

# **Faculty of Health eLearning Pilot: Evaluation Report**

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# Executive Summary

## Introduction

This report presents the findings and recommendations of an evaluation undertaken by the Institute for Research on Learning Technologies of an eLearning Pilot project conducted by the Faculty of Health. An elearning course prototype which incorporated lecture capture was created by the Faculty using the Moodle platform, and this prototype was then tested in six undergraduate course/sections, most with large numbers of students, over the 2010 winter term. This blended-learning prototype required that course directors include six elements in their course Moodle: a course outline with a weekly schedule, course materials, lecture recordings captured with Camtasia software, course announcements, discussion forums, and email. The key objectives of the evaluation were to illuminate how and to what extent the prototype, and more specifically its various components and affordances, enhanced the learning environment of the courses; whether the training and technical support provided met the needs of the course directors; and based on the findings, recommend any changes in the prototype and the support systems that could make the prototype more effective and more scalable.

Three primary sources of data were tapped for the evaluation: a survey of students in participating courses conducted towards the end of the winter term; interviews conducted with the participating course directors; and a written questionnaire completed by the IT department supporting the pilot (York's Learning Technology Services).

## Findings

*Course directors (CDs).* The CDs, five of whom had used a learning management system (LMS) with past courses, did not encounter any difficulties learning to use the Moodle prototype. Those who had been using a LMS or web site for the same course in prior years greatly appreciated that the Learning Technology Services (LTS) staff had moved their course materials into the Moodle prototype for them, as it made the transition to the prototype far easier.

The procedures required to initiate and complete lecture capture proved relatively easy to master by most CDs as a high level of support was provided (in-lecture training and supervision by LTS staff for the first few lectures). Two CDs who used their own laptops rather than those provided in the lecture halls for lecture presentation encountered more challenges but these were eventually resolved.

All but one of the CDs made use of each of the mandated prototype elements during the trial period, although their use patterns for the individual elements varied widely. They all made use of Moodle to post a course outline/schedule and to make course

announcements using the course announcements tool, and each of them posted course materials to their course Moodles, but they did make different decisions about what course materials to add to their Moodle site. Most posted their lecture PowerPoint presentations, but a few chose not to; a few added podcast versions of their lecture recordings, others did not. Some instructors made relatively unique course materials available through Moodle; this was exemplified in one instructor's posting of Scantron answer sheets to course tests so students could see what questions they got wrong, and his uploading of short instructional video clips of himself stepping through various statistical procedures.

The course announcements function in Moodle was used by all the CDs, and generally found to be an effective and efficient means for updating students on course requirements. A few CDs who were not aware that Moodle could keep them informed about which students had looked at their announcement emails asked for that functionality.

The ways in which the CDs made use of Moodle-based forums in their courses varied, both in terms of the degree to which their use were tied to specific course elements and the extent to which the CDs themselves participated in the online discussions. In some instances discussions were set up for specific assignments, labs, tests, or exams; in others students were left to develop discussion threads on their own within a general course forum. While all CDs monitored their course discussions at least a few times per week, a few acted as occasional discussion moderators, injecting discussion-provoking questions or responding to incomplete or faulty student explanations of concepts or procedures. Others let students interact freely without intervening, letting them raise and answer their own questions.

A number of Moodle components that were not mandated for use in the trial were employed by some of the CDs. Three used the course assignment tool and all three found it effective in managing student work products and (in two cases) running them through the Turnitin plagiarism detection system. Moodle's gradebook was used as well by several CDs, but only as a repository where students could access grades calculated on a spreadsheet and then uploaded. The Moodle gradebook had certain limitations that CDs found made it difficult to manage the grading process and manipulate marks in the way they wanted. No CD used the Moodle quiz tool.

Lecture capture using Camtasia software was considered relatively easy to enable and complete by those CDs who used the computers provided in the lecture halls, and the process was technically reliable most of the time, with only a few lecture recordings being lost over the term due to technical problems. The two CDs who preferred to use their own laptops for lecturing ran into some initial technical issues that were eventually resolved, but even with their resolution the operational procedures required for using external laptops continued to be more complex and time-consuming for various reasons (such as the need to use two rather than one wireless mic when lecturing). Uploading

and posting lecture recordings went smoothly for the most part although uploading through a wireless connection could be a lengthy process. CDs requested greater simplification of the whole lecture capture process, as well as the capture of document camera and video playback output.

CDs reported making no substantive changes in either lecture content or delivery as a result of using lecture capture (although some increase in self-consciousness was noted), and the use of Moodle itself did not alter their ways of teaching their courses. The one exception to this was with a course director who had students collaborate in developing course-related wikis, which proved to be a very effective learning experience that resulted in higher-graded assignments. The remaining CDs did not see any shifts in student performance in either direction that they could attribute to the use of Moodle or lecture capture, although some were impressed with the quality and quantity of student discussion they saw in their course forums. A few CDs cited the efficiencies Moodle introduced in communicating with students as a major advantage of its use; the ability to quickly change course materials and the flexibility it extended to students in terms of their course participation were other benefits mentioned. Few CDs saw any drawbacks to their Moodle deployments; they reported that Moodle use did not appreciably increase their time or workload for the course (once they had put several hours into developing the course site).

The lack of a fully internal Moodle email system was mentioned as a drawback by three instructors, but two of these CDs were not fully cognizant of Moodle's email functionalities. An inability to flag read forum messages as "unread" for later attention was thought problematic by several CDs. Some instructors worried that ready access to lecture recordings would lead students to skip lectures (they had perceived some decline in lecture attendance) and speculated that because of their limited self-management skills many of these students would fail to view the missed lectures. A few thought the recordings would serve slower or English-challenged students well as a tool for review and one felt that it could provide better support for students with different learning styles. All of the CDs planned on continuing the use of Moodle and lecture capture in future courses. They saw the one-on-one training and support they had been given in the pilot by LTS as exemplary, but two CDs who had attended group workshops had not found them very useful.

*Students.* There was an overall response rate of 37% to the student survey. Surprisingly, half of the respondents indicated that they had used a course management system in four or more of their previous courses. Students on average reported no difficulties in learning how to use Moodle, although its usability was down rated slightly by some in comparison to WebCT, which many had used in other courses. However over 90% found Moodle easy to use and a great majority found it easy to access and to retrieve resources from. Comparatively few reported encountering any technical or operational issues for which they required assistance. The audio and video resources provided were thought to be of good quality.

Students varied extensively in the number of hours per week they made use of the course Moodle, with two thirds indicating they used it for 1 to 5 hours per week. The most frequently accessed components were the course announcements, course PowerPoint presentations, and course discussion forums. An overwhelming majority of students either agreed or strongly agreed that the various forms of access that Moodle provided to a range of course materials was of value to them. Moodle was also valued as a venue for posting questions and getting responses from instructors and fellow students, accessing the course calendar and schedule, and turning in assignments. Most students shared the view that the use of Moodle saved them time and helped them better manage their course activities. Course instructors were perceived as generally making effective use of Moodle for providing feedback on work and responses to inquiries.

Moodle use was widely perceived as fostering improved communication with instructors and fellow students as well as promoting and facilitating more collaborative learning. The great majority of students valued Moodle as a means of receiving messages or notifications from their instructors and, more generally, improving instructor-student communication. Most felt comfortable communicating with instructors and TAs online. In fact for the majority, Moodle use was seen to have made it more likely that they would communicate with their instructor. Online course discussions in Moodle forums were thought by about two thirds of the students to lead them to think more about their course topics, and of those for whom the question was applicable, about two thirds thought their instructor or TA participated effectively in these discussions.

Moodle use was reported by the majority of students to have had a positive impact on a number of their learning behaviours and outcomes, including motivation to study, course grades, course satisfaction, and time preparing and studying. Students felt that Moodle use had made their courses more interesting, their studying more effective, and increased their course satisfaction. Over 80% would like to see Moodle used in all of their courses.

The inclusion of lecture recordings within the course Moodle was almost universally considered to be valuable by students. While students varied widely in the frequency with which they accessed the recordings, over  $\frac{3}{4}$  did so 2 to 3 times a month or more. When viewing a lecture, most watched segments of the recording more than one time, suggesting that their use was not superficial but focused on redressing misunderstandings or incomplete knowledge. The quality, comprehensiveness, and ease of use of the lecture recordings all received high ratings from about  $\frac{3}{4}$  of the students. Nearly half indicated that the availability of lecture recordings made no difference to their lecture attendance rate; the rest indicated some degree of attendance decrease, with the degree of drop-off varying widely. Student learning behaviour during lectures appeared to be positively impacted in some cases, with half of the students stating that

they focused more on understanding the lectures and similar numbers following lecture discussions more closely.

Surprisingly few students offered suggestions for improvement when given the opportunity through an open-ended survey question. The only suggestion categories to reach a significant frequency count were one requesting the inclusion of video of the lecturer in the lecture recordings, and another seeking improvements in the layout, organization, and usability of the Moodle course pages.

## **Discussion and Recommendations**

The data from both the CDs and the students provide substantial grounds for concluding that the elearning pilot was largely successful in attaining its goals. The mandated prototype elements—course outline/schedule, course materials, lecture recordings, course announcements, and discussion forums—were used by all CDs with only two minor exceptions. CDs were able to use the lecture capture technology with relatively little difficulty, although those using their own laptops had a longer learning curve and were required to undertake a slightly more complicated setup routine prior to a lecture. Students highly valued lecture capture, and about half reported focusing more intently on understanding the lecture and related discussions knowing lecture recordings were available. CDs expressed some concerns about a modest decrease in attendance in lectures that resulted, but thought the recordings a worthwhile learning resource for the most part. Lecture capture should definitely be retained in the next stage of the elearning rollout.

Moodle forum use varied considerably across courses, with some CDs choosing to be actively involved in moderating discussions while others only checked the forums occasionally. Active involvement in the forums of large enrolment courses is a considerable challenge for CDs because of the time demands that they require, but even when the CDs did not intervene, most students still found the forums useful for communication and mutual assistance, and valued their inclusion in the prototype. Forums should also be retained in the elearning prototype.

Making course announcements, outlines/schedules, and materials available through Moodle during the pilot proved very useful to students and offered practical course management advantages for CDs with large lecture sections. Students greatly appreciated the flexibility of anytime/anywhere access to course resources. These features are basic elements for any LMS and need to be retained.

Several optional prototype elements (the assignment tool, the gradebook, and Turnitin) were used by a few CDs, and were found to be effective (although there were notable limitations when using the gradebook for calculating grades). The one element not used according to CDs was the quiz tool (due to proctoring issues), but this tool could be applied to student self-testing activities. It is recommended that these optional elements be retained as they demonstrate promise and the exploration of their potential is not yet complete.

Overall satisfaction levels with Moodle were high for both CDs and students. Once learned, Moodle proved relatively easy for the CDs to use effectively, and it did not appreciably add to their workload. The CDs were unanimous in stating they planned to continue using it in future course. The great majority of the students were also favourably impressed and wanted Moodle brought to their future courses. Some two-thirds stated that they were very satisfied with their course because of its use of Moodle and half of the students felt that Moodle had a positive impact on their grades.

The training and support provided by LTS staff were largely considered exemplary by both CDs and students, the one exception being the group training sessions attended by two CDs, who found their sessions too technical. The high degree of support effectiveness and satisfaction demonstrated in the trial appeared to be important factors in the CD's success in using Moodle and must receive equal attention in future elearning rollouts.

The recommendations presented in the main report address a range of issues. These include exploring more flexible and powerful lecture capture options that make it easier for CDs to operate and produce more complete lecture content coverage; the improvement of a few discussion forum functions to make it easier for students and CDs to manage their use of forum posts; the creation of a broader set of course templates to better model Moodle course organization; and the provision of new approaches to training that would reduce the per-CD workload for the LTS staff, in order to permit a scaling up of prototype use without appreciably increasing support costs. It is our recommendation that all of the current eLearning Pilot prototype elements should be retained in the next phase of the pilot, and the current breakdown between required and optional elements should remain the same. Finally, the CDs should be encouraged to experiment with new ways of organizing and delivering their courses that may better leverage the educational affordances offered by Moodle and lecture capture use.

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# 1 Introduction

As part of its ongoing elearning initiative, the Faculty of Health at York University implemented an eLearning Pilot project over the 2009-2010 academic year. An elearning course prototype which incorporated lecture capture was created using the Moodle platform, and this prototype was then tested in six courses over the 2010 Winter term. The prototype required that the participating course directors include six elements in their course Moodle: a course outline with a weekly schedule, course materials, lecture recordings captured with Camtasia software, course announcements, discussion forums, and email. The Institute for Research on Learning Technologies at York University was asked to conduct an external evaluation of the pilot project. The purpose of the evaluation was to provide feedback to the Faculty of Health on the implementation of the pilot and develop recommendations for future iterations of the project. The key objectives of the evaluation were to illuminate how and to what extent the prototype, and more specifically its various components and affordances, enhanced the learning environment of the courses; whether the training and technical support provided met the needs of the course directors; and based on the findings, recommend any changes in the prototype and the support systems that could make the prototype more effective and more scalable.

## 1.1 Method

The evaluation used a number of data sources to document the experiences and perspectives of the course directors, students, TAs, and IT personnel participating in the trial. The six participating course directors were interviewed either singly or in pairs a few weeks prior to the end of the school term. The course directors were queried about their prior use of technology in teaching, their experiences in learning to use Moodle and the lecture capture system, how the prototype was used in their course, and how well it met their objectives. Their experiences in the use of the prototype elements, including lecture capture recordings, online course materials and media resources, and Moodle-based course announcements, assignments, and tests, as well as the discussion forums and the Moodle gradebook were probed, and their perspectives and assessments of the outcomes, strengths, and weaknesses of each captured. The interview also addressed any technical or operational problems that arose in the trial, the amount of time the use of the prototype required, and the CD's assessments of the training and support they received from the Learning Technologies Services team.

All students in the course were asked to respond to an online survey through a link posted to their course Moodle pages approximately two weeks prior to the end of classes. The survey asked students to assess the ease of use and value of the Moodle components they used in their course, and how their use had impacted their learning behaviours, communication with instructors, TAs, and fellow students, and course outcomes. Students' perspectives on their instructors' utilization of Moodle and lecture

capture were also sought, and their recommendations for changes in the prototype and its use were documented.

It became clear one week after students were asked to complete the online survey that the response rate—at that point below 10% of the targeted students—needed to be brought up substantially if the data gathered from it was to be reliable and valid, so a decision was made to have the course directors ask students who had not completed the online survey to do so in class using printed copies of the survey form. This action significantly increased the response rate from several courses. The statistical program SPSS was used to generate descriptive statistics for the quantitative data derived from the multiple choice and Likert items in the survey. Answers to the open ended questions included in the survey were coded and categorized using standard qualitative research procedures, and frequency counts for the emergent answer categories generated.

Course directors were asked to forward a short questionnaire to their TAs who had made use of Moodle during the course; as questionnaire asked the TAs to describe their use of Moodle and how it had assisted them in carrying out their role. Finally, the two Learning Technologies Services (LTS) personnel responsible for prototype development, training, and technical support jointly completed a questionnaire describing their training and support activities, the technical issues and problems brought to their attention and how these were resolved, what changes in the prototype they recommended for the next phase of the Moodle prototype rollout based on their experiences to date, and what forms of support and level of resources would be required for scaling up the implementation.

The next section of this report presents the findings developed from the data for three Faculty of Health eLearning pilot participant groups: course directors, students, and LTS personnel. The findings are integrated and their implications considered in an ensuing discussion section. The report concludes with recommendations intended to enhance the effectiveness of the elearning prototype and its support structures and facilitate the scaling up of its use within the Faculty of Health and the university as a whole.

## 2 Findings

### 2.1 Course Director Use and Perspectives

#### 2.1.1 Learning to use Moodle

*Prior technology use.* All of the Course directors (CDs) participating in the trial had made substantial use of technology in their teaching in prior years. Two had been using the WebCT course management system for five years, and one (James) for three years. Alice had used WebCT for one year before switching over to Moodle in 2005. Myra started to use Moodle in 2007; Jennifer moved over to Moodle more recently. For her one fully online course, Jennifer had had her lectures videotaped and posted. (She has also used blogs and podcasting in that course.) Rick was the only CD other than Jennifer who had any prior experience with the use of lecture capture. He had been using Media Site software for lecture capture, which required the presence of a technician to record the lecture.

Susan was the only CD of the six interviewed who had not used a learning management system in the past. However she had been creating comprehensive course websites that included lecture notes, PowerPoint lectures, announcements, and test grades. She indicated that the only additional affordance the eLearning trial offered to her students through Moodle was access to video and audio of the captured lectures.

*Participating courses.* The courses chosen for the pilot were undergraduate level courses offered by either the Faculty of Health or the Psychology department. The participating courses/sections and their final enrollment numbers were as follows: HSLT 2020: 139 students; NURS 4111 Section N: 103 students; KINE 3030 Sections M&N (combined): 712 students; PSYC 1010 Section A: 186 students; PSYC 1010 Section G: 516 students; and KINE 2050 Sections M&N (combined): 720 students.

*Learning Moodle.* Most of the CDs reported that learning to work with Moodle was relatively easy and took little time. Rick found it very easy to make the transition from WebCT, in large part because the staff from Learning Technology Services (LTS) had moved his course content onto the new platform for him. “The template they had produced had everything I needed, and once you've used one of those platforms it's merely a matter of procedure, as long as you understand it. So it was not difficult at all.” Jennifer had participated in a two-hour one-on-one session with an LTS trainer, and found it took her a total of 6 to 7 hours to get comfortable in using the Moodle functions she employed in her course. James received no training; he “sat down and played”, consulting Rick on occasion, and found he was comfortable with Moodle after about two hours of use. Alice had attended a Moodle workshop offered by the University back in 2005 but had found it very confusing because “there was a whole group of people there all with different needs, and I didn't get what I wanted out of it.” She subsequently picked up Moodle use skills on her own. When the trial began in the fall, she found the LTS staff to be “fantastic, because I've always known what I wanted

to have and I was able to go and say 'I'd like to have this kind of structure to my course', and then in December it happened. And now I know how to do it." Myra had also attended a Moodle workshop which she had not found useful: "After 10 minutes of listening to a presentation on how to use the gradebook, I opened my laptop and did my e-mail instead because I didn't understand what the presenter was talking about." Myra felt strongly that "real educators" should be offering Moodle training, not technical people lacking teaching skills. "Moodle is fantastic, but if not taught properly, people won't use it."

Susan found the LTS staff to be extremely helpful, creating her Moodle site and copying most of the content over from her course website so that all she had to add was updated lectures and tests as well as new announcements. She took one workshop on Moodle and also met with an LTS staff member to go through its basic functions. She encountered a minor problem posting some content that was resolved by means of LTS e-mail support. In total, Susan indicated it took her three or four hours to get comfortable with the program.

Jennifer discovered that the best way for her to learn to use Moodle was to "just give it a go". She found it very similar to WebCT from a functional standpoint: "It's like programming in one language versus programming in another language—you're still doing the same thing, it's just different words or different clicks. It's conceptually the same thing so I found it easy to migrate over." A quick e-mail to the LTS staff resolved any issues Alice encountered without difficulty.

### **2.1.2 Teaching and Learning with Moodle**

#### **Expectations**

When the CDs who had made prior use of WebCT were asked about whether Moodle use in their course met their expectations, they drew comparisons to their experiences with WebCT. These CDs thought the two systems were very similar in their capabilities, although both commented that the lack of a completely internal e-mail system in Moodle had been a comparative drawback. One CD with prior Moodle experience found that the course announcement functionality had some glitches and consequently had not met her expectations. The only CD with no prior learning management system experience stated that she had no pre-existing expectations as she just did not know "what Moodle was about" when she joined the eLearning trial. "I had no idea I would have to learn a new interface, and if I had been told that I might have been reluctant just because of the time involved."

#### **Moodle use**

*Use of mandated prototype elements.* All of the mandated prototype elements discussed above were used by each participating course director, with one exception:

one CD made no use of discussion forums.<sup>1</sup> (Additionally, Myra did not use lecture capture, but that was due to the fact that her practicum course did not include lectures. Lecture capture, while one of the required elements, is not covered in this section; due to its complexity, it is taken up in its own section later in the report.)

Each CD included a course outline/syllabus together with a course schedule in their course Moodle. All CDs also provided course materials online, although there was some variance across courses with respect to what materials were made available through Moodle. For example, Rick posted short (2 to 3 minute) videos describing statistical concepts and giving examples of how to solve certain statistical problems. He also uploaded Scantron answer sheets from quizzes so students could see what quiz items they answered correctly. He did not upload course PowerPoint notes as these were included in the course kit that students purchase ahead of time. Alice posted both lecture summary slides and course assignments as well as relevant links to websites discussed in class. She organized her content in five blocks each of which had a culminating test; Rick preferred to organize his course by week, moving the current week block to the top of the course page. Susan posted course grades as well as lecture notes, although the latter were also made available through her website. For his course, James added some lecture notes and PDF copies of PowerPoint slides, as well as podcast versions of his lectures. Jennifer posted some course readings, course assignments, and PowerPoints, as well as Web links that were incorporated into a Word document. She also made lecture recordings available as podcasts through Moodle links.

The instructors found it relatively easy to master the process of posting course materials and resources to the Moodle. Two of them noted that in comparison to WebCT, Moodle eliminated an intermediary step in the process of uploading and identifying the files which made the process easier and more streamlined.

The course announcements tool in Moodle was used by all instructors, although Susan only used it once. It was thought to work very well, but two CDs saw one significant drawback to its use—the fact that it provided no feedback about whether students actually read the announcements that were automatically e-mailed to them. (Note that this perception is erroneous because Moodle can produce activity reports on who read the announcements – *authors*.) Based on student comments, Jennifer and James were of the view that the same students who would not pay attention to other forms of notification would be the ones who would ignore the Moodle announcements.

All but one of the CDs made use of the discussion forums in their courses, the use of which was a required element in the pilot. But they varied considerably in how they structured these for student participation and the degree to which they took part in the

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<sup>1</sup> Mail was listed as a required element in the original course template, however it is not discussed in this report as a prototype element because the course announcement feature sends an automatic e-mail message to all students once the announcement is posted. Thus CDs found no need to use the mail function separately.

discussions themselves. A CD who was teaching a very large course which incorporated lab sessions set up separate discussion threads for each of the labs in the course, as well as for each of the course quizzes, the final exam, and lab swapping. (The latter enabled students to find peers to swap lab times with at the beginning of the term.) Students used the forums to post questions about assigned work to each other, and other students would normally respond. Students also posted questions for the CD specifically, such as “Is this material testable on quiz one?”, and the CD would respond. The CD read every discussion post because he had no way of knowing to whom the post was addressed. He actively discouraged students from directing questions at him because he wanted them to answer each others’ queries. He had limited success in fostering this behaviour, which he considered unfortunate, because he thought the primary value of the discussion boards lay in the affordance they provided for students to help their peers. “I will interject if they're off-track or no one has answered after two or three days. But when they post for me no other student dares answer it, and that is not good.” The course TAs did not contribute to the discussion, and the students received no marks for participation.

Alice relied on her TAs to support online discussions around course assignments. Each assignment was overseen by one TA, and that TA would moderate the related discussion. Alice got all the questions and answers sent to her e-mail and actively monitored the discussion herself. No grades were given for participation; discussions were primarily a support tool to assist students to develop their understanding of course content and progress through the assignments.

Jennifer made Moodle forums available to her students, but did not participate in the discussions herself, although she did check a few times a week to ensure that no student questions “were left hanging”. Although no marks were assigned to participation she found her students were quite responsive to each other: “Some students act as ambassadors and they answer questions for other people”. Jennifer had a practice of encouraging a lot of discussion in her three-hour lecture periods; students seem to carry over this practice to the forums without a need for discussion-prompting questions. The questions students posted tended to focus on the exam, essays, and other course assignments; there was no off-topic discussion.

Like Jennifer, James generally left it up to his students to decide what questions to raise in his course forums, although he did use prompting questions on occasion when a student answer was almost correct but needed some further development, or he wanted to get students linking ideas. (One student wound up using the forum as a tool for organizing other students for tutorial sessions that this student wanted to offer.) As he had a very large course, James checked the tutorial at least every day, which allowed him to “keep a handle on things” as he always has a few “militant” students in his course. James makes clear at the beginning of his course that he will shut down conversation threads if they get out of hand or inappropriate. He only once had an issue of this type in which he had to intervene.

James encouraged his TAs to get into the forums to see what students were writing about, but he indicated that only a few of them ever did so. He personally found the forum discussions useful for determining what his students were having problems with; these topics would then be addressed in a subsequent class or in a weekly tutorial. He thought the forum was valuable for allowing students to ask questions they may not been willing to in his very large lecture sections: “Not everybody was comfortable putting their hand up in class to ask questions.”

Myra used two discussion groups for her course; the first was used by students to communicate with their clinical CD, and the second was used for course assignment discussions. She found the quality of discussion to be very strong, with her students actively engaged in coaching each other, particularly about the use of wikis (she had her students create wikis using MediaWiki, a tool external to Moodle).

*Use of optional prototype elements.* The Moodle quiz tool was not used by any of the CDs (its use was not mandated in the trial). Two of the CDs noted that its major disadvantage was that it provided no means of proving that the students actually took the tests themselves.

Three of the CDs used the assignment tool included in Moodle. Alice posted a two-page paper study assignment posted in Word file format; when students upload the finished assignment, it was processed through Turnitin and then returned to the students for review before final submission and online marking by TAs. Alice found this assignment workflow procedure effective, but she did not set it up herself; it was done for her either by LTS staff or one of her colleagues in the e-learning trial (the interview transcript does not make this clear). Jennifer also had her students submit assignments through the assignment tool and she too processed them through Turnitin; but in her course, printed copies of assignments were also required to be handed in, and these were the versions marked by the course TAs. Myra had also used the assignment tool which she considered “fantastic” and she indicated that it had worked very well for her (she did not describe the ways in which she used it).

The CDs who had not used the assignment tool in Moodle were asked why they had chosen not to do so. Rick indicated that his students submitted all their written work in their labs to their TAs for marking. James stated that his student assignments were lab - based, and made use of analysis software that generated paper forms for assignment completion, making their reports unsuitable for electronic uploading.

Jennifer noted that for her, marking assignments or papers on the computer was far more onerous than doing so with a hard copy: “it's too many clicks compared with just saying ‘awkward’ or ‘great’”. James noted that when he marks online he feels like he has to rationalize his comments more and type longer responses.

The CDs all reported using Excel-based grade books to record and calculate grades for their course rather than relying on the Moodle grading module. (The use of the grading module was not a required element in the trial.) There were a number of reasons

proffered for this lack of use. Myra indicated that the university requires grades to be submitted in Excel so she saw no need to use the Moodle grading system as this would just duplicate the effort involved. Rick did not trust Moodle to properly calculate and present the grades in the format he wished, but he did upload grades from his Excel spreadsheet into Moodle for student access once they were finalized. Alice did the same but ran into difficulties with discrepancies between the Moodle course's student list and her CSB course list. Moodle would flag missing students but Alice did not know the source of the error, "so then I passed it to Lisa [an LTS staff member] who discovered where students had gone missing. I am not quite sure how students get missed out." It appeared that students who had dropped out of the course were still present in the Moodle course list, even though Moodle is supposed to automatically de-enroll such students.

James had his TAs do all marking; they entered student grades into spreadsheets which were then integrated by another TA. James then merged the integrated spreadsheet with a master spreadsheet containing prior marks. This would be saved as a comma delimited file and uploaded to Moodle. Initially James ran into difficulties uploading the file, a consequence, it turned out, of not ordering the spreadsheet columns in the way Moodle expected. He also encountered some challenges mapping York student numbers to the equivalent category in Moodle, a process he thought needed to be clarified in the documentation.

### **Lecture Capture Use**

The use of lecture capture was a required element of the elearning trial prototype, and it was employed consistently throughout the winter term by all of the participating course directors with the exception of Myra, whose course did not include lectures. The CDs that made use of the computer provided in the lecture halls to deliver their lectures found the Camtasia lecture capture software relatively easy to learn and use, but those who preferred to use their own laptops found the process more intrusive, time-consuming, and difficult to master. Rick, for example, brought his lecture materials into the lecture hall on a pen drive which he loaded into the classroom computer; he found the use of Camtasia to be straightforward and the learning curve minimal. "You just have to learn how to log in and hit the record button and then upload at the end. I do all of this right in the lecture itself. It goes up, all of it, warts and all.... So it's very simple."

For Alice, who brought her Macintosh laptop with her, the process was much more complex; she used a Post-it note to guide her through the sequence of steps she needed to take at the start of the lecture. Her use of her own laptop meant that she had to make use of two wireless mics, one connected to her laptop for the Camtasia recording, and the other connected to the lecture hall's public address system. When she paused the lecture recording during a lecture break she sometimes inadvertently stopped the recording process entirely, which meant that she had to start a new recording for the second part of her lecture and upload the two files at the end of the class. Alice stated



that she was “not that technological” and still had some challenges with the process: “I must admit that the wizards [software on the computer]... they do things, and things just happen.... I have no recognition of how to do that [myself].... But I'm getting there”. She only found herself relatively comfortable with the procedure after seven weeks of the course had passed.

The lecture upload process could sometimes take a considerable amount of time for Alice; once it had taken about six hours to upload the lecture from her laptop through the wireless network. The upload for one of her lectures failed; subsequent to that she took the laptop to the LST staff to try to determine why the failure had occurred. In total she reported three “bad” uploads. This contrasts sharply with Rick's experience; he reported that his uploads only took about 5 seconds, and he had never encountered any upload issues, although his lectures were only one hour long.

Alice had initially tried to edit out extraneous material from her lectures but soon gave up the practice because she found it a very “finicky” procedure and she had on one occasion almost deleted an entire lecture.

Like Alice, Jennifer used her own Mac laptop in the lecture hall, and she encountered a number of technical issues as she began capturing her lectures which initially made using Camtasia “a real pain”. After a week of troubleshooting, she had determined in conjunction with LST staff that she could not use her regular Mac desktop profile in the lecture but had to create a new user profile on her computer for Camtasia use. As a consequence, she had to go through a number so steps to make Camtasia lecture capture functional:

When I'm in my office and I finish my PowerPoint presentation I have to put my files into a presenter folder, then I have to shut down my computer. When I get into the classroom I have to reboot my computer and boot in as another user and then my file would be in that presentation folder.... I always had a slight thought in the back of my head that maybe something was not going to work.

The LTS manager worked on site at her lectures to support her for five weeks “because each week something different went wrong which required some sort of troubleshooting [by the manager] while I then started the lecture.” Prior to his last visit, everything appeared to be working well with the process, but Jennifer asked the manager to come one further time so that she could take all the required steps herself as she had not yet done so successfully. Jennifer stated that it always took her about 15 minutes to set everything up for the recording process “because using a laptop, it was slow.” She encountered what she termed “silly things that I would never have thought to troubleshoot myself” such as the fact that the computer provided in the lecture hall had to be turned on for the lecture capture to work even though she was not using it. These challenges made her a little nervous about going into any other classroom without having the kinds of supports that had been available to her in this pilot trial. Two other CDs pointed out that to be seen fumbling around with equipment at the

beginning of the lecture was stressful and not conducive to projecting an image of competence. As one expressed it, "When I'm actually starting to lecture I hope they're looking at me; when I'm doing this part I don't want them looking at me. I felt kind of self-conscious about that part." Both Jennifer and James found doing the mic level checks irritating; James eventually stopped doing these checks altogether.

The CDs reported making no major changes to either their lecture content or delivery as a consequence of initiating the use of lecture capture. There were, however a number of operational changes made of a practical nature, largely designed to capture more content being delivered during the lecture into the lecture capture file. Both Alice and Rick had been in the practice of making heavy use of a document camera to project paper-based materials during their lectures; in order to make these materials available in the Camtasia captures, they were now spending more time scanning these materials so that they could be displayed through the computer and thus captured in the Camtasia file. Where he would formerly write calculations out on paper, displaying these using the document camera, Rick would now write calculations down using a mouse on a PowerPoint slide, which he found was not as neat, but allowed him to demonstrate calculations in a manner that would be captured. Susan had also been in the practice of making considerable use of the document camera but she changed her practices less extensively; instead of scanning materials, she would make clear in the audio recording when she was moving away from the computer display onto something shown on the document camera, and would offer some description of what was being displayed for the sake of the lecture capture viewer.

Jennifer was in the habit of moving through all areas of the lecture hall as she talked; but due to the limited range of the wireless mic she was using for the Camtasia recording her location had to be restricted to the forward area of the room. Jennifer would sometimes wonder if her voice was being properly recorded when the mic's indicator light would suddenly start to flash. She found that setting up and leveling the two mics she needed to use, checking their battery levels, and ensuring they were properly paired with their bases consumed a considerable amount of time, although she noted that her students seemed willing to endure the wait as "they seem to feel as though they were getting something out of it". In all, she said, introducing the second external mic introduced four or five extra steps to the setup process, which she wished could be simpler. But despite this complexity, Jennifer indicated that she would not use lecture capture if she was unable to do so from her own laptop "because I am too wed to not having to put [my lecture materials] into the cloud. I don't want to have to do that."

Jennifer's lecture capture files were perceived to have a few limitations when played back. Students had reported to her that they could not clearly hear any podcasts or other audio media streaming she is playing through her laptop during the lecture. And she saw the lack of capacity of Camtasia to capture any video she was playing to the class as a significant drawback (only the audio from the video clips were captured).

While the use of lecture capture did not result in substantive shifts in their lecturing style, several CDs noted that the act of being recorded made them somewhat more self-conscious about their choice of vocabulary and cautious in their presentations. Most CDs did not listen to or view their own lecture recordings, in some cases because of time pressures but in a few instances because they simply were not comfortable doing so.

The two CDs who had prior experience using Media Site to capture their lectures, captures which included all aspects of their presentations, did not find Camtasia be as comprehensive a tool for lecture capture because it did not capture video of the lecturer or of materials that were presented off computer. Students had told their instructors that they preferred the Media Site playback over the Camtasia playback because it provided them with a more realistic lecture experience.

Asked what changes or additions might be made to improve either the functioning or output of the lecture capture procedures, the CDs had several suggestions to offer. Two CDs wanted to see the output from document cameras incorporated into the lecture capture output. One commented that she would have liked an opportunity to practice its use in the lecture room without the class being present after her training. The provision of a step-by-step printed operations guide was also recommended. A more automated startup procedure was requested by two CDs, and two directors asked for automatic mic leveling so that they would not be required to do this manually. One noted that “the technology surely exists for [the software] to determine whether the levels are right, and then adjust the levels within a few milliseconds of starting to talk.”

### **Outcomes and Benefits of Moodle and Lecture Capture Use**

*Moodle.* Myra was the only CD in the pilot trial who felt that participation in the pilot had led her to use a new teaching approach—having students collectively create wikis. Asked what benefits Moodle use brought to their courses, the CDs offered a range of responses. Alice emphasized its value as a readily accessible location for hosting course information and resources. Jennifer saw it having the same benefit:

Using it means that I'm not constantly having to e-mail out syllabuses to students who have lost theirs for various reasons.... students actually seem to be looking at that stuff more often than e-mailing me and saying “What am I supposed to do now?” They are actually looking up the information.

Jennifer found she was getting fewer e-mailed questions requesting second explanations of course content because students could go back and review the material themselves if they didn't understand it. She also cited the flexibility that Moodle use afforded in giving a few of her students the opportunity to continue to participate in her course despite long absences or double booked timetabling.

For James the primary benefit of Moodle use was the ability it gave him to change course materials and resources on the fly: “I can upload material, change material and re-upload it, disseminated broadly really quickly, as opposed to using a course kit which

you print out at the beginning of the semester.” He also mentioned the way Moodle use was able to support a student who was out of the country for a prolonged time but could still continue to advance in the course.

Myra perceived the major benefit of Moodle to be the increase she observed in her students’ interactions with each other through the discussion groups, and the high quality of the discussions themselves. Rick framed his response to a question about Moodle's benefits in relation to his prior experience with WebCT, which he considered about the same in terms of the benefits it offered. He saw these learning management systems as saving him time because he can answer a question once or twice and not have to do it 50 different times. He thought the discussions had been the most useful element of Moodle for his students because they aided his students in preparing for exams and meeting other course requirements. Moodle’s ability to post grades was also considered extremely useful given the high numbers of students in his course. Rick thought the short videos that he posted were the least used Moodle resource in his course. Despite this he still thought the videos were worth uploading to Moodle. Alice also found through inquiry that most of her students did not make use of the media clips that she posted to her course Moodle. She noted that many students would ask her about course information despite that fact that this information was available on Moodle. She felt that she had no real sense of what most of her students were taking from the Moodle site.

Rick's sense was that his students were less involved in posting discussion responses than they had been in past years with WebCT, but he was uncertain as to why. Both James and Jennifer, who had always taught their courses using a learning management system, had seen no shifts in student engagement levels this year. Nor had James noticed any change in student grades by late in the term. Jennifer felt she could not make an assessment of Moodle's impact on her students’ performance until she saw the final exam grades. For her part, Susan had found no evidence of better student outcomes in the current year; in fact her class had not been performing as well as in past years, although confounds prevented her from attributing this decrease to the use of Moodle. She did think it likely that having access to Moodle would make a difference on the final exam because students would have the time while studying to go back and check the recordings.

Of all the CDs, Myra was the only one to report a significant increase in student performance that could be attributed to the use of Moodle. Students in her course did not get together in a face-to-face context more than a few times per year, and she found that having her students collaborate using wikis to complete assignments was a powerful and effective pedagogical strategy for encouraging student dialogue. Even though her students only worked together online, the quality of the work produced was “amazing” and student grades increased.

The CDs perceived few drawbacks to the use of Moodle. One potential drawback anticipated by many instructors contemplating the use of a course management system is a significant increase in the amount of time required to teach the course. But these CDs largely found that not to be the case (although it needs to be kept in mind that most of those participating in the trial had prior experience in the use of course management systems). Rick indicated that it took him about 8 to 10 hours to prepare the Moodle site for the course, but after that very little extra time was required. Alice, who went through a steeper learning curve before she was comfortable with the Moodle environment, and had invested a “fairly extensive” amount of time over the Christmas break getting prepared for the course, found that once initial setup was complete the process of putting up lecture PowerPoint slides, outlines, etc. was basically trivial. Even Susan, whose uploading workload almost doubled because most of her resources were uploaded both to her course website and to Moodle, found the use of Moodle only added “a little bit of additional work that did not take long”. James found himself devoting considerably less time to course Moodle work—about two hours per week on average—than he had spent in the previous year using WebCT, although his prior course had had a much higher enrollment level (the course had been split into two sections this year). James stated that had he not been using a course management system for his course this year he was “pretty sure it would take me much, much longer to accomplish things that I need to accomplish”.

Jennifer reported spending 30 to 40 minutes per week monitoring her Moodle course forum discussions and posting materials. Most of her communication with students came through e-mail outside of Moodle. She felt that the use of Moodle had actually decreased student e-mail traffic “because some of the simple stuff, the students are discussing amongst themselves and I don't even have to address it.” Overall, she thought that the use of Moodle had slightly increased the time she had to devote to the course, “but it improves some aspects of my work”.

Both Rick and Alice saw what they perceived to be the apparent inability of students to use e-mail within Moodle as a disadvantage; they were unaware that messages to students could in fact be sent from within Moodle using the class list, with copies of these messages being automatically sent to external email addresses by Moodle. (This was verified by the research team.) Initially Jennifer found Moodle’s lack of a fully internal e-mail system a deficiency until she set up a separate inbox for her course within her e-mail client. Susan expressed some concern that her practice of maintaining both a course website and a course Moodle could confuse her students. “I'm tempted to keep the current website because it's more personalized, but usually on the first page of the website there is a link to the Moodle site so students could visit Moodle fairly easily.”

A limitation of Moodle considered significant by several CDs was the inability when reading forum messages in Moodle to reset the “unread” flag on a read message so that the instructor would be alerted to return to it later. The default presentation layout for the forum threads also came under some criticism, although this could be customized

by the end-user. The lack of available statistics on student use of specific resources was also seen as a drawback; these statistics had been accessible in WebCT. Rick indicated that such data would give instructors a better indication as to how well students knew how to use the resources they put online. (As pointed out earlier activity reports are available in Moodle.)

Rick thought that while the resources and affordances Moodle provided to his course were of benefit to his highest-achieving students, he was not certain that they provided a better educational experience for the entire class. Alice held the most critical view of Moodle of all the CDs: she thought that the use of Moodle could be “doing a real disservice to some students” by providing students who are not independent learners with a resource that allows them to avoid attending classes. She wondered if these students are being put in a learning context that reduces their opportunity for actively engaging the course materials. She likened the process of listening to a podcast of a lecture to that of highlighting a textbook; both often invoke passive strategies on the part of the student which do not necessarily result in the learning of the material presented.

*Lecture capture.* Rick and Alice saw the value of lecture capture as being most apparent for their strongest students. These students, it was felt, were capable of self monitoring, and would know when they have missed important content; the recordings, as Rick expressed it, would “allow them to get better because they might have got 90% of the material in class and that extra 10%--they're going to be able to go back and get it [from the recording]”. In the case of less motivated students however, both CDs were concerned that although they might rationalize not attending lectures by assuring themselves that they would watch them later online, they may in fact not do so. The availability of lecture recordings provides these students with an excuse to skip lectures which in fact may never be listened to at any point, and consequently student performance may suffer. Alice considers this to be of special concern in the case of her course in which her lectures ran for three hours and covered a great deal of material. “A lot of the students may be saying ‘Yes it is recorded in I am going to listen to it’ without thinking that you actually have to spend the three hours listening to it.” She also found that the nature of the recordings Camtasia produced made it difficult to locate a particular section of the lecture for targeted listening.

Susan expressed a contrasting view; she felt that for her bright students the Camtasia recordings would not add much “because I don't speak very fast, I use a lot of examples around the main points, which give students some time to write down the notes. The lecture slides are available, they can print the lecture slides and make notes on that.” She thought the recordings would be more useful for a student who was average or who was having a harder time in the course.

Jennifer saw the primary value of lecture capture as being its capacity to support different learning styles, and to increase course access for students with disabilities of

various types. "I'm very, very supportive of different learning styles... [lecture capture] gives everybody more equal learning opportunities and I'm very favorable to that kind of the learning environment." James also valued it for the affordances it provided to students with disabilities or those otherwise unable to attend class. He noted that even though he tries to lecture at a slow rate because of the mathematics content in his course, some students still have trouble keeping up; he saw the lecture recordings as providing "an equitable environment for [these students] to stay on top of the material".

### **2.1.3 Teaching Assistants: Moodle Use**

Two responses were received to the e-mailed TA survey from PSYC 1010 TAs (one from section A and another from section G), and one was received from a KINE 3030 TA. All of the TAs indicated that they used Moodle for accessing the discussion forums. One did so to post announcements to students and to distribute the assignment she was responsible for marking. Students submitted completed assignments to her online which were then run through Turnitin and marked online by the TA. The second TA used the forums to address questions and concerns students had about the lab component of the course. The final TA accessed the course Moodle for class updates and lectures, and used the discussion forum to discuss an assignment with the students she was responsible for.

Two of the TAs found Moodle's primary benefit to lie in the use of the course forum, which provided a valued and convenient channel for answering student questions about assignments or lab work and helping students with any difficulties they may be encountering in their work. One of these TAs received a few expressions of thanks from students in response to assisting them so promptly through the discussion forum. The other TA saw the primary benefit of Moodle as providing a virtual location to access course materials and information from his laptop during the class break "when students asked particular questions about tests or URPP".

### **2.1.4 Technical Support**

The CDs were nearly unanimous in praising the quality and timeliness of technical and operational support offered to them throughout the pilot by York's Learning Technology Services group. Susan indicated that without the comprehensive support she received from the LTS staff, who had done most of the work of porting her course materials from the course website into the Moodle, she would not have participated in the trial: "I knew nothing about Moodle and I did not want to invest a significant amount of time. So having it prepared for me was really helpful."

Those CDs who had participated in one on one training with members of the LTS group thought the training had been effective and an important factor in their success. The CDs were also highly appreciative of the practice instituted in the trial of having an LTS staff member support them onsite during their lectures until they felt fluent and

comfortable in using the lecture capture system autonomously. On one occasion, Susan had a lecture recording fail for an unknown reason; an LST staff member attended the following lecture and observed to make sure she was following the correct protocol, and no further problems developed. “It was nice to have someone there, though, just to feel a little reassured.”

LST’s responses to e-mail support queries from the CDs were found to be very prompt and generally resolved issues quickly. When Jennifer encountered the operational challenges using lecture capture discussed earlier, she found the support from the manager and his assistant very helpful: “They came up with really good strategies that were appropriate for the Macintosh and they always had the microphone ready for me.”

Two CDs did report having difficulties getting needed support on specific occasions. In one instance, James could not get the classroom projector to work; but this technology was supported by the York ITC group, not LTS, which caused some initial confusion. James stated that “having so many people involved in technical aspects of our teaching can be confusing. Sometimes I just don’t know who to call, and the numbers are never handy.” Both he and Jennifer thought that providing a laminated card on the lectern listing the appropriate phone numbers for support would be useful. Myra also ran into difficulties getting needed support; she found the staff person assigned to support her Nursing course was unresponsive and so simple issues became quite complicated, making it very difficult to get anything accomplished in a timely fashion.

The contextual support built into the Moodle application was widely considered to be of marginal value. James was the only CD to find the linked help documentation useful, or to value the pop-up help provided when one of the embedded question mark icons was clicked on. Rick indicated he found better support documentation, including on-point video-based demonstrations, by typing his questions directly into Google: “‘I want to upload from Excel to Moodle’—you just Google that and there will be demonstrations somebody else has posted.” Jennifer found the online documentation provided for the application to be written in too technical a language, and Alice made no use of the Moodle help system at all. Myra did use the help system but only found it effective for simpler issues.

### ***2.1.5 Moving Forward: Advancing Moodle Use***

All of the CDs stated that they were planning to continue using Moodle in future courses, most with only minor adjustments to the ways in which they had used it during the trial. Rick indicated that while he might prefer to return to using WebCT because of Moodle’s inability to mark a read forum posting as unread, as well as in its lack of a fully internalized email system, he did not see this being a viable option because in his view WebCT was “on the way out”: “I would probably be foolish to go back and reinvent the wheel a few years from now when WebCT is totally not available.” He also intended to continue using lecture capture although he would prefer to continue with Media Site as



his students have expressed a preference for it over Camtasia. He did not anticipate doing anything significantly different in his use of Moodle next year, and saw his technical support needs going forward as being minimal.

Alice also intended to keep using Moodle, and planned to put more of her student assignments on line than she did in the current year. Susan also planned to continue using both Moodle and lecture capture. She thought both had substantive enough value to make the investment of energy worthwhile. Myra intended to continue employing Moodle for the same course, but next year she intended to start using wikis with her students earlier in the term, and setting up the student discussion groups before classes start so that their use may begin as soon as the course commences (as her course does not make use of lectures, no lecture capture was needed).

Jennifer also planned to continue her current use of the technologies piloted in the trial, but (as mentioned earlier) she expressed some apprehension about using Camtasia in a different classroom, because she thought that a new set of issues was likely to arise, and she wanted to be assured of sufficient technical support. She indicated that the level support she would need would depend on the nature of the course she was teaching; for example, for a fully online course she thought she would probably need to use more aspects of Moodle “because I'd be using a blog and various other things, so it would be different.” With respect to teaching the current course again, she indicated she would design the Moodle in the same form as she had been teaching the course in the current manner for a few years and did not for see any large changes.

James intended to expand his use of Moodle to a graduate course he would be teaching next year. He had never made use of Moodle in a graduate course before. The current graduate course instructor was using Moodle to teach this course and James had her permission to copy her materials over to his course for use the following year.

The only significant change James thought he would be making in his use of Moodle next year was the inclusion of more videos in his course materials. He thought his need for support would be minimal but he emphasized that he feels much better when he knows he can quickly phone LTS staff for any needed help: “It just makes me feel better about teaching. Knowing I'm not going to be hung out to dry in front of 300 people just lowers your stress level quite a bit.”

The CDs were asked if they had any recommendations to make about changes they thought were needed in the way Moodle was used in the pilot trial. A few suggestions were made that were directed at strengthening the training procedures for faculty. Alice did not find she learned lecture capture procedures effectively by simply having LTS set up the lecture capture for her: “I can't learn that way. You have to actually let me fall over and then just be there to say ‘No, that was the wrong thing to do’. I know we were going to have a practice in the lecture room before and we never got it.” She thought LTS staff coaching during a practice session was imperative. She and Rick also thought a printed step-by-step guide to lecture capture was needed.

Both Jennifer and James felt that the default course page template that had been used in the trial needed some alterations. They thought the library bar on the page took up too much space relative to its use level and priority. Jennifer stated that she “disliked it immensely, and then I just started to ignore it. It made the page extremely busy from my perspective.” James indicated that he never clicked on anything in the library section and indicated that when he goes to the library site he has a different way of doing it. Jennifer thought that the default Moodle page template was “very dull” and wanted to be able to customize it. As mentioned previously both Jennifer and James asked to have the recording levels of the lecture capture mic set automatically so they did not have to spend time adjusting it.

All of the CDs indicated that they would recommend the use of Moodle to their colleagues, but some qualified their endorsements. Alice said she would recommend Moodle use but “maybe not” lecture capture as she was not yet certain if it offered significant added value to her course. Rick said he would definitely recommend both lecture capture and Moodle use; he said Moodle made his work easier because he could scale the discussion boards and other course elements effectively but he was more equivocal about its utility for students: “I'm not sure it helps the students know what much. I don't know.” Susan commented on the potential use of Moodle with Camtasia by colleagues:

I would tell them if you want your lectures recorded use Moodle [with Camstasia]. If you're using your own website and you don't care about having your lectures recorded, then the features of Moodle in my case anyway kind of replicates the actual website. ... I'm wondering too whether some professors might be uncomfortable with having their lectures recorded. There's something a little bit intimidating about that.

Jennifer indicated she would recommend the use of Moodle based on her experiences so far, but noted that some colleagues are resistant to technology and would not likely benefit from its use: “I know plenty of people that don't use PowerPoint and so having [a Moodle site] I don't think would necessarily help them.” She thought a more effective approach to that type of colleague would be to discuss how she used Moodle in her course, pointing out the advantages and disadvantages. James had also met members of his faculty who had no desire to use a learning management system: “We have a lot of faculty in KIN who teach more practicum-based courses and the actual materials are not that plentiful and they can communicate just as easily in other ways.” However James was not hesitant to recommend Moodle to other faculty: “If someone was looking for a way to change things up that I would definitely suggest to them that getting involved with Moodle or something like it would be the way to go.”

The CDs were asked to give their perspective, based on their experience in the current trial, on the type and extent of training and support their colleagues would require to learn how to use Moodle and lecture capture. CDs disagreed about the value of group workshops as a training technique. Susan saw them as valuable; she thought the provision of one half day workshop with perhaps some additional one-on-one

assistance, adding up to about four hours in total, should be sufficient. Myra also thought workshops could be an effective training resources, provided that there were taught by educators rather than technical staff with no teaching skills. But for Alice and Rick, workshops did not seem to be the ideal approach to preparing faculty for Moodle use. Alice saw the problem with workshops as one of effectively addressing the unique and specific needs of individual faculty: "It's one thing, how do I do this one little thing, and it's not a workshop that you need an hour and a half with everyone else doing different things." Both she and Rick thought a better training strategy would be to provide short one-on-one sessions for individual faculty that could be scheduled through appointments or made available during drop-in hours at LTS.

Rick and Alice felt that opportunities should be provided for instructors to exchange views of each other's Moodle sites as this would allow faculty to benefit from each other's experiences and design ideas. Jennifer was primarily concerned that any future roll out provide levels of technical support similar to what she had received. She indicated that not having that level of technical support available could make a faculty member's job extremely stressful, especially when he or she was in front of a class. As she saw it, the technical and operational problems that emerge are often unique and are likely to vary across classrooms, requiring a high degree of support. "Without that I think that a large-scale rollout of this would be quite problematic. And I think why do it unless you can do it well because the students will rely on it." Jennifer thought that if the administration were to triple the number of instructors that Moodle was rolled out to next year, it would need to roughly triple the number of technical support hours provided in the present eLearning trial. She saw no way to escape this training and support requirement, given the fact that many faculty had considerably less technical expertise than those participating in the pilot trial. James concurred with Jennifer's analysis of the levels of support needed in any future scale-up of Moodle and lecture capture use.

## **2.2 Moodle Training and Support: The IT Role**

The Learning Technology Services office of York University's IT department was responsible for providing the training and support services for the Faculty of Health eLearning pilot. Prior to the start of the courses, LTS personnel provided individual consultations of each of the participating course directors to better understand their goals and strategies for Moodle use as well as their training and transition needs. Three course directors had been using WebCT for the courses they would be using Moodle for in the trial; LTS assumed the responsibility for migrating the content of these courses from WebCT to Moodle. Two other CDs had already been using Moodle with those courses they would be bringing to the trial; LTS staff created a new Moodle course for each of them based on their old one. For one course director who would use neither WebCT normal in the past, a new Moodle course was created.

Most training was provided on a one-to-one basis and was tailored to the specific needs of the course directors. The one course director with no prior LMS experience also attended and Introduction to Moodle workshop. Following the initial training, some brief follow-up training was required by those CDs were using Moodle for the first time. LTS staff reviewed the pertinent Moodle course with each of the course directors prior to the start of the winter term to ensure that everything in the course was in place and working as expected and that any concerns about delivery or ongoing content creation were addressed.

Because of the tight timelines prior to launching the new Camtasia-based lecture capturing service, CD training in the use of this service largely took place in the lecture hall prior to the first course lecture. LTS staff was made available to the start of the following two lecture classes in case the course directors had any questions or needed to review the steps required to start the capture process. Staff also returned at the end of the first and second classes to ensure that there were no issues with the submission of the lecture capture files to the server. As noted earlier, in two instances additional lecture room visits by staff were required to resolve ongoing issues and provide assurance for the instructors. Additional lecture capture training was provided to the two CDs who chose to use their laptops for presentation, which necessitated the addition of a microphone for audio input to their computers. LTS staff also worked to resolve the user profile issue Jennifer encountered using her Macintosh laptop (see discussion above).

LTS staff were asked what software or hardware related problems (if any) CDs encountered during their training for or initial use of Moodle or the Camtasia lecture capture process. They indicated that a lack of an e-mail tool in Moodle was a concern for some of the CDs that had worked previously with WebCT. Differences in how the discussion forums functioned in Moodle as compared to WebCT also raised some concerns for two course directors. No common or recurrent issues were noted with the lecture recording, although three separate failures occurred for various reasons (one software, two hardware).

Following the initial training period, the course directors brought several technical issues to the attention of the LTS staff. Ensuring that all students were enrolled in the Moodle course was a problem for more than one course director. Myra had the most trouble with this issue; it proved to be a consequence of her department not properly registering a student in Myra's section in SIS (the university's administrative database). There was also a missing student problem in a course that merged two pre-existing sections. These two issues were resolved.

The use by some course directors of technologies outside of Moodle introduced some problems. A few course directors used Turnitin to scan assignments, and one had students create wikis outside of the Moodle environment. Getting students to understand how to submit their work using these tools posed a challenge. In some cases

these problems were presented as technical glitches, but in fact the tool was simply not being used correctly or user expectations for the tool were incorrect.

Several course directors were interested in posting grades in Moodle, but according to LST staff they did not request or avail themselves of any training opportunities, whether in person or through documentation. As a result they were not able to successfully import grades into Moodle via Excel, or the grade calculations conducted in Moodle were not what they expected.

LTS was asked what problems were brought to their attention through the help desk by students in the trial courses, and if any were difficult to resolve or were likely to keep recurring. Problems identified include the inability to mark discussion messages as unread after reading them, which LTS tag as a legitimate concern for large classes. A number of students had problems opening PDF documents, but this was not a Moodle issue per se, and with proper documentation LTS expected to minimize this difficulty. No functional or usability issues were reported by students with respect to the lecture recordings.

In response to an inquiry about any technical or operational issues remaining in the use of either lecture capture or Moodle that required resolution before implementation scale up, LTS indicated that there were very few concerns outstanding. It was thought that clearer and simplified documentation for working with grades and grade books in Moodle was required to resolve grading difficulties.

LTS staff indicated that there were several changes and upgraded functionalities in Moodle and lecture capture they plan to implement prior to the next phase of Moodle roll out. They intended to reduce the complexity and intervention needed on the part of instructors to create podcasts of lecture recordings. Currently, an account on the media server is required to store the lecture recordings, and, if podcasts are desired of these recordings, a blog account needs to be created which is the mechanism used to generate the RSS feed required for podcast subscription. Currently, instructors using podcasts need to manually add information about each lecture recording to this blog, and all instructors need to manually add links to the lecture capture files in their Moodle course. LTS hopes to develop a solution that automates account creation and automatically creates both the lecture recording integration with Moodle and the podcast feed without any instructor intervention being required. On the training side, it was suggested that a quick start guide and a short screencast could be created that would probably eliminate the need for in-person, in-place training of CDs in the lecture hall.

The LTS manager was asked what he thought the most effective and efficient approach to training and supporting 20 to 30 faculty in the second phase of the Faculty of Health eLearning implementation might be, and how many additional faculty he thought LTS could support with the resources used in the current pilot. His reply is worth quoting in full:

Supporting larger numbers involves participants understanding what they need of Moodle and how to achieve those goals. Ideally participants would commit to a consultation to discuss their needs well in advance of the start of term (this need not be face-to-face). This would allow us to suggest approaches and allow them the time to implement any course design elements and add content in preparation for the start of term. Scaling would require us to make more self-serve training materials available (documentation, screencasts, webinars, etc.) and require instructors to make use of them rather than one-on-one help at their convenience. There would also need to be a more specific understanding of what is “supported” as a service, and what other elements might be provided on a “best effort” basis.

Scaling lecture capture will involve fixing an issue with the media server that causes the recording URL to be written incorrectly in the notification email. We’ll also need to create a better, more automated mechanism for server account administration. With existing resources, assuming we could make a few changes and introduce some constrains, we could support 15-20 without additional resources. [For] medium and/or longer term, [more] resources would be required to support larger numbers.

## 2.3 Student Use and Perspectives

### 2.3.1 Background

A total of 869 students responded to the survey, giving an overall response rate of 37%. Table 1 below gives the survey response counts and enrolments for each of the courses/sections participating in the pilot. Survey participation rates for individual course and sections varied from nearly 100% for HLST 2020 to a low of 8% for NURS 4111. Sixty-five percent of respondents were female, 35% male.

*Table 1: Student survey participation*

Student course/section	Survey Count	Enrolment Count
HLST 2020	137	139
NURS 4111 Section N	8	103
KINE 3030 Section M &N	73	712
PSYC 1010 Section A	137	186
PSYC 1010 Section G	168	516
KINE 2050 Section M & N	246	720
<b>TOTAL</b>	<b>869</b>	<b>2376</b>

Fifty-one percent of the students responding reported having used some type of course management system in four or more of their previous courses; another 44% had used a CMS in one to three prior courses, and only 6% had never made use of a CMS system at all. Exactly 3/4 of the students indicated that they had used Moodle in a prior course.

There was considerable variance in the hours per week of Moodle use for the pilot courses reported by the students. Fourteen percent indicated that they used Moodle less than one hour per week on average over the course; 38%, one to three hours per week; 26%, 3 to 5 hours per week; 12%, 5 to 8 hours per week; and 11%, nine or more hours per week. Most students reported attending course lectures a majority of the time; 24% always attended lectures, 38% attended regularly, 25% attended occasionally, 9% attended regularly, and 4% never attended lectures.

The hours students reported spending on campus and working (both paid work and volunteer work) are given in Table 2 below.

*Table 2: Student campus and work hours*

	1 to 5 hours	6 to 10 hours	11 to 15 hours	16 or more hours
Campus hours per week	12%	15%	26%	46%
Work hours per week	29%	24%	18%	29%

Most students indicated that they spent considerable time on campus, although a substantial minority spend 10 hours a week or less. A sizeable minority of students report working the equivalent of two or more full days per week.

*Learning to use Moodle.* Students appeared to have very little difficulty in learning how to use Moodle for the pilot course, which might be expected given that three quarters of them had worked with Moodle in the past. Only 3% of respondents indicated that learning to use Moodle for the course was difficult, and 1%, very difficult. Over half indicated it was very easy to learn, and 43% found it easy to learn.

Those few who reported difficulties learning Moodle were asked in an open-ended question to identify the source(s) of their difficulty. Many of the responses were off-topic, focusing on perceived weaknesses of Moodle itself rather than describing sources of learning difficulty (although clearly the two can be related). By far the most common reason given was that the layout and organization of the Moodle course pages made them difficult to learn to navigate and use. Sixteen students gave responses that fell into this category, and many of these made unfavorable comparisons to prior experiences using WebCT. In replying to this question, many students took the opportunity to offer

suggestions for improving little page design. A sample of representative responses in this class follow:

- Overall I do not like the layout of Moodle – it's not user friendly. I much prefer WebCT due to its simplicity in layout. Call me stupid but for the first exam it took me ten minutes to locate where the marks were posted for our first exam. Not a fan of Moodle AT ALL – however recorded lectures in Moodle are very beneficial.
- I was just used to using WebCT and find Moodle difficult to navigate.
- The layout is not very user friendly. It would be easier to have a main page with links to each main part of the course website rather than just a huge list of links.
- Everything listed on one page. All words, no pictures - organize links in an easier-neat manner.

The next most frequently encountered category of responses regarding Moodle learning difficulties were statements declaring strong preferences for the WebCT layouts and organizations, and describing how WebCT provided better usability. Six responses were given in this category. Below are two examples:

- I have some experiences of using Moodle before, but I still liked the WebCT better. When I was using WebCT, I was able to notice everything which means everything was all organized. Moodle is very difficult to notice what's going on within the Moodle service and it's just hard. I just don't get this. I just don't use it as much as I used to use the WebCT.
- I am more accustomed to using WebCT than Moodle. Plus, I don't like the navigation system compared to WebCT.

The only other response made by more than one student concerned lack of access due to system down-time in the middle of the night or due to their location.

### **2.3.2 Student Moodle Use and Its Impacts**

The frequency with which students reported making use of various Moodle components is shown in Table 3 below.



*Table 3: Moodle components: Student access frequency (% of total student responses)*

	Once per month or less	2 or 3 times per month	2 or 3 times per week	4 to 6 times per week	1 or more times per day	Feature not available
Lecture recordings access	22%	22%	28%	15%	12%	1%
Discussion forum access	22%	16%	24%	17%	15%	6%
Course announcements access	15%	17%	29%	20%	18%	2%
Course outline/schedule access	28%	25%	23%	12%	11%	2%
Course assignments access	18%	19%	23%	17%	11%	11%
Gradebook access	31%	25%	14%	9%	9%	11%
Chat access	48%	9%	7%	5%	6%	26%
Course readings access	22%	16%	24%	16%	9%	13%
Course PowerPoints access	15%	15%	27%	22%	14%	8%
External web links access	42%	18%	13%	9%	8%	10%

The data in Table 3 reveal a high level of inter-student variability in the frequency with which nearly all components were used, with the exception of the chat tool and external web link access. Course announcements, course PowerPoint presentations, and discussion forums were the most frequently accessed Moodle components, with course outlines and schedules, course assignments, lecture recordings, and grade books being sought out less frequently.

Students were asked whether they agreed or disagreed with a series of statements about the usability of and accessibility of their course Moodle (see Table 4 below).

Table 4: Student evaluation of Moodle usability and access

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Not applicable
Moodle is easy to use	1%	2%	4%	41%	51%	0%
The built-in Moodle help is useful	3%	2%	28%	32%	26%	10%
The quality/fidelity of video and audio clips provided in Moodle is good	1%	2%	12%	45%	38%	2%
It is easy to access course PowerPoint (or equivalent) presentations in Moodle	1%	1%	8%	40%	47%	3%
It is easy to access Moodle from campus	1%	1%	6%	37%	53%	2%
It is easy to access Moodle from campus residence or home	1%	1%	4%	36%	57%	1%
It is easy to navigate through the Moodle	2%	3%	8%	41%	46%	0%

The students in the trial courses were almost universally positive about Moodle's ease of use, its navigability, and its ready accessibility both on campus and off. The only item on table 4 to diverge from this pattern tapped students' perceptions of the utility of the built-in Moodle help: while only 5% disagreed with the statement that the help is functional, over one quarter of respondents neither agree nor disagree, suggesting that a substantial minority of students were not familiar with the help system and had not used it to any significant extent. (This interpretation is supported by the fact that a relatively high number of students reported that this particular rating item was not applicable to them.) Especially encouraging was the fact that over 80% of the students regarded the audio and video media resources provided to be of good quality, suggesting that the media formats being used were not seen as badly degrading the source material, an outcome which can be a consequence of steps sometimes taken by IT staff to minimize network traffic by severely compressing video and audio recordings.

An overwhelming majority of students either agreed or strongly agreed that the various forms of access that Moodle provided to a range of course resources was of value to them. (The students' assessments of the value of Moodle as a channel for accessing various course materials and resources are shown in detail in Appendix A, Table 5 of this report.) Even the access students valued the least, that provided to library resources or research help, was still thought valuable by the majority of students, and only 6% clearly found it not to be valuable. The anytime-anywhere access flexibility Moodle provided was almost universally valued, as was Moodle-mediated access to course lecture recordings and PowerPoint presentations.

Students saw several practical and logistical benefits arising from the addition of a Moodle site to their course (see Table 6 below).

*Table 6: Moodle: Perceived practical/logistical value*

Using Moodle in my course is valuable for...	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Did not use
Reducing the number of times I need to travel to York	5%	9%	20%	29%	28%	9%
Saving me time (efficiency)	1%	3%	11%	37%	47%	2%
Managing my course activities (e.g., planning, apportioning time, noting success and failure)	1%	3%	14%	36%	41%	5%

Most students shared the view that the use of Moodle saved them time and helped them better manage their course activities. Over half of the students indicated that its use reduced the number of times they needed to travel to campus.

Moodle was also widely perceived as fostering improved communication with instructors and fellow students as well as promoting and facilitating more collaborative learning (detailed results for the relevant survey items can be found in Tables 7 and 8 in Appendix A).

The great majority of students valued Moodle as a means of receiving messages or notifications from their instructors and more generally improving instructor-student communication (although slightly more thought that it improved their instructors' communication with them as compared to their own communication with their instructors). Slightly fewer (nearly half) felt Moodle improved their communication with their TA.

The majority of students also felt comfortable communicating with instructors and TAs online. In fact for most, Moodle use was seen to have made it more likely that they would communicate with their instructor. Moodle was also valued by the majority for getting assignments back with comments and grades; a slight majority also thought that its use made it more likely that they would quickly receive instructor or TA feedback on their assignments.

Moodle appears to have an appreciable effect on fostering student to student communication and collaborative work processes as well. The course instructors were viewed by the majority of students as actively promoting online collaboration, and just under half indicated that Moodle was valuable for facilitating their participation in instructor-created student groups or teams. Most students thought Moodle use improved the quality of their communication with fellow students, made them more

likely to communicate with their course peers, and improved their collaboration with classmates. Specific collaborative practices for which Moodle was valued by the majority were generating or sharing instructional materials, reading and commenting on other students' work, and working with classmates on a task or assignment.

Online course discussions in Moodle forums were thought by about two thirds of the students to lead them to think more about their course topics, and of those for whom the question was applicable, about two thirds thought their instructor or TA participated effectively in these discussions.

Students were asked to rate the importance of a number of the characteristics and affordances of Moodle forum use in relation to the value that Moodle had for them in their course (see Table 9 below). The majority of students considered these affordances important determinants of the value Moodle had for them. The ability to contribute to discussions at their own pace and without the stress of speaking to a whole class were both considered important or very important attributes by two thirds of responding students; discussion anonymity and the use of written as opposed to verbal expression were thought important or very important by over 50% of respondents.

*Table 9: Moodle: Perceived importance of forum communicative affordances*

Importance of being able to...	No importance	Little importance	Somewhat important	Important	Very important	Not applicable
Contribute to discussions at my own pace.	4%	7%	15%	29%	40%	6%
Contribute to discussions anonymously.	9%	13%	17%	23%	29%	10%
Contribute to discussions in written rather than spoken form.	5%	11%	18%	28%	31%	7%
Contribute to discussions without the stress of speaking to the class.	5%	9%	16%	26%	38%	6%

Students were also asked about the impact of Moodle use on a number of other learning behaviors and outcomes (see Tables 10 and 11 below).

*Table 10: Moodle: Perceived impact on student learning behaviours (pt. 1)*

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Not applicable
Use of Moodle made me more likely to seek clarification when I did not understand something.	1%	3%	17%	41%	34%	3%
Use of Moodle made me more likely to review lecture notes to gain clarification.	1%	3%	11%	42%	41%	2%

*Table 11: Moodle: perceived impact on student learning behaviours (pt. 2)*

Impact of Moodle on...	Significantly reduced	Slightly reduced	No change	Slightly increased	Significantly Increased
My motivation to study	2%	5%	39%	33%	21%
The depth of my learning in the course	2%	3%	23%	42%	30%
The time I devoted to study (total course workload)	2%	7%	37%	33%	21%
My sharing of ideas and resources with other students	2%	3%	49%	30%	16%
My course grades	2%	4%	41%	36%	17%
My overall satisfaction with the course	2%	4%	25%	39%	29%
How well prepared I was for class	2%	4%	29%	37%	27%
How well prepared I was for tests and exams	2%	4%	21%	41%	32%

Three quarters of the students reported an increased likelihood of seeking clarification when course content is not understood, a behaviour critical to the effective self-regulation of learning. A majority also reported an increase in two other important determinants of learning: motivation to study, and time devoted to course study. An increased sharing of ideas and resources, behaviour integral to collaborative learning, was reported by slightly less than half of the students. Possibly consequent to these reported improvements in learning behaviours, about two thirds of those surveyed thought that the depth of their course learning had increased, and that they were better prepared for classes as well as for tests and exams. Over half indicated that Moodle use

was having a positive impact on their course grades. Overall course satisfaction improved for two thirds of the group. It is important to note that while significant proportions of students (generally between  $\frac{1}{4}$  and  $\frac{1}{2}$ ) reported no change with respect to these outcomes, virtually no students indicated shifts in a negative direction on these dimensions.

Students were asked to rate the value of several types of Moodle course content (see Table 12 in Appendix A for item response details). Eighty-five percent thought that the online class resources provided in Moodle were helpful to their learning, and that the course information available in Moodle was complete. Seventy-five percent of the students used the online quizzes; of those that did, the great majority found them helpful learning aids.

A large majority of students found Moodle valuable for performing a range of course related activities: viewing the course calendar, posting questions and responses, and turning in assignments (see Table 13 in Appendix A for item response details). Once again, only an extremely low percentage of students felt that Moodle was not valuable for these purposes. Slightly fewer students, although still a majority, found Moodle valuable for taking exams and quizzes; this reduction in number seems primarily due to the fact that 23% of them did not use Moodle for this purpose.

Students appeared to be largely satisfied with how their instructors made use of Moodle in their courses (see Table 14 below).

*Table 14: Moodle: Perceptions of instructor behaviour*

	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neither agree nor disagree</b>	<b>Agree</b>	<b>Strongly agree</b>	<b>Not applicable</b>
My instructor placed all course resources into Moodle.	1%	4%	9%	38%	46%	2%
My instructor provided timely and helpful replies to my questions.	2%	1%	16%	32%	37%	12%
My instructor or TA provided timely feedback on assignments I posted to Moodle.	2%	3%	20%	25%	24%	27%
My instructor or TA provided sufficiently detailed and helpful feedback on assignments I posted to Moodle.	2%	3%	19%	25%	24%	27%
Class time was used more effectively because of Moodle.	2%	3%	21%	33%	38%	3%
The instructor encouraged us to use Moodle in this course.	1%	2%	9%	42%	45%	1%

A substantial majority of the students who felt able to rate their instructors on the optimal instructor behaviors listed in Table 14 either agreed or strongly agreed that their instructors behaved in the ways indicated. The instructors were seen as using Moodle effectively to provide timely and effective feedback to questions and assignments; to make better use of class time; and to make resources available. Nearly all of the students also indicated that their instructor actively encouraged the use of Moodle.

### **2.3.3 Lecture Capture: Student Use and Impact**

While there was considerable variability in the reported frequency of student access to lecture recordings (see Table 3), over three quarters of the students accessed these 2 to 3 times a month or more, indicating that the large majority of students made repeated use of this resource during the course. The fact that half of the students reported accessing lecture recordings 2 to 3 times a week or more suggests that these recordings were highly valued by many if not most students, and this supposition is borne out by students’ responses to a direct question on that point. Over half of those responding strongly agreed with the statement that “Using Moodle in my course is valuable for accessing lecture recordings”, and an additional third agreed with that statement; only 1% disagreed with it, and 5% indicated a neutral stance (see Table 5).

Students differed widely in the ways in which they viewed lecture recordings (see Table 15 below). Fifty-nine percent only watched a given lecture recording once, but about half of that group would watch certain sections multiple times. A relatively small proportion of students (16%) viewed only certain sections of the lectures, and fewer still watched recordings multiple times.

*Table 15: Student recorded lecture viewing patterns*

<b>Recorded lecture viewing behaviour</b>	<b>Response (%)</b>
Did not view lecture recording	11%
Watched recording once	28%
Watched recording multiple times	14%
Watched the entire recording once and sections multiple times	31%
Fast-forwarded to sections and watched them once	8%
Fast-forwarded to sections and watched them multiple times	8%

Students were generally satisfied with the quality and usability of the lecture capture recordings posted to the course Moodle pages (see Table 16 below). Over two thirds considered the audio and video quality, usability, and the completeness of the lecture recordings to be either good or excellent; only a tiny minority rated them as poor or very poor on these attributes.

*Table 16: Perceived quality of lecture capture*

	Very poor	Poor	Adequate	Good	Excellent	Did not view
Lecture recording audio quality	1%	1%	11%	37%	40%	11%
Lecture recording video quality	1%	2%	11%	34%	35%	17%
Completeness of the lecture capture	2%	5%	17%	34%	32%	10%
Lecture recording ease of use	1%	1%	8%	34%	47%	9%

When students were asked about the impact that their awareness that lecture recordings would be readily available had on their lecture attendance rates, nearly half indicated that it made no difference (see Table 17 below). A small minority stopped attending lectures completely, and slightly less than half reported some degree of reduced attendance.

*Table 17: Impact of lecture capture on lecture attendance*

Impact of lecture capture on lecture attendance	Response (%)
Stopped attending lectures completely	8%
Attendance was less than 50% of normal	10%
Attendance was between 50% - 75% of normal	14%
Attendance was between 75% - 100% of normal	19%
Attendance rate was the same	47%
Attended more lectures than normal	2%

A series of items queried students about possible changes in their behavior during lectures that were thought could possibly develop as a result of their awareness that lecture recordings would be available for later review (see Table 18 below).



*Table 18: Potential changes in student behaviour during lectures*

Behaviour change during course lectures	Response (%)
Having lecture recordings available led me to follow lecture discussions more closely	44%
Having lecture recordings available led me to participate in more discussions in lectures	17%
Having lecture recordings available led me to ask more questions in lectures	9%
Having lecture recordings available led me to pay less attention in lectures	7%
Having lecture recordings available made no difference to my lecture behaviour	27%
Having lecture recordings available led me to focus more on understanding the lectures	50%

Approximately half the students indicated that rather than pay less attention to the lecture, the availability of recordings led them to focus more on understanding the content, and follow lecture discussions more closely. About one quarter indicated it made no real difference to their lecture behavior, and less than 10% reported paying less attention during a lecture. Only a relative handful of students reported changes in their questioning practices or participation in lecture discussions.

Asked how useful it would be to incorporate video of the instructor into the lecture recordings (the Camtasia software used to record lectures in the pilot trial recorded only the audio and any computer screens being projected), 26% thought this essential; 33%, thought it useful; 22% thought it slightly useful; and 18% said it was not needed.

#### **2.3.4 Student Moodle Use: Technical Issues**

Students were asked to categorize the number and difficulty of any technical issues they encountered in using Moodle. Half of them stated that no technical issues were encountered, and 30% reported that one or a few issues occurred that were readily resolved. Five percent had several issues that were readily resolved. Difficult issues that were challenging to resolve were encountered by 14% of respondents; a small minority of this latter group encountered several such issues.

Over one half of the students indicated that no help with Moodle was ever needed (see Table 19 below). Of those that did seek out help most turned to either a classmate, a

friend, or a family member, or sought out the course instructor. Hardly any made use of York University computing help resources or the online Moodle documentation.

*Table 19: Student Moodle help source*

Moodle help sources	Response (%)
No help needed	59%
York computing helpdesk by phone	1%
York computing helpdesk by email	2%
Classmate, friend, or family member	17%
TA	2%
Course instructor	15%
Online Moodle documentation	3%

Finally, students rated a number of statements designed to tap their overall assessment of the value that Moodle (including lecture capture) had for them in their course and their attitudes towards it (see Table 18 below).

*Table 18: Student overall assessments of Moodle*

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Not applicable
Use of Moodle made the course more interesting.	2%	9%	24%	36%	26%	2%
Use of Moodle made studying for the course more effective.	1%	3%	10%	41%	44%	1%
I am very satisfied with this course because it used Moodle.	2%	2%	19%	39%	37%	1%
In general, it takes more effort to complete a course that uses online resources like Moodle.	16%	19%	20%	23%	16%	5%
I would like to have Moodle used in all my courses.	2%	3%	12%	36%	47%	1%

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Not applicable
Use of Moodle made the course more interesting.	2%	9%	24%	36%	26%	2%
Use of Moodle made studying for the course more effective.	1%	3%	10%	41%	44%	1%
I am very satisfied with this course because it used Moodle.	2%	2%	19%	39%	37%	1%
In general, it takes more effort to complete a course that uses online resources like Moodle.	16%	19%	20%	23%	16%	5%
I would like to have Moodle used in all my courses.	2%	3%	12%	36%	47%	1%
Moodle made it more convenient to complete course work.	2%	2%	16%	34%	43%	3%
Moodle helps me reach my learning goals for the course	2%	3%	19%	43%	33%	1%
Moodle fits my learning style	3%	3%	14%	46%	34%	0%

Taken together, these items indicate that the great majority of students held favorable views on the use of Moodle and its effects on their learning and motivation. Eighty percent or more thought that Moodle fit their learning style, made studying for the course more effective, and helped them reach their learning goals for the course. A similar percentage felt the use of Moodle made it more convenient to complete course work, and either agreed or strongly agreed that they were very satisfied with the course because it had used Moodle. Nearly 2/3 thought the use of Moodle had made their course more interesting, and more than three quarters would like to use Moodle in all their courses.

The one item in this table that was stated negatively—“In general, it takes more effort to complete a course that uses online resources like Moodle”—had a more ambivalent response, with roughly equal proportions of students agreeing and disagreeing with this statement. However this particular result needs to be interpreted with extreme caution because the vast majority of items on the scales in the survey were stated in such a way that affirming agreement was an indication of a positive opinion about some aspect of Moodle or its use. It is possible that many students conditioned to that response set

applied it to this item, misinterpreting it as reading “In general, it takes *less* effort to complete a course that uses online resources like Moodle”.

### **2.3.5 Suggested Improvements**

The student survey concluded with an open-ended question asking respondents what changes they would like to see in the use of Moodle that would make it more effective in supporting their course. The largest proportion of the responses given (162) focused on lecture capture and the lecture recordings. Thirty-two respondents discussed the value and the benefits that including the video component in the lecture capture had for them but did not offer any suggestions for changing the process or the product. Forty-six wanted to see video of the instructor included in the recordings; it was thought that this increased the realism of the lecture experience which in turn was thought to enhance learning. The following example replies illustrate this:

- When you sit at the back, you only listen to your prof's voice. It feels like you are only listening to the voice and it gives the feeling of detachment from the lecture. With video recordings having [the] prof in them, one feels you are having one to one lecture with the prof and it makes a huge difference in the learning.
- I would like to see the online recorded lectures to be able to include the professor in the recording. I find that this helps in visualizing concepts and terms.
- Sometimes it is very important that the professor can be viewed in the recorded lectures because he/she may be demonstrating something (i.e. biomechanics-movement of their bodies) and sometimes it was hard to see what they were demonstrating or writing on the board because the camera was not focused on them. Also, some professors use laser pointers to point at the slides which cannot be seen in the recording so it is hard to know what they are referring to. Further modifications should help solve this problem.”
- I would love to see the prof during recordings. It adds to retention ability. For some reason it make to content real. Please make this a standard feature. It’s amazing, regardless of how many people say it makes no difference.”
- If the Moodle includes the professor also, I would be feeling that I am present in the class. Only seeing presentation slides with the professor's voice doesn't make me feel that I am attending, so that it reduces my attention to the Moodle.

The inclusion in the video capture of all the materials used in a lecture, including any over-writing on lecture slides, a view of the chalkboard, any video used in a lecture, and links to that video, was passed suggestion made by 23 respondents, many of whom complained about these elements being missing from the capture recordings. One group of responses given by 16 students was clearly addressed to the Media Site

recordings being used in one of the classes; they requested more close-ups of the blackboard when the professor was writing on it. A dozen students complained about poor quality of recordings and the need to ensure that voice recordings are working properly. Two wanted to see posted lectures identified by both lecture date and topic.

Changes to the video player and to playback options for the lecture recordings were sought by 17 students. Requests were made for bigger playback screens; the ability to pause, rewind, fast-forward the video; indexed lectures so that students could easily jump to areas of interest in the lecture; and being able to adjust the speed of playback. One deaf student requested close captioning of the recordings. Six students wanted all lectures posted to the Moodle; they complained about one or more lecture recordings never showing up on the Moodle.

The second largest category of responses (47 in total) addressed perceived shortcomings in the layout and organization of course content and information in Moodle and sought improvements in Moodle usability. Many unfavorable comparisons were made to WebCT on these dimensions, and the aesthetics of Moodle pages were critiqued by some students. Some representative responses in this category:

- More clearly categorized into topics in the course home page - topics like 'video lectures', 'discussion', 'lecture material' instead of listing every single link on the page - more similar to the design of WebCT
- Profs and TAs should also post all assignment dates, exams, rooms and content etc. in one area so it could easily be referred back to
- I would like to improve the aesthetics of the course page - ie. making important tabs more visible than others...and just generally organizing the page better... On first visit to the site students might find it overwhelming due to the high amount of text on the homepage.
- The layout is a bit confusing compared to WebCT. When I first used Moodle I was definitely overwhelmed. I'm sure my answers now compared to when I began using the program at the beginning of the term would have been different. I am use to Moodle now."

Nine student responses were coded in a closely related category; responses in this group consisted of expressions of a strong preference for WebCT as being easier to navigate. One colourful response exemplifies this class of response:

- I don't think it's very user friendly - it looks like WebCT information all shoved into a website so York saves money even though I pay six grand a year to be here. If Moodle can be revamped for simplicity then this downgrade may have potential to succeed. Until then, I want WebCT back.

Several students requested more that navigational flexibility be added to Moodle, such as the ability to log out of a Moodle course without having to return to the home page.

A handful of others wanted course announcements to be made more prominent in some way; one asked that they be automatically emailed to York accounts. Better organization of discussion threads in the forums was sought by 12 students; specific changes suggested ranged from not placing discussion threads in a diagonal layout to avoid wasted screen space to making it possible to minimize read postings to free up screen space.

Fifteen students thought the Moodle gradebook system or the way their instructor used it needed improvement. Suggestions aimed at enhancing gradebook usability and improving student notification of grades included the following:

- I would like to see some sort of notification either on the "My Courses" page or the "Course Homepage" regarding marks that have been posted.
- Marks on all assignments/tests should be posted so we don't have to collect our papers in class.
- Make it easier to view overall grade and individual grades instead of opening a file that not everyone can access if they do not have the program to access it. In my other course they use the grade section where it shows the percentage of test / quiz to overall mark. It's more convenient to view all of your marks at once without having to look through a long list

Five students found the automatic email notifications they received alerting them to new posts made in a forum thread they had previously contributed to were unwanted and wanted the ability to turn this feature off.

Ten student suggestions focused on the way instructors chose to use Moodle rather than on Moodle features per se. They largely addressed what was perceived to be a lack of instructor use of or support for Moodle-based activities, as is evident in the following examples:

- I want to see teachers more prepared for Moodle difficulties, and be more knowledgeable in Moodle overall. (sic)
- Since this course was only online, communication is important. The professor did not answer any posts for a couple of weeks. She was late in getting criteria out for our first and second assignment. She gave very vague information about the 3rd and 4th assignment. Better communication would be appreciated.
- I would like for the instructor to provide more details in terms of assignment and the assignments should be graded with the same urgency required at the time of their submission

Ten students wanted to see instructors and/or TAs provide online feedback on assignments, tests, or exams in a timelier manner; nine wanted instructors to post lecture slides before class.

The reliability and speed of connectivity to Moodle was seen as needing enhancement by 16 students, some of whom complained about access shutdowns and others of slow page load and lecture download speeds. The slow downloading of PDF formatted files in particular was cited by 8 students, some of whom recounted technical glitches attempting to get these files.

### 3 Discussion and Recommendations

Overall, the data suggest that the Faculty of Health eLearning Pilot was a qualified success. The mandated prototype elements—course outline/schedule, course materials, lecture recordings, course announcements, and discussion forums—were used by all CDs, except for one who did not use discussion forums and another who did not use lecture capture since the course was fully online. Below we discuss the most salient findings with respect to these elements. Following that we discuss overall satisfaction with the pilot from the point of view of faculty and students, technical support, and then provide recommendations for the next phase of the pilot.

#### 3.1 Prototype Elements

*Lecture captures.* By far the element that attracted the most attention by CDs and students alike was the lecture captures. CDs who used the standard York podium found the recording process relatively straightforward, while those who used their own laptops had to struggle somewhat with setting up their equipment and wearing two microphones. Initially, some CDs were self-conscious of being recorded at first; however they all adapted to the process as their courses proceeded. They did not alter their lecture style significantly because of the recordings, although the range of the wireless microphones restricted those who wanted to move around the lecture hall. Generally speaking, CDs concluded that the lecture captures added a worthwhile resource to students, allowing them to focus more on the lectures, review material, assist those with different learning styles, and support students with disabilities. The area where CDs did express some concern was the apparent drop off in attendance as students felt that they could watch the video instead of attending lectures regularly.

Indeed, students did not attend lectures as often as they usually would have because of the recordings. Approximately half of them said their attendance had decreased and a small proportion (8%) even stopped attending lectures. Students said they valued the lecture capture videos which allowed them to focus more on understanding the lectures than they would ordinarily in non-recorded lectures. The only complaints about the pilot that stood out were that some students would like to have seen the picture of their lecturer.

Thus, from the point of view of CDs and students, lecture captures were seen to be a valuable component in the trial and should be retained.

*Course announcements.* This tool provides a way for the instructor to broadcast a message to all students. Despite the fact that two instructors were uncertain about whether students read them, it is by far the simplest way to attempt to reach all students, and a few CDs highly valued the efficiencies the course announcement tool brought to their administrative tasks.. This is a critical tool that should be retained, especially if students do not attend lectures regularly as they would miss in-class announcements.



*Discussion forums.* CD's use of discussion forums varied considerably: some were actively involved and responded to questions students posted, while others remained more passive and checked them only occasionally. Active involvement in the forums of large enrolment courses is a considerable challenge for CDs because of the time demands that they require. Nevertheless, at a minimum, they provide a vehicle for students to communicate with each other, to develop a sense of community, reflect “publically” on their ideas, and to learn from each other. If the CD chooses to become involved, these advantages still accrue, however students are able to have the added advantage to receiving feedback from a content expert. Therefore, this element should be retained and its use encouraged, where feasible.

*Course outlines and materials.* These two remaining required elements are a basic expectation for any course website and their use should be encouraged. In addition to the obvious cost and environmental savings, CDs in the pilot reported that having them in electronic form in Moodle avoided the problem of students losing their paper copies or not being present in class when they were handed out.

*Other elements.* The optional prototype elements included assignments, quizzes, Turnitin, and gradebook. (Labs were also listed as an optional element although they are discussion forums where students are grouped, so the discussion above about forums applies to labs as well.) Although these elements were used by only a few or none of the CDs, they should be retained as they do offer worthwhile enhancements. The assignment tool was used successfully by three of the CDs, while the other three had paper based assignments so it was not applicable to them. Quizzes were not used by any CD because they would not be able to verify who actually took a quiz. However, CDs might consider using them as a self-testing activity with no grades assigned. Half of the CDs used Turnitin and reported that it was a useful adjunct to Moodle. None used the gradebook feature in Moodle and preferred to a separate Excel spreadsheet because they did not trust it, found it not applicable to their grading scheme, or did not fully understand its use. The gradebook is designed to be used in conjunction with the assignment tool and can automate the construction of an Excel spreadsheet. The instructor can then merge this Moodle produced spreadsheet with other external spreadsheet grades. Therefore, this element should also be retained and CDs should be given detailed instruction on how to use it so that they can make an informed decision about whether to employ it or not.

### **3.2 Overall Satisfaction**

*Faculty.* Overall, course directors were positive about their experience in participating in the pilot, although it did take them some up-front time to get familiar with Moodle—especially for those who had not used a course management system before. Afterwards, they found it relatively easy to post course resources to Moodle, use discussion forums, and post course announcements, and most reported that Moodle use did not appreciably add to their workload (in fact a few CDs indicated that it decreased the time

needed to manage large lecture sections). The only Moodle issue that caused concern was not being able to flag read messages as unread or for follow-up, a notable shortcoming of the tool for large discussion groups. As mentioned above, those course directors who used the standard York podium generally found the lecture capture system to work smoothly, however technical problems were not uncommon for those CDs who used their own laptop computers in lecture halls.

*Students.* Some two-thirds stated that they were very satisfied with their course because of its use of Moodle and half of the students felt that Moodle had a positive impact on their grades. Overall, they found Moodle easy to use and navigate and they valued the convenience of having course resources readily accessible. They valued the anytime, anywhere availability of their course and the access to course resources in Moodle. The only complaints about the pilot that stood out, in addition to not being able to see the image of their lecturer in the lecture captures, was that some found the layout in Moodle somewhat cluttered and lacking organization. However it is important to note that these criticisms were only raised by about 5% of the students surveyed.

### **3.3 Technical Support**

All the course directors except one roundly praised the technical support staff in LTS for helping them on such tasks as converting existing WebCT courses to Moodle, assisting them in using the lecture capture system, responding promptly to their email queries, and helping them deal with other technical issues that arose from time to time.

Opinions were mixed about the effectiveness of the technical training, with some CDs being satisfied with it, while others felt individual one-on-one training would have been more effective than group training. Some CDs mentioned being uneasy when they had to learn to use the lecture capture system on the first day of classes, a situation that arose due to time pressures. But overall, the high degree of support effectiveness and satisfaction demonstrated in the trial appeared to be important factors in the CD's success in using Moodle and must receive equal attention in future elearning rollouts.

### **3.4 Recommendations**

We offer the following recommendations for consideration before the pilot is expanded next year. The recommendations deal with three areas: prototype elements, Moodle, and training and support.

#### **3.4.1 Prototype Elements**

1. All prototype elements should be retained in the next phase of the pilot and the current breakdown between required and optional elements should remain the same.
2. Alternatives to Camtasia for lecture capture should be investigated with a focus on those that can index content to make it easier to locate specific topics and allow for optional recording of the lecturer.

3. A turnkey solution should be developed that allows instructor laptop use in the classroom and automates the lecture capture process to the extent possible (e.g. eliminating the need for mic level checks). If this is not possible, instructors should be strongly advised to use the standard York podium and shown how they can make their laptop resources available on the podium computer.
4. An effort should be made to integrate all media sources into the lecture capture system including the document camera and videos that are played in the lecture hall.
5. The use of motion-tracking cameras should be explored to determine if it would be feasible to include instructor video in the lecture capture using an automated camera system that would not require the presence of a videographer.

#### **3.4.2 Moodle Recommendations**

6. The Moodle development team should determine if the system can be modified to allow discussion forum postings that have been read to be flagged as unread for follow-up.
7. Course directors should be presented with suggestions on how to better organize the layout of their course resources. These suggestions should be based on a review of how the courses were organized this year during the pilot with a view to making them less cluttered and making resources easier to locate. Alternative templates using different organizing principles for the course should be made available to them as well.
8. The Moodle default profile for students should flag unread messages and notification of course announcements should be sent to the student's preferred email address.

#### **3.4.3 Training and Support Recommendations**

9. Brief videos, screencasts, and/or illustrated instruction sheets should be prepared to explain specific aspects of Moodle use such as the assignment tool, use of discussion forums, wikis, layout options, tracking activity, messaging all course participants, and other administrative functions.
10. Introductory workshops for Moodle and lecture capture need to be continued. Also, workshops on specific aspects of Moodle such as those mentioned above should continue to be held. Faculty who are experienced Moodle users should be invited to attend to share their experiences as a way to introduce more authenticity into the workshops. LTS staff should pilot workshops with one or two target audience members to ensure that they are not overly technical and meet audience needs.

We conclude with two further suggestions for the Faculty of Health. First, we encourage course directors to experiment with new ways of organizing and delivering their

courses. While lecture capture partially replicates the classroom experience online for students, faculty may want to think deeply if this is the most effective way for students to learn. For example, faculty may want to consider the reuse of some lecture recordings for future course offerings to deliver content, and use the face-to-face time as an opportunity to interact with students and address areas in which students have difficulty understanding. A more extensive and creative use of forum-based discussions as a vehicle for active and collaborative learning might also be explored. Second, we suggest that as the Faculty of Health moves to expand the pilot and innovate with blended learning models, that evaluation research continue to be conducted as a way to understand the impact of the innovations on teaching and learning and to provide feedback for course improvement.

## 4 Appendix A

Table 5: Moodle access affordances: Perceived value

Using Moodle in my course is valuable for...	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Did not use
Accessing the course syllabus	1%	1%	7%	45%	43%	3%
Accessing lecture recordings	1%	0%	5%	36%	54%	4%
Accessing course PowerPoint presentations	1%	1%	6%	33%	53%	7%
Accessing lecture or course notes before class	2%	2%	11%	33%	42%	10%
Accessing lecture or course notes after class	1%	1%	7%	38%	47%	7%
Accessing online readings and other supplementary course materials	1%	1%	9%	41%	41%	7%
Providing a single access point for materials from a variety of online sources	1%	1%	16%	37%	38%	8%
Accessing grades	2%	2%	9%	38%	45%	5%
Accessing sample exams and self-test quizzes for learning purposes	1%	3%	11%	32%	41%	11%
Accessing material any time, from any location (convenience)	1%	1%	6%	36%	56%	1%
Accessing library resources or research help	2%	4%	21%	29%	25%	19%

Table 7: Moodle: Perceived communicative and collaborative value (pt. 1)

Using Moodle in my course is valuable for...	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Did not use
Receiving messages or notifications from instructors	1%	3%	10%	38%	43%	5%
Getting assignments back with comments and grades	2%	6%	17%	25%	26%	23%
Improving my instructor's communications to me	1%	4%	17%	41%	33%	4%
Being part of instructor-created ad-hoc student groups/teams	2%	5%	24%	24%	20%	25%
Improving my collaboration with other classmates	3%	5%	21%	35%	26%	9%
Reading and/or commenting on other students' course-based work	3%	3%	18%	34%	27%	15%
Generating or sharing instructional materials with my classmates	2%	4%	18%	36%	25%	15%
Working with my classmates on a task or assignment	2%	5%	19%	29%	22%	22%

Table 8: Moodle: Perceived communicative and collaborative value (pt. 2)

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Not applicable
Use of Moodle made me more likely to receive instructor and/or TA comments on assignments quickly.	2%	6%	23%	30%	23%	16%
Use of Moodle made me more likely to communicate with other students taking this course.	2%	6%	21%	35%	26%	9%
Use of Moodle made it more likely for me to communicate with my instructor.	2%	6%	21%	37%	28%	5%
The course online discussions make me think more about course topics.	1%	6%	22%	37%	28%	6%
I feel comfortable communicating with my instructor online.	1%	2%	16%	39%	33%	9%
I feel comfortable communicating with my TA online.	2%	3%	17%	33%	27%	19%
My TA or instructor participates effectively in Moodle discussion forums.	2%	4%	17%	30%	31%	15%
My instructor promoted online collaboration with other course members.	2%	5%	20%	33%	26%	15%
I feel Moodle use improved communication with my instructor.	2%	6%	21%	34%	29%	9%
I feel Moodle use improved my communication with my TA.	4%	7%	22%	26%	21%	20%
I feel Moodle use improved communication with my classmates.	4%	6%	21%	34%	27%	9%

*Table 12: Perceived value of course Moodle content*

	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neither agree nor disagree</b>	<b>Agree</b>	<b>Strongly agree</b>	<b>Not applicable</b>
Online class resources were helpful to my learning.	1%	2%	13%	41%	37%	6%
Course information provided in the Moodle was complete.	1%	3%	10%	44%	40%	3%
Online course quizzes were helpful to my learning.	1%	2%	16%	28%	29%	24%

*Table 13: Moodle: Perceived value for course activities*

<b>Using Moodle in my course is valuable for...</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neither agree nor disagree</b>	<b>Agree</b>	<b>Strongly agree</b>	<b>Did not use</b>
Viewing a calendar of course activities	1%	4%	15%	36%	32%	12%
Taking exams and quizzes for grading purposes	2%	4%	16%	29%	26%	23%
Posting questions or responses after class	2%	3%	15%	39%	29%	12%
Turning in assignments online	1%	4%	15%	30%	28%	22%