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Editorial

Instructional Design 1: Instructional Technology

Donald G. Perrin

In 1961, Professor James D. Finn returned to his office at the University of Southern California, summoned his faculty and graduate students to an informal meeting, and invited them to discuss a name change for the field of audiovisual. Finn just returned from a weekend with Charles F. Hoban, a fellow Irishman, at Pennsylvania State University In 1953 Hoban published the *Instructional Film Research Reports: Rapid Mass Learning* under a joint Army-navy contract directed by C. Ray Carpenter. This report summarized the research conducted on learning from films and filmstrips during World War II. Finn and Hoban had been discussing the relevance of the name *audiovisual* to newer technologies like teaching machines and computers.

They determined that audiovisual was too limiting because it did not encompass a growing range of technologies to support learning. A growing body of research on teaching and learning was pushing what was audiovisual into design, production, evaluation, and related areas. Media were being used for individualized as well as large group instruction. And starting with the language laboratory, media were becoming more interactive – not mere delivery systems. The assembled group came to similar conclusions to those of Finn and Hoban. Audiovisual needed a name and expansive definition that would serve long in to the future - a name that encompassed aspects of technology and instruction The new discipline should be called instructional technology.

This led to many meetings, committees and commissions to study this new discipline. In 1970, the Commission on Instructional Technology published its findings in two volumes

> Tickton, Sidney G. (ed.) (1970) To Improve Learning: An Evaluation of Instructional Technology., New York: Bowker Company.

In the introduction, it stated:

> "Instructional technology can be defined in two ways. In its more familiar sense, it means the media born of the communications revolution which can be used for instructional purposes alongside the teacher, textbook, and blackboard. In general, the Commission's report follows this usage. In order to reflect present-day reality, the Commission has had to look at the pieces that make up instructional technology: television, films, overhead projectors, computers, and the other items of 'hardware' and 'software' (to use the convenient jargon that distinguishes machines from programs). In nearly every case, these media have entered education independently, and still operate more in isolation than in combination.
>
> The second and less familiar definition of instructional technology goes beyond any particular medium or device. In this sense, **instructional technology** is more than the sum of its parts. It **is a systematic way of designing, carrying out, and evaluating the total process of learning and teaching in terms of specific objectives, based on research in human learning and communication, and employing a combination of human and nonhuman resources to bring about more effective instruction**."

This definition puts learning, the ultimate goal, ahead of teaching. It embodies systems of learning involving men and machines with other kinds of instructional resources. It paved the way for Jerry Kemps 1971 concept of instructional design where goals and learner characteristics are the basis of learning objectives, content and pre-assessment; selection or design and production of learning resources; implementation and evaluation. He conceived this as a cyclic process, adopted two decades later by the quality movement as continuous quality improvement.

Kemp, Jerrold E. (1977). Instructional Design: A Plan for Unit and Course Development. Fearon Publishers.

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Editor's Note: Widespread availability of mobile communication devices provides new opportunities for teaching and learning by increasing accessibility, frequency and relevance of communications. This study showed positive results for the connected students and encourages testing in other contexts.

SMS-based assessment affecting Iranian EFL learners' achievement in grammatical points

Hamid Ashraf and Reyhaneh Salehi
Iran

Abstract

Information communication technology has opened new areas in the field of teaching and learning languages as well as language testing. The purpose of this study is to examine the effect of mobile SMS-based assessment in relation to the achievement of grammatical points amongst Iranian EFL learners studying in junior high schools. For this aim, 40 students were selected randomly, having taken a homogenizing test and right after that they were divided into experimental and control groups. Both groups were given the same pretest at the beginning of the study. One teacher taught grammatical points to both groups while she was trying to keep all learning processes as much equal as possible. During 20 sessions in 10 weeks of instruction, the teacher assessed the learners' knowledge by using SMS in the experimental group and paper and pencil technique in control group. After application of the posttest, which was like the pretest, a descriptive analysis of the results was carried out to make a comparison between the two groups. The findings showed statistically significant differences between means of the control group and the experimental group, i.e. the experimental group who received the treatment achieved higher scores in comparison with the control group. As a consequence, the proposed method of testing through mobile SMS proved to be effective in helping these students learn grammatical points better than the traditional paper and pencil method.

Keywords: SMS-based assessment, achievement in grammatical points.

Introduction

Nowadays, in almost every society, including developing ones, we rarely see a person who does not carry a small screen magic device. People all over the world are walking around with powerful computers in their pockets and purses. This happens in business situations and in educational systems with different purposes. Mobile technology has gained prominence in personal and educational aspects of people's lives. Research is being carried out to determine effective uses of these popular devices for different teaching and learning purposes. Sharples, Taylor and Vavoulat (2005) believe there is a need to re-conceptualize learning for the mobile age to recognize the essential role of mobility and communication in the process of learning.

Traditional assessment modes in crowded classrooms can be a serious load on the instructors (Mercier et al., 2004; Kim, 2005). The traditional classroom, teacher, textbooks and blackboard can no longer satisfy the needs of generations of students who have handled technological tools since their childhood (Vinc and Cucchi, 2010). In the traditional setting, both questions and answers were written on a printed piece of paper. Today, non-traditional tools such as computers and mobile communication devices can be used to assess a learners' knowledge and ability to perform a task or answer a question. Using and integrating new technologies like mobile phones could be beneficial to design more appropriate pedagogy and curriculum to help the learner, who is the focus of the teaching and learning process. It can assist the instructor as facilitator to provide required information and feedback in order to get the best results out of their work.

Students could reach information systems, discussion times, course scores and tests by using mobile phones whenever and wherever they want. According to a study conducted by Vavoula, few people actually utilize the time spent in transit to learn (Sharples, Taylor, &Vavoula, 2005). Mobile learning (M-Learning) makes education more accessible and enables learners to pursue studies according to their own schedules (Muhanna, 2011).

In the study, a new aspect of M-learning uses short message service (SMS) associated with mobile devices (phones, PDAs) for learning and assessment. Learners receive a number of grammatical points for their course in the form of SMS from their teacher followed by biweekly formative assessments.

Review of the literature

During the past decade, rapid developments have occurred in the scope, uses and convergence of mobile hand-held computing, communications and information devices and services (Tuomi, and Multisilta, 2012).

Mobile learning and technology

Mobile learning is the subject of numerous recent studies. In *Computers and Education*, Sharples (2000) discussed the potential for new designs in personal mobile technologies that could enhance adult educational opportunities and lifelong learning programs. Many, if not all, of the ideas raised in Sharples' early article are still evolving and are of interest to M-Learning today. In mobile learning, learners can be continually on the move. They are not just moving from one place to another, they also move from one context to another and from one technology to another (Tuomi, and Multisilta, 2012). Chinnery (2006) and Zhao (2005) reported language-learning opportunities in technology that includes PDAs, multimedia cellular phones, MP3 players, and DVD players. These technologies have been explored and used for language learning due to their popularity. For example, researchers expect learners to use their mobile phones simply because they own one (Hsu, Wang & Comac, 2008). M-Learning increases access for those who are mobile or cannot physically attend learning institutions - those who would not otherwise be able to attend courses in a traditional educational setting due to the constraints of work, household activities, and other competing demands on their time (Muhanna, 2011). Whereas in traditional models of education the goal is the transfer of knowledge from teacher to student, M-Learning empowers students to actively participate in the learning process and to make it a process of construction, not mere instruction (dela Pena-Bandalaria, 2007). Mobile learning also facilitates designs for authentic learning, meaning learning that targets real-world problems and involves projects of relevance and interest to the learner (Kukulska- Hulme&Traxler 2007; Traxler, 2007).

Some previous studies stressed that different versions of technologies have considerable influence on enhancing the learning process in a supportive manner. The use of WAP or SMS based tests through PDA, PALM, mobile phone or computer in higher education has been promoted to support and enhance the learning process of the students, offer media exercises and provide the opportunity to test the level of learning achieved (Dawabi, Wessner and Neuhold, 2003; Kennedy and Sugden, 2003; Evans and Taylor, 2004; Mercier, et al., 2004; Lim and Lim, 2006; Scornavacca and Marshall, 2007; Wentling, Parkz and Peiper, 2007).

The possibility of using mobiles in education has grown rapidly along with other technological tools such as PCs. Employees, business persons and students are using mobiles phones; therefore, this kind of technology can modify the way of doing in education. It is a sort of revolution that could change the relationship between students and teachers through technology to create new learning environments (Vinc and Cucchi, 2010). However, M-Learning represents a challenge for students and teachers due to its ongoing changes.

Advantages of short message service (SMS)

Mobile learning in general and learning through SMS are impacting educational systems in different countries. Mobility permits users to gain access to service/information anywhere at any time via mobile devices. In other words, mobility brings the ability to guide and support users in new learning situations whenever and wherever it is necessary. (Norazah Mohd SUKI, 2011). Mobile learning has been described by many as 'just-in-time learning' or 'right time learning'. Supporting comments include: 'There's a real opportunity for access to knowledge or learning on a time-needed basis' and 'Mobile devices offer flexible access to learning at times that are most convenient' (Norman, 2011). M-Learning has been used to help students who are outside formal education, who have abandoned their studies, teenagers no longer motivated by traditional curricula, and also to prevent the risk of leaving school (Vinc and Cucchi, 2010).

The advantages of Short Message Service within M-learning approach in educational contexts have been mentioned by Lomine and Buckingham (2009) in the following statement:

- Quick, discreet, to the point and inexpensive
- Can improve student motivation and retention
- Can involve students more actively/interactively
- Can contact any group or individual immediately
- Students can text in for help and advice
- No need for familiarization or training

The success of SMS supported learning in a number of different settings is mostly attributed to its flexibility and ubiquity *(Petrova, Li, 2011)*. SMS allows the development of relatively simple learning activities that can be structured, are interactive, and can become personalized (Stone, 2004; Virvou & Alepis, 2005). Also, according to the results of the study by Motallebzadeh and Ganjali (2011) on SMS as a Tool for L2 Vocabulary Retention and Reading Comprehension Ability, participants in SMS group could significantly outperform the ones in conventional/paper group, confirming the results found by Lu (2008) and Hulstijn and Laufer (2001) stating that mobile phones can be an effective medium for self-learning L2 vocabulary. The obtained results also showed that acquiring vocabularies sent through SMS can be effective in improving learners reading comprehension scores.

It is worthwhile here to mention that in the world of teaching and learning a foreign language, many researches have been done on different aspects of M-learning in educational system to investigate its various effects on learners. However, most of these studies are related to learning vocabulary through SMS, there was not much evidence for learning and assessing the other skills in this way. Therefore, the researchers in this study have come up with a related new area of research to investigate the process of assessing the learners' achievement in grammatical points via using SMS. They have carefully managed the research aspect of learning in order to get the pure and reliable results.

The main purpose of this study is to investigate the effective use of SMS-based assessment in learning grammatical points within mobile learning approach. The other purpose is to make a comparison between mean scores of the group using SMS-based assessment and those who were assessed in traditional paper-based assessment.

In order to fulfill the purpose of this study the following questions have been raised by the researchers:

Q1: Does the use of SMS-based assessment have any significant impact on Iranian EFL learners' achievement in grammatical points?

Q2: Is there any significant difference between mean scores of the group assessed through SMS and the group with traditional system?

The following null hypotheses have been proposed:

H0 1: The use of SMS-based assessment has no significant impact on Iranian EFL learners' achievement in grammatical points.

H0 2: There is no significant difference between the means scores of the group assessed through SMS and the group with traditional system.

Methodology

Participants

In order to test the stated hypotheses, 40 students out of 50 learners studying in junior high schools in Mashhad, Iran participated in this study. To ignore the effect of gender and age, all of them were female EFL learners with the age of 17 to 19. They were selected randomly and then divided into two 20-participant groups. One group (experimental group) that received the treatment was evaluated using SMS-based assessment, while the performance of other group (control group) was assessed using paper and pencil-based assessment.

Instrumentation

To gather the required data, the following instruments were used during the implementation of the research:

Proficiency Test: For the current study, the Nelson Test developed by Fowler, W.S. & Coe, N. (1976) was administered among all the participants at the beginning of the study. The test contained 50 items and the reliability index of this test was estimated through Cronbach's Alpha as .824. It was administrated in order to obtain a homogenous sample, and to make sure that all participants were at the same level of language proficiency at the outset of the study. The researchers did not include learners whose scores were not within the range of one standard deviation above or below the mean.

Researcher-made test: In order to assess the participants' level of achievement throughout the study, KET grammar test was used as the pre/posttest. This test contained 25 multiple-choice questions focusing on grammar and language used at KET Level (A2). In other words, the **difficulty level** of test was A2 which was related to Upper Intermediates and both groups of participants took it before and after the treatment.

Procedure

A proficiency test was administered to 112 female students studying in junior high schools in Mashhad, Iran in order to assure the participants' homogeneity at the outset of the study. Having analyzed the data, the researchers selected forty participants who were suitable for the purpose of this study. Therefore, they were randomly assigned into two equal experimental and control groups (N=20). Then, the participants in both groups took a pretest. Throughout 20 sessions of instruction within 10 weeks, some English lessons and example sentences focusing on grammatical points were presented to the participants in experimental group through SMS. Each message included two or three grammatical points and some examples. In other words, learners in experimental group were receiving a number of grammatical points of their course in the form of SMS sending from their teacher and then following by biweekly formative assessments.

In control group, the participants were treated in traditional system; i.e. they were given the same structural points and examples on the paper and they were also had the same biweekly assessments of those having finished the treatment, the participants in both groups took the posttest. The researchers administered the pretest as posttest to see the effects of the treatment throughout the study. The interval time between the pre-test and the post-test was 10 weeks which was long enough to reduce the effects of the pre-test on the results of the study.

Results and discussions

Having collected the required data, the researchers conducted the analysis of data in order to find the appropriate answers for the research questions of the present study. This process involved analyzing data and developing a conclusion whether the treatment had any impact on the learners' achievement in grammatical points.

Results of the analysis of pretest and posttest

The significance of the difference among the obtained means of experimental and control groups in the pretest and posttest is shown in Table 1.

Table 1

Results of analysis of pretest and posttest

Groups	N	Mean- Pretest		Mean- Posttest	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Experimental	20	24.2500	.49670	27.4500	.32016
Control	20	24.0500	.60903	25.2000	.48450
Valid N	20				

As Table 1 reveals, there is no significant difference between the mean scores of pretest in control (*M* =24.05) and experimental (*M= 24.25)* groups. Therefore, it can be said that the participants possessed similar grammatical knowledge of English based on their level of proficiency before the treatment. However, it also indicates that the learners in experimental group gained higher scores than the learners did in control group in posttest (27.45>25.2).

In order to compare the performances of the participants in experimental and control groups over the whole test and to examine the effect of the treatment, t-test analysis for pretest and posttest was used. Table 2 and 3 summarize the results of this analysis.

Results of study pretest

In order to analyze and make a comparison of the participants' performances on the researchers-made test in control and experimental groups at the outset of the study, an independent-sample t-test was conducted.

Table 2

Results of t-test analysis for study pretest

Total	*Levene's test for Equality of Variances*		*t-test for Equality of Means*						
	F	*Sig.*	*t*	*df*	*Sig. (2-tailed)*	*Mean Difference*	*Std. Error Difference*	*95% Confidence Interval of the Difference*	
								Lower	*Upper*
Equal variances assumed	.552	.462	.605	37	.549	.46053	.76123	-1.08188	2.00293
Equal variances not assumed			.603	35.822	.550	.46053	.76383	-1.08885	2.00990

As Table 2 indicates, t is lower than critical t (t (38) =2.02), i.e. 0.6<2.02, therefore there is no significant difference between the performances of experimental and control groups over the pretest and it shows that both experimental and control groups were similar before the implementation of treatment.

Results of Study Posttest

The participants in control and experimental groups took the same pretest as the study posttest. Here, a t-test analysis was conducted to compare the scores of both groups (Table 3).

Table 3
Results of t-test analysis for study posttest

	Levene's Test for Equality of Variances		t-test for Equality of Means						
								95% Confidence Interval of the Difference	
Total	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	1.967	.169	3.874	38	.000	2.25000	.58072	1.07439	3.42561
Equal variances not assumed			3.874	32.936	.000	2.25000	.58072	1.06843	3.43157

As Table 3 indicates, the calculated *t* of 3.87 is larger than critical value of t (t (38) =2.02), therefore it can be assumed that we are safe in rejecting the null hypotheses. So, we can conclude that there is a significant difference in the means and the performances of experimental and control groups over the posttest and such differences could not be due to chance.

Conclusions

The findings of this study are in support of the important and positive side of mobile learning; i.e. the ability for the user to get learning done when they move from one place to another, via mobile devices (Tuomi, and Multisilta, 2012). Mobile phones as a tool and SMS as an application can facilitate certain forms of learning. Since the text messages can be easily sent at predetermined times and intervals, they can be stored systematically and accessible for later retrievals (Motallebzadeh and Ganjali, 2011). According to the results of this study, participants in SMS group could significantly outperform the ones in traditional group, therefore SMS-based assessment strategy seems to have a significant effect on the Iranian EFL learners' achievement in grammatical points. Consequently, the proposed method of testing through mobile SMS proved to be effective in helping these students learn grammatical points better than the traditional paper and pencil method.

Pedagogical implications

Any discussion of the pedagogical implications of the results of this research into a form of language assessment necessarily focuses on the washback effect of this kind of assessment; i.e. the effect of SMS-based assessment which might have on teaching and learning. Therefore, the students and teachers should be given a chance to improve the process of teaching and learning by experiencing a new way of assessment which is quietly different from conventional board and paper technique for the same process but we should also keep it in mind that although SMS-based

assessment might be seen as an appropriate alternative to traditional approaches of assessment, there are some concerns about it, particularly when used for large scale performance evaluation. We also encourage the educators to consider the great positive mirroring of different methods of mobile-learning within the framework of e-learning in their teaching programs and the process of curriculum designs together. Use of mobile learning and especially SMS-oriented methods for assessing the learners' knowledge can also enhance and increase the visibility of the learners' work and accomplishments inside and outside the formal classrooms. Furthermore, integration of new teaching and assessment methodologies will further enhance the image of the profession embraced by the public and continue to reinforce the dynamic, innovative nature of the discipline of their future professions.

Implications for further studies

This study was implemented to junior high school students, but it can be worthwhile if other researches on the same issue are extended to pre-university and university level students.

The current study was conducted to investigate the effect of SMS-based assessment in grammatical points but it is possible for the researchers to investigate the effect of using Short Message Service (SMS) on the improvement of other language sub skills like vocabulary. Also, as all the participants in this study were female, a further area for research can be to investigate the role of gender to check the possible difference between male and female students' performances via SMS-based assessment.

References

Bandalaria, Melinda dP. 2007. Impact of ICTs on Open and Distance Learning in a Developing Country Setting: The Philippine Experience. The International Review of Research in Open and Distance Learning, Vol 8, No 1 (2007), ISSN:1492-3831. http://www.irrodl.org/index.php/irrodl/article/view/334/792.

Chinnery, G. (2006). Emerging Technologies: Going to the MALL: Mobile Assisted Language Learning. *Language Learning & Technology, 10*(1), 9-16. Retrieved November 30, 2006, from http://llt.msu.edu/vol10num1/emerging/default.html.

Dawabi, P., Wessner, M., & Neuhold, E. (2003). Using mobile devices for the classroom of the future. *Proceedings of MLEARN 2003: Learning with Mobile Devices* (pp. 55-60). London, UK: Learning and Skills Development Agency.

Hsu, H. Y., Wang, S. K., & Comac, L. (2008). Using audioblogs to assist English-language learning: An investigation into student perception. *Computer Assisted Language Learning, 21*(2), 181-198.

Hulstijn, J.H., & Laufer B. (2001). Some empirical evidence for the involvement load hypotheses in vocabulary acquisition. *Language Learning. . 51*,539-558.

Kennedy, G., and Sugden, B. (2003). EBNA-1: A Bifunctional Transcriptional Activator. Mol. Cell. Biol., 23: 6901-6908.

Kukulska- Hulme, A., &Traxler, J. (2007). Designed and user-generated activity in the mobile age. *Journal of learning design.*

Livingston, A. (2004). Smartphones and Other Mobile Devices: The Swiss Army Knives of the 21st Century. *EDUCAUSE Quarterly*, *2*, 46-52.

Lomine, L., & Buckingham, C. (2009). M-Learning. Texting (SMS) as a teaching and learning tool in higher arts education. Winchester University, Faculty of Arts, UK.

Lu, M. (2008). Effectiveness of vocabulary learning via mobile phone. *Journal of Computer Assisted Learning*, *24*: 515-525.

Motallebzadeh, K., & Ganjali, R.(2011). SMS: Tool for L2 vocabulary retention and reading comprehension ability. *Journal of Language Teaching and Research, 2, pp*. 1111-1115.

Norazah M. S. (2011). Factors affecting third generation (3G) mobile service acceptance: Evidence from Malaysia. *Journal of Internet Banking and Commerce, April 2011, Vol. 16, No.1, pp*. 1-11.

Petrova, K.**,** & Li, C. (2011). Supporting mobile learners: An action research project. *International Journal of Web-Based Learning and Teaching Technologies, 6(3), 46-65.*

Scornavacca, E. and Marshall, S. (2007) "txt-2-lrn: improving students' learning experience in the classroom through interactive sms" *40th hawaiian international conference on system sciences. Hawaii. January.*

Sharples M, Taylor J. and Vavoula G., 2005, Towards a Theory of Mobile Learning. *In Proceedings of m Learn 2005 Conference, Cape Town, South Africa, 2005.*

Traxler, J.(2007). Defining, discussing and evaluating mobile education. *International Review of Research in Open and Distance Learning*.

Tuomi, P., Multisilta, J. (2012) Comparative Study on Use of Mobile Videos in Elementary and Middle School. *International Journal of Computer Information Systems and Industrial Management Applications. Vol. 4. 255266*.

Vinci, M. & Cucchi, D. (2010). Possibilities of application of e-tools in education: mobile learning. Florence / Italy.

Virvou M. & Alepis E. (2005). Mobile and electronic medical support and education for dyslexic students. *In Proceedings of the 2005 IEEE 7th International Workshop on Mathematical Methods in Scattering Theory and Biomedical Engineering, 8-11 September, Greece, to appear.*

Wentling, T. L.; Park, J.; Peiper, C. (2007). Learning gains associated with annotation and communication software designed for large undergraduate classes. *Journal of Computer Assisted Learning* vol. 23 issue 1. pp. 36-46.

Zhao, F., (2005). "Exploring the synergy between entrepreneurship and innovation", *International Journal of Entrepreneurial Behaviour & Research, Vol. 11 Iss: 1, pp.25 – 41.*

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Editor's Note: This study opens the discourse on how courses should be adapted to optimize language learning in an online environment.

Teaching Presence in a Virtual Language Learning Environment

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Iran

Abstract

This study aimed to investigate the extent to which teaching presence, one of the elements of the Community of Inquiry (CoI) framework, exists in two virtual language teaching centers of Iran. The participants of the study consisted of 107 students attending college virtually at Bachelor of Science (B.Sc.) level. A questionnaire was developed by the researchers on the basis of the indicators of teaching element of the CoI framework. The analysis of the questionnaire data showed that (a) considering the categories of teaching presence, the Facilitating discourse category appeared more frequently than others in virtual centers of this study, and (b) the indicators of Acknowledging contribution, Time parameter, Sharing personal meaning, and Encouraging and reinforcing contribution were hierarchically frequent.

Keywords: community of Inquiry, teaching presence, cognitive presence, social presence, design and organization, facilitating discourse, direct instruction

Introduction

"The future of education is e-learning and a vision based on a deep understanding of its potential" (Garrison & Anderson, 2003. p. 118). E-learning is transforming teaching and learning in higher education and in times of fundamental change, successful transformation depends not only on strategic development but also on the sound theoretical and conceptual bases. A number of universities and virtual centers in Iran are making substantial investments in e-learning, and there is a continuing growth in the enrollment of such courses in those institutions. However, due to the lack of strategic direction and coherent approaches, there is little benefit or fundamental change. This study is a descriptive research on the framework suggested by Garrison, Anderson, and Archer (2000). It aims to investigate the extent to which the indicators and categories of teaching presence as one of the elements of the CoI framework exist in virtual environment of two Iranian universities from the perspective of virtual students. It is important to note that this study is the first investigating this element of the CoI model with regard to Iranian virtual students' perspectives. In addition, it tries to help answer calls for developing a conceptually grounded basis for examining the processes of virtual language learning.

Literature Survey

The literature mainly consists of CoI framework, the teaching presence (i.e., one of the elements of this framework), and the categories of teaching presence which are discussed below.

Community of Inquiry

Garrison, Anderson, and Archer (2000) developed a model of a Community of Inquiry (CoI), which combines cognitive presence, teaching presence, and social presence. Garrison (2009) defined social presence as "the ability of participants to identify with the community (e.g., course of study), communicate purposefully in a trusting environment, and develop inter-personal relationships by way of projecting their individual personalities". Garrison, Anderson, and Archer (2001), having considered cognitive presence as the heart of an educational experience, argued

that cognitive presence is "the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry" (p. 11). Teaching presence, according to Anderson, Rourke, Garrison, and Archer (2001), is also defined as "the design, facilitation, and direction of cognitive and social process for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes" (p. 5).

The CoI framework reflects the dynamic nature of higher-order learning and has shown to be useful in guiding research and practice in online higher education (Garrison & Arbaugh, 2007). It is grounded in a broad base of research in teaching and learning in higher education (Garrison & Anderson, 2003). The premise of this framework is that higher-order learning is best supported in a community of learners engaged in critical reflection and discourse. The philosophical foundation of the CoI framework, as suggested by Garrison and Archer (2000), is collaborative constructivism, and theoretically it is grounded in the research on deep and meaningful approaches to learning.

The CoI framework, since its initial formulation, has been adopted by educators worldwide. However, it was adapted to meet the needs of educational context. The CoI model has been the most frequently cited theoretical model used to explain online educational experiences, with extensive research having been undertaken around each of the individual presences (Arbaugh, 2007; Garrison & Arbaugh, 2007) and the CoI framework as a whole (Arbaugh et al., 2008). Garrison, Anderson, and Archer (2000) characterized CoI framework, and methods for measuring each of the three elements of this framework were suggested (Anderson, Rourke, Garrison & Archer, 2001; Garrison, Anderson, & Archer, 2001; Rourke, Anderson, Garrison, & Archer, 2001). Further, Rourke et al. (2001) described various methodological issues related to the framework itself.

The validity of the CoI framework and its conceptualizations of the individual elements were examined. For instance, Arbaugh et al. (2008) argued that the instrument that attempts to operationalize Garrison, Anderson, and Archer's (2000) CoI framework is a valid, reliable, and efficient measure of the dimensions of social presence and cognitive presence, thereby providing additional support for the validity of the CoI as a framework for constructing effective online learning environments. Bangert (2009) also provided empirical evidence to support the validity of the CoI model survey.

Teaching Presence

To establish and maintain a CoI requires a thoughtful, focused, and attentive teaching presence. As Anderson, Rourke, Garrison, and Archer (2001) suggested, Teaching presence is "the design, facilitation, and direction of cognitive and social process for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes" (p. 5). As can be deduced from this definition, teaching presence brings all the elements of CoI together in a balanced and functional relationship congruent with the intended outcomes, needs, and capabilities of the learners. Teaching presence can be argued to be a mechanism for bridging the transactional distance between learner and instructor commonly associated with distance education (Moore, 1973, 1983).

Collison, Elbaum, Haavind, and Tinker (2000) described different roles online facilitators can play, advocating 'the guide on the side' style of facilitation for developing a learning community. The voices that a facilitator should utilize when communicating online are: generative guide, conceptual facilitator, reflective guide, personal muse and mediator or role play (Collison et al., 2000). At times the teacher may be a guide on the side (i.e., facilitator), or a sage on the stage (i.e., a direct instructor) – and, at other times, a convergence between the role of an active moderator. All these roles require teaching presence with an educational goal in mind.

Teaching presence consists of three major categories: Design and organization, Facilitating discourse, and Direct instruction. Table 1 shows the indicators of each category.

Table 1

Categories and Indicators of Teaching Presence

Categories	Indicators
Design & organization	Setting curriculum and methods, Designing methods, Establishing time parameters, Utilizing medium effectively, Establishing netiquette, Making macro-level comments about course content
Facilitating discourse	Sharing personal meaning, Identifying areas of agreement/disagreement, Seeking to reach consensus/understanding, Setting climate for learning, Drawing in participants, Prompting discussion, Assessing the efficacy of the process, Encouraging, acknowledging, or reinforcing student contribution
Direct instruction	Focusing discussion on specific issues, Press content/questions, Summarize the discussion, Diagnose misconceptions, Inject knowledge from diverse sources, Responding to technical concerns

Teaching presence has been investigated by a number of researchers (e.g., Burgess, Slate, Rojas-LeBouef, & LaPrairie, 2010; Dringus, Snyder, & Terrell, 2010; Garrison, Cleveland-Innes, & Fung, 2010; Ke, 2010; Shea, Sau Li, & Pickett, 2006; Torras & Mayardomo, 2011; Traphagan, et al., 2010). For instance, Shea et al. (2006) aimed to investigate variations in online learners' sense of classroom community as it was relevant to perceived levels of instructors' teaching presence. To this end, 1067 learners responded to a survey seeking to understand their sense of community in classroom-based and online environments, as assessed by Rovai's Classroom Community Index. They were also asked to rate their instructors' use of three categories of teaching element based on a developed survey entitled "Teaching Presence Scale". The results showed a clear connection between perceived teaching presence and students' sense of learning community. The respondents tended to report higher levels of learning and community. In addition, they reported that the instructors exhibited effective instructional design and organization and directed facilitation of discourse.

Dringus et al. (2010), in a pilot study, investigated if instructors' use of mini audio presentations (MAPs) in online discussions can be considered as an effective facilitation method. A two-part survey, distributed among 34 students, was used to examine the students' perspective towards MAPs as a way to enhance teaching presence, immediacy, and students' participation and satisfaction in the study. The first part consists of the statements from the facilitating discourse subscale of Shea et al.'s (2006) Teaching Presence Scale items. The other part was related to verbal immediacy adapted from Arbaugh (2001) and Gorham (1988). Sixteen students responded to the survey. The results showed a moderate to high agreement with all items on the survey. The findings revealed that the use of audio appeared to facilitate discourse, enhance teaching presence, and sustain dialogue in online discussion forums.

In another study, Burgess et al. (2010) made use of the CoI's Multi-user Virtual Environment Education Evaluation Tool (MUVEEET), and the CoI survey in the multi-user virtual environment (MUVE) and second life. The objectives of the study were (a) to investigate the extent to which graduate level instructional technology students experienced three elements of CoI framework inclass activities held in SL, and (b) to examine the students' perception regarding the experience of the three elements within SL. Participants of the study who were at graduate level (N=10) were purposefully selected. The observational and perceptual data were gathered from their responses to two instruments: MUVEEET and the CoI Survey. This study

suggested the efficacy of assessing social, teaching, and cognitive presences within a MUVE. With regard to teaching presence, the frequency of observations of design and organization, facilitating discourse, direct instruction, logistical focus, side channel control, and teacher representation was 14, which fell in the medium range. The findings revealed that the instructors should support SL instruction by using the CoI framework's survey and/or the MUVEEET for assessment of CoI existence.

Torras and Mayardomo (2011) investigated the relationship between the techno-pedagogical design of an electronic portfolio (Transfolio), the teaching presence focused on the use of the tool and the student regulation processes in the two postgraduate courses. A mixed methodology including a naturalistic observation, content analysis, and comparative statistics was used in this study. Concerning self-regulation and teaching presence, Group 1 received assistance based on techno-pedagogical design while Group 2 received support provided by techno-pedagogical design along with the support of the instructor on the use of the resource. The results of the study indicated that in designing eportfolios, techno-pedagogical considerations should be taken into account. Further, emphasis should be placed upon the importance of teacher–student dialogue in the use of the tool and the learning content. It was also suggested that the teacher must allocate a certain amount of time to make the students familiar with the tool before embarking on the learning activity.

Methods

The participants of this study were 107 Iranian students at Iran University of Science and Technology and Khajeh Nasir Toosi University of Technology. The participants were at a B.Sc. level majoring in "Computer Engineering" (17 participants), "Information Technology" (44 participants), and "Industrial Engineering" (46 participants). In order to carry out the study, students participated in a web-based closed survey. The survey was designed based on the information obtained from reviewing teaching presence of Garrison et al.'s (2000) CoI Model (see appendix A). It was conducted to find out the existence of teaching element, categories, and indicators of this element in virtual centers of this study. The survey consisted of 16 questions with Yes/No responses. To establish the content validity of the questionnaire, the survey was classified based on the indicators and categories of teaching presence (see appendix A).

The final English version of the questionnaire was translated into Persian using a back translation method to assure its validity. A PhD holder in TEFL, three virtual English language instructors, and eight virtual students assessed the content of the translated version of the questionnaire. They were asked to check the questionnaire for possible problems and ambiguities. Necessary changes were made based on the feedback received, and the revised questionnaire was also checked for possible difficulties and obscurities. Two follow-ups, a letter and a copy of the Persian version of the questionnaire were sent via email to 107 virtual students. The researchers clearly explained the purpose of this research to respondents and informed them that to answer the questions, they needed to consider their English language classes in virtual environment. The collected data were analyzed. In other words, the frequencies and percentage of each indicator were determined. Additionally, the descriptive statistics of the categories of teaching presence were calculated.

Results

As described previously, the questionnaire consisted of 16 questions which were written based on the indicators of teaching presence of CoI model. Cronbach's Alpha test was used to estimate the consistency of participants' responses to the questionnaire. The results showed a reliability coefficient of 0.82 which indicated that the responses to the teaching items in the CoI were consistent enough. The descriptive statistics of the indicators of teaching presence is as follows.

Table 1

Frequency, Percentage, and Rank of the Indicators of Teaching Presence

Indicators	Agreement			Disagreement		
	f	*p*	*Rank*	*f*	*p*	*Rank*
Utilizing medium	66	61.7	8	41	38.3	9
Setting curriculum and method	31	29.0	15	76	71.0	2
Establishing netiquette	44	41.1	12	63	58.9	5
Identifying agreement/disagreement	34	31.8	14	73	68.2	3
Time parameters	75	70.1	2	32	29.9	15
Acknowledging contribution	77	72.0	1	30	28.0	16
Setting climate for learning	63	58.9	9	44	41.1	8
Sharing personal meaning	72	67.3	3	35	32.7	14
Encouraging & reinforcing contribution	70	65.4	4	37	34.6	13
Diverse sources	48	44.9	11	59	55.1	6
Summarize	29	27.1	16	78	72.9	1
Technical concerns	36	33.6	13	71	66.4	4
Diagnose misconceptions	52	48.6	10	55	51.4	7
Press content	69	64.5	5	38	35.5	12
Setting curriculum and method	67	62.6	7	40	37.4	10
Designing methods	68	63.6	6	39	36.4	11

As shown in Table 1, Acknowledging contribution, Time parameter, Sharing personal meaning, and Encouraging and reinforcing contribution indicators received the most positive replies, while Summarize, Setting curriculum and method, Identifying agreement and disagreement, and Technical concerns indicators received the least amount of positive replies respectively. The frequency distribution of the indicators of teaching element is presented in Figure1.

As figure 1 demonstrates, the Acknowledging contribution indicator received the highest frequency (f=77) while the lowest frequency belonged to Summarize indicator (f=29).

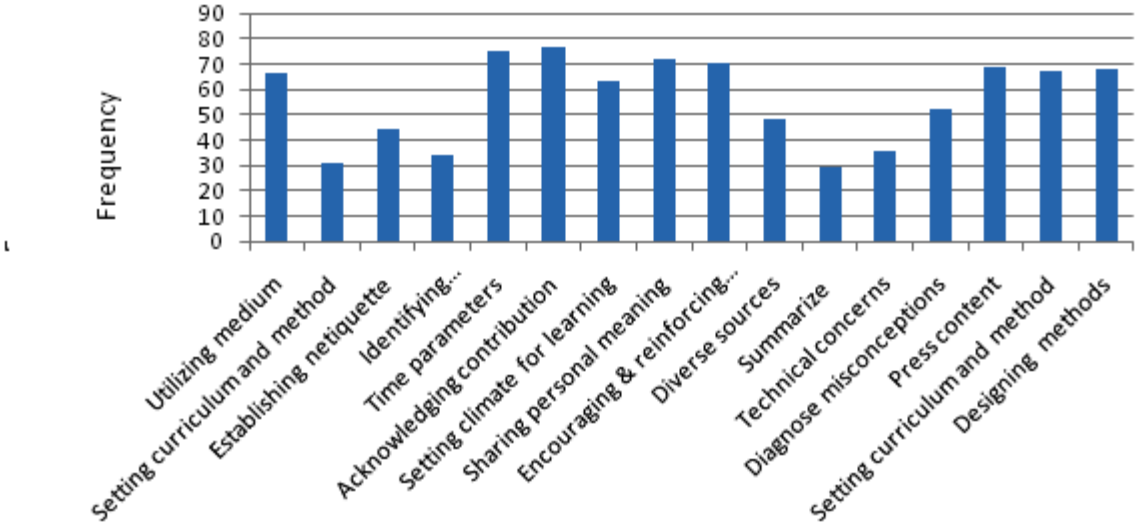

***Figure1*. Frequency Distribution of Indicators of Teaching Presence.**

The means comparison of the categories of teaching presence is illustrated in Figure 2.

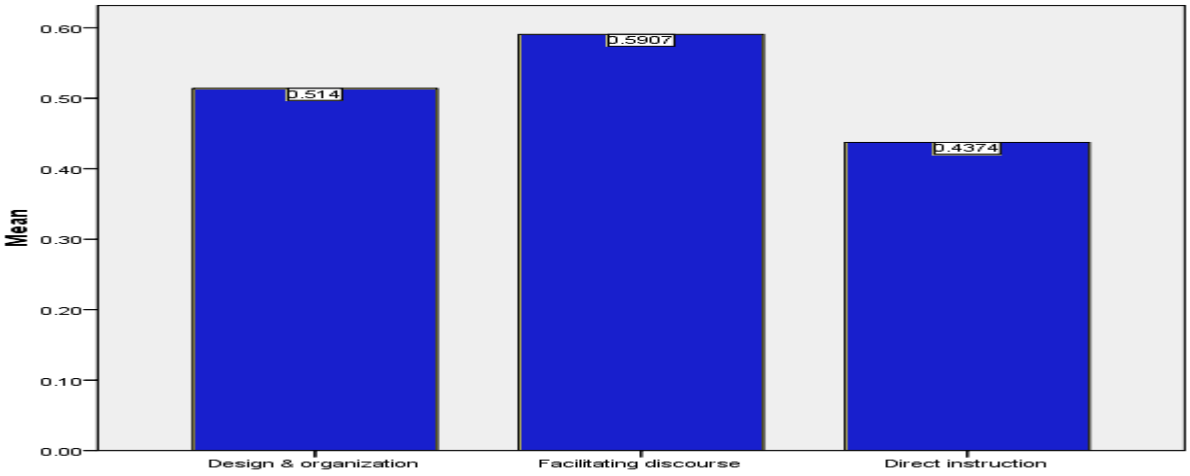

***Figure 2*. Means Comparison Between Categories of Teaching Presence.**

As Figure 2 demonstrates, the Facilitating discourse category appeared more frequently than others and received the highest mean (*M* =0.59) while Direct instruction category accounted for a small proportion of the overall positive replies of the students to teaching presence items and received the lowest mean (*M* =0.43).

Discussion

Design and Organization

In this study, Setting curriculum and method and Designing methods indicators received the small amount of positive replies. It might be due to the fact that learners did not have the freedom to

choose when and what to study; instructors plan how virtual interactions should take place, and how management and direction of such interactions should be carried out to ensure learning outcomes. They did not give any freedom to learners to choose the content, the pace, and sequences of the learning materials, and the classes were totally teacher-centered. In order to clarify the rules and guidelines of virtual engagement, the instructors set up some boundaries on the learners' interactions. For instance, the learners were asked not to interrupt when the instructors were explaining a grammatical point, or when a reading section was being taught.

As Shea, Frederickson, Pickett, and Pelz (2003) argued, the Instructional design and organization category does not only focus on presession management, but on ongoing monitoring and management of the virtual structure of the environment. TEFL instructors of this research, on the other hand, provided materials of the following sessions or the Power Point presentations and lecture notes from the beginning onto the course site.

Establishing time parameters indicator received more positive replies. This might be attributed to the fact that from the first session, the instructors communicated important date/time frames for learning activities at the beginning of the course to help the learners have an organized program to study during the semester. For instance, the learners were informed that they needed to complete the assignments and submit them via email to their instructors during the specified time.

It is believed that all virtual teachers should be equally adept at using the medium appropriately. However, this indicator did not receive more positive responses from respondents. This could have resulted from the fact that the virtual instructors did not receive specific instruction with regard to teaching in virtual centers and that they had different levels of computer and information knowledge.

Establishing netiquette indicator received a low mean value. This might be due to the limited time the instructors had to help their students understand and practice the kinds of behaviors acceptable in a virtual learning environment.

Facilitating Discourse

Regarding Encouragement and reinforcing student contribution indicator, the instructors of this study encouraged collaboration and group work. However, as some learners taking the classes worked full-time and some had limited web access from home, it made it difficult for instructors to establish an organized virtual community and have virtual team projects.

As Arbaugh and Benbunan-Finch (2005) suggest, the ideal size of online classes is between 25 and 30 students. However, the virtual classes in this study differed substantially from the norm, and there were even some classes held with 1000 learners. As a result, the attendance of a huge number of learners made it almost impossible for instructors to specify group works. Sharing personal meaning indicator was relatively frequent in classes of this research in that the learners could share their personal meanings though the primary focus was on materials presentation through a predetermined syllabus.

The findings of this study with regard to Facilitating discourse category were in contrast with those of Anderson et al.'s (2001) study in that they suggested that Facilitating discourse requires the instructors to review and comment upon student comments and questions raised by them, to make observations to move discussions in a desired direction, to keep an efficient discussion, and to draw out inactive students.

Direct Instruction

In this study, the indicators of Direct instruction category accounted for a small proportion of the positive replies in that Instructors, when deciding on the sources of virtual classes, did not teach from diverse textbooks, articles, and/or internet-based materials. Rather, they taught

predetermined and old materials mostly based on Grammar Translation Method. It might be due to the limited specified time and the e-learning principles of the universities in which they taught. Regarding students' technical concerns, the instructors did their best to solve the learners' problems. However, there were some specific technical problems that instructors could not solve; for instance, when students did not have the audio or image of the virtual class. Additionally, due to the great number of students in the class, the instructors did not have enough time to diagnose misconceptions and provide proper solutions. In addition, even though the instructors could reinforce key learning points by summarizing the discussion, this was not the activity performed by English language instructors. It could be assumed that the lack of time spent on this activity was the reason for the low mean of this indicator.

With regard to categories of teaching presence, the findings of this study are in line with those of Burgess et al.'s (2010) study in that the Design and organization, Facilitating discourse, and Direct instruction categories were not fully observed in the online environment and like this research, the frequency of the existence of the categories of teaching element fell in the medium.

Conclusions

Based on the results of this study, it can be argued that although the mean scores of some indicators are high, there are some indicators more specific to e-learning community (i.e., Summarizing, Technical concerns, Identifying agreement/disagreement, Setting curriculum and method, and Establishing netiquette) which received less positive replies from the participants of this study. In addition, Direct instruction and Design and organization categories received the mean scores around M= 0.5. Accordingly, we can conclude that the teaching presence does not fully exist in the virtual centers of this study.

Such research may contribute to an important and necessary transformation in the theoretical and empirical foundations of virtual learning system. Generally speaking, this study has implications for syllabus designers, materials developers, virtual instructors, online learning researchers, and virtual centers and institutions. For instance, in virtual classrooms, the materials presented are of great importance. Therefore, the materials should be selected and presented in such a way that learners' improvement is fully achieved. Further, syllabus designers and materials developers should develop specific materials and textbooks for virtual learners, and this study may aid to present a conceptually grounded and empirically sound basis for developing appropriate materials for virtual learners. Additionally, all virtual educators, especially TEFL virtual educators, can benefit from the results of this study. They could try to incorporate the indicators of the teaching element of the CoI model into the method of their teaching. Virtual centers and institutes can also benefit from the results of this study; they can try to incorporate the elements of CoI framework into the educational system they offer.

There are some limitations to this research, however. For instance, to be able to more accurately generalize the results, it would be necessary to increase the sample size and test the framework more extensively. Additionally, it is worth mentioning that all the data were gathered from two virtual centers. Other researchers could try to test the research inquiry at various virtual centers and institutions, especially in diverse cultural contexts.

It is believed that there is abundant potential for research in the CoI framework. This study investigated the virtual learners' perceptions of the teaching element of CoI model in Iran. There is a need to carry out the same study with taking into account the virtual instructors' attitudes towards this element. This study was based on the teaching element of the CoI framework. Other studies can be carried out investigating social and cognitive elements. Finally, this study made use of teaching element for investigating English language classes of virtual learners. It could be of value if other studies examine this element in other courses in online educational systems.

References

Anderson, T., Rourke, L., Garrison, D. R., & Archer, W. (2001). Assessing teacher presence in a computer conferencing context. *Journal of Asynchronous Learning Networks, 5*(2), 1-17.

Arbaugh, J. B. (2001). How instructor immediacy behaviors affect student satisfaction and learning in web-based courses. *Business Communication Quarterly, 64*(4), 42−54.

Arbaugh, J. B., & Benbunan-Finch, R. (2005). Contextual factors that influence ALN effectiveness. In S. R. Hiltz, & R. Goldman (Eds.), *Learning Together Online. Research on Asynchronous Learning networks* (pp. 123–144). Mahwah: Lawrence Erlbaum Associates, Inc.

Burgess, M. L., Slate, J. R. Rojas-LeBouef, & K. LaPrairie (2010). Teaching and learning in second life: Using the Community of Inquiry (CoI) model to support online instruction with graduate students in instructional technology. *Internet and Higher Education, 13*, 84-88.

Collison, G., Elbaum, B., Haavind, S., & Tinker, R. (2000). *Facilitating online learning: Effective strategies for moderators*. Madison, WI: Atwood Publishing.

Dringus, L. P., Snyder, M. M. , & Terrell, S. R. (2010). Facilitating discourse and enhancing teaching presence: Using mini audio presentations in online forums. Internet and Higher Education, 13, 75-77.

Garrison, D. R. (2009). Communities of inquiry in online learning. In P. L. Rogers et al. (Eds.), *Encyclopedia of distance learning* (pp. 352−355), 2nd ed. Hershey, PA: IGI Global.

Garrison, D. R., & Anderson, T. (2003). *E-Learning in the 21st century.* London: RoutledgeFalmer.

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *Internet and Higher Education, 2*, 87-105.

Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *American Journal of Distance Education, 15*(1), 7-23.

Garrison, D. R., & Arbaugh, J. B. (2007). Researching the community of inquiry framework: Review, issues, and future directions. *Internet and Higher Education, 10*(3), 157-172.

Garrison, D. R., & Archer, W. (2000). *A transactional perspective on teaching-learning: A framework for adult and higher education*. Oxford, UK: Pergamon.

Garrison, D. R. Cleveland-Innes, M., & Fung, T. Sh. (2010). Exploring causal relationships among teaching, cognitive and social presence: Student perceptions of the community of inquiry framework. *Internet and Higher Education, 13*, 31-36.

Gorham, J. (1988). The relationship between verbal teacher immediacy behaviors and student learning. *Communication Education, 37*(1), 40−53.

Ke, F. (2010). Examining online teaching, cognitive, and social presence for adult students. *Computer & Education, 55,* 808-820.

Moore, M. G. (1973). Toward a theory of independent learning and teaching. *Journal of Higher Education, 44*, 661-679.

Moore, M. G. (1983). The individual adult learner. In M. Tight (Ed.), *Adult learning and education* (pp. 153–168). London7 Croom Helm.

Shea, P. J., Frederickson, E. E., Pickett, A. M., & Pelz, W. E. (2003). A follow-up investigation of "Teaching Presence" in the SUNY learning network. *Journal of Asynchronous Learning Networks*, 7(2), 61–80.

Torras, M. E., & Mayordomo, R. (2011). Teaching presence and regulation in an electronic portfolio. *Computers and Human Behavior*, 27, 2284-2291.

Traphagan, T. W., Chiang, Y. V., Chang, H. M., Wattanawaha, B., Lee, H., Mayrath, M. C., Woo, J., Yoon, H., Jee, M. J., & Resta, P. E. (2010). Cognitive, social and teaching presence in a virtual world and a text chat. *Computers & Education, 55*, 923-936.

Appendix A
The English Version of the Questionnaire

A.1. Design and Organization Category

Utilizing medium

Does your instructor utilize the medium effectively?

Setting curriculum and method

Do you have the freedom to choose the learning materials?

Establishing netiquette

Does your instructor help you understand and practice the kinds of behavior acceptable in the virtual learning environment?

Identifying agreement/disagreement

Is your instructor helpful in identifying areas of agreement and disagreement on course topics?

Time parameters

Does your instructor clearly communicate important date/time frames for the learning activities?

Setting curriculum and method

Does your instructor clearly communicate important course goals at the beginning of each semester?

Designing methods

Does the instructor provide you with clear instructions on how to participate in the course learning activities?

A. 2. Facilitating discourse Category

Acknowledging contribution

Does your instructor acknowledge your contribution in the class activities?

Setting climate for learning

Does your instructor set the climate for learning?

Sharing personal meaning

Could students share their personal meanings in the class?

Encouraging and reinforcing collaboration

Does your instructor encourage and reinforce student contributions and discussion?

A. 3. Direct instruction Category

Diverse sources

Does your instructor present knowledge from diverse sources?

Summarize

Does your instructor summarize the discussion at the end of the class?

Technical concerns

Does your instructor respond to your technical concerns?

Diagnose misconceptions

Does your instructor diagnose misconceptions?

Press content

Have the learning materials been selected appropriately to help you learn effectively?

Appendix B
The Persian Version of the Questionnaire

1– آیا استاد شما در استفاده از تسلط کافی تکنولوژ ی دارد ؟

2- آیا در انتخاب مطالب درسی آزادی عمل دارید؟

3- آیا استاد تان در زمینه نحوه رفتار متناسب با سیستم آموزش مجازی به شما آگاهی های لازم را داده است؟

4- آیا استاد تان نقش موثری در شناسایی نقاط قوت و ضعف فرایند یاد گیری شما دارد؟

5- آیا استاد تان در آغاز ترم تاریخ امتحانات و فعالیت های مهم کلاسی را ارائه می کند؟

6- آیا استاد تان از دانشجویان به دلیل شرکت در فعالیت های کلاسی قدردانی و تشکر می کند؟

7-آیا استاد شما فضای مناسبی برای یاد گیری ایجاد می کند؟

8-آیا امکان ارائه نظرات شخصی در کلاس برای دانشجویان فراهم است ؟

9- آیا استاد تان به تشویق و تقویت دانشجویان در شرکت در فعالیت ها و بحث های کلاسی می پردازد؟

10- آیا استاد شما مطالب درسی را از منابع مختلفی ارائه می کند؟

11- آیا خلاصه ای از مطالب درسی در پایان کلاس توسط استادتان ارائه می شود؟

12- آیا استاد به مسائل فنی شما دراستفاده از تکنولوژی پاسخ می دهد؟

13– آیا استاد در کلاس به تشخیص سوء برداشت ها ی شما می پردازد؟

14- آیا برای یادگیری موثر شما مطالب درسی به طور مطلوب انتخاب شده است ؟

15- آیا استاد تان در ابتدای ترم اهداف مهم درس را مطرح می کند؟

16- آیا استاد شما در ارتباط با نحوه انجام فعالیت های کلاسی اطلاعات لازم را فراهم می کند؟

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Editor's Note: Teaching styles, learning styles, and the technical capabilities impact on decisions how to use the web camera in online classrooms. What is social value for some students may be a distraction for others. Judicious use of these tools to support learning is a recommendation from this study.

Examining the web camera use in a virtual classroom: students' perception and instructors' attitude

Jinyuan Tao and Ming-Hsiu Tsai
USA and Taiwan

Abstract

This paper investigated students' perception and instructors' attitude on web camera use in an online course from the lens of social presence framework. Student perception was measured in two surveys of an online course that used Wimba™ virtual classroom in two consecutive semesters in 2011. Both quantitative and qualitative data from the surveys were analyzed. Results showed that visually showing instructor's face in Wimba™ virtual classroom increased instructor's social presence. Online students generally preferred to see instructor's face while listening to their audio greeting at the beginning of the chat time. However, after the greeting part, video was not as critical as audio. For instructors' attitude toward web camera use, a survey was conducted to identify the barriers to adopt web camera uses in the Wimba™ virtual classroom. Strategies were then proposed to overcome those barriers. The goal of this study was to promote online instructor's purposeful web camera practices to increase their social presence in the virtual classroom learning environment.

Keywords: Online teaching, video conferencing, online learning environment, social presence, web camera, camera uses, visual presence, online teaching strategies.

Background

With the latest development in desktop-based video conferencing technology such as Wimba™, Elluminate™ (both were acquired by Blackboard™ in 2010 and the new product was Blackboard Collaborate™), many online courses are using video conferencing tools to conduct live chat or virtual office hours (figure 1). With video conferencing, instructors can use audio to converse with students, and at the same time, instructors can also use web camera to show live video of their face while they are talking (figure 2), share desktop, present a Powerpoint™, drawing on the eboard, and archive the whole lecture for students to access later on.

When examining the first author's university's distance program (Figure 1), there were 52 online courses offered in the spring 2011 term, 10 (19.3%) of these online courses were using Wimba™ tool to conduct live chat, the rest were using regular chat room offered by the Learning Management System (LMS). However, among the 10 courses that were using Wimba™ tool, only 4 courses were using audio plus video while the other 6 course only used the audio feature. When checking the purpose of using video tool, 2 courses had lab components so instructors had to use web camera to show the lab procedures to the entire class. Only 2 courses intentionally used web camera in increase instructors' social presence. The "Introduction to Microcomputers" course was one of those two courses.

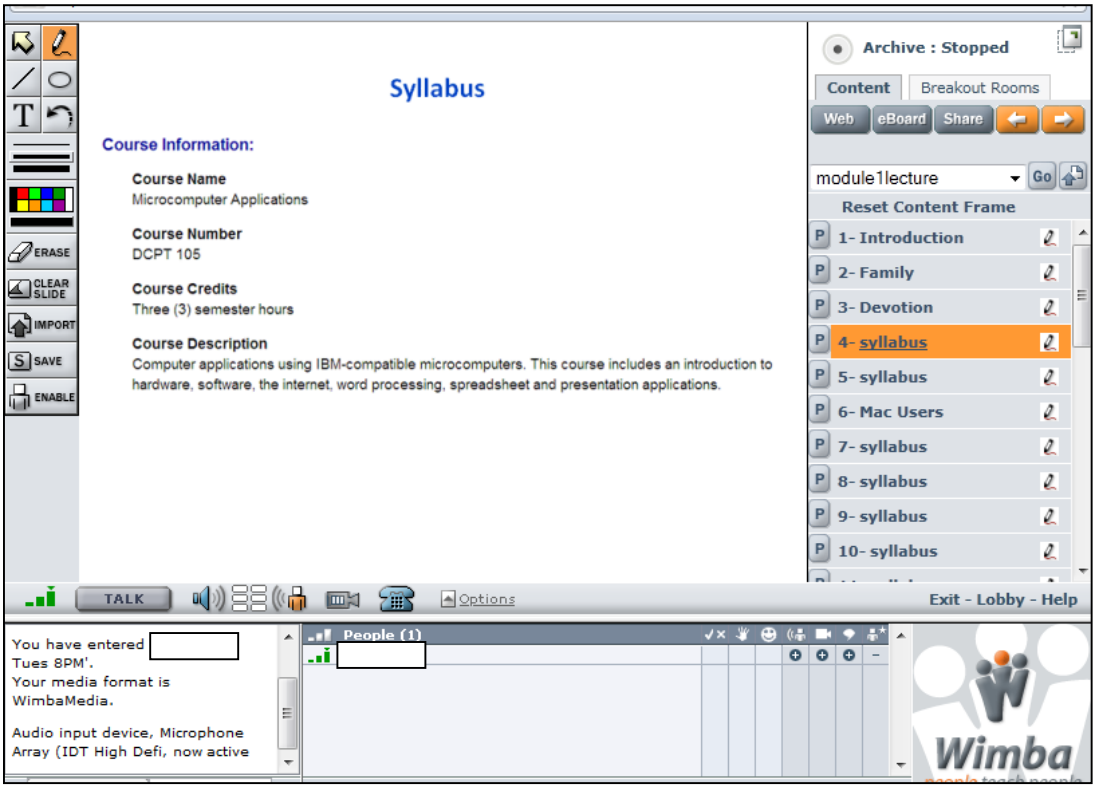

Figure 1. Wimba Classroom that doesn't use Web Camera
(instructor's name was wiped out)

Figure 2. Wimba Classroom that uses Web Camera
(instructor's name was wiped out)

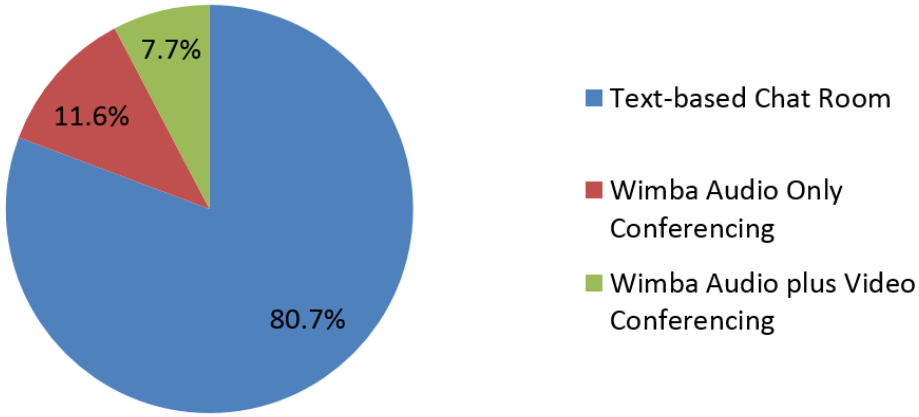

Figure 3. Synchronous Components Uses of Our Online Courses
(Spring 2011)

It appears the effect of web camera use in the online learning environment is something worthy of researching. This paper investigated students' perception and instructors' attitude on web camera use in an online course from the lens of social presence framework. There were two goals to be achieved: first, we wanted to identify students' perception on web camera uses, second, we wanted to identify the possible barriers that prevent online instructors from adopting web camera uses in online learning environment.

Literature review

Education is a social practice (Lafey, Lin, & Lin, 2006; Shea, Frederickson, Pickett, & Swan, 2001); consequently, any formal learning environment must be able to support the social practice and process of learning (Shea et al., 2001). In 1976, Short, Williams & Christie originally developed the theory of social presence to explain the effects telecommunications media can have on human communication (Short, Williams & Christie, 1976). They first defined social presence as "the degree of salience" (i.e., "quality or state of being there") between two communicators using a communication medium. They concluded that communication media differ in their degree of social presence and that these differences play an important role in how people interact (p. 65). They also pointed out that some media have higher degree of social presence (e.g., video) while other media have lower degree of social presence (e.g., audio). They further concluded that a medium with a high degree of social presence is seen as being more sociable, warm, and personal, whereas a medium with a low degree of social presence is seen as less personal.

With online learning gaining momentum since the 1990s, in 1995, Gunawardena defined social presence as "the degree to which a person is perceived as a 'real person' in mediated communication" (Gunawardena, 1995, p. 151). As computer-mediated communication has evolved, social presence has come to be viewed as the way individuals represents themselves in their online environment (Lownethal, 2009). Despite initial concerns about the sociability of the Internet, researchers of social presence have demonstrated that indeed online instructors and students can achieve higher degree of social presence by using the right computer and Internet-based tools such as synchronous video conferencing, real-time text-based or audio-based chat, and virtual learning environment.

The face-to-face medium is considered to have the most social presence, whereas written, text-based communication, the least (Daft & Lengel, 1986). Christie (1974) reported from one study that:

> *"visual media were … more useful for complex group discussions, private conversations and non-private dyadic conversations. Thus, the presence of visual channel appears to be perceived as an important advantage of a communications medium."* (p. 367)

Communication is effective if the communication medium has the appropriate social presence required for the level of interpersonal involvement required for a task.

Isaacs & Tang (1994) found that compared with audio-only, the video channel of desktop video conferencing improves the ability to show understanding, forecast responses, give nonverbal information, enhance verbal descriptions, manage pauses, and express attitudes. Daly-Jones, Monk & Matt (1997) also concluded that video can result in more fluent conversation, particularly where there are more than two participants.

However, as more and more online courses are using desktop-based video conferencing tool such as Wimba™, Elluminate™ and latest Blackboard Collaborate™ to conduct real-time chat, lecture or virtual office, the web camera uses and its research in online learning environment is quite limited. This paper studied if web camera use in an undergraduate online course could make a difference from the perspective of instructor's social presence in an online learning environment. It also identified possible barriers for instructors to adopt web cameras in the virtual classroom.

Methods

Participants and setting

Online student subjects were from an undergraduate course "Introduction to Microcomputers" (with a total of 20 students) enrolled in the summer 2010 from the first author's university. The course was delivered via Angel Learning Management System (ALMS). Wimba™ was used as the web-based video conferencing tool to conduct real time chat once a week for seven consecutive weeks

5 online instructors from the "Introduction to Microcomputers" were surveyed in the term of summer 2010. To increase the sample size and also investigate how web camera uses is perceived in other online courses, 24 online instructors from other three online undergraduate courses within the same university were also surveyed in the summer term of 2011. Those three courses were "World Religion", "Lessons on Living", and "Ethics for Nursing and Allied Health". Those online courses just switched from traditional text-based chat room to Wimba virtual classroom in the summer of 2011. Thus survey was made available to a total of 29 online instructors inside the ALMS after they used Wimba™ to interact with students. Those 29 online instructors served as Wimba™ chat facilitators with each taking care of about 15 students. Besides the chat, their responsibilities also included grading students' assignment, answering students' emails and entering grades and attendance.

Data collection

Three surveys were administered in this study. Two went to the students and one went to the instructors.

For students' perception on web camera use, two surveys were administered. The first survey went to the students from summer 2010 "Introduction to Microcomputers" where the chat facilitators didn't use web camera in the first three Wimba™ chats but used web camera in the last four Wimba™ chats. Three Likert-scale questions and one open-ended question at the end were asked, aiming at collecting students' detailed reflection and feedback from the web camera use experience. 20 students were enrolled in the course and 17 students responded to this online survey with the response rate of 85%.

The second survey went to the students from fall 2010 "Introduction to Microcomputers" where the chat facilitators used web camera to show his face during the greeting part of each Wimba™ chat. After the greeting, the instructor turned off the video and only used audio plus desktop sharing to conduct the rest of the course. The second survey contained four Likert-scale questions and one open-ended question at the end was conducted. 22 students were enrolled in the course and 19 students responded to this online survey with the response rate of 86%.

For online instructor's perception on web camera use, 23 out of 29 online instructors from three online undergraduate courses titled "World Religion", "Lessons on Living", and "Ethics for Nursing and Allied Health" responded to a third survey in summer 2011 (with response rate of 79%). The survey questions were designed to collect data from instructors regarding their web camera practice with the goal of identifying possible adoption barriers.

Data analysis

To maintain participants' anonymity, the three surveys were conducted by using the survey tool within the ALMS with anonymity feature turned on. For the Likert-scale questions, means were calculated for the web camera practice perceptions from students. For the open-ended questions, concrete feedback from the students and instructors were recorded and analyzed.

Findings

Students' perception

The following Table 1 shows the data from the first survey to students. The three-question perception survey used a scale from 1 (strongly disagree) to 5 (Strongly agree), and it was completed by 17 students.

Table 1
Students web camera perception first survey results * (n=17)

Survey Questions	Mean	1	2	3	4	5
1. I prefer to have camera view of my chat facilitator in Wimba™ conferencing.	3.43	5%	18%	18%	47%	12%
2. The live camera view of my chat facilitator made Wimba™ chat more interactive and realistic.	3.7	12%	0	13%	56%	19%
3. The camera view of my chat facilitator helped me focus better during the 2-hour Wimba™ chat.	3.55	11%	6%	18%	47%	18%
4. I would like to have camera view of my chat facilitators in my future Wimba™ chats.	3.73	5%	12%	12%	47%	24%
* Strongly Disagree=1; Disagree=2; Unsure=3; Agree=4; Strongly Agree=5						

Overall, the majority of the students liked the camera view part of the lecture while some deemed web camera use as unnecessary or even distracting. Table 2 further collected the detailed positive and negative feedbacks from the 17 students. Obviously some students went further and gave out suggestions on how to improve the web camera uses:

Table 2
Students web camera perception first survey

Reasons For Using Web Camera	Reasons Against Using Web Camera
The camera use made it like a real class room experience. The culture of learning is very sight and audio oriented. Camera was a very personal touch.	At times the camera view was cumbersome for the instructor when he was trying to switch between screens to show us how to work on different projects. It also caused technical difficulties, which slowed down his class.
At least the first couple of sessions, the camera view helped connect the relationship between the instructor and the students.	It is not necessary to use web camera during the Wimba™ chat because it just took time for the students to open another window.
I felt more connected and less lethargic and more involved. I was surprised by the difference	Web camera view blocked the screen some and covered the content we were going over. Students had to drag the window to the corner.
The camera uses by the teacher did give students an option: students can choose to close the video window if they don't want to see the teacher. Sometimes if they want to see the instructor, it is right there!	The web camera us can be a little distracting and uses a lot of bandwidth. It caused more audio breakups and consequently it disrupts train of thoughts and concepts.
Other opinions	
I think with the camera, students are more focused on the background and the person than what they are teaching. It is occasionally nice to see the person; however, at times it can be annoying and distracting.	
The camera uses did not make much of a difference to me.	
If the quality of video and audio remains clear, I prefer the camera use. If I had to choose, I would rather have clear audio and no video.	

Based upon the feedback from the students in the summer 2010 term, we changed the web camera use strategy in the following fall term with a different group of students. This time the instructors used web camera to show his face during the greeting part of each Wimba™ chat. After the greeting, the instructor turned off the video and only used audio plus desktop sharing to conduct the rest of the course. The second survey was administered to the summer 2010 term students and the table 3 shows the second survey results:

Table 3
Students web camera perception second survey * (n=19)

Survey Questions	Mean	1	2	3	4	5
1. I like the way the instructor used web camera to show his face during the greeting part of each Wimba™ chat.	4.40	5%	0%	0%	37%	58%
2. The live camera view of instructor made the greeting more interactive and realistic.	4.40	5%	0%	0%	42%	53%
3. After the greeting, the instructor turned off the video and only used audio plus desktop sharing to conduct the rest of the chat. I like this mode of teaching.	3.90	10%	0%	11%	42%	37%
4. I would like to have camera view of my instructor in my future Wimba™ chats, at least for the greeting part.	4.30	6%	0%	0%	47%	47%
* Strongly Disagree=1; Disagree=2; Unsure=3; Agree=4; Strongly Agree=5						

By comparing with the Table 1 results, overwhelmingly, the fall group students preferred the new way of using web camera: to only show the instructor's face during the greeting part of the Wimba™ chat; and after the greeting, the instructor turned off the video and only used audio plus desktop sharing to conduct the rest of the chat. Table 4 collected all the concrete positive feedbacks from those 19 students:

Table 4
Students web camera perception second survey

The webcam feature, gave me a face to put with the name, and gave the feeling of an actual class room setting. I really enjoyed it.
It was nice to see the person behind the voice. Good web camera use!
I felt more at ease knowing my instructor's face vs just a voice. It was personable and enhanced the chat session.
I think using camera as much as possible is great and it increases the interaction and feeling of "presence" of teacher. However, due to the fact that it might cause connection issues and it might be uncomfortable for the teacher, using web camera part time is good too. Something is better than nothing.
Web camera use made the chats more personal.
The use of the web camera during the greeting session of the Wimba™ classroom enhances the perception of attending an in-class room experience. Using the web camera also provides a more 'personal" experience, enhancing your "investment" into the class.

Instructors' attitude

Two questions were asked in the third survey that went to the instructors: Have you used a web camera in Wimba classroom to let students see your face while lecturing? Do you think it will help increase your social presence if you decide to use camera while conducting Wimba chat?

Table 5
Instructor Web Camera Perception Survey Results * (n=23

Survey Questions	Yes	No	Not Sure
1. Have you used a web camera in Wimba™ classroom to let students see your face while lecturing?	58.3%	41.7%	0%
2. Do you think it will help you increase your social presence if you decide to use camera while conducting Wimba™ chat?	16.7%	25.0%	58.3%

Above table 5 shows that nearly half of the online instructors surveyed didn't use web camera during their Wimba™ chat. Subsequently, only a small percentage of the instructors believed web camera use could increase online instructors' social presence. Table 6 further analyzed the possible reasons why instructors didn't use web camera in their Wimba™ classroom. The two main reasons were privacy intrusion and lack of training. However, interestingly, 45.5% thought it was not necessary to use web camera because audio is enough. Table 7 will continue to list other possible reasons.

Table 6
Instructor web camera perception survey results * (n=23

What prevents you from using web camera in Wimba™ classroom?	Response Percent
Intruding my privacy, I don't feel comfortable showing my face while talking.	36.4%
Lack of training, I don't know how to use the web camera.	18.2%
Not necessary, the audio chat is enough for now.	45.5%
Other reasons.	27.3%

In table 7, the open-ended question collected possible barriers why some instructors hesitated to use web camera in their Wimba™ classroom.

Table 7
Possible barriers for web camera adoption in Wimba™ classroom

Once the web camera was on, my audio quality was jeopardized. Students were complaining not being able to hear me clearly.
Every time the web camera is used, a new video popup window will be displayed on the screen blocking the content, which can be distracting both to the instructor and students.
I'd like to look at my notes without students seeing.
I don't see the web camera use will improve my social presence because my chat is more about their thoughts and they need to be reading all the posts coming in from everyone else. Viewing my face is not that important.
Students have other channels to see instructor's picture, such as faculty profile.

Obviously barrier 1 was technical problem that has something to do with the Wimba™ platform itself and Internet bandwidth. Long time use of video by the web camera will take away some Internet bandwidth which can decrease the quality of audio output. Thus Wimba™ technical support staff recommends to only using web camera briefly and purposefully. Barrier 2 and 3 were mainly about comfort zone for users. Barrier 4 and 5 talked about the necessity of using web camera: In some online courses, it may not be a necessary practice.

Discussions

This study showed web camera use in online video conferencing classroom did increase instructor's social presence. From students' perspective, the majority of the students felt connected with the instructor and other students if they were able to see instructor's face while listening to their audio. However, some students still had fear that the web camera use would jeopardize the instructors' audio quality. A small portion of the students felt it was not necessary because it was distracting for them.

From instructor's perspective, web camera uses allowed them to add their personal touch in their online teaching. However, it also meant extra work for the instructors to prepare themselves before they turned on the web camera. Therefore, for most of the online courses, five minutes use of web camera at the first chat is most practical. For the following chats, instructors don't have to use web camera and just focus on the audio lecture part. This way, both instructors and students can focus on the audio part of the chat. Another benefit of this practice is that five minutes of using web camera won't typically clog up the Internet bandwidth, thus a good audio quality can be ensured.

From students' feedback, generally audio has a priority over video in Wimba™ classroom since audio carries most of the instructional information. If audio quality is jeopardized, instructors can stop web camera use right away so that a good quality of audio can resume.

In terms of privacy intrusion, instructors can implement some measures to decrease the privacy intrusion level. For example, they can do a mock up practice of using web camera before their first chat, adjusting the angle of web camera to make sure what the students see through the camera is appropriate and professional.

In terms of instructor training of using web camera, the first objective for trainers is to introduce the concept of social presence in online learning environment to stress the significance of the appropriate web camera use. Once instructors know the importance of effective web camera use,

they will be more motivated to accept the web camera training. Additionally, instructors can be trained to teach students how to minimize, close or move the video window when web camera is used. This way, students can choose to close or move the video window when it is blocking the content. In another words, the camera uses by the teacher does give students an option: students can choose to close the video window if they don't want to see the teacher. Sometimes if they want to see the instructor, it is right there.

Conclusion

It appears that web camera uses in the virtual classroom can increase instructor's social presence. Students generally prefer to see instructor's face while listening to his audio voice. Feedback from the students also suggests that the web camera use by the online instructors is critical during the greeting phrase of online chat. When it comes to content lecture, audio is more critical than video. After the initial greeting, online instructors can turn off the web camera to ensure a good quality of audio for the rest of the chat. Although the data garnered from this study is far from inclusive, the findings are relevant and useful for consideration by other distance programs concerned with online instructors' social presence in the online learning environments. However, this study was conducted in four undergraduate online courses from a private university in the southeastern United States. No students and instructor demographic data were gathered; therefore care should be taken in applying the findings of this study to other courses in different subjects.

References

Christie, B., & Holloway, S. (1975). Factors affecting the use of telecommunications by management. *Journal of Occupational Psychology, 48*, 3-9.

Daft, R. L., & Lengel, R. H. (1986). Organizational information requirements, media richness and structural design. *Management Science, 32*(5), 554-571.

Daly-Jones, O., Monk, A. & Watt, L. (1997). Some Advantages of Video Conferencing over High-quality Audio Conferencing: Fluency and Awareness of Attentional Focus. *International Journal of Human-Computer Studies*, Vol 49, Issue 1, p 21-58.

Gunawardena, C. N. (1995). Social presence theory and implications for interaction and collaborative learning in computer conferences. *International Journal of Educational Telecommunications,1*(2/3), 147-166.

Isaacs, E. A. & Tang, J. C. (1994). What video can and cannot do for collaboration: A case study. *Multimedia Systems*, Volume 2, Number 2, 63-73.

Laffey, L., Lin, G. Y., & Lin, Y. (2006). Assessing social ability in online learning environments. *Journal of Interactive Learning Research, 17*(2), 163-177.

Lowenthal, P. R. (2009). The Evolution and Influence of Social Presence Theory on Online Learning. *Online education and adult learning: New frontiers for teaching practices*. Hershey, PA: IGI Global.

Shea, P. J., Fredericksen, E., Pickett, A., Pelz, W., & Swan, K. (2001). Measures of learning effectiveness in the SUNY learning network. In J. Bourne & J. C. Moore (Eds.) *Online education, volume 2: Learning effectiveness, faculty satisfaction, and cost effectiveness* (pp. 31-54). Needham, MA: SCOLE.

Short, J., Williams, E., & Christie, B. (1976). *The social psychology of telecommunications*. London: John Wiley & Sons.

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Editor's Note: This is a thoughtful and very useful discussion of web conferencing for doctoral students during the dissertation phase of their program.

Upping the quality for online dissertation students with web conferencing

Gerald W. Olivas

Abstract

It is easy for online dissertation chairs and dissertation committee members to have face-to-face communications with their dissertation students using web conferencing. For dissertation students this means that complex and intricate aspects of their proposals and dissertations are more fully covered including areas such as methodological development, data analysis techniques, and Institutional Review Board application enhancements. Also dissertation student oral defense presentations and discussions are easily accomplished using web conferencing. For desktop and laptop computers as well as portable devices the more capable, the better. A microphone and camera are necessary, which are usually built in to most computers and devices. Broadband Internet connectivity is required. Several web conferencing software applications are available, inexpensive, and easy to install and use. Sessions are conducted just like normal on-ground meetings with the need for participant preparation, including a plan for the session, a quiet environment, and a well-lit room. The effectiveness and efficiency of face-to-face communications for online dissertation chairs, committee members, and dissertation students has the potential to increase the quality of scholarly research as well as making the learning experience for the student more fulfilling and rewarding.

Keywords: dissertation chair, dissertation committee, dissertation defense, doctoral dissertation, face-to-face discussion, face-to-face interaction, face-to-face web conferencing, interactive discussion, online degree, online education, oral defense, web conferencing, web conferencing applications, web conferencing hardware, web conferencing software, scholarly research.

Introduction

Often, when I mention to someone that I am an online doctoral dissertation chair, I am asked, "Do you ever meet with your doctoral dissertation students?" I used to say no, never face-to-face, but more and more I am saying yes. It is becoming very easy and inexpensive to have one-on-one, fully interactive, face-to-face discussions with doctoral dissertation students as well as with their dissertation committee members. What allows for this are faster and more capable computers, portable communications devices, and communication networks. Web based online asynchronous textual communication is fine for working with doctoral dissertation students. However, by using voice and video face-to-face web conferencing a doctoral dissertation student can be helped much more comprehensively with clarification and fine tuning of intricate scholarly research issues that come with a dissertation project. For the dissertation oral defense, seeing and interacting with the entire dissertation committee, in the same virtual meeting room with the student controlling their presentation slides, allows a much more productive and comprehensive encounter. There are some minor negatives of web conferencing: a possible need for hardware and network upgrades, purchasing web conferencing software and services, and time for installation, setup, and practice.

Online education is fast becoming the norm

It is hard to find a university, or any school for that matter that is not offering online courses. In 2010 it was reported that 6.1 million university students were enrolled in online courses (National Center for Education, 2012). Awarding of full degrees at all levels is becoming more common, and this is not just from the more well-known online educational institutions, such as University

of Phoenix and Ashford University. For example, University of California, Berkeley is offering a Master's Degree in Public Health with 85% of the coursework completed online (Wisloski, 2011). As for doctoral degrees, a quick search of the web finds numerous online doctoral programs. Again it is not just the more well-known online educational institutions offering doctoral degrees, like Walden University and Grand Canyon University, but many other traditional educational institutions are also offering the online doctoral degree option. For instance, Arizona State University offers an online Doctor of Behavioral Health and Texas Tech University offers an online Doctorate of Education in Higher Education. To be fair most universities that offer doctoral degrees have some on-campus residency requirements but the majority of the work is online.

Doctoral study, and for that matter, any graduate level study, encompasses a good deal of research endeavors. Most mission statements for graduate schools of higher education highlight their strong research focus. For example, the Mission for California Polytechnic State University's Research and Graduate Programs states, "The Office proactively strives to foster an environment in which the research and creative accomplishments of faculty and students are encouraged and rewarded and in which high quality graduate programs emerge, thrive and evolve." My own master's degree program at the University of California, Santa Barbara required a thesis and my doctoral degree at United States International University (currently named Alliant International University) required a dissertation. For both of these a great deal of indepth scholarly research was needed, which meant not only formal coursework in research methods but also many face-to-face meetings with my committee members. These face-to-face meetings were crucial in helping me design and execute scholarly research work. They allowed for interactive one-on-one dialogue with the opportunity for full explanations and examples with a live person. I am happy to report that online doctoral dissertation students, dissertation chairs, and dissertation committee members can continue to have face-to-face interaction using web conferencing.

Is web conferencing for me?

Web conferencing is a broad term used to describe live online face-to-face, interactive discussion. Web meeting, multicasting, webcasting, webinar, virtual meeting, digital meeting, video chat, video call, and VoIP (voice over Internet Protocol) are terms often used to mean some form of web conferencing. With all these different terms it can get confusing, however for the purpose of this article web conferencing means using the Internet for live online one-on-one, or small group, video, voice, and document presentation through normal computer systems, such as laptops, tablets, and smart phones. For online dissertation chairs, sometimes referred to as dissertation mentors, advisors, or supervisors, dissertation committee members, and dissertation students this means seeing, speaking, hearing, and viewing documents instantaneously. This is analogous to a dissertation chair or committee members sitting down with the dissertation student in the same room to discuss and critique the student's dissertation work.

Most universities require a dissertation chair and committee members for doctoral dissertation students. For example, University of Wisconsin, Milwaukee, Graduate School, Prospective and Incoming Students, Current Students, Ph.D. Students, under the heading of Major Professor as Advisor it states: "Selecting your advisor is one of the most important decisions you will make in graduate school. This person will be your mentor—helping you shape your dissertation proposal, guiding you through the writing and defense of your dissertation, and often employing you as a research or teaching assistant. Your relationship with your advisor will directly affect the quality of your graduate school experience" (University of Wisconsin, 2013, p. 1). Most other graduate schools have this type of requirement for doctoral dissertation students.

A doctoral dissertation chair and their student have more than the normal teacher student relationship. It is a very close working relationship that often last for several years. It involves a

great deal of team effort and coaching by the chair of focused communications with the ultimate goal of producing a high quality research study. John Garger indicates a dissertation chair serves as an advocate, manager, leader, and judge for the mentee (2011). This is true for both online and on-ground doctoral dissertation students. Concerning more specific elements of the dissertation process the online student can be at a disadvantage because they do not have face-to-face contact with their dissertation chair or committee members to discuss and receive detailed clarification on important aspects of their dissertation. However, for online student use of web conferencing this does not have to be the case. Areas that can be enriched using web conferencing are

Determining the research topic.

Developing the research problem, sub-problems, and purpose.

Selecting the most optimal research method.

Formulating research questions and hypotheses.

Deciphering independent and dependent variables (if necessary).

Determining the significance of research study.

Creating theoretical and conceptual framework.

Deciphering the assumptions, scope, limitations, and delimitation.

Clarifying population selection and sampling methods

Choosing the most appropriate data collection instrumentation.

Determining data collection procedures.

Choosing applicable data measurement techniques.

Ensuring alignment of crucial elements of the proposal and dissertation.

Determining and completing Institutional Review Board requirements for the protection of human subjects.

Developing data analysis, interpretation, implications, and recommendations.

Preparation for oral defense.

Conducting the oral defense with the entire committee.

Throughout the entire dissertation process clarifying any written feedback.

Throughout the entire dissertation process providing clarification regarding completing necessary proposal and dissertation forms.

Can the above areas be covered in an asynchronous manner using online class posts and e-mails with online doctoral dissertation students? Yes they can but not nearly as thoroughly as through face-to-face contact using web conferencing. Of course short posts with explanations and samples, including attachments can be shared but for the above listed areas having a back and forth face-to-face interactive dialogue definitely can streamline and make the communications more productive. For example, by seeing someone you can tell from their expressions if they understand what is being said. If there is any hint that full comprehension is not taking place it is easy enough to repeat and more fully elaborate. It is also possible with face-to-face web conferencing to be a little animated using gestures to emphasize important points.

It is easy to see that there are many benefits to web conferencing, and it could even be argued that it allows for more efficient interaction between the doctoral dissertation student and their chair as compared to traditional methods. For example, it is often difficult for the dissertation student to visit a dissertation chair, or committee member, during their assigned office hours, or by scheduling an appointment. This traditional meeting method can mean long waits between contacts to cover important points, which can influence the vital element of dissertation momentum. Yes, web conferencing means setting mutually convenient times to meet but there is

much more flexibility with web conferencing because of the capability of the use of the Internet anytime, from anywhere, including the home office.

Hardware and communications capabilities

For web conferencing computer hardware the stronger and more capable the better. This generally means a higher end central processing unit, plenty of random access memory, very capable video graphics, a bigger than normal display, decent amount of hard drive storage as well as audio (microphone) and video (camera) capabilities. Also a good option for more privacy is headphones with an attached microphone. The bottom line for hardware, whether it is a Windows® or Apple® based system, is to get good throughput speed to better ensure that there are no voice or video delays during discussions. With a good all-around strong hardware platform there is more of a guarantee of full synchronization of voice and video. It is definitely fine to ask computer sellers if the computer system they are selling is fully capable of handling flawless web conferencing. As for Internet connectivity, high speed broadband is essential, which usually means using a local cable provider, home satellite system, or landline telephone Digital Subscriber Line. Just like having a strong hardware platform broadband speeds will help to prevent delays that can cause intermittent freezing and blinking of the streaming picture. Wireless or Ethernet cable connections are fine. Most hotel and public Internet connections are broadband so web conferencing from those locations should not be any problem.

For smartphone, tablet, and mini-tablets users web conferencing is certainly an option. However, the same rule applies regarding having the most capable as possible and do not forget that a microphone and camera are necessary. Because tech specs are not as prevalent when accessing smartphones and other highly portable devices it is always good to ask the sales person and check online to see the capabilities of the device you are considering. For good online reviews CNET® Reviews at http://reviews.cnet.com/ is a very well established and respected resource for unbiased electronic devices and software information.

As with normal computing strong Internet capabilities are essential, which for most portable devices means wireless broadband. 4G network capabilities is a must for mobile devices like smartphones. Bluetooth® capabilities are a plus because that will allow for better connectivity with other devices. Note that a variety of smarter and more capable Internet communication devices and capabilities are quickly surfacing, including e-book readers, televisions, and cars. It is a good idea to keep these in mind also when selecting web conferencing hardware.

Software requirements

New and upgraded software are a way of life for all computer users. The good news is most new and upgraded applications are not only compatible with major computer hardware, operating systems, and browser software, for example, Microsoft's Internet Explorer®, Mozilla's Foxfire®, and Apple's Safari®, but typically install and configure themselves. However, learning how to use new and upgraded applications may take a little trial and error.

With web conferencing software there is quite a bit to select from. It is hard to narrow down who the leaders are but based on Internet web reviews and discussions with educational colleagues the products that seem to be in the forefront are Cisco WebEx®, Citrix GoToMeeting®, Adobe Connect®, MegaMeeting®, Nefsis®, iLinc®, Blackboard Collaborate®, Saba Meeting®, and Microsoft Live Meeting®. All of these web conferencing software applications have strong capabilities for dissertation chair and dissertation student interactive voice, video, and document sharing for presentations and discussions. Whiteboarding, public and private chat, file transfer, and being able to record discussions are also good features to have. Strong security and privacy are important, which means user authentication (for signing in) and at least 128 bit encryption.

Toll-free dial-in is a must but most web conferencing software uses VoIP, which is definitely best for international sessions.

This may be obvious but to use web conferencing software it is necessary for all users to have the same software installed and configured correctly on their computing devices. It is best for all users to be at the same version level for the web conferencing software. During initial set up and configuration determining host and client categories is usually not a problem because the communication relationship is technically peer-to-peer. However, when establishing a web conferencing session there will be some minor adjustments that relate to customizing. For example, choosing who will be the leader and be able to manage the session.

Whatever software product used for web conferencing it always good to have easy to access support, 24/7 toll-free telephone helpline, tech and user blogs, website FAQs, and built-in tutorials. Of course, Facebook®, Twitter®, and Google® search engines can all be good resources for troubleshooting any problems. The hope is that any product selected is very easy to set up and use with an intuitive interface. There will be a slight learning curve with a little trial and error.

Free limited time trials are always a good idea with software products. Most software companies offer some sort of trial period use for a few users. Licensing agreements, which cost, can be a little tricky with regard to amount of users you want to have in a session so check this out thoroughly. For a dissertation orals presentation, four would most likely be the maximum. If the dissertation student's orals are open there will be a need for many more guests. Most established web conferencing software providers charge by the month with specials if you sign up for a certain period. Of course, check with your educational institution regarding what they like and use. They may already have license for a certain product.

Note that there are many limited capabilities face-to-face voice and video calling products on the market such as Skype®, ooVoo®, Google® Video Chat, and FaceTime®. Many of these are free and may work just fine, but do test these out thoroughly before using them to make sure they have all the capabilities you desire.

Tips for successful web conferencing

A web conferencing session does not have to be a formal endeavor. However, just like old school stand and deliver lectures it is essential to be prepared, and this is true for both the dissertation chair and the dissertation student. Having an outline for a session as well as having important materials to be shared will greatly assist for ensuring a successful web conferencing session. Just like a normal on-ground classroom lecture, always start a session with a brief overview of what is going to be discussed and end with a summary.

Setting aside adequate time to cover all that needs to be discussed is important as is staying on task. Do not get into the talk-too-much syndrome, which can easily occur just like during a phone conversation. However, because it is easy to see facial expressions it is easier to recognize if various points are comprehended. Maintaining good eye contact helps with determining if points are made and understood. Like with any conversation that involves explaining and articulating knowing when to interrupt and redirect is fundamental to ensure that a good grasp of what is being discussed is fully absorbed. Again, this is easier to do because of the visual aspects of web conferencing.

In a way a web conferencing session is like a photo shoot. This means casual professional appearance, bright lighting, and being shielded from other interruptions. Don not forget to turn off other devices. It is good to start off by asking everyone in the web conferences if they can hear and see everyone clearly. As a side note here, if a speaker phone connection is being used a

slight echo may occur, which is rather annoying. This will not happen if the microphone is attached to headphones that place the voice receiver right in front of the mouth. Of course, if an interruption occurs the session can be put on hold or re-started easily as well as terminated and re-started at a later time.

Like with anything new, over time web conferencing sessions will be more effective and efficient. The software will become more familiar to use, conducting successful sessions will become more routine, and that essential component of confidence will build.

Conclusions and beginnings

Technology is like a moving target. No sooner do you get comfortable with a new device, or software; a newer faster, more capable, and better looking product is released. The good news is that usually the newer product is easier to use and offers some better features that can increase productivity. The bad news is that it means getting used to and learning ongoing changes, and usually a slight cost factor to stay up to date. Hopefully the institution where you teach can pay for additional and ongoing software upgrades and any necessary training. Out-of-pocket expenses are often the case, especially for part-time and adjunct faculty. These types of professional expenses may qualify for a small business or required professional enhancement tax deduction.

There are many positives to implementing web conferencing for use by dissertation chairs and their students. These mostly fit into the greater category of effectiveness and efficiency of the learning experience. It not easy to see the motivational impact of having face-to-face interaction with dissertation students, but the personal touch of web conferencing has got to impact student desire to do the best job they can as well as help students stick to a timeline for completion.

Use of Internet technology to assist with learning, especially at the university level, is firmly in place and growing rapidly. Online university courses are rapidly escalating. In a recent article in the Silicon Valley MercouryNews.com titled, University of California wants more classes online, it is clear that many more online courses will be offered through the University of California system (Chea, 2013). Currently University of California, Harvard, MIT, University of Texas, and many others offer free online courses for anyone through a program called edX. EdX courses are called massive open online courses (MOOCs) that use online Internet technology that provides video-based lectures as well as web-based exercises, homework assignments, examinations, and forums. MOOCs are at one end of the spectrum for online education. At the other end is online face-to-face fully interactive voice and video web conferencing. The perfect match for this is the dissertation chair and their doctoral dissertation students. It will not be too long before the question for me, and many of my online doctoral dissertation chair colleagues, “Do you ever meet fact-to-face with your doctoral dissertation students?” will no longer be applicable.

References

CalPoly Research and Graduate Programs. (2009, December 3). Mission, Vision, and Values. Retrieved from http://rgp.calpoly.edu/mission.html

Chea, Terence. (2013, January 16). University of California wants more classes online. In The News: 'Times Square of Silicon Valley', Silicon Valley MercuryNews.com. Retrieved from http://www.mercurynews.com/breaking-news/ci_22383759/gov-calls-more-online-courses-at-ca-colleges

Garger, John. (2011, January 8). The Role of the Dissertation Chair. John Garger, Professional Copy Editor. Article Categories: Dissertations. Retrieved from http://johngarger.com/articles/dissertations/the-role-of-the-dissertation-chair

National Center for Education. (2012, May 4). Online University Statistics, Statistics Brain. Retrieved from http://www.statisticbrain.com/online-university-statistics/

University of Wisconsin, UWMilwaukee. (2013, January 29). Graduate School, Prospective and Incoming Students. Current Students. Ph.D. Students. Major Professor as Advisor. Retrieved from http://www.graduateschool.uwm.edu/students/current/doctoral/

Wisloski, Jess. (2011, December 16). Online Master's Degree Program at UC Berkeley School of Public Health is a University First. Get Educated.com: The Consumer's Guide To Online Colleges. Articles. Retrieved from http://www.geteducated.com/online-education-facts-and-statistics/latest-online-learning-news-and-research/465-new-online-degree-program-at-uc-berkeley-school-of-public-health-is-a-university-first

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Editor's Note: This paper makes the logical jump that students can view and/or listen to lecture presentations any time using computers and mobile devices, while discussion and interactive activities should have priority in live classrooms.

Designing easy and inexpensive flipped classes: for instructors and students

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USA

Abstract

The flipped class is a powerful teaching methodology that reverses the traditional classroom. In the flipped class students watch the lecture outside of the classroom, complete an assessment to demonstrate their mastery and then spend class time applying the concepts at deep levels. Instructors in teacher preparation classes need to be creating student assignments that allow their students to create flipped class projects to be prepared to implement these types of teaching methodologies when they become teachers. For students to complete flipped class assignments, the technologies used need to be easy to use, inexpensive and ubiquitously available.

Keywords: active learning, flipped class, moviemaker, imovie, technology, teaching methodology, project based learning

Introduction

Research has shown that concentration begins to decline after 10-15 minutes (Stuart & Rutherford, 1978), so extended lectures can be a tough teaching methodology to maintain student attention (Bligh, 2000). Flipped classes are a form of blended learning where the instructor creates content such as videos for students to watch outside the live classroom (Pink, 2010) and then class time is spent applying the concepts using active learning which results in higher student achievement (Hake, 1998; Knight & Wood, 2005). Teachers use assessment techniques such as interactive quizzes or projects to verify student completion of the home video and to measure student understanding of the topic (Barseghian, 2011). This type of teaching methodology is also known as the backwards classroom and reverse instruction because the traditional classroom would be to assign students a reading and then lecture during class time to passive students followed by an assessment to demonstrate their mastery (Ronchetti, 2009). In a flipped class, students study the topic independently and then spend the class time solving problems, applying the concepts to case studies, or doing practical application actvities. Instructors act as tutor or coach to help students when they have trouble applying the concepts (Alvarez, 2011). Flipped classes allow instructors to spend more time with students and allow students to create higher level application projects (Tucker, 2012) which results in an increase in learning (Mazur, 1991). There is a common misconception that the flipped class is strictly about the creation of the video lesson, but this is the part that frees up the time and enables the instructor to have the opportunity to use class time to apply the concepts at deeper levels (Bergmann, Overmyer & Willie, 2012).

Students not only need to be experiencing flipped classes, but also need to learn how to create digital media products such as this to become proficient in the 21st century digital skillset students need to develop (Partnership for 21st Century Skills, 2011). For these types of projects to be successfully implemented as student assignments, the process and technologies used to create the Flipped Class assignments need to be easy to use and inexpensive to purchase. The technologies used also need to be ubiquitously available so that all students have ready access and online students who cannot come to campus to access the university lab computers have availability to the technologies from home. This paper reviews the process of creating flipped classes that uses

technologies that are inexpensive and ubiquitously, available on either a PC or Mac environment, and would be easy to implement in the classroom either as an instructor teaching methodology or an as a student assignment.

Step #1: Create content

The first step in creating a flipped class is to create the content for the video. Microsoft PowerPoint can be used to create the slides for the video. Microsoft PowerPoint is a widely used productivity tool that is available to students in most campus labs and on most students' computers. If Microsoft PowerPoint is not available, students have access to free versions of presentation software such as Google Drive Presentation (Google Apps Docs Presentations, n.d.) or the free open-source Apache OpenOffice presentation software (Apache OpenOffice, n.d.).

Effective PowerPoint slide design

The majority of students and instructors feel comfortable using PowerPoint, but unfortunately most use the traditional 6X6 bullet point slides which put up to six lines of bulleted text on each slide with up to six words on each line (Tufte, 2006). The 6X6 design can cause cognitive overload which interferes with effective learning (Atherton, 2009; Mayer & Moreno, 2003). Creating PowerPoint slides with an effective design is one of the most challenging parts of this project because students and instructors assume they already know how to create PowerPoint slides and are resistant to change.

Slides should be created using the Atkinson and Mayer (2004) Beyond Bullet Point (BBP) design format. The BBP format is a brain-based research design that has been shown to improve students' learning (Mayer, 2009) and is a simple but powerful method for producing PowerPoint slides. The BBP design requires the elimination of the traditional "death-by-PowerPoint" bulleted text and replaces it with a design that minimizes cognitive overload. The BBP design (Atkinson, 2011) gives some simple techniques for creating effective designs:

Write a clear headline on every slide:

The slide headline should be written as if it is a headline of a newspaper article whose purpose is to grab your attention. The headline should have a noun, a verb and a short sentence that readers can quickly scan and completely understand the point of the slide. Each headline needs to have a consistent format on every slide so that the reader does not have to lose focus searching for the headline. The headline should be a consistent two lines with the same text size, font color and font style on each and every page. The first slide should be created and then duplicated to ensure consistency on each and every slide.

Chunk up the story into bite sized pieces

The data should be chunked up so that each slide has one point. This one point is summarized by the headline and the image on the slide.

Include an image

In the place of the bullet points, use an image that closely aligns with the point of the slide. Medina (2008) found that images are much more powerful than text to increase learning, so bulleted-text should be removed and replaced with one image that summarizes the point of the slide. Sometimes one image does not accurately depict the point of the slide so connectors can be used to unite two images into one image point. An example would be when depicting the growth of a child into an adult might need an image of a child and an image of an adult with an arrow showing the growth from one to the other.

Remove extraneous content

Any information on the slide that does not directly help tell the story of that slide should be removed. This includes any logos and template backgrounds that do not support the message. Any moving or rotating images that detract from the message should also not be included.

Audio script

An audio script needs to be added that will be used when recording the audio. To do this, students and instructors open PowerPoint and switch to the Notes View. In the Notes pane within PowerPoint, they write their audio script. Since the PowerPoint has been chunked up to the point there is only one point per slide, there should only be a couple of paragraphs included. Text in the PowerPoint notes pane works similarly to Word, so the audio script can be written in full sentences and full paragraphs with in-text citations included. The references used for the presentation should be listed on the last couple of slide(s) so that the audience will see the research behind the presentation.

Saving PowerPoint slides to JPG images

Students can use a video editor to add audio to their PowerPoint slides. Unfortunately, video editors do not import PowerPoint slides but need JPG images instead. The PowerPoint frames can be easily saved as JPG images by simply clicking File/ Save As and changing the "Save as type" at the bottom of the dialog box to JPG. In seconds, their entire PowerPoint presentation is saved as individual jpg files (images).

Printing PowerPoint notes view for audio narration

The PowerPoint file should be printed out in the Notes View so that there is an audio script to be used when recording the audio. The easiest way to print out the PowerPoint Notes View is to click File/Print and then change the settings to set the properties from Full Page Slides to Notes Page. Once printed, the instructor or student can use the Notes Page PowerPoint to read the audio narration.

Step #2: Adding audio

The next step of the process is to use a video editor to add audio to each of the PowerPoint slides. There are many sophisticated and expensive video editors such as Camtasia, Adobe Premiere, and Final Cut Pro. While these are powerful video editors, they would be cost prohibitive to be required for student purchase (and many instructors too). All Macintosh computers come with a free video editor (iMovie) and Windows computers also come with a free video editor (Sound Recorder and MovieMaker). Both iMovie and MovieMaker are easy to use and surprisingly robust. Instructors and students can choose to use iMovie or MovieMaker to add audio to their flipped class project. You will need an input and output device to record and listen to your audio, so you should consider using something like a USB headset which will cost less than $50.

Each PowerPoint JPG slide should be recorded as a separate audio recording so that it is possible to review each section and re-record as needed. This gives the recorder the option to relax between recordings and take drink breaks to prepare for the next recording. Generally students and instructors are uncomfortable with the sound of their voice when they begin this project, but quickly move beyond discomfort and appreciate the value of the project. Once all PowerPoint JPG slides have an audio recording, the project can be exported to a compress video format such as .MOV, MPEG4, .AVI. WMV and others. Here is how to add audio for MovieMaker with a PC or iMovie with a Mac.

MovieMaker for PC

MovieMaker does not include audio narration, so an option available is to use the Sound Recorder program, which is included with all Windows computers. Launch the Sound Recorder program and record a separate audio narration for each PowerPoint JPG slide. Give each recording a meaningful name so it will be easy to match the sound recording to the slide (Slide1, Slide2). Take a minute to open each sound recording file to listen to it and verify that you are satisfied with the quality of the recording and make adjustments as needed. Close Sound Recorder when you have finished all recordings.

Launch MovieMaker and import all the PowerPoint JPG slides and the audio narrations. You can import multiple files by clicking on the first file and holding down your shift key and clicking on the last file. All PowerPoint JPG slides and the audio narrations are imported quickly into MovieMaker. Drag each PowerPoint JPG slide and audio narration file to the appropriate spot on the time line. You will need to make adjustments to make each PowerPoint JPG slide to last the same length as the recording by clicking on each JPG image and changing the duration to be about three to five seconds longer than the audio narration file. Export the project to a digital video. MovieMaker will save the project to a proprietary Microsoft .WMV format. The movie project begins to render and will show its progress. Be patient at it may take a while for the rendering to be complete.

iMovie for Mac

iMovie has the ability to record audio within the program, so it is not necessary to use an additional program to record audio. Launch iMovie and create a new project. While you are in the Project Library right click on your project and change the Aspect Ratio to 4:3 since the slides are squarer than widescreen videos. Import the PowerPoint JPG slides into iPhoto library which makes them available to access in iMovie. Drag each PowerPoint JPG slide to the timeline. Click each PowerPoint JPG slide and record a separate audio recording for each slide. Take a minute to listen to each recording to verify that the quality is acceptable. If not, just delete that audio recording and record it again. Extend each PowerPoint JPG image to match the length of the recording by clicking on the image and selecting Clip Adjustments. Make the image last three-five seconds longer than the audio.

To save the iMovie project to a compressed finished video format, just click Share/ Export Using QuickTime and give your video a meaningful title. Select the Export option as “Movie to Apple TV” and navigate to where you want to save on your computer. Be patient as the project renders to the compressed video format.

Step #3: Post to cloud-based service

Once the flipped class video has been created, it is necessary to publish it some place so that students can access the video. Publishing to YouTube is an excellent option that is free and easy to utilize. YouTube (2012) reports that there are over 800 million unique users with over 4 billion hours of video watched each month. By default, users can upload videos that last up to 15 minutes, but users who comply with the YouTube’s Community Guidelines may be extended up to 12 hours in length (YouTube Upload, 2013). If instructors or students feel uncomfortable sharing their flipped class video in a public format, it is possible for them to change the privacy settings for videos uploaded to YouTube by making them (1) public for anyone to view, (2) private so that only selected people can view the video or (3) unlisted where only people with a link to the video can view it. Once the video is uploaded, YouTube provides a URL link or an HTML embed code which would allow its insertion into a web page or a URL option.

There is no charge to publish to YouTube and it may even save money since you do not have to purchase server space to upload the video. YouTube also provides excellent video tutorials that

give step-by-step instructions about how to publish to YouTube (YouTube Upload Instructions, 2013). The skillset needed for the 21st century learner and instructor requires the ability to create flipped classes where students can have access to knowledge at any time, from any place and on any device. Content posted on social media sites such as YouTube will allow users to access the information they are looking for at the moment they need it. Having online videos support the flipped classroom so that students can watch the video outside of class and then come to class and spend the time applying the ideas and concepts learned while watching the video.

Step #4: Assessing knowledge

To ensure that students have watched the video and have solid understanding of the content, it is critical they are assessed on the content. If your school has a Course Management System (CMS) such as BlackBoard, Desire2Learn, Moodle or Sakai, you can create an online quiz where you have selected the correct answers and set the properties of the quiz to automatically grade and upload the grade to the electronic grade book. It is also possible to add more questions than needed to the quiz and then set the properties to randomly draw a specified number for the quiz to minimize cheating since each quiz would have a unique set of questions delivered in a different order for each and every student.

If your school does not have a CMS, Google Drive has the option for creating free quizzes. To get started it is necessary to create an account in Google. The quiz can be created in Google Drive forms. The quiz questions can have several types of responses including text, paragraph text, multiple choice, check boxes, choose from a list, scale or grid. Upon completion of the question, the Google quiz will save in the cloud and give a URL or embed code to access the online quiz. The URL can be sent via email to the students or embedded into a web site. The results of the Google quiz are saved to a spreadsheet to allow the instructor to grade. It is also possible to add "if then" formulas to grade the spread sheet automatically (Google Apps Docs Forms).

Step #5: Adding context to digital video

Instead of simply sending out the URL link to the flipped class video, it is important to embed the video in a web page to allow you to add context about the entire lesson. The web page can include text information that is important to know before or after watching the video, the embedded video, links to the assessment that the student needs to complete to demonstrate their mastery and any other important information the student needs to know. Developing web sites allows instructors to post content online so that the cloud based content can be accessed from any place at any time by their students. Up to this point most web developers used HTML editors such as Adobe Dreamweaver to develop web pages. While Dreamweaver is much easier than coding the page in HTML, it still has a steep learning curve and is pricy. Besides the cost and complexity of creating web sites, it was then necessary to pay for a site to host the web site.

Weebly has made the process of creating and posting web sites much easier because they provide web-hosting service and also provide a proprietary drag-and drop web site builder that is so simple that beginner web site developers can utilize it almost no training. In 2007, Time magazine ranked Weebly number four out of the 50 best web sites (Buechner, 2007). Weebly provides free educational accounts that allow instructors and students to get started building two web sites at no charge. The free account provides access to the majority of features available in their paid plan. The free account has fairly advanced multimedia support such as the ability to include photo galleries, slideshows, upload files, audio player, upload video, embed documents, include flash files, add Google Maps, and embed YouTube videos. It is also possible to add online polls, contact forms, and surveys. There are more than 100 templates available for the free Weebly plan which allows for significant customization to the web sites. Free accounts do not have any storage space limitations, but have limitations on individual files that can be no more

than 10MB. Weebly has well documented online help support to help instructors and students create and post their web sites (Weebly Support Center). Students can use their Weebly web sites as the central repository to post their projects as they complete them. Students can post their PowerPoint files, upload their flipped class digital videos, embed their YouTube videos, post links to any online assessments, and post content onto their Weebly web site.

Step #6: Applying the knowledge during class

The flipped class is a pedagogical model where students view the lecture at home, complete an assessment to demonstrate their mastery of the material and then spend time in class discussing and applying the concepts and principles. This will allow instructors to detect any widespread misconceptions in thinking, encourage interaction between students and allow them to learn from one another (Educause Learning Initiative, 2012).

Mazur (1997) discovered that his Harvard students were memorizing formulas for his Physics class and did not truly understand the concepts he was teaching. Mazur began using the flipped class methodology where students would watch the lecture outside of class, take an assessment to demonstrate their mastery and then spend class applying the concepts using Peer Instruction. Instead of lecturing in class, Mazur now gives students complex problems to solve. This requires that students have a deep enough understanding of the concepts to be able to apply them to solve the problem. Students make a commitment to their answer by using clickers to vote for their selected response. This allows Mazur to identify any areas of misconception. When the majority of students get it right, he knows he does not need to spend any additional time on the subject, however when a large percentage get it wrong he can conduct a quick mini-lecture. When the results are split, he will ask students to find someone is the class with a different answer and discuss the problem and figure out the correct answer. He has found that most of the time the person who has the right answer can use “peer instruction” to convince the other student of the correct answer (Mazur, 1997).

To implement peer instruction in this manner, the instructor would need to have access to an audience response system (clickers). Many colleges and universities are using polling systems such as Turning Point that require students to purchase clickers which cost about $40 per student. Another inexpensive option is online polling systems where students use their own cell phone, smart phone, tablet or laptop to respond to the polls. Poll Everywhere has a free plan available to educators or students that will allow up to 40 responses per poll or audience size. The number of polls or questions that you have on the free educator plan is unlimited, but there can only be 40 responses per question (Poll Everywhere Pricing, n.d.). Creating polls in Poll Everywhere is quick and simple. The company has robust tutorials that explain everything you need to know about how to create your polls (Poll Everywhere User Guide, n.d.). To get started using Poll Everywhere you first need to create an “educator” account. To begin building your question ban, you simply click “New Poll” and type in your question. Then select whether you want an open ended response or multiple choice response from your audience. If multiple choice is selected, the next step would be to specify some options to which the audience can respond. This process is continued until you have as many questions as you like. You can also easily add images or math or scientific options in the polls. The incorporation of Poll Everywhere would allow instructors to inexpensively incorporate polling into their classroom to allow them to identify misunderstandings of the concepts.

Conclusion

The flipped class teaching methodology reverses the traditional classroom structure and has the student watch the lecture outside of class, complete an assessment to demonstrate their mastery of the material and then spend time during class applying the concepts to allow instructors to

identify any misconceptions for opportunities to reteach or peer instruction. There is a common misconception that the flipped class is strictly about the creation of the video lesson, but this is the part that frees up the time and enables the instructor to have the opportunity to use class time to apply the concepts at deeper levels. Instructors in teacher preparation classes need to be implementing flipped class teaching methodologies to take advantage of the learning benefits, but also creating assignments for students to complete. Instructors cannot create flipped class assignments for students if the technology used to create the projects is complicated and/or expensive. Technologies such as YouTube, Google Drive, Weebly web sites and Poll Everywhere allow educators to create flipped class student assignments that are inexpensive and easy to complete.

References

Alvarez, B. (2011, September 2011). *Flipping the classroom: Homework in class, lessons at home.* Retrieved from the National Education Association. http://neaprioritySchools.org/successful-students/flipping-the-classroom-homework-in-class-lessons-at-home-2

Appache Open Office. (N.D.). Retrieved from the Apache OpenOffice web site at http://www.openoffice.org/product/

Atherton, C. (2009) *Visual attention: a psychologist's perspective*. Proceedings of Technical Communication UK Conference.

Atkinson, C. (2011). *Beyond Bullet Points: Using Microsoft PowerPoint to create presentations that inform, motivate, and inspire.* Redmond, Washington: Microsoft Press.

Atkinson, C. & Mayer, R. E. (2004). Five ways to reduce PowerPoint Overload. Retrieved http://www.indezine.com/stuff/atkinsonmaye.pdf

Barseghian, T. (2011, February 5). *Three trends that define the future of teaching and learning.* In Mind Shift from http://blogs.kqed.org/mindshift/2011/02/three-trends-that-define-the-future-of-teaching-and-learning/

Bergmann, J., Overmyer, J. & Willie, B. (2012, April 14). The flipped class: What is is and what it is not. *The Daily Riff*. Retrieved from http://www.thedailyriff.com/articles/the-flipped-class-conversation-689.php

Bligh, D. A. (2000). *What's the use of lectures?* San Francisco: Jossey-Bass.

Buechner, M. M. (2007, July 8). 50 Best Websites 2007: Weebly Build a web site. *TIME* Magazine. DOI: http://www.time.com/time/specials/2007/article/0,28804,1633488_1633608_1633636,00.html

Educause Learning Initiative. (2012, February). 7 things you should know about flipped classrooms. Retrieved from http://trc.virginia.edu/Flipping%20the%20Classroom.pdf

Google Apps Docs Forms. (N.D.) Retrieved from the Google web site http://edutraining.googleapps.com/Training-Home/module-4-docs/module-4-chapter-6

Google Apps Docs Presentations. (N.D.). Retrieved from the Google web site http://edutraining.googleapps.com/Training-Home/module-4-docs/module-4-chapter-5

Hake, R. R. (1998). Interactive-engagement vs. traditional methods: A six-thousand-student survey of mechanics test data for introductory physics courses. *American Journal of Physics, 66*, 64-74. DOI: http://web.mit.edu/rsi/www/2005/misc/minipaper/papers/Hake.pdf

Knight, J. K. & Wood, W. B. (2005, Winter). Teaching more by lecturing less. *Cell Biology Education, 4*,(4): 298-310.

Mayer, R. E. (2009). *Multimedia Learning*. New York: Cambridge University Press.

Mayer, R. E. and Moreno, R. (2003) Nine ways to reduce cognitive load in multimedia learning, *Educational Psychologist 38*(1), 43-52. Retrieved from http://cursa.ihmc.us/rid=1107382637890_1091797698_982/Mayer_2003.pdf

Mazur, E. (1991, February). Can we teach computers to teach? *Computers in Physics, 5*, 31-38.

Mazur, E. (1997). *Peer Instruction: A User's Manual*. Upper Saddle River, NJ: Prentice-Hall.

Medina, J. (2008). *Brain rules: 12 Principles for surviving and thriving at work, home, and school.* Seattle, WA: Pear Press.

Partnership for 21st Century Skills. (2011). *Framework for 21st Century Learning.* Retrieved from http://www.p21.org/overview/skills-framework

Pink, D. (2012, September 12). Think tank: Flip-thinking- the new buzz word sweeping the US. *The Telegraph*. Retrieved from http://www.telegraph.co.uk/finance/businessclub/7996379/Daniel-Pinks-Think-Tank-Flip-thinking-the-new-buzz-word-sweeping-the-US.html

Poll Everywhere Pricing. (n.d.). Poll Everywhere Change Your Plan. Retrieved from the Poll Everywhere web site http://www.polleverywhere.com/account/plans

Poll Everywhere User Guide. (n.d.). Poll Everywhere User Guide: Put on your Scuba gear and get ready to dive deep. Retrieved from the Poll Everywhere web site http://www.polleverywhere.com/user-guide

Ronchetti, M. (2010). Using video lectures to make teaching more interactive. International *Journal of Emerging Technologies in Learning (iJET) 5*(2).

Stuart, J. & Rutherford, R. J. (1978). Medical student concentration during lectures. *The Lancet*, 514-516.

Tucker, B. (2012, Winter). The flipped classroom. *EducationNext (12)*1. Retrieved from http://educationnext.org/the-flipped-classroom/

Tufte, E. (2006). *The cognitive style of PowerPoint: Pitching out corrupts within*. Cheshire, CT: Graphics Press.

Weebly Support Center. (n.d.). *Beginner's Guide to Weebly.* Retrieved from the Weebly web site http://help.weebly.com/beginners-guide.html

YouTube. (2012). *YouTube Statistics*. DOI: http://www.youtube.com/t/press_statistics

YouTube Upload. (2013). YouTube Help: Upload videos longer than 15 minutes. Retrieved from the YouTube web site http://support.google.com/youtube/bin/answer.py?hl=en&answer=71673

YouTube: Upload Instructions. (2013). *YouTube Help: Upload instructions and settings.* Retrieved from the YouTube web site http://support.google.com/youtube/bin/topic.py?hl=en&topic=2888648&parent=16547&ctx=topic

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Editor's Note: Student response devices have many uses in the hands of a creative teacher. They can enhance interaction, gather data to guide the learning process, and provide a record of progress for every student. As students and teachers are required to become more accountable, it provides an excellent tool for "troubleshooting" to resolve learning difficulties. It may increase preparation time for lessons prepared by individual teachers, or provide more productive use of teacher time when prepared and shared by groups of teachers or curriculum-media professionals.

Are student response clickers appropriate for K-12 classrooms?

Morgan M. Wilson
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Abstract

This paper includes research into incorporating student response clickers into K-12 classrooms. Are student response systems appropriate for K-12 classrooms? An overview of what "clickers" are, the history, the purpose, their incorporation and challenges are discussed.

Keywords: "Clickers", student response systems (SRS), hand-held remotes, student participation, personal response systems, K-12 Classrooms, technology, classroom communication system, electronic voting system, classroom response system, audience response system

Introduction

"Clickers" are hand-held student remotes that use infrared, radio frequency or Wi-Fi wireless technology to transmit and immediately record student responses to instructor's questions ("7 Things You Should Know About Clickers," 2005). A receiving station or computer is placed near the front of the room to record student responses. The student responses can then be displayed on the interactive white board. The Student Response System helps create active participation by all students and provides immediate feedback to the instructor. The uses of "Clickers" have many educational benefits. Are Student Response Clickers appropriate for K-12 classrooms?

> "The idea is that the instructor can then quickly collect data from an entire class, display the results of all the student responses, indicate to the students the correct answer and thereby provide immediate feedback, fill in any gaps in understanding and thereby increase learning," (Kuschke et al., 2011).

"Clickers" are also known as:

Audience Response System
Classroom Communication System
Classroom Response System
Electronic Voting System
Personal Response System
Student Response System

The Student Response System can be used to immediately assess student understanding of content being taught. "Unlike other forms of audience participation, Student Response Systems use software to record audience responses, and those responses are stored in a database which can be analyzed over time and used for research" ("Personal Response Systems," 2013). The systems

can be used across educational disciplines to keep students engaged in what's going on in class. Based on student responses, teachers can make adjustments in the instruction to fill in any gaps in learning. The "Clickers" are effective in both large and small classroom settings. Student Response Systems are user friendly and easy to incorporate into the K-12 classroom.

"Clickers" are affordable and can be re-used in multiple classes. The Student Response Systems are relatively easy to use and do not require a lot of training. Depending on the size of the class, the system is financially manageable because each individual clicker costs between $20-$45. Teachers can also take advantage of web based polling sites. Depending on how large the audience is determines the monthly access fee, audiences smaller than 50 are free. Students use their cell phones, tablets or laptops to participate in the poll. Interaction and engagement can be facilitated successfully with "Clickers." Student Response Systems even out the playing field, they often limit the monopolization of one or two students in classroom discussions, and they give other students an opportunity to share as well.

History of student response systems

Audience or Personal Response Systems first became popular in Hollywood in the 1960's ("Personal Response Systems," 2013). Producers would use the systems to poll the audiences attending their television shows or movies. Rice University was one of the first universities to use a Student Response System for educational purposes ("Personal Response Systems," 2013). Students at colleges and universities have been using Student Response Systems since 1988 (Calhoun, 2013). The students at the university level reportedly enjoy using them and think they are fun (Gok, 2011).

Many studies have been conducted concerning the use of "Clickers" or Student Response Systems in the classroom. Most studies pertain to the university use of "Clickers". Most if not all of the studies collected data based on the professor or students' perceptions. Both the students and professors agreed that academic achievement improved with the use of Student Response Clickers (Calhoun, 2013, Gok, 2011, Kaleta & Joosten, 2007). A survey conducted at the University of Wisconsin showed that 94 percent of faculty polled felt that "Clickers" improved student engagement (Kaleta & Joosten, 2007). 74 percent of the faculty also agreed that the "Clickers" increased knowledge retention (Kaleta & Joosten, 2007).

Purpose

The purpose of using "Clickers" is to collect data, formative assessments, engagement, feedback and discussion.

According to Calhoun (2013), "There are two primary benefits of teaching with a Classroom Response System: Students are encouraged to commit to answers anonymously in class so their knowledge is not revealed publicly; however, their answers are graded privately afterward so they receive credit based on their own responses, and immediate feedback is provided for students and the instructor about a particular question."

The students have the opportunity to respond to every question without waiting.

21st century learning skills focus on critical thinking, collaboration, communication, analyzing information and problem solving (Jones, 2012). By re-evaluating lesson strategies and allowing for opportunities to explore, K-12 teachers can engage the students where they are in the learning process. Jones, (2012), states that learners must "do the content rather than just learning it." The students respond positively to the "Clickers" because it is anonymous and because it breaks information up into smaller chunks.

Most students don't participate in class because they fear they will look dumb. Student Response Systems dispel all of the preconceived notions students may have about class participation by recording the data anonymously therefore building the student's confidence and ability to respond and participate in class. K-12 students are more apt to answer honestly when using the "Clickers" instead of looking around the room and agreeing with the majority of their peers. Shy students or less confident students have a voice when they use the "Clickers" (Stowell et al., 2010). The human race is afraid of being judged. If this fear can be eliminated in the K-12 classroom by using "Clickers" for a little while during the day, it is obvious that K-12 classrooms should incorporate their use. The anonymity of the Student Response Systems means that fewer students will feel embarrassed when answering questions. Less embarrassment can lead to greater overall achievement for the students.

A qualitative and quantitative study at Dokuz Eylul University studied the perception of both the instructors and students stated, "Instructor's perceived outcomes of the use of Student Response Systems include increased student participation, increased student attendance, improved instructor-student interaction, active and collaborative learning activities, and an enriching educational environment" (Gok, 2011).

Incorporation

The University of Washington ("16 Suggestions for Teaching with Classroom Response Systems," 2013) has 16 suggestions summarized below for incorporating "Clickers" into the classroom. Most of the suggestions pertain to using the "Clickers" as discussion starters.

1. The teacher should always approach the "Clickers" with a plan in mind.
    a. What is the ultimate goal for the lesson?
    b. What do you want the students to learn from the poll?
2. Some questions posed should be open ended in order for the students to stop and think about their answers. After responding they are able to be active participants in class discussion for the day.
3. By using a variety of question types the students are less likely to lose interest in the Student Response System.
4. The teacher should be willing to experiment with questions.
5. Spontaneity can lead to productive class discussions.
6. "Clickers" can also be used in smaller settings where difficult or more controversial topics can be discussed freely.

7. Use of the Student Response Systems in the classroom leads to productive, higher-level thinking.
8. It is also important for the teacher to allow the students to share why they answered the way they did.
9. It is imperative for them to know why they got the answer wrong or correct.
10. If a difficult question is posed, the teacher should give the students time to work through it independently and in a small group setting.
11. It is also crucial for the teacher to review how successful the lesson was with the use of the "Clickers." The teacher should make adjustments as needed.
12. According to Lamwers (2012), teachers who use Student Response Systems are better able to differentiate their curriculum based on their student's needs.
13. The teacher should also seek support from other teachers using similar technology. Sharing teaching experiences, strategies and technology helps teachers grow.
14. The effectiveness of how the teacher uses the "Clickers" depends on how they are implemented.
15. "Students have indicated that they believe the effective use of technological tools can help them learn material better and make abstract or esoteric ideas more concrete; however, poor or improper use of technology can have the exact opposite results" (Davies et al., 2009).
16. "The use of "Clicker" cases has the potential to increase classroom interactions, although their efficacy depends largely on instructional strategies" (Herreid et al., 2011).

Student Response Systems to name a few:

iClicker - http://www1.iclicker.com

SMART Response - http://smarttech.com/response

PollEverywhere - http://www.polleverywhere.com/k12-student-response-system

ELMO CRV-32 Student Response System
- http://www.elmousa.com/crv-32-student-response-system

Virtual Clicker - http://studentresponsenetwork.com

Meridia Audience Response Systems - http://www.meridiaars.com/audience-response-rentals/student-response/?gclid=CO3vmeeWtLYCFa9eQgodHicA_A

Renaissance Learning - http://www.renlearn.com/2know/?gclid=COTc4f-WtLYCFc5_QgodWk8A5Q

iRespond - http://www.irespond.com/products/?gclid=CKbQtKaXtLYCFSHZQgodIFQAuA

Audience Response Solutions - http://www.audience-response-services.com/?gclid=CMHElLaXtLYCFYFxQgodknMATQ

CPS Student Response System - http://www.einstruction.com/cps-overview

PolyVision - http://www.polyvision.com/solutions/student-response-systems

Challenges

The research also discussed several challenges related to using Student Response Systems. SRSs are a fairly new technology; at times there are technical glitches that may affect the successful use in a lesson. Some glitches such as battery replacement or power connections are relatively easy fixes but there may be technical issues with software or communications between the hand-held device and the computer that would be more difficult to fix. When the instructor is not familiar with the technology they may fumble the lesson causing the students to lose interest in the technology and content. Proper training is necessary to ensure the effective integration of the "Clickers." Although the Student Response System only delivers quantitative data it can still be used as discussion starters for higher-level thinking. It is up to the teacher to create interesting and challenging questions in order for the SRS to be engaging.

Conclusion

The Student Response technology has been around since the 60's but has only been used educationally since the late 80's. "Clickers" are an affordable K-12 classroom technology that can be incorporated into any lesson in order to engage or assess the students. With proper training K-12 teachers can implement the use of Student Response Systems in their classroom successfully. According to research, Student Response "Clickers" would be appropriate for K-12 classrooms.

References

7 Things you should know about clickers (2005). Edu-cause Learning Initiative. Retrieved from http://net.educause.edu/ir/library/pdf/ELI7002.pdf

16 suggestions for teaching with classroom response systems (2013). Retrieved from http://www.bothell.washington.edu/learningtech/clickers/16-suggestions-for-teaching-with-clickers

Calhoun, J. (2013). Classroom response systems. Pedagogy in Action. Retrieved from http://serc.carleton.edu/sp/library/classresponse/index.html

Davies, T.L., Lavin, A., and Korte, L., (2009). Student perceptions of how technology impacts the quality of instruction and learning. *Journal of Instructional Pedagogies* 1 (1): 1-16.

Gok, T. (2011). An evaluation of student response systems from the viewpoint of instructors and students. *Turkish Online Journal Of Educational Technology*, 10(4), 67-83.

Herreid, C. F., Kang, H., Lundeberg, M. A., & Wolter, B. H. K. (2011). Students' perceptions of using personal response systems ("clickers") with cases in science. *Journal of College Science Teaching*, *40*(4), 14. Retrieved from http://go.galegroup.com.ezproxy.liberty.edu:2048/ps/i.do?id=GALE%7CA252634451&v=2.1&u=vic_liberty&it=r&p=ITOF&sw=w\

Jones, V. (2012). *Essentials for engaged 21st century learners*. Retrieved from www.techniques.com

Kaleta, R. and Joosten, T. (2007) Student response systems: A University of Wisconsin system study of clickers, *Educause Center for Applied Research Research Bulletin.* Vol. 2007, Issue 10, pp. 6–7.

Kuschke, R., Matus, J., & Summa, K. (2011). An analysis of technology-enhanced pedagogy and learning: student response systems (clickers) tool or toy? *International Journal of Business and Social Science*, *2*(12), 6+. Retrieved from

http://go.galegroup.com.ezproxy.liberty.edu:2048/ps/i.do?id=GALE%7CA285886445&v=2.1&u=vic_liberty&it=r&p=AONE&sw=w

Lamwers, L. M. P. (2012). The effect of student response systems (clickers) on student achievement and student engagement in a middle school science class. The College of St. Scholastica). *ProQuest Dissertations and Theses*, 40. Retrieved from http://search.proquest.com/docview/936705147?accountid=12085. (936705147).

Personal Response Systems (2013). Beyond Question Retrieved from http://www.bqlearning.com/Beyond-Question/what-is-a-response-system#history

Stowell, J. R., Oldham, T., & Bennett, D. (2010). Using student response systems ("clickers") to combat conformity and shyness. *Teaching Of Psychology*, 37(2), 135-140. doi:10.1080/00986281003626631

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