbogho PhD

Conclusion

ICT has come to stay as an instrument for fast tracking economic and social development. Successful education in the 21st Century depends greatly on the application of ICT in the education system. ICT is not an end on its own but only a means of enhancing creativity of students. Creativity which among others is revealed through problem definition, and solving, divergent thinking and cognitive flexibility is greatly enhanced using ICT. However, teachers attitude towards the use of ICT, lack of ICT literacy, inadequate electricity supply are some of the blocks to using ICT to enhance creativity. The paper has made some suggestions on how those blocks can be tackled.

Reference


