The Influence of Audio vs. Multimedia Classroom Instruction on Critical Thinking of EFL Learners

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Abstract - The popularity of information technology (IT) over the past decade has brought about the innovative use of the Internet in English language learning and teaching process. Using computers and Internet can improve EFL learners' language abilities, and they also reach real learning experiences. They gain the opportunity to access useful language resources and communicate with native English speakers through computers and Internet. Critical thinking is a higher-order cognitive skill that is indispensable to students, readying them to respond to a variety of complex problems that are sure to arise in their personal and professional lives. The aim of the paper is to explore the relationship between critical thinking ability of EFL learners and the use of different media such as audio vs. visual texts in English classes. The participants of this study are 80 first year university students from the Faculty of Information and Communication Technologies, Bitola, North Macedonia. Watson-Glaser Critical Thinking Questionnaire is used as an instrument to evaluate the learners' critical thinking. For these purposes MANOVA was used. In this paper we specifically focus on the use of audio and multimedia files in order to extend the students critical thinking skills through interactive activities that force them to diverse opinions, analyze and synthesize course content. The results revealed that video materials with text performed better than audio group.

I. INTRODUCTION

The popularity of information technology (IT) over the past decade has brought about the innovative use of the Internet in English language learning and teaching process as Evans (Evans, 1983, according to Ilievski, 1999: 192) in his study "Computer Challenge" will say: "Instead of increasing muscle strength, we aim towards increasing brain strength". Using computers and Internet can improve EFL learners' language abilities, and they also reach real learning experiences. In addition, computers contribute beneficially to learners' learning and development. They gain the opportunity to access useful language resources and communicate with native English speakers through computers and Internet. Computers are important in language learning because they help students to think critically in their learning process and make them have active and stable knowledge. That is, they are provided with more creative activities to analyze and assess through using computers. Critical thinking is a higher-order cognitive skill that is indispensable to students, readying them to respond to a variety of complex problems that are sure to arise in their personal and professional lives. Critical thinking has been recently introduced and gained a high position in foreign language teaching (FLT) settings so that nowadays enhancing critical thinking in learners is considered one of the foreign language teachers' tasks. The relevance of critical thinking with technology is to prepare the students in order to be the best solver and make the better decision. It is important for the students to be independent thinker since there are many jobs needed skillful workers which have critical thinking ability. Meanwhile,3 the students should know how to be creative and to develop reflective and logical thinking in order to decide some problems.

Based on the above thought, this study investigates the use of audio and video with texts recording lessons in stimulating critical thinking among EFL students from a public university in North Macedonia. More precisely, the lessons contain a wide range of topics about technology that encourage students to answer the questions through interactive activities that help students advance their thinking.

II. THE INTERPLAY OF TECHNOLOGY AND CRITICAL THINKING

There is a thin line between language and thought in relation to interaction (Bowerman and Levinson, 2001; Chomsky, 1975; Vygotsky, 1978; Whorf, 1956). It means they are interrelated, and teachers must train students in order to develop their linguistic and cognitive skills by contrasting the target language with their own language, hypothesizing the grammatical rules of the target language. The use of technologies as cognitive tools engage students in thinking while they learning by visualizing with technology, learning by reflecting, and learning by exploring that it is not to do without technology support. When students use audio and video activities they can examine question and reflect on what they learn. In other words, with these media tools students have opportunities to learn through visual formats, mental models and problem-oriented activities that provide them with higher degree of CT (Carmichael and Farrell, 2012). The correlation between critical thinking skills and a technology-rich environment provides an improvement of students' motivation, scaffolding, and feedback. The Fig.1 below represents the cognitive skills at the foundation of critical thinking (Facione, 2011).

Fig.1 Core critical thinking skills

The image shows when students think critically, they engage in the following process: analysis, synthesis, evaluation, problem-solving, communication and reflection. It means they can develop both lower- level (remembering, understanding) and higher level (applying, analyzing, evaluating and creating) critical thinking skills (Facione, 2011). Huang et al. (2012) mention that learning environments that incorporate technological tools into classrooms enable students to develop arguments supported by making thinking processes 'visible', and eventually foster enhanced critical thinking skills. However the utilization of audio and video materials could improve students' critical thinking ability and language teaching. Audio tends to use one channel, that include only audio information which is spoke language information. Now, combinations of media as input could be selected and the learners have a possibility to be exposed to authentic language. This kind of media provides "methods that reflect the cognitive processes necessary to successfully perform a given learning tasks''(Clark and Paivio 1991). Multimedia means a combination between sight and auditory and can improve learning process and achieve high critical skills. Digital learning helps students see the importance of what they are learning and make a connection between theoretical ideas and critical thinking (Mayer, 1997). Mayer pointed out when learners use multimedia to stimulate thinking they are better in applying, coherence, modality redundancy and individual differences. Specifically, when learners use auditory-verbal and visual-pictorial channel, verbal thinking is involved. Besides, this learning media was one of dominant aspects after learning method which could improve learning process and achieve high learning result (Sudjana and Rivai, 2007, p.2). Technology makes students to be self-dependent thinkers (Burgess, 2009). According to Abreu (2010) media literacy can enhance students' critical thinking skills, as a big challenge for the 21st century. The application of learning technological tools and critical thinking skills provides an opportunity for interested students to achieve higher levels of knowing and to practice critical thinking skills (Carmichael and Farrell, 2012). Li (2010) claims that through activities that include processes by providing Internet resources, designed tasks, and interaction with others, students can develop critical thinking skills more effectively. Critical thinking is the ability to connect new knowledge to previous knowledge, to construct and evaluate arguments, and solve problems systematically. Students are better able to grasp complex concepts when tasks are explained using a wide array of modalities (verbal, visual, graphical, and symbolic) and instructional formats (audio files, video lectures, graphic displays, and simulations). Digital learning environments foster critical thinking and increase the accessibility of content by offering learners more options for applying knowledge and skills. The capacity to, monitor, evaluate and control thinking while completing new tasks—helps support critical thinking and transfer of knowledge. By providing, coaching, extensive modeling, scaffolding, and problem solving, technology offers learners opportunities to build metacognitive skills. (Yang and Wu, 2012).

In relation to cognitive research the extensive student practice is a vital component of learning. Technology provide more opportunities for students to practice skills and concepts. It helps foster critical thinking by transferring knowledge from short-term to long-term memory as a significant process that helps students apply and remember information to new settings (Mandernach, 2006).

III. METHOD

Using both qualitative and quantitative methods, this experimental study seeks answers to the following research question: Is there a significant difference between critical thinking ability of EFL learners and the use of different media such as audio vs. visual texts in English classes?

A. Participants

Participants of the study are 80 first year university students from the Faculty of Information and Communication Technologies, Bitola, North Macedonia who study English as a foreign language. For the purpose of this study two intact groups consisting of 40 in each are included.

B. Instruments

To carry out the research investigation, 3 different instruments were employed in the present study:

Straightforward Quick Placement & Diagnostic test – a language proficiency test,

Audio and video with text recording lessons/interactive activities

Seven topics which are in accordance with the English subject in the first year study program same for both groups are selected as audio and visual materials. The participants are asked to respond to the materials in a personal way.

Watson-Glaser Critical Thinking Questionnaire

In order to evaluate the students' critical thinking, Watson-Glaser Critical Thinking Questionnaire was used. It is consisted of five subtests: a) Inference b) Recognizing Unstated Assumptions c) Deduction d) Interpretation e) Evaluation of Arguments.

C. 3.3 Procedures

For the purpose of this study the following procedures were followed:

First, a general proficiency test was administered in order to make sure of the proficiency level of the students (intermediate). Then, 80 students were divided into two

groups (audio and video materials with text) of 40. Second, one of the groups (called audio) had a task only to listen the materials, while the second one (called video materials with text) to hear, see and read the same materials. The audio/video files took up 2-3 minutes. The students were required to complete the questions through interactive activities in stimulating critical thinking in relation to the level of numeration and explanation, explanation of functions and characteristics and explanation of differences and similarities about technology during one month. Third, the students were asked to complete Watson-Glaser Critical Thinking Questionnaire.

IV. Results And Methods

Based on the results we can conclude that students are active with particular interest on higher thinking skills in their audio and video activities. It means that every student manages their learning process in order to achieve the relational thinking. They can share their experience and knowledge actively. This implies that knowledge and understanding are constructed when students are engaged actively. In this case students prefer a certain single different learning style. They have different ability to manage the input through technology tools. In fact, technology has an impact on students involvement in learning activities. Indirectly, that activities have been mixed with critical thinking abilities.

Table 1 shows that the sample is 40 observations (students). In this sample, the average of critical thinking level in audio group is 36.45. 24 students are above that average (with an average score of 41.21) and 16 students are below that average (with an average score of 29.18).

Table 2 shows that the sample is 40 observations (students). In this sample, the average of critical thinking level in audio group is 62.7. 21 students are above that average (with an average score of 69.95) and 19 students are below that average (with an average score of 54.68).
Related to the above results students are motivated to discovery critical thinking. Providing words with images, pictures or other graphics enhances critical thinking skills instead of materials that include words. Results show that students from *'audio group'* have "lack of focus", they are less critically oriented then the students from the group video materials with text, and not enough able to receive, evaluate and respond to a message. They are not much engaged in activities that require them to develop critical thinking skills and evaluate and analyze course content. The students from the second group *'video materials with text'* are more inspired to think critically and deeply and to seek out different solutions.

TABLE I: Audio materials

Dummy variables for critical thinking	Critical thinking level	Observations
0	29.1875	16
1	41.29167	24
Total	**36.45**	**40**

TABLE II: Video materials with text

Dummy variables for critical thinking	Critical thinking level	Observations
0	54.68	19
1	69.95	21
Total	**62.7**	**40**

On this basis multimedia emphasizes critical thinking rather than rote learning. It helps students advance their knowledge and engage them in multiple levels of critical thinking through reflective activities. Students can construct hypotheses and make decisions. It promotes the development of students' critical thinking skills and self-regulation. Students are the active creator of their knowledge. This means that students must be creative and active in all their activities. Critical thinking and multimedia increase the development of students' expressions and different learning style as well as the ability to manage and monitor the input. The visual and auditory nature of video stimulates critical thinking, it provides opportunities for interacting materials. This kind of information forms can cause heavier cognitive load, it provides broader context and visual details that can help develop critical thinking skills. Results indicate that multimedia is closely a superior tool for visually demonstrating "how-to" through the presentation of authentic information. Multimedia aids critical thinking in a number of ways. These include stimulating interest, increasing knowledge and assisting in comprehension. Multimedia design enable students to make their sense of what and how they think. It is based on action-oriented.
Results display the fact that when students are presented with visual aids such a printed text or visual information they create their own critical thinking through experience, they think actively, create schemes, etc. They use both "top-down'' and "bottom-up'' learning methodology while thinking process. In this thinking, the students get the details of the given idea and explain opinions by making thinking processes 'visible'. This positive indicators of usage of multimedia help students develop their critical skills, make connections between arguments and information and meet their individual needs.

V. Conclusion

The findings of the study found a significant difference between the critical thinking ability of EFL learners and the use of different media such as audio vs. visual texts in English classes. The study suggests that presenting information with image, sound and text gives better results versus presenting information only with sound and positively reflects on students' knowledge. Multimedia creates an effective learning environment that motivates students to develop critical thinking skills. It also provides effective tools for students to share the content and construct knowledge through learning activities. Technology has an impact on the intellectual learner and on the development of both micro and macro world technology. It can be used as an effective tool to facilitate critical thinking skills within a higher education setting or

in the content of audio and multimedia learning. Critical thinking also extends to the field of linguistics and learning process in particular.

Technology can extend language classes so critical thinking can open new avenues for foreign language teachers. However, multimedia plays a visible role in enhancing critical thinking and language pedagogy. Bringing together critical thinking skills and learning technological tools may be beneficial in that it provides an additional opportunity for students to practice critical thinking skills, problem solving and to express feelings and thoughts.

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