Comparison of Pedagogical Effectiveness of Web1.0 and Web 2.0 Technologies in Global Learning

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Abstract. The study examined how the instructional activities using different Web technologies affected students' global learning. The participants were students enrolled in teacher education programs in three different cultural settings. A quasi-experimental design and six instructional modules using Web technologies were used as a method of this study. Data were drawn from four sources: pre- and post-surveys, interaction logs, reflections, and focused group interviews. The article discusses what factors need to be considered when educators create their learning environment and instructional activities for global learning.

Keywords: Web technologies, Global learning

1 Introduction

In this interconnected society, global awareness and citizenship has been significantly emphasized in K-12 schools as well as in higher education. It is important that students begin developing a deeper understanding of the world's economic, social, and political issues. Accordingly, educators should provide students opportunities to have a better understanding of the interrelatedness of world history and global issues such as economy, environment, education systems and technological systems, and their impact at both local and global levels[1]. Global learning can be defined as an educational process that enhances one's competencies for participating productively and responsibly in the international, intercultural, and interconnected world [2].

In this research, we conducted global learning with students enrolled in teacher education programs in the three different cultural settings: Midwest and Southern regions of the United States and a region of East Asia. The aim of this study was to examine how the use of different technology tools (Web 1.0 vs. Web 2.0) affects students' global learning. In addition, the aim included suggesting factors are needed to consider when educators create their learning environment and instructional activities for global learning.

The following research questions were addressed in this study:

1) Is there a significant difference between two groups using Web 1.0 vs. Web 2.0 technologies on students' global learning attitudes such as motivation, interest, and engagement?
2) What factors need to be considered for global learning in a cross cultural learning environment?

2 Literature Review

2.1 Global learning

There have been several studies on the global learning in higher educations. Wang [3] investigated the instructional design for forming a cross-cultural group from the United States and Taiwan, and designing the assignments for online cross-cultural collaboration projects. The result of the research indicated the importance of building a sense of learning community and taking advantage of integrating multimedia for assignment and Web 2.0 tools for informal communication. Scovottie and Spiller [4] used video conferencing for a class project involving a semester long international collaboration conducted by students at two different universities; American and German. Their findings showed that the use of videoconferencing promoted stronger relationships among distributed team members and increased student satisfaction with the cross-border assignment.

3 Methodology

3.1 Research design

Study participants included 52 students from three different classes in teacher education programs. Two classes were from universities in the Midwest region and in the southern area of the United States, and the other class was from a university in South Korea. In order to investigate the differences between Web 1.0 and Web 2.0 technologies' effects on students' global learning, all participants at each of the three sites were randomly divided into two groups: Group A and Group B. Each group had 4 teams that consisted of 6-7 students who were from three sites. Six instructional modules using Web 1.0 or Web 2.0 applications developed by the three instructors were implemented for 8 weeks.

The study used a mixed method of quantitative investigation and qualitative nature of students' experiences with Web 2.0 social media technologies. The quantitative data was gathered through the pre-survey (Time I) and post-surveys (Time II & III) at the beginning of the treatments and at the end of the treatments. The primary sources

of qualitative data were the interactions and discussion logs on the technologies. The students were required to participate in the group discussions and interactions at least twice in Module 3 and 6. Three focused groups, including 3-5 students per group on each site, were interviewed about their global learning experiences with technology tools

Data was gathered from participants in the United States and Korea in the fall of 2011. The descriptive and statistical data analyses were conducted to analyze the quantitative data gathered from the surveys. For the surveys, t-Test analysis was used to compare the differences between Web 1.0 and Web 2.0 technologies. For the qualitative data analysis, the researchers reviewed the interaction and discussion logs with Web 1.0 and Web 2.0 tools. The interview and reflection data were identified by the themes/codes relevant to the current investigation.

4 Result and discussion

The data was analyzed by the mixed approach of quantitative and qualitative methods to examine how Web 1.0 and Web 2.0 tools affect students' global learning, compare efficacy of Web 1.0 and Web 2.0 tools in a global learning environment, and identify factors to be considered for designing global learning environments. Overall, the majority of participants found that their cross cultural learning experiences using Web 2.0 were very positive and meaningful to their learning and teaching.

4.1 Comparison of efficacy of Web 1.0 and Web 2.0

The results of t-Tests conducted to compare the differences between Web 1.0 and Web 2.0 technologies in global learning environments are shown in Table 1 and Table 2. Since the p values for the both Post Survey-I (p=0.98) and Post Survey-II (p=0.16) are higher than 0.05, there is no statistical significant difference between the two groups using Web 1.0 or Web 2.0 tools. The results could be due to the fact that the experiment was conducted during a short term time period, so it would be hard for learners to get accustomed to the Web 2.0 Tools and to have confidence in using them. However, more than 75% of the participants preferred Web 2.0 to Web 1.0 tools.

Table 1. The t-Test Result of Post Survey – I

	Web 1.0	Web 2.0
Mean	8.62	8.625
Variance	0.359714286	0.0916
Observations	8	8
Hypothesized Mean Difference	0	
df	10	
t Stat	-0.021051132	
P(T<=t) one-tail	0.491809493	
t Critical one-tail	1.812461123	
P(T<=t) two-tail	0.983618987	
t Critical two-tail	2.228138852	

Table 2. The t-Test Result of Post Survey – II

	Web 1.0	Web 2.0
Mean	8.87625	8.605
Variance	0.129741071	0.144028571
Observations	8	8
Hypothesized Mean Difference	0	
df	14	
t Stat	1.466297505	
P(T<=t) one-tail	0.082333452	
t Critical one-tail	1.761310136	
P(T<=t) two-tail	0.164666905	
t Critical two-tail	2.144786688	

4.2 Results of the focused interviews

The results of the focused interview report the participants' learning experiences, applications in their own classroom, and suggestions for future projects. Overall, learning through Web technologies proved to be more insightful for the students. They gained a better appreciation for different cultures and understood its meaning through a direct line of communication. This allowed the students to get a quicker response in order to share information openly. Also, students gained a better perspective of the other culture because it was not taught through typical forms of education. Students actually interacted with people from different cultures and used the information they were given to compare misconceptions or curiosities through global learning.

5 Conclusion and Discussion

This paper has presented how the use of different technology tools (Web 1.0 vs. Web 2.0) in the global learning environment affects students' global learning. The survey findings showed that there were no significant differences between Web 1.0 and Web 2.0 technologies. However, the interview data and reflective essays showed that the participants felt more favorable towards Web 2.0 technologies. They indicated very high interests in new tools such as Wiki and Glog. But the quality of interactions through Web 1.0 was better than Web 2.0. In addition, some Korean students felt comfortable with Web 1.0 than Web 2.0 because of their language problems. Therefore it means that Web 1.0 can be used as supplementary tools of Web 2.0 in global learning.

The challenges perceived during the cross-cultural collaboration were time differences and language barriers. This study designed instructional strategies for lowering the pressure of language barriers of students by supporting the use of multimedia like photos and videos. Although those strategies helped to reduce students' pressure to the extent, Korean students still felt that it was a burden to communicate with American students. Thus, strategies for facilitating communication and reducing the impact of language barriers should be considered in the instructional design for global learning.

References

1. Hovland, K.: Global Learning: What is it? Who is responsible for it? Peer Review, 11(4), 4-7. (2009).Chen, C. Cultural diversity in instructional design for technology-based education. British Journal of Educational Technology, 38(6), 1113–1116. (2007).
2. Rugg, E., Papp, D., Black, L., & Morris, B.: Engaging a university's leadership team in elevating global learning. Presented at NAFSA 2008 Annual Conference, Washington, D.C. (2008).
3. Wang, M.: Instructional design for cross-cultural online collaboration: Grouping strategies and assignment design. Australasian Journal of Educational Technology, 27(2), 243-258. (2011).
4. Scovotti, C., & Spiller, L. D.: Cross-Border Student Collaborations**:** Opportunities for Videoconferencing. Marketing Education Review, 21(1), 57-62, DOI: 10.2753/MER1052-8008210108. (2011).
5. Zhu,C., Valcke, M., & Schellens, T.: A cross-cultural study of online collaborative learning. Multicultural Education & Technology Journal, 3(1), 33 – 46. (2009).