



Effects of Online Tools utilization on thinking skills: Afghanistan students' Perceptions

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Abstract

Online technology plays an important role in teaching and learning especially to provide variety into students' learning experiences. In Afghanistan, to embrace the technologically-driven learning, the Ministry of Higher Education (MoHE) encourages all universities to use technology for teaching and learning. It is hoped that with such effort, technology is able to assist students' learning particularly to enhance their thinking skills. Although the challenge has been well-accepted and implemented, it is essential to investigate whether this move has the positive effects it aimed for. This study therefore investigated Afghanistan university students' perceptions of online tools utilization on their thinking skills. 217 questionnaires were distributed, and 35 of the participants volunteered to be interviewed. The results generally show positive perceptions of the effects of using online tools on thinking skills. Participants also believed that online tools have helped developed their lower-order better than their higher-order thinking skills. The findings proposed providing training programs for teachers and students to use online tools effectively for better learning experience where thinking skills particularly higher-order thinking can be enhanced.

Keywords: Online tools, perceptions, thinking skills.

Introduction

In the last few years, a new advancement of Internet technologies, web 2.0 has appeared with the capacity to further improve the teaching and learning setting in higher education. With the use of web 2.0 learners are not only able to search the web for course information, but also they are able to access the Internet to construct knowledge via social interactions. Web 2.0 empowers students to link different pieces of information and construct new information that can be shared with others¹. Teaching and learning environment can be constructed in a way that both teachers and students can take part as co-constructors of learning². The web 2.0 tools offer a collaborative learning environment for students. This is an appropriate approach to enhance students' higher order thinking^{3,4}. It is therefore significant to explore students' perceptions on the use of online tools on their thinking skills at tertiary level.

Literature Review: Utilization of Technology in Afghanistan Universities: Today, technology is being used by many teachers and students around the world for teaching and learning purposes. Using technology for teaching and learning has been encouraged by the Ministry of Higher Education (MoHE) of Afghanistan, and MoHE has indicated that universities should take the first step towards this effort. As a result, one of the MoHE strategic plans is to work closely with private sectors in order to find out the benefits of technology and then introduce them to the universities⁵. According to MoHE, technology as a tool seems to be more helpful than using the conventional teaching and learning approaches. Technology can help facilitate teaching and learning process, and is more advantageous than using the traditional

approaches. In line with the government efforts, many Afghan researchers such as Barikzai found that Afghanistan must use new technology for new and effective learning experiences at the universities rather than following the conventional approaches⁶.

Use of Technology in Education: Technology plays a significant role in education, and can assist teaching and learning. Technological tools such as the web 2.0 provide numerous benefits for both teachers and students in order to have a better learning environment and experiences⁷. Web 2.0 tools offer great opportunities for students to actively take part in knowledge creation, sharing and collaborating^{8,2,10}. Web 2.0 tools such as blogs, wikis, social bookmarking and social networking sites allow learners to share content, take part in creating and producing information and knowledge which was not possible in the conventional learning and teaching approaches. In the last few years, the increase of online social networks created opportunities for sharing personal information, videos and photos. Teachers and students can quickly analyze, evaluate, and create information and knowledge¹. At tertiary level, web 2.0 tools can support and enhance learning and thinking skills. For instance, social networking sites, wikis, podcast, blogs and You Tube provide various opportunities for students to keenly take part in the learning and enable them to construct knowledge.

Alternative learning and teaching approaches for cognitive development: With technology, the way of teaching and learning has changed. A number of learning approaches have been developed where technology can be applied efficiently¹¹. To embrace toward using technology, constructivist approaches have been recommended by several studies¹². Based on constructivism

theory of learning, learners must be involved in the construction of knowledge⁸. Constructivism theorists such as Vygotsky and Bruner emphasised and claimed that students should be actively involved in the learning process such as interaction with peers. Knowledge can be constructed through this interaction and collaboration¹³. In brief, in constructivism knowledge construction is essential in learning. Attwell and Hughes explained eight principles which are essential in the constructivist pedagogy¹². In these principles, students acquire and learn knowledge through practice, reflection and creation: i. Learning should happen in the real life environments. ii. Learning should contain social interaction. iii. Learners should know the relevance of content and skills. iv. The content and skills should be based on students' previous knowledge and experiences. v. The evaluation and assessment of students should tell future learning experience. vi. Self-regulatory and self-aware should be encouraged for students. vii. Teachers should act as a facilitator. viii. "Teachers should provide for and encourage multiple perspectives and representation of content".

Technology supports 21st century skills such as critical thinking, problem solving, communication and collaboration, creativity and innovation¹⁴. Web 2.0 technologies provide many new learning opportunities to enhance learning and thinking skills. Higher level of thinking can be promoted through the use of technology especially with the use of online tools. Online learning environment can be an effective constructivist learning experience that let students take active role in improving their knowledge and understanding³. Web 2.0 tools also provide peer learning environment and can help to stimulate critical thinking and creative thinking. Therefore, using web 2.0 tools can be an alternative learning and teaching approaches to enable students to enhance their learning and thinking skills.

Use of online tools for thinking skills: Higher education institutions around the world expect students' not only to obtain knowledge, and information but also higher order thinking skills. Moving students from lower order to higher order thinking skills is very significant in learning and teaching^{16,17}. Higher order thinking is a significant element in higher education institutions. Higher order thinking includes analyzing and evaluating information, solving problem and thinking critically. These skills include categorizing concepts, comparing and contrasting ideas and elements which can help students reduce their weaknesses^{18,19}. Higher order thinking skills basically means thinking that happens in higher level of the hierarchy of cognitive processing. Bloom's taxonomy is recognized as the most well known hierarchy which begins with the level of knowledge to evaluation¹⁸. Based on Bloom's taxonomy, lower level provide a base for higher order of learning and thinking. In cognitive domain, six categories such as knowledge, comprehension, application, analysis, synthesis and evaluation are identified as learning objective, learning process and thinking order. These classifications are managed from simple to complex and from concrete to abstract¹⁶. This is important for learners to obtain higher level of thinking skills rather than memorizing and

understanding which are known as lower order thinking. A significant application of Bloom's taxonomy is Bloom's digital taxonomy where it is applied for learning and teaching process using technology^{20,21}. Technology such as web 2.0 offers a learning environment which supports students' enhancement of critical and creative thinking skills. Many studies indicated that students' critical thinking skills can be enhanced by the use of web 2.0 tools such as wikis, blogs and other web 2.0 tools. Online tools and collaborative activities can develop students' critical thinking²². There are many useful presentation tools for students to have collaborative activity and to do peer editing. With the use of web 2.0 tools, students can collaborate, discover, evaluate and share learning resources. Wikis, blogs and podcast provide an opportunity to post information and provide feedback. Online collaborative learning can improve critical thinking, met cognition and motivation²³. Web 2.0 tools support active learning, and enhance higher order of thinking skills²⁴. Wikis and social networking sites can assist online collaborative learning²⁵. Therefore, technology in general and online tools in particular support and assist students to enhance their learning and thinking skills. Online tools such as wikis, YouTube and social networking sites assist and develop students' thinking skills in the learning process.

Purpose of the study: This paper reports a study which looked at the utilization of technology especially online tools on students' thinking skills. The purpose of the study was to investigate Afghanistan students' perceptions of using online tools on their thinking skills. Using technology in Afghanistan educational settings is new and in its preliminary step, and it is therefore significant to find how the students perceive the effects of using online tools on their thinking skills.

Methodology

Participants of the study: The study was conducted with 217 participants from four universities in Kabul Afghanistan. Participants were from Kabul University, Kabul Education University, American University of Afghanistan (AUAF), and Kateb University. Kabul University and Kabul Education University are public universities whereas AUAF and Kateb University are private universities. 40 % of the participants were from Kabul University whereas 16.6 % of them were from KEU. 34.6 % of the participants were from Kateb University, and only 8.8 % of them were from AUAF. 64.5% of the participants were male, and 35 % were female. Both public and private universities were chosen because it is well-known in Afghanistan that private universities are better equipped with current teaching and learning facilities. Therefore, it is essential to look at how students from both types of universities perceive of the technology utilization on thinking skills.

Research Instrument: A developed questionnaire was used as the main instrument of the study. A semi-structured interview was conducted with a number of volunteered participants to support the data from the questionnaire.

Survey Questionnaire: In this study, Bloom’s digital taxonomy was used as reference to develop the questionnaire. The questionnaire was used to inquire students to indicate their level of agreement using Likert-type scale of 5. The purpose of the questionnaire was to find out the effects of online tools on students’ thinking skills. The quantitative data were analyzed using SPSS via percentage, mean, and standard deviation.

Semi-structured Interview: To support the data from the questionnaire, a semi-structured interview was conducted with 35 participants. The interview data were analyzed based categories of themes.

Procedure: The study was carried out during the second semester of 2013/2014 academic session in the four universities. The data collection from each university took almost 15 days. Permission

was achieved from the university’s authority before students were approached individually. Data was collected in the classrooms, library and at cafes. Participants’ consents were obtained before the questionnaire was administered. Students who agreed to be interviewed were interviewed a few days later, and this was done face to face. All interviews were recorded in Mp4. The data collection moved from the public universities to the private universities.

Results and Discussion

Survey questionnaire results: The SPSS was used to find out the reliability of the questionnaire. The result of Cronbach’s alpha was .897 which indicates that the survey questionnaire was valid and reliable. The findings from the survey questionnaire are presented in table 1 via means and standard deviations.

Table-1
Students’ perception of using online tools on their thinking skills

	Level of thinking	Items	Mean	Std.
Lower Order of Thinking	Remembering	Online tools help me to search the web for more information regarding the lesson	4.44	.86
		Online tools assist me to socialize with classmates	4.07	.86
		Online tools help me to select a topic for discussion	4.08	.86
		Online tools help me to give examples on other’s information posted	4.18	.94
		Online tools help me to explain a topic on social network	4.04	.97
	Understanding	Online tools assist me to define terms and concept	3.95	.92
		Online tools help me to state my opinions about a text posted.	4.05	.93
		Online tools help me to compare similarities and difference of information	3.59	1.02
		Online tools assist me to classify examples to others proposed task	3.98	1.01
		Online tools assist me to match the given questions with answers	3.89	.99
	Applying	Online tools assist me to write and post my work.	4.07	.96
		Online tools help me to edit an academic written works posted by others	4.04	.95
		Online tools help me to run an academic discussion related to the lesson	3.96	1.009
		Online tools assist me to carry out a survey related to the lesson	3.81	1.04
		Online tools assist me to share my information about academic issue	3.75	1.09
Higher Order of Thinking	Analyzing	Online tools help me to reorganize the shared information in academic manner.	3.55	1.11
		Online tools assist me to mind-map my ideas into graphical form	3.99	1.03
		Online tools help me to ask questions related to the lesson	3.84	.88
		Online tools assist me to discuss possible solutions to a problem	3.96	1.001
		Online tools help me to outline my ideas in a structured manner	3.77	1.076
	Evaluating	Online tools help me to moderate discussion in online forum	3.73	.974
		Online tools allow me to collaborate with friends on a given project	3.72	1.03
		Online tools help me provide constructive feedback and comments in blogs	3.93	1.007
		Online tools help me to argue on how to apply a theory	3.73	1.055
		Online tools help me to defend my ideas that I have shared on wikis or blogs	3.67	1.127
	Creating	Online tools help me to design a weblog in order to discuss academic issues related to my studies	4.00	.976
		Online tools assist me to create multimedia presentation to present my ideas	4.06	.968
		Online tools help me produce YouTube video to share my ideas	3.75	1.12
		Online tools assist me to develop a discussion by adding more information and examples	3.93	1.02
		Online tools help me to criticize on other’s ideas, and information	3.79	1.15

Table 1 shows students' perceptions on the effects of online tools utilization on their thinking skills both lower order and higher order of thinking. The mean scores for lower order of thinking skills ranged from 3.59 to 4.44 with an overall mean of 3.9. This indicates that participants agreed using online tools helped them with their lower-order thinking skills. They used online tools to search for information, give examples on others' information, socialize with classmates, and compare similarities and differences of information. Students used online tools to classify examples, share and post information, edit an academic written work and run academic discussion. The mean scores for the higher order of thinking ranged from 3.55 to 4.06 with an overall mean of 3.8. This illustrate that the participants agreed using online tools helped them in the higher-order thinking skills. They used online tools to reorganize information, mind map their ideas, ask questions, and moderate discussion. They also used online tools to collaborate, give feedback, design weblog, produce YouTube video and criticize on others' ideas.

Interview results: In addition to quantitative survey, a semi structured interview was carried out with 35 volunteered participants to get a better picture and understanding from the participants on the effects of using online tools on their thinking. The interview data were coded based on the following coding: S-Student: 1-student's number: KEU- Referring to the university they belong. Therefore, S1KEU refers to student 1 from Kabul Education University; S2KU refers to student 2 from Kabul University, S3AUAF refers to student 3 from American University of Afghanistan, S4KAU refers to student 4 from Kateb University, and so forth. The interview data are important to support the questionnaire data on how online tools can enhance students' thinking skills. The participants from all four universities confirmed on the positive effects of using online tools on their thinking skills. The interview findings will be discussed based on the categories of significance of using the online tools. Firstly, most of the interviewees agreed that online technology plays a significant role in teaching and learning process, and it can enhance their thinking skills. For example, most of the students stated that online tools helped to create a blog or new information. As the these students believe: S1KU "yes for instance to create something or Post, when I post then I get comments on it, the comments help me to make better one". S4KU "yes why not , it can help to be creative, you see the creative minds there , you become motivated to be creative, you see everything new and you think why I should not bring something new". Some students believed that using online tools can provide opportunity to take part, and create something new. They also stated that using online tools helped them to criticize on others' ideas and information as pointed out by these students: S21KAU "yes we have to be operational, we have to shows something from ourselves, it leads the students to be more active, creative, and use our thinking" S27KAU "criticize ideas, analyze ideas, and create information" S31AUAF, "For example I had blogs when I was out of Afghanistan, and using blogs can help to analyze and create information". Therefore, the interview data

shows that students perceive the positive effects of using online tools in the learning process to enhance thinking skills.

Discussion and Recommendation: The findings of survey questionnaire, and interview session with related literature are discussed.

Can Online Tools Assist Students with their Thinking Skills?:

In this study, a survey questionnaire was developed, and distributed to ask students to indicate their level of agreement or disagreement using Likert-type scale on the effects of online tools in their thinking. The questionnaire was developed based on Bloom's cognitive domain. The bloom's cognitive domain is divided into six sub domains namely remembering, understanding, applying, analyzing, evaluating, and creating. This division can be named as lower order thinking and higher order of thinking. The findings revealed that students' lower order of thinking could be enhanced better than the higher order of thinking. The remembering domain showed the highest mean among the rest of domain listed. They believed using online tools helped them to search the web for more information, give examples on other's information posted and select a topic for discussion. In the remembering domain they also believed that online tools helped them to explain a topic on social networking sites and socialize with classmates. The study found using online tools helped them in the higher order of thinking. They believed using online tools helped them in the analyzing and evaluating domain. They used online tools to reorganize the shared information, mind map and ask question. Moreover, students believed using online tools helped them to discuss possible solutions to a problem, collaborate, and provide feedback.

The study also revealed that using online tools helped them in the creation domain. They used online tools to design a weblog, create multimedia presentation and produce YouTube video. The study also showed that applying online tools helped students to develop a discussion, and criticize on others' ideas and information. These findings are supported by the previous studies. Online tools are suitable for learning and thinking²⁶. Both higher and lower order of thinking enhanced through using online tools but especially higher order of thinking which showed significant enhanced. In ord to enhance their critical thinking, students should support in appropriate discussion by asking suitable questions, and sharing ideas. This could enhance students' higher order of thinking in the lesson. Blogs and wikis facilitate critical thinking and learning⁴. These two online tools provide collaborative communication for students. Therefore, using online tools could enhance students' thinking skills during the learning process. The findings of this study may recommend to MoHE and authorities of the Afghanistan universities of possible utilization of technology especially online tools for teaching and learning. Preparing students for the 21st century skills and knowledge, the teaching and learning process needs to be revised and more focus should be given on student-centered learning, problem solving and creativity. Technology allows students actively take part in the learning process in order to enhance their thinking skills.

Online tools assist students to collaborate, communicate, share, and create ideas, information and knowledge.

Conclusion

The study tries to investigate the perceptions of Afghanistan students on the use of online tools on their thinking skills. The findings showed that majority of the participants agreed on the positive effects of using online tools on their thinking. The participants generally believed using online tools could help them better in the lower order than the higher order of thinking. They stated that using online tools helped them to search, share and edit information, socialize with their classmates and run a discussion. However, the participants also believed that using online tools helped them in the higher order of thinking where they can collaborate, produce YouTube video to share their ideas, provide feedback, and develop a discussion. These findings are supported by previous studies. Most of the students are engaged in using social networking sites mainly to socialize with their friends and classmates, and it has positive impact on their academic activities²⁷. Using web 2.0 tools assist students to interact, exchange ideas, and information²⁸. There are several pedagogical advantages of using web 2.0 tools for students such as to publish their work internationally, collaborate, interact, and share information¹. Social networking emphasis on peer interaction and its goal is to provide an environment where students can share their personal information, experience, and construct knowledge²⁹. Therefore, using web 2.0, and online tools assist students to enhance their thinking skills. Online tools can provide numerous useful activities for students to enhance their thinking skills such as to communicate, collaborate, and share information and knowledge. The findings also revealed that in Afghanistan context, there were not too much differences between public and private universities in terms of online tools utilization. This is probably because the use of technology in Afghanistan universities, whether it is private or public universities, is still new. Much has to be done for the teachers and in-class environment and facilities for students to fully experience advantageous teaching and learning using online tools.

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