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The Use of ICTs in Teaching and the Development of Critical Thinking Skills in Secondary Schools in the South West Region of Cameroon

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Abstract:

Secondary school teaching must enhance critical thinking as it is needed in the work place and everyday life. ICTs are one way through which critical thinking can be enhanced. Unfortunately, Cameroonian secondary school teachers think that they must possess complex ICT skills such as in synchronous online platforms to enhance critical thinking and so they give up on the use of basic and affordable ICTs in teaching. Thus, the study was a qualitative study which made use of an observation guide and focus group discussion to find out the effect of the use of the video in enhancing analysis, evaluation and creativity in the students and teacher's awareness of this effect. Participants consisted of 224 students and 8 teachers from three public secondary schools in Fako Division of the South West region of Cameroon. Data were analyzed thematically. Findings revealed that the use of video greatly enhances critical thinking. However even though teachers are aware of this they lack the resources and an enabling environment to make use of basic ICT tools. Recommendations are discussed.

Keywords*: ICTs, video, teaching, critical thinking, secondary schools, Cameroon*

1. Introduction

Higher order thinking skills like critical thinking, creative thinking and problem solving are considered necessary skills for 21st century individuals. Teaching students how to think critically is an essential issue in educational settings (Facione, 2007; Şendağ & Odabaşı, 2009) This is because critical thinking is very important to participate effectively in a democratic society with a set of skills in terms of workplace decision making, leadership, clinical judgment that affects professional success. The use of Information and Communication Technologies (ICTs) in improving educational outcomes and the quality of teaching and learning (Wagner, 2001) has been established. Also, technology competencies like using the Internet and its services effectively and learning in online environments are also skills required for the new generation. Hence, it is necessary and important to examine these dimensions from different points of view in order to develop ideas on the ways to best equip teachers with these skills and to make them more easily cope with emerging technologies and situations (Kalelioğlu & Gülbahar, 2014) in order to equip learners with critical thinking skills. Research studies reveal that even though most teachers do not make use of the potential of ICTs to contribute to the quality of learning environments, they value this potential quite significantly (Smeets, 2005).

2. Literature Review

2.1. Critical Thinking

Critical thinking includes the component skills of analyzing arguments, making inferences using inductive or deductive reasoning, judging or evaluating, and making decisions or solving problems (Lai, 2011). Facione (1990) considers critical thinking to be purposeful, self-regulatory judgment, which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological or contextual considerations upon which that judgment is based. Critical teaching views content as something alive only in minds, as modes of thinking driven by questions, as existing in textbooks only to be regenerated in the minds of students. Once we understand content as inseparable from the thinking that generates, organizes, analyzes, synthesizes, evaluates, and transforms it, we recognize that content cannot in principle ever be "completed" because thinking is never completed (Lunenburg, 2011).

According to a United Nations report (1999) ICTs cover internet service provision, telecommunications equipment and services, information technology equipment and services, media and broadcasting, libraries and documentation centres, commercial information providers, network-based information services, and other related information and communication activities. The various kinds of ICT products available and having relevance to education, such as teleconferencing, email, audio conferencing, television lessons, radio broadcasts, interactive radio counselling, interactive voice response system, audiocassettes and CD ROMs etc have been used in education for different purposes (Sharma, 2003; Sanyal, 2001; Bhattacharya and Sharma, 2007). Using digital media requires activities that involve the students in cooperation, research, play, etc., and not presentation by the teacher from the front of the classroom. Therefore, the didactic value of using digital media is the fact that they enable inquiry-based and problem-based learning, individualization of work, situational (contextual) learning, co-operative learning and creative learning, that is, learning-by-doing (Kanselaar, de Jong, Andriessen, & Goodyear, 2002; Schulz-Zander & Tulodziecki, in Topolovčan and Matijević, 2017)

The field of education has been affected by ICTs, which have undoubtedly affected teaching, learning, and research (Yusuf, 2005). A great deal of research has proven the benefits to the quality of education (Al-Ansari, 2006). ICTs have the potential to innovate, accelerate, enrich and deepen skills, motivate and engage students, help relate school experience to work practices, create economic viability for tomorrow's workers, as well as strengthening teaching and helping schools change (Davis and Tearle, 1999; Lemke and Coughlin, 1998; cited by Yusuf, 2005). As Jhurree (2005) states, much has been said and reported about the impact of technology, especially computers, in education.

2.2. Using Icts to Enhance Critical Thinking

"The Web is where constructivist learning can take place. The web provides access to rich sources of information; encourages meaningful interactions with content; and brings people together to challenge, support, or interact with each other" (Khine, 2003, pp 22-23). However, just access to the web for the student does not guarantee constructivist learning. The lecturer is required to provide some guidance or coaching to allow students to create their own meanings. Contemporary settings are now favouring curricula that promote competency and performance. Curricula are starting to emphasize capabilities and focus more on how the information will be used than with what the information is. Contemporary ICTs are able to provide strong support for all these expectations and there are now many outstanding examples of world class settings for competency and performance-based curricula that make sound use of the affordances of these technologies (Oliver, 2000). The use of information and communication technologies can help motivate teachers and students and improve the quality of education by providing curricular support in content areas (Noor Ul Amin, 2013).

ICT changes the characteristics of problems and learning tasks, and hence play an important task as mediator of cognitive development, enhancing the acquisition of generic cognitive competencies as essential for life in our knowledge society. Students using ICTs for learning purposes become immersed in the process of learning and as more and more students use computers as information sources and cognitive tools (Reeves and Jonassen, 1996), the influence of the technology on supporting how students learn will continue to increase. The integration of ICT into the teaching and learning processes contributes to increase the interaction and reception of information (Cabero, 2001). ICTs can also enhance learner motivation and engagement, by facilitating the acquisition of basic skills (Noor Ul Amin, 2013). Learning approaches using contemporary ICTs provide many opportunities for constructivist learning through their provision and support for resource-based, student-centered settings and by enabling learning to be related to context and to practice (Berge, 1998; Barron, 1998). ICT-enhanced learning is student-directed and diagnostic. Unlike static, text or print-based educational technologies, ICT-enhanced learning recognizes that there are many different learning pathways and many different articulations of knowledge. ICTs allow learners to explore and discover rather than merely listen and remember

ICT helps in providing a catalyst for rethinking teaching practice (Flecknoe,2002; McCormick & Scrimshaw, 2001) developing the kind of graduates and citizens required in an information society (Department of Education, 2001); improving educational outcomes (especially pass rates) and enhancing and improving the quality of teaching and learning (Wagner, 2001; Garrison & Anderson, 2003). ICT can help deepen students' content knowledge, engage them in constructing their own knowledge, and support the development of complex thinking skills (Kozma, 2005; Kulik, 2003; Webb & Cox, 2004). Studies have identified a variety of constructivist learning strategies (e.g., students work in collaborative groups or students create products that represent what they are learning) that can change the way students interact with the content (Windschitl, 2002). As also stated by MacKnight (2000), teaching critical thinking by using online discussion is an essential approach in terms of enhancement of teaching and learning in electronic forums. Students should enhance their critical thinking abilities in order to cope (Kalelioğlu & Gülbahar, 2014).

Albert Bandura, Girasoli and Hannafin (2008) urge the use of asynchronous tools to promote student self-efficacy and hence academic performance. Fister et al (2008) also depict the power of tablet PCs to improve mathematics instruction. Khine (2003) stated that lecturers could use ICT to facilitate learning, critical thinking and peer discussions. Pratt (2002) suggested that it is possible for ICT to facilitate both teaching and learning. ICT can be a useful complement to lecturers when carefully integrated into the curriculum. The use of an ICT mediated intervention, provide users access to a deluge of questions posted by other users. (Giddens, 2000, p36).

Perkins and Murphy (2006) conducted an exploratory case study involving the development of a model for identifying and measuring individual engagement in critical thinking in an online asynchronous discussion and

underlined the potential usefulness and importance of identifying critical thinking in online asynchronous discussion groups based on their findings. Another researcher, Jeong (2003), examined group interaction and critical thinking in online threaded discussions. The researcher identified patterns in interactions and determined which interactions promoted critical thinking and concluded that interactions having contradictory viewpoints stimulated more discussion and critical thinking. Furthermore, Walker (2004) examined the types of moves and strategies used by tutors facilitating the synchronous computer mediated communication debates in proportion to student responses in order to evaluate the efficacy of different move types. The researcher found that the most common move types were meta-statements, probe, challenge, inform and encourage (Kalelioğlu & Gülbahar, 2014).

Karagiorgi and Symeou (2005, p24) asserted, "...in a world of instant information, constructivism can become a guiding theoretical foundation and provide a theory of cognitive growth and learning that can be applied to several learning goals." In a constructivist learning environment the role of the lecturer shifts from being a source of knowledge to facilitating learning. Khine (2003) argued that students should not be left to explore alone, rather lecturers should provide support, coaching and modelling to the students to make certain learning takes place. Unlike the teacher-centred model, in which lecturers impart knowledge to students, "knowledge for constructivism cannot be imposed or transferred intact from the mind of one knower to the mind of another" (Karagiorgi and Symeou, 2005, p18). However, Russell and Schneiderheinze (2005) argued that a critical factor which shaped how lecturers used ICT to develop learning, was the lecturers' academic belief and acceptance of constructivism.

2.3. Statement of the Problem

Secondary school teaching must enhance critical thinking as it is needed in the work place and everyday life. ICTs are one way through which critical thinking can be enhanced. Unfortunately, Cameroonian secondary school teachers think that they must only possess complex ICT skills such as in synchronous online platforms to enhance critical thinking skills and so they give up on the use of some ICTs to enhance critical thinking. Yet there are very basic and affordable resources which are sometimes used without the intention of fostering problem-solving skills but which have the capacity to do so. This study therefore aims at identifying basic ICT tools and the extent to which they can enhance critical thinking.

3. Objective of the Study

The study aims at finding out the extent to which the use of a video (Television and DVD) in a lesson can enhance critical thinking

3.1. Research Question

To what extent can the use of video in a lesson enhance critical thinking?

3.2. Research Methodology

The study was a qualitative study involving a total of 232 participants comprising 224 students and 8 teachers. It made use of two instruments namely an observation guide and a focus group discussion. A total of three form 3 classrooms in three randomly selected schools were observed in three schools in Fako division. Prior observation was made in all the classes on students' development of critical thinking (analysis, creativity and evaluation) in the teaching of literature using the traditional /teacher-centred method. The same classes were taught a few days later again using a video. Analysis was measured by the themes that students were able to identify and reasons why; Evaluation was measured by the adjectives used to describe the identification of the evidence and creativity was measured by students' ability to make predictions as well as propose better solutions to problem situations. Data were analyzed thematically. Discussions were noted for each class and the extent of analysis, evaluation and creativity of responses from lessons using the traditional method and those using a video were compared. The focus group discussion was made up of eight teachers: two literature teachers, two history teachers, two geography teachers and two science teachers from four schools in Fako division. The aim of the focus group discussion was to find out from teachers their awareness of the effect of integrating ICTs in teaching especially with regard to enhancing critical thinking skills.

4. Findings

More students participated in the classes with a video than those without. The level of motivation was high and more themes were brought in the classes with video than those without. With regard to evaluation, apart from the fact that many more adjectives were used to describe characters or actors with the use of evidence, there were arguments where some students did not entirely agree with others' responses and the teacher had to rewind the video and focus on the scenario causing the argument. The analysis from students was richer and more detailed than in the traditional method class since students could read gestures or non-verbal language of actors to decipher their behavior or attitudes. Also, in the video lesson, students came up with several predictions on what they thought certain actors were going to do after a particular incident and also how the story was likely to end. They also came up with more and better solutions to problem situations in the video which showed their creativity. Summarily there was a significant increase in the quantity and quality of responses with regard to analysis, judgement or evaluation and creativity.

Findings from the focus group discussion revealed that all 8 teachers (100%) were aware of the ability of the video to stimulate discussion and motivation. All 8 (100%) of them said they were aware of the effect of using a video in a lesson but the lack of resources and an enabling environment could not permit them make regular use of it in schools. One of the teachers reported,

"Many of our classrooms either do not have electricity or the sockets' are not working. We cannot do much in such an environment."

Another teacher said, "We do not have TV screens and DVDs meant for teaching. That will mean we have to bring them from our homes and that is only if one has a car"

Another teacher reported, "It is not easy to have videos or simulations for a variety of topics or subjects and even though I am aware of the effects of using videos in a lesson is difficult to find videos designed for a particular lesson.

5. Discussion

The Video enhances motivation and critical thinking**.** Students were able to defend their own points of view. Critical thinking includes the component skills of analyzing arguments, making inferences using inductive or deductive reasoning, judging or evaluating, and making decisions or solving problems (Lai, 2011). ICT can help deepen students' content knowledge, engage students' in constructing their own knowledge, and support the development of complex thinking skills (Kozma, 2005; Kulik, 2003; Webb & Cox, 2004). Learning strategies that make use of contemporary ICTs provide many opportunities for constructivist learning the integration of ICTs into the teaching and learning processes contributes to increase the interaction and reception of information (Cabero, 2001). More students participated making the lesson learner-centred. ICTs can also enhance learner motivation and engagement, by facilitating the acquisition of basic skills (Noor Ul Amin, 2013). Also, findings corroborate research studies that show that most teachers do not make use of the potential of ICT to contribute to the quality of learning environments, although they value this potential quite significantly (Smeets, 2005).

6. Conclusion

The use of ICTs in a lesson enhances critical thinking skills. However, even though teachers are aware of this they lack the skills and resources to make use of these important tools that are not only needed for teaching and learning but are also needed in the work place. The use of information and communication technologies can help motivate teachers and students and improve the quality of education by providing curricular support in content areas (Noor Ul Amin, 2013). As a way forward, teachers must be equipped by subject associations to integrate ICTs in teaching. In addition, they must be given support by school authorities by way of providing the necessary resources and creating an enabling environment for the use of ICTs in the classrooms. Teachers must also make personal efforts from time to time use their personal resources in teaching some lessons.

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