

3-1-2010

## Online Lecturing: Suitable for all Courses?

Peoi-Shaun Shum  
peoi.shuan@gmail.com

Lesley Land

Geoffrey Dick

Follow this and additional works at: <http://aisel.aisnet.org/sais2010>

---

### Recommended Citation

Shum, Peoi-Shaun; Land, Lesley; and Dick, Geoffrey, "Online Lecturing: Suitable for all Courses?" (2010). *SAIS 2010 Proceedings*. 4.  
<http://aisel.aisnet.org/sais2010/4>

This material is brought to you by the Southern (SAIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in SAIS 2010 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).

# ONLINE LECTURING: SUITABLE FOR ALL COURSES?

Peoi-Shuan Shum

UNSW

[peoi.shuan@gmail.com](mailto:peoi.shuan@gmail.com)

Lesley Land

UNSW

[l.land@unsw.edu.au](mailto:l.land@unsw.edu.au)

Geoffrey Dick

UNSW

[g.dick@unsw.edu.au](mailto:g.dick@unsw.edu.au)

## ABSTRACT

Universities worldwide are rapidly embracing online technologies to make their courses more convenient for today's tech savvy students. Consequently, academics are suddenly met with increased workload and the need to learn new technologies. Thus, to ensure the success and continual use of this new technology, it is important to gauge academics' acceptance of online lecturing. However, the suitability of online lecturing may not be suitable for all courses.

Building on Davis's (1989) TAM model and Daft and Lengel's (1986) media richness theory, this study provides empirical evidence for the effects of perceived usefulness, perceived ease of use and perceived media richness on the academics' choice to adopt online video lecturing in differing courses.

## Keywords

Technology Acceptance Model (TAM), Media Richness Theory (MRT), online lecturing.

## INTRODUCTION

With increasing student numbers, changes to student demographics, limitations to room sizes and equipment availability, online lecturing is seen as a response to addressing the changing context of higher education. Many higher education institutions are expanding their investment in e-learning to enhance learning performance, while others are adopting e-learning practices so that they do not fall behind (Govindasamy, 2002; Cheung and Huang, 2005). As a result, approximately 95% of higher education institutions are now utilising some method of e-learning (Pollack, 2003) including course management systems such as WebCT and Blackboard, online discussion forums, podcasts and chat rooms.

The term online lecturing is used in this study to refer to the range of video technologies used to deliver digitally captured lectures in a visual format to an online community. Common examples include the YouTube, iTunes and university branded online video channels to deliver lecture content. Using online lecturing, students can access educational content at their own convenience at any place, anytime. This is particularly useful to students who are unable to attend lectures due to work commitments, illness and distance barriers. The online lectures can also be used to review the course for exam preparations as well as for students to seek clarification if they had fallen behind in the lecture. The success of online video lecturing has seen lectures being delivered on YouTube and iTunes at many leading universities including Duke, Harvard, MIT, University of California, Yale, Stanford and Oxford to name a few.

As online lecturing is being adopted rapidly by universities worldwide, the understanding of the level of academics' acceptance of these technologies is crucial to its success. Whilst, online lecture delivery may be advantageous/suitable for courses that are heavily content based, the suitability of online lecturing is questionable for practical/hands on courses as online delivery eliminates students' ability to interact in hands-on activities that was once available in face-to-face lectures (McConnell & Schoenfeld-Tachner 2001). Hence, the focus of this study is to understand whether online lecturing is more suitable for particular courses and/or disciplines. In this study, results from the faculties of business and law (which are heavily information disseminators) will be compared with the more practical/hands-on faculties of science, engineering and the built environment (includes the architecture school).

## TECHNOLOGY ACCEPTANCE MODEL (TAM) AND E-LEARNING

Since its introduction by Davis (1989), TAM has been used extensively in studies predicting acceptance of ICT technologies including online shopping, online banking and software applications (Selim, 2003). In TAM, ‘perceived usefulness’ and ‘perceived ease of use’ are hypothesised to be the major determinants of technology acceptance (Davis, 1989; Selim, 2003).

### Perceived Usefulness (PU)

In TAM, perceived usefulness is defined as “the extent to which a person believes that using a particular technology will enhance his or her job performance” (Davis, 1989). Academics may perceive online media to be useful as it can help broaden and enrich the students’ learning experience by serving as a more convenient learning platform that can be accessed regardless of place or time differences. Improvement in student performance will be reflected in the lecturer’s achievements in both student grades and student feedback. Existing IS literature has provided extensive support of the significant relationship between perceived usefulness and usage intention (Davis et al., 1989; Zhang et al., 2008; Saeed and Yang, 2008; Lua et al., 2005; Wang et al., 2006; Yi and Hwang, 2003; Lee et al., 2007). It is expected that academics will use online media if they find that these technologies are useful in the completion of their task, thus:

**H1:** PU will positively influence the lecturer’s intention to use online lecturing

### Perceived Ease of Use (PEOU)

In TAM, PEOU is defined as “the degree to which a person believes that using the system will be free from effort” (Davis, 1989). In this study, PEOU refers to how easy the lecturer believes it is to operate these online video channels to record and publish the lecture recordings. Many studies have provided strong empirical support for the relationship of perceived ease of use on usage intention, either directly or indirectly through its effect on perceived usefulness (Yuen and Ma, 2008; Zhang et al., 2008; Yu et al., 2005; Saeed and Yang, 2008; Lua et al., 2005; Wang et al., 2006; Yi and Hwang, 2003; Lee et al., 2007). Some studies have also found that PEOU is a better predictor of intention to use than PU (Lowry, 2002 in Lua et al., 2005). It is hypothesised:

**H2:** PEOU will positively influence the lecturer’s intention to use online lecturing

**H3:** PEOU will positively influence the PU of online lecturing

## MEDIA RICHNESS THEORY

Media Richness Theory (MRT) developed by Daft and Lengel (1986) states that the communication efficiency between people is affected by the fitness of the media and the characteristics of the communication task. According to Daft et al. (1986), media richness is based on the criteria of the medium’s capacity to:

- (1) provide immediate feedback,
- (2) transmit multiple cues (body language, facial expressions and tone of voice),
- (3) convey language variety of verbal and non-verbal information (e.g. signs and symbols); and
- (4) personalise the message to convey the emotions and feelings of the message sender

If a communication medium is rich, there will be less uncertainty and ambiguity associated with the task and hence there will be less effort required to use it which may result in the user experiencing more satisfaction in using it (Lee et al., 2007). Lim and Benbasat (2000) have also found that a medium that allows for sending and receiving of multiple cues to be perceived as useful. Thus, from the perceived media richness (PMR) of online lecturing mediums, it is hypothesised that:

**H4:** PMR has a positive impact on PU of using online video media

**H5:** PMR has a positive impact on PEOU of using online video media

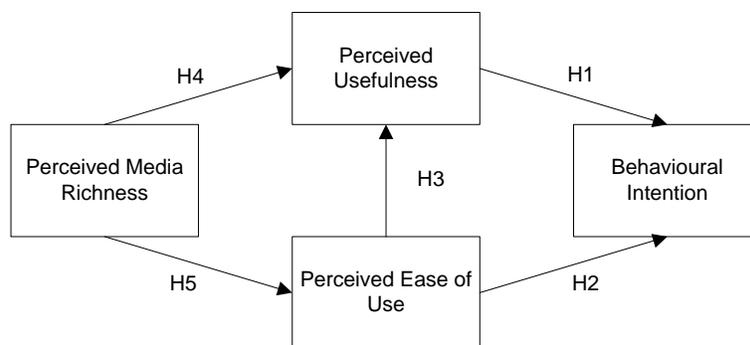


Figure 1. Research model

## RESEARCH METHODOLOGY

A questionnaire was developed based on items adapted from prior studies that had demonstrated validity and reliability. To fit the context of this study, minor wording adjustments were made to the questionnaire items. Participants were asked to state the extent to which they agree with that statement using a Likert scale with 5 options with 1 being strongly disagree and 5 strongly agree.

A total of 135 responses were collected from a major Australian university; 48 from the abstract group (business and law disciplines) and 87 from the practical group (science, engineering and built environment). Among the respondents, 64% were male and 36% female. The respondents had varying teaching expertise from associate lecturers to professors, and reported different levels of self perceived computer usage. The average respondent was aged in the 46-55 age group with an average of 13 years lecturing experience and good (self perceived) computer literacy. Regarding usage of the technologies under study, all participants had either 'never' used or 'rarely' used these technologies.

Data analysis of the research model was conducted using Partial Least Squares (Smart-PLS 2.0 M3), a structural equation modeling technique. PLS is being used as it is a primary technique for causal-predictive analysis in situations of low theoretical information and is appropriate for the early stages of theory development (Howell and Higgins 1990). Since the use of Online media for lecturing purposes is still in the early stages (at least widely in academia and given the recent availability of tools such as YouTube and video technology) with no known literature exploring the acceptance and effect on its use to higher learning institutions, PLS is appropriate for this study.

## RESULTS

To ensure that meaningful results were drawn from the structural model, the measurement model was first assessed for discriminant and convergent validity.

### Measurement Model

Evaluation of the measurement model (outer model) involves examining the relationships between the indicators and its corresponding construct for discriminant and convergent validity. In PLS, Divergent validity was assessed by examining intercorrelations, AVE and cross loadings. Convergent validity was assessed by checking loadings and weights, Cronbach alpha and composite reliability.

The composite reliabilities of all reflective construct scales ranged from 0.855 to 0.945 which exceeds the minimum threshold value of 0.60 (Hair et al. 2006; Hulland 1999). Similarly, Cronbach alpha values of all reflective construct scales ranged from 0.778 to 0.912 which exceeds the recommended threshold value of 0.70 (Chin 1998) and 0.6 for exploratory studies. Bootstrapping method (200 resamples) was used to test the validity of the constructs and the significant level of

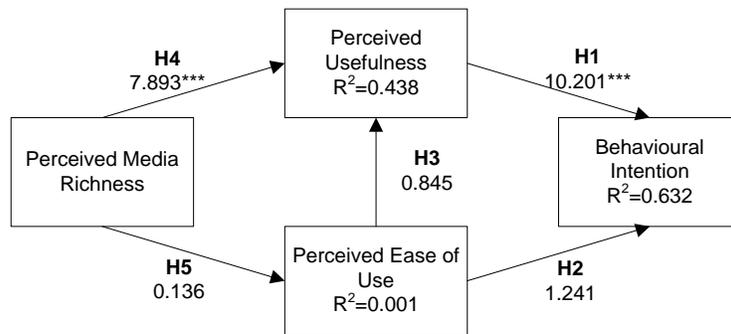
regression path coefficients. All items loaded substantially high on their intended construct with relatively small cross loadings. All loadings were found to be significant at  $p < .001$  level.

All AVE values were higher than 0.5 (which implies that at least 50% of the variance of the indicators are accounted for (Chin 1998). Furthermore, the square root of AVE for each construct was larger than the correlation between the assigned construct and any other construct in the correlation matrix, thus demonstrating good discriminant validity (Chin 1998).

As both convergent and divergent validity of all reflective constructs were met, the constructs were considered reliable and valid.

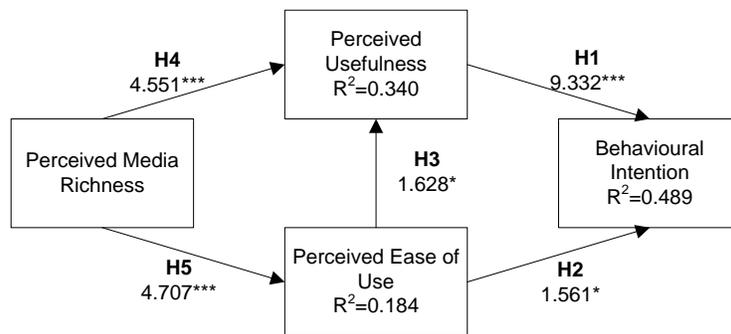
**Structural Model**

The structural model (inner model) is a representation of the relationships between the constructs. To assess how well the structural model predicts the hypothesized paths, the path coefficient value for each exogenous/endogenous pair and R square values for endogenous LVs was considered. A large number of paths were found to be significant as shown in figures 2 and 3 which outlines the overall results from PLS with bootstrapping (200 resamples). The results indicate considerable support of the model with an R-Square value of 0.632 and 0.489 for behavioural intention. Additionally, blindfolding with an omission distance of 25 was run. For the structural model to possess predictive relevance,  $Q^2$  value has to be greater than 0 (Chin 1998). All  $Q^2$  values were above 0.37, thus the structural model has satisfactory predictive relevance.



\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$  (based on one-tailed test)

Figure 2. Structural Model – Abstract courses



\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$  (based on one-tailed test)

Figure 3. Structural Model – Practical courses

## DISCUSSION

Consistent with previous studies, PU was found to have significant relationships with predicting intention to use online video lecturing. Perceived Usefulness was found to be the dominant determinant in predicting intention to use online lecturing. This indicates that the perceived usefulness of these technologies is particularly important for academics. It was found that the perceived media richness of the technologies had a significant relationship with perceived usefulness. This implies that if academics perceive the media to be rich, the more likely they will find it useful.

However, there were striking differences between the 2 groups for the relationships involving PEOU. For the practical group, PEOU was found to have significant relationships with PU and BI, however no such relationship was found with the abstract group. A possible explanation for this result is that the abstract group reported a higher self perceived computer efficacy score of 4.625 (1 being poor and 5 being excellent, with the respondents being asked to rate themselves in terms of computer literacy) whilst the practical group had a lower score of 4.23. The abstract group may already be comfortable with technology and thus not see how the ease of use can lead to improved usefulness of the technology or lead to their use of the technology. However for a group that is less familiarised with technology, the inability to use the technology would ultimately render it as useless and the group not having any intentions to use it even if it is perceived to be as useful. Hence for the practical group, university management may consider providing workshops, manuals and IT support to help improve the computer self efficacy of academics. It is also possible this group they didn't see the delivery medium as being appropriate and this may have had some effect on their assessment of computer efficacy – in this case the focus of support might have to move to medium itself.

## LIMITATIONS AND CONTRIBUTIONS

The first limitation is the generalisability of the current study as all data will be collected from one university; hence, the results will be difficult to generalise to other higher education institutions as each university has different preparedness in accepting e-learning initiatives. Other limitations include the possibility that some relevant constructs are not included and response bias.

Nevertheless, this study contributes to literature through its identification of contributing factors surrounding lecturer's acceptance of online lecturing. Importantly, the results help to dispel the belief that online lecturing is only suitable for courses that are heavily theoretical and abstract in nature as both groups found that online lecturing as possessing high perceived media richness and was perceived as useful. Furthermore, findings from this study can be used by educational organisations to help gauge whether the use of online lecturing would be a success within their own learning environment and introduce initiatives to help reduce the negative factors/perceptions.

## REFERENCES

1. Ajzen, I. & Fishbein, M. (1980) *Understanding attitudes and predicting social behaviour*, Englewood Cliffs, NJ: Prentice-Hall.
2. Cheung, W. and Huang, W. (2005) Proposing a framework to assess Internet usage in university education: An empirical investigation from a student's perspective, *British Journal of Educational Technology*, 36, 2, 237–253.
3. Chin, W. W. (1998) The partial least squares approach to structural equation modeling, in Marcoulides, G.A. (Ed.) *Modern Methods for Business Research*. Mahwah, New Jersey, Lawrence Erlbaum Associates.
4. Daft, R.L and Lengel R.H. (1986) Organizational Information Requirements, Media Richness and Structural Design, *Management Science*, 32, 5, 554–571.
5. Davis, F.D. (1989) Perceived usefulness, perceived ease of use and user acceptance of information technology, *MIS Quarterly*, 13, 3, 319-341.
6. Govindasamy, T. (2002) Successful implementation of e-learning pedagogical considerations, *The Internet and Higher Education*, 4, 287–299.
7. Guo, Z., Tan F., Turner, T. and Xu H. (2008) An Exploratory Investigation into Instant Messaging Perceptions and Preferences in Two Distinct Cultures, *IEEE Transactions on Professional Communication*, 51, 4, 396-415.

8. Howell, J.M. and Higgins, C.A. (1990) Champions of technological innovation, *Administrative Sci. Quarterly*, 35, 2, 317–341.
9. Lee, M.K.O., Cheung, C.M.K. and Chen Z. (2007) Understanding user acceptance of multimedia messaging services: an empirical study, *Journal of the American Society for Information Science and Technology*, 58, 13, 2066–2077.
10. Liaw, S.S., Huang, H.M. and Chen, G.D. (2007) Surveying instructor and learner attitudes toward e-learning, *Computers & Education*, 49, 1066-1080.
11. Lim, K.H. and Benbasat, I. (2000) The effect of Multimedia on Perceived Equivocality and Perceived Usefulness of Information Systems, *MIS Quarterly*, 24,3, 449–471.
12. Lua, J., Yaob, J.E. and Yua, C.S. (2005) Personal innovativeness, social influences and adoption of wireless Internet services via mobile technology, *Journal of Strategic Information Systems*, 14, 245–268.
13. Mahdizadeh, H., Biemans, H. and Mulder, M. (2008) Determining factors of the use of e-learning environments by university teachers, *Computers & Education*, 51, 142-154.
14. McConnell, S. and R. Schoenfeld-Tachner (2001) Transferring your passion for teaching to the online environment: A five step instructional development model, *E-Journal of Instructional Science and Technology*, 4, 1.
15. Pollack, T.A. (2003) Using a course management system to improve instruction, *Annual Conference of the Association of Small Computer Users in Education, Myrtle Beach, South Carolina*.
16. Saeed, N., Yang, Y. and Sinnappan S. (2008) Media Richness and user acceptance of second life, *Proceedings Ascilite Melbourne 2008*.
17. Selim, H.M. (2003) An empirical investigation of student acceptance of course websites, *Computers and Education*, 40, 343–360.
18. Tao, Y.H. (2008) Typology of college student perception on institutional e-learning issues - An extension study of a teacher's typology in Taiwan, *Computers & Education*, 50, 1495-1508.
19. Wang, Y.S., Lin, H.H. and Luarn P. (2006) Predicting consumer intention to use mobile service, *Information Systems Journal*, 16, 157–179.
20. Yi, M.Y. and Hwang, Y. (2003) Predicting the use of web-based information systems: self-efficacy, enjoyment, learning goal orientation, and the technology acceptance model, *International Journal of Human-Computer Studies*, 59, 431–449.
21. Yu, J., Ha, I., Choi, M. and Rho, J. (2005) Extending the TAM for a t-commerce, *Information and Management*, 42, 965–976.
22. Yuen, H.K. and MA, W.K. (2008) Exploring teacher acceptance of e-learning technology, *Asia-Pacific Journal of Teacher Education*, 36, 229-243.
23. Zhang, S., Zhao, J. and Tan, W. (2008) Extending TAM for Online Learning Systems: An Intrinsic Motivation Perspective, *Tsinghua Science and Technology*, 13, 3, 312-317.

#### APPENDIX – SURVEY QUESTIONS

Perceived-usefulness	Adapted from
I believe the use of the following online media system is helpful for my teaching	Liaw et al.(2007)
The quality of students' learning in my course will be improved by using the following online media system	Mahdizadeh et al.(2008)
In general, I believe the following online media system will boost students' learning interests	Tao(2008)
Perceived-ease-of-use	
Learning to operate the following online media system should be easy for me	Davis(1989)
It is easy for me to become skilful in using the following online media system	
I think online video media will be difficult to operate	
Behavioural Intention	
I intend to use the following online media system when it becomes available	Ajzen&Fishbein(1980)

I intend to use the following online media system in my teaching as often as possible when it suits the teaching task	
Perceived Media Richness <sup>1</sup>	
If the lecturers feel very strongly about something (positively or negatively), the following online media system allows them to show their feelings.	Guo et al.(2008)
The following online media allows the lecturer to add meaning to what they want to say by using as many cues (body language, voice, tone, etc) as possible.	
The following online media system allows the lecturer to be flexible with the way language (verbal, non-verbal and/or graphics) is used in order to increase understanding	

---

<sup>1</sup> As online lecturing is essentially a one-way communication channel for academics to deliver lecture content to students, feedback immediacy criterion in the media richness theory wasn't applied in this study.