Use of Echo360 generated materials and its impact on class attendance

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Echo360 lecture capture system has become widely used in Australian universities. However, there are concerns about how Echo360 generated materials are used by students and the effects of its use on student learning. The paper draws on data from an inter-disciplinary project that aimed to investigate the role of Echo360 lecture capture system on learning and teaching at the University of Tasmania. Initial findings showed that the majority of respondents used Echo360 generated materials to help them better understand face-to-face lectures, review notes, prepare for assignments and examinations, rather than using the materials as an alternative to attending lectures. Contrary to some published findings, this study found that the availability of Echo360 generated materials did not necessary result in low class attendance. Over 86 per cent of respondents still considered face-to-face lectures to be of high value and attendance was necessary to promote their learning.

Keywords: Echo360, lecture capture, personal capture, class attendance

Introduction

There has been increasing interest amongst lecturers at Australian universities to explore ways of improving teaching efficiency and learning outcomes. The availability of technology such as Echo360 lecture capture system has provided a platform for transforming learning within higher education. However, there is a lack of empirical evidence in relation to: a) the possible correlations between the use of technology-initiated (or enhanced) methods and student performance; b) the impacts of using technology (e.g. lecture capture) on class attendance and students' performance; and c) the potential benefits brought by technology-driven initiatives on the organisation and delivery of course materials in more efficient and effective ways. Consequently, some lecturers are reluctant to embrace technology-driven initiatives such as Echo360. There is particular interest in the use of technology-driven initiatives when learning and teaching activities involve on-campus and distance students that have different learning needs.

This paper presents findings from an interdisciplinary project, investigating the transformative role of Echo360 lecture capture system materials on learning and teaching, at the University of Tasmania. While the project intends to address all three aspects, this paper aims to address how students use Echo360 generated materials and how the availability of such materials affects student attendance.

Echo360 generated materials and class attendance

Echo360 lecture capture system provides four recording choices based on the curriculum, instructor preference and the technical complexity of the venue being captured: capture appliance; classroom capture; personal capture; and media import. The two most common choices in Australian universities are automated lecture capture using the capture appliance (lecture capture) in Echo360-enabled venues and personal capture at any computer using Echo360 personal capture software and the use of a headphone with a speaker. Nationally, more than 60 per cent of Australian universities have used Echo360 software in their lecture theatres and classrooms, many capturing over 1,000 hours of lectures each week (NetSpot, 2011). For example, the University of Tasmania has 34 Echo360-enabled venues. The University of Queensland, offers Echo 360 lecture capture systems in venues with a capacity of over 100 students.

Educational technologies such as Echo360 lecture capture system provides students with an easy option to access course materials online from anywhere and at any time. However, there are concerns from academics that easy access to captured lectures will create absenteeism and decrease content learning (Stewart, et al., 2011). For example, Massingham and Herrington (2006) assert it is not the educational technologies and the materials generated by the technologies that have introduced absenteeism, rather the character of students has much more influence over absenteeism. Mark, Vogel and Wong (2010) suggest that using Echo360 does not necessarily encourage truancy among students but rather motivates them towards revision of course materials. The accessibility and flexibility offered by Echo360 generated materials to students is what makes revision easy. Most students appreciate access to lecture-capturing technologies (McNeill et al. 2007). Phillips (2006) however, states that readily available learning materials generated by using Echo360 system may lead to cramming; a condition where students only revise their course materials at the latter stage when examination or assessment time is approaching. Some students may not revise the captured lecture materials at all (Philips 2006). Davies and Hardman (2010) find that the most common reasons for this phenomenon include preoccupation by students with other commitments, a lack of awareness of its availability, and unfamiliarity with technology. Thus, the relationship between ready access to course materials outside of the classroom and classroom attendance appears to be influenced by students' preferences and behaviour.

Echo360 lecture capture system and other educational technologies with similar features makes classroom proceedings available to students online (Williams & Fardon 2005). This is particularly advantageous to students who need to meet various commitments in relation to employment, health as well as childcare issues that reduce the opportunity to attend class regularly (Vajoczki, Watt & Fenton 2011). The use of Echo360 is advantageous to both students and lecturers as they respectively rely on it to improve access and enable revision opportunities. This increased accessibility may also increase teaching quality (Mark, Vogel & Wong 2010).

Some negative influences on learning and teaching behaviours that may have resulted from the use of Echo360 have been identified in literature. Mark, Vogel and Wong (2010) report that the use of Echo360 may lead to reduced classroom interactions, especially among shy students. The literature reveals that students may adopt different learning patterns in relation to how they use materials generated from lecture-capturing educational technologies such as Echo360. The work of Phillips et al. (2010) provides ten categories of behaviours that students may exhibit towards the use of electronic learning environments that rely on lecture-capturing technologies. With the emergence of educational technologies such as Echo360, the behaviour of non-attendance may inevitably increase. Hence, Massingham and Herrington (2006) concluded that the focus of educators should be on how to harness existing technologies to improve the learning and teaching behaviours of stakeholders, rather than increasing attendance. The paper intends to answer these two questions:
  i.   What were the purposes of students using Echo360 generated materials?
  ii.   To what extent did students rely on Echo360 generated materials with reference to class attendance?

Methodology, results and discussion

A questionnaire consisting of five parts was designed to address the objectives of the project. Findings presented are derived from Part A of this questionnaire. The survey was published online to take advantage of online survey (Wright 2005). An invitation was sent to students enrolled in five units across multiple disciplines at

University of Tasmania including management, engineering, and nursing. The total number of students enrolled in these five units was 841 with both on-campus and distance study. 244 valid responses were received representing 29 per cent response rate. SPSS (v.21) was used to perform the statistical analysis.

As presented in Table 1, among the nine listed purposes of using Echo360 generated materials, *revise and prepare for examinations (A1.3), replay and revise key concepts that were too difficult to grasp during class sessions (A1.2), gather information for assignments (A1.4),* and *revise notes that were made in classes (A1.1)* were the highest rated with over 80% of agreement. *Acquire presentation skills (A1.7)* and *want to experience what a real class feels like (A1.9)* were ranked among the two lowest with 45.1% and 36.9 % of agreement among respondents. For class experience, the reason for the low agreement may be attributed to the low percentage of participation by distance students in the survey, as the question was intended to collect views from those who do not have face-to-face interactions with lecturers.

Table 1: Purposes of using Echo360 generated materials

Item	SD	D	N	A	SA	% A&SA
A1.3 Revise and prepare for examinations	5	2	24	119	94	87.3
A1.2 Replay and revise key concepts	4	7	22	136	75	86.5
A1.4 Gather information for assignments	2	4	36	130	72	82.8
A1.1 Revise notes that were made in classes	5	9	29	135	67	82.8
A1.6 Cover-up for missed lectures due to other commitments	12	14	43	79	96	71.7
A1.5 As an alternative to traditional physical lecture attendance	18	15	48	89	74	66.8
A1.8 Collect feedback given by lecturers on assessments	12	27	63	89	53	58.2
A1.7 Acquire presentation skills	12	43	79	73	37	45.1
A1.9 Want to experience what a real class feels like	28	31	95	57	33	36.9

SD: strong disagree; D: disagree; N: neither agree nor disagree; A: agree; SA: strongly agree; % A & SA: total percentage of agree and strongly agree

Table 2: Class attendance and the use of Echo360 generated materials

Variable	Frequency	%
A2.1 Rely only on traditional lectures without using Echo360 materials	29	11.9
A2.2 Rely on both traditional lectures and Echo360 materials	182	74.6
A2.3 Rely on only Echo360 materials without attending lectures	29	11.9
A2.4 Rely on neither traditional lectures nor Echo360 materials	4	1.6
Total	244	100.0

Table 3: Post Hoc Tests of the use of Echo360 materials and class attendance

Dependent variable	Independent variables		M Dif	Std. Err	Sig.
A1.3 Revise and prepare for examinations	Rely only on traditional lectures without using Echo360 materials	Rely on both traditional and Echo360 materials	-.64153	.15824	.001
		Rely only on Echo360 materials without attending lectures	-.60269	.20784	.032
A1.4 Gather information for assignments	Rely only on traditional lectures without using Echo360 materials	Rely on both traditional and Echo360 materials	-.53316	.14907	.006
		Rely only on Echo360 materials without attending lectures	-.55172	.19579	.050
A1.5 As an alternative to traditional physical lecture attendance	Rely only on traditional lectures without using Echo360 materials	Rely on both traditional and Echo360 materials	-.65233	.22612	.042
		Rely only on Echo360 materials without attending lectures	-1.51478	.29501	.000
	Rely on both traditional and Echo360 materials	Rely only on Echo360 materials without attending lectures	.86245	.22272	.002

As for the possible effects of Echo360 materials on class attendance, a majority of students did not solely rely on lecture capture (Table 2). Overall, 86.5 % of respondents did not agree that the use of Echo360 material would affect class attendance, among which 11.9 % relied only on traditional lectures without using Echo360 materials (A2.1), and 74.6 % rely on both approaches (A2.2). It is not clear though whether the 11.9 % of respondents who relied solely on Echo360 materials were studying only off-campus.

One-way ANOVA was performed to examine whether students differed in terms of their purposes of using Echo360 materials and possible behavioural changes on class attendance as a result of using these materials. The results show that five of the nine listed purposes reached statistically significant difference (between groups) at 95% confidence level, including A1.1 (.017), A1.2 (.028), A1.3 (.001), A1.4 (.017), and A1.5 (.000). To reveal which groups differ, Post Hoc Tests were performed and the results are shown in Table 3. Since the significance levels of A1.1 and A1.2 in the tests were above 0.05, these two items were removed. The test results show (Table 3) that those who rely on traditional lectures without using Echo360 materials have significantly different views from those who rely on both traditional lectures and Echo360 material and those who rely only on Echo360 materials without attending lectures, on the use of the materials to: a) *revise and prepare for examinations* (A1.3), b) *gather information for assignments* (A1.4), and c) *as an alternative to traditional lecture attendance* (A1.5).

The results indicate that a majority of students used Echo360 generated materials for revision, replaying key concepts, and gathering information for assessments. This result coincides with that of Gosper et al. (2008). Regarding the impacts of Echo360 generated materials on class attendance, the study found that the availability of lecture capture did not have a significant impact on attendance, a finding that is consistent with that of von Konsky, Ivins and Gribble (2009) while different from Traphagan, Kucsera and Kishi (2010). The differing findings from the literature might be attributed to the different context in which studies were undertaken. An interesting finding was that those who did not use Echo360 materials (representing 11.9%) highly valued traditional lectures and the way they collected information for assignments and did their revision for examinations, while somehow resisting the use of Echo360 materials in the process. It was unclear though what caused the difference without further analysis of demographic information, for example age groups.

Conclusion

For a majority of students, Echo360 generated materials complemented traditional lecture attendance and were used mainly for reviewing lectures and notes, gathering information for assignments and examinations. That Echo360 generated materials can be accessed at any time repeated at their own pace, as often as needed, provides students with increased flexibility and convenience. The findings of this study show that the availability of Echo360 generated materials does not necessarily contribute to low class attendance. A majority of respondents still considered traditional lectures to be of high value and necessary to attend. The significant differences between those who relied solely on traditional lectures and those who relied on Echo360 generated materials in terms of how they view and use these materials require further exploration.

References

Davis, S., Connolly, A. & Linfield, E. (2009), Lecture capture: Making the most of face-to-face learning, *Engineering Education*, 4(2), 4-13. https://doi.org/10.11120/ened.2009.04020004

Gosper, M., Green, D., McNeil, M., Phillips, R., Preston, G. & Woo, K. (2008). *The impact of web-based lecture technologies on current and future practices in learning and teaching.* Australian Learning and Teaching Council.

Mark, K. P., Vogel, D. R. & Wong, E. Y. (2010), Developing learning system continuance with teachers and students: Case study of the Echo360 lecture capturing system, *Proceedings of the 2010 Pacific Asia Conference on Information Systems (PACIS)*, 9th - 12th July, 2010, Taipei - Taiwan.

Massingham, P. & Herrington, T. (2006), Does attendance matter? An examination of student attitudes, participation, performance and attendance, *Journal of University Teaching & Learning Practice*, 3(2), 3.

McNeill, M., Woo, K., Gosper, M., Phillips, R., Preston, G. & Green, D. (2007), Using web-based lecture technologies: Advice from students, *Proceedings of the 30th HERDSA Annual Conference*, 8th - 11th July, 2007, Adelaide.

NetSpot, (2011), NetSpot and Echo360 team to reduce IT burden for Australian clients through premium hosting service, http://www.newsmaker.com.au/news/9934, accessed 18 January 2013.

Phillips, R. (2006), Tools used in learning management systems: Analysis of webCT usage logs, *Proceedings of the 23rd ASCILITE Annual Conference,* Sydney, pp. 663-673.

Phillips, R., Preston, G., Roberts, P., Cumming-Potvin, W., Herrington, J., Maor, D. & Gosper, M. (2010), Using academic analytic tools to investigate studying behaviours in technology-supported learning environments, *27th ASCILITE Annual Conference*, 5th - 8th December, 2010, Sydney.

Stewart, M., Stott, T. & Nuttall, A-M. (2011), Student engagement patterns over the duration of level 1 and level 3 Geography Modules: Influences on student attendance, performance and use of online resources, *Journal of Geography in Higher Education*, vol. 35(1), pp.47-65. https://doi.org/10.1080/03098265.2010.498880

Traphagan, T., Kucsera, J. V. & Kishi, K. 2010, Impact of class lecture webcasting on attendance and learning, *Education Tech Research Dev* 58, 19-37. https://doi.org/10.1007/s11423-009-9128-7

von Konsky, B. R., Ivins, J. & Gribble, S. J. 2009, Lecture attendance and web based lecture technologies: A comparison of student perceptions and usage patterns, *Australasian Journal of Educational Technology*, 25(4), 581-595. https://doi.org/10.14742/ajet.1130

Williams, J. & Fardon, M. (2005), On-demand internet-transmitted lecture recordings: Attempting to enhance and support the lecture experience, *Proceedings of the 12th Proceedings of Association for Learning Technology Conference*, 6th - 8th September, 2005, University of Manchester, England.

Wright, K. B. 2005, Researching internet-based populations: advantages and disadvantages of online survey research, online questionnaire authoring software packages, and web survey services, *Journal of Computer-Mediated Communication*, 10(3),   DOI: 10.1111/j.1083-6101.2005.tb00259.x

Vajoczki, S., Watt, S., Marquis, N., Liao, R. & Vine, M. (2011), Students approach to learning and their use of Lecture Capture, *Journal of Educational Multimedia and Hypermedia*, 20(2), 195-214.

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