

MyLab IT educator study explores impact of assignments on Capstone Grader Projects and exam scores in Business Computing course at MacEwan University

<p>School Name MacEwan University, Edmonton, Alberta, Canada</p> <p>Course name Business Computing I</p> <p>Course format Face to face (lab-based), hybrid (lab-based), or online; flipped classroom</p> <p>Course materials MyLab IT for Exploring Microsoft Office 2016, Volume 1 and 2 (eText), by Poatsy, et al.</p>	<p>Timeframe Fall 2016</p> <p>Submitted by Randy Jenne, Associate Professor</p> <p>Results reported by Sara Owen, Pearson Customer Outcomes Analytics Manager</p>
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Key Findings

- Data indicate strong, positive correlations between MyLab™ IT Simulation Trainings and MyLab IT Grader Projects, between MyLab IT Grader Projects and Capstone Grader Projects, and between MyLab IT Grader Projects and exam scores, suggesting positive relationships exist between successive course assignments.
- Students who earned Grader Project scores 90 percent or greater had exam scores an average of 14 percentage points higher than students who earned Grader Project scores less than 90 percent.
- Over 90 percent of student survey respondents reported they were able to use the Word and Excel skills learned from MyLab IT in real-life situations (another course, a job, internship, etc.) during the course of the semester.

Setting

Established in 1971, [MacEwan University](#) serves more than 19,000 full- and part-time students across three urban campuses in Alberta, Canada. About 58 percent are enrolled full-time in credit programs. City Centre, the largest of the three campuses, spans six city blocks in downtown Edmonton. Students are an average of 23 years old; 65 percent are women. As of 2016, the university offers nine baccalaureate degrees, two applied degrees, and more than 40 diploma and

certificate programs, in a variety of delivery formats including full-time, part-time, online, and distance.

About the Course

Business Computing is a one-semester, three-credit course taken by approximately 700 Bachelor of Commerce, business certificate, and diploma students each year. Students use the Windows operating system to develop foundational skills in the areas of file management, word processing, spreadsheets, presentation software, and emerging technologies to both support them in subsequent courses and prepare them for the business world. Projects emphasize problem solving, data analysis, and the use of Internet communication tools.

Randy Jenne, associate professor, has been teaching at MacEwan for 35 years and has been teaching the Business Computing course for the past 10 years. Currently a total of three educators teach the course. Face-to-face and hybrid sections are capped at 40, and online sections are capped at 30. Face-to-face courses take place in a computer lab twice a week for 90 minutes. Hybrid courses have one 90-minute class per week in a computer lab, and the remaining coursework is completed online. Eleven sections run in the Fall semester, four in Winter, and two in Spring and Summer.

Challenges and Goals

Jenne piloted MyLab™ IT in 2008 after being disappointed by a different online homework management program that had not kept pace with the (at that time) current Microsoft Office program. With MyLab IT, Jenne was specifically interested in offering his students Simulation Trainings, as well as comprehensive exercises and assignments in Word, Excel, and PowerPoint to enable the kind of rich, hands-on learning that a simple lecture format cannot provide. The Project Creation Tool (PCT) in MyLab IT additionally provided Jenne with the ability to create his own assignments that are graded automatically by the PCT engine. Looking to implement a flipped classroom, Jenne also needed an online program that would allow him to require assignments to be completed prior to lectures. MyLab IT gives him that ability.

Implementation

Jenne employs a flipped classroom in which MyLab IT is used to teach basic concepts, as well as for practice and homework. Students work at their own pace, but have firm due dates for assignment submissions. Students complete required MyLab IT Simulation Trainings before midnight on the night before each lecture. One student recently commented, "I liked the Simulations because I could use them as a reference to the Grader." They have unlimited attempts to complete their Grader Projects, usually four per MS application. Another student commented, "I really liked the multiple attempts because it allowed me to effectively learn from my mistakes while also improving my grade." In an end-of-semester survey, 21 percent of student survey respondents reported spending between 1–2 hours working in MyLab IT, 47 percent reported spending between 2–3 hours, 20 percent 3–4 hours, and 12 percent more than four hours per week.

Lectures are conducted in a lab setting. Approximately one half of lab time is spent addressing challenging chapter content; during the other half, students begin MyLab IT Grader Project assignments, which are due at midnight the night of class. For both Simulation Trainings and Grader

Projects, all learning aids are turned on, students have unlimited attempts, and the highest scores are recorded. After students complete all the chapters (four to five) in a Microsoft application, Jenne uses the MyLab IT Project Creation Tool to generate a cumulative Capstone Grader Project that covers all skills and is machine-graded in MyLab IT. This may be completed at home or in the computer lab, and students have unlimited attempts.

Jenne also creates an exam for each unit that is similar to the Capstone Grader Project and requires students to work in the Microsoft application. The exams are hands-on, with students applying the knowledge and skills they have learned using Word, Excel, and PowerPoint. Students only have one attempt to take each exam. Exams are given in a computer lab for face-to-face and hybrid courses. By the end of the course, students will have completed a total of 13 Simulation Trainings, 13 Grader Projects, four Capstone Grader Projects, and three exams in MyLab IT.

Best practices

At the beginning of the semester, Jenne gives students a three-page MyLab IT best practices study guide he created himself and follows up with a quiz designed to make sure students understand MyLab IT and how it fits into the course. The quiz is worth one percent of the course grade (to incentivize students to complete it).

Jenne has also developed a series of five-minute “how to” videos to explain the most difficult topics in each application. Students are encouraged to use these videos for review, homework, and exam preparation.

Assessments

- 20% Excel exam
- 13% MyLab IT Grader Projects (13)
- 13% MyLab IT Simulation Trainings (13)
- 10% PowerPoint exam
- 10% Word exam
- 10% Excel Capstone Grader Project
- 5% PowerPoint Capstone Grader Project
- 5% Publisher/emerging technologies Capstone Grader Project
- 5% Word Capstone Grader Project
- 5% File management exam
- 3% File management Capstone Grader Project
- 1% MyLab IT best practices quiz

Results and Data

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Correlations do not imply causation but instead measure the strength of a relationship between two variables, where r is the correlation coefficient. The closer the r value is to 1.0, the stronger the correlation. The corresponding p -value measures the statistical significance/strength of this evidence (the correlation), where a p -value $<.01$ shows the existence of a positive correlation between the two variables.

Student performance data from Simulation Trainings and Grader Projects indicate strong, positive correlations across the board, suggesting positive relationships between success on the Simulation Trainings and Grader Projects, between success on Grader Projects and Capstone Grader Projects, and finally between Grader Projects and exam scores. View table 1 to see r-values color-coded to indicate the strength of each correlation.

R-values for correlations across all applications

	All applications <i>r</i> -value	Excel <i>r</i> -value	PowerPoint <i>r</i> -value	Word <i>r</i> -value
Simulation Training Average to Grader Average	0.68	0.67	0.70	0.46
Grader Average to Capstone Average	0.80	0.72	0.62	0.56
Grader Average to Exam Score	0.64	0.64	0.42	0.54

***r*-value Correlation Key**

.00-.19	"very weak"
.20-.39	"weak"
.40-.49	"moderate"
.50-.59	"moderately strong"
.60-.79	"strong"
.80-1.0	"very strong"

In all cases, $p < .001$

Table 1. R-values Color-coded to Show Strength of Correlations across All Applications (Excel, PowerPoint, and Word) and across Individual Applications, Fall 2016 (n=203)

To look at the data another way, figure 1 illustrates average exam scores and average Capstone Grader Project scores for two groups of students: those who earned 90 percent or higher on Grader Projects, and those who earned less than 90 percent. Students who earned, on average, greater than 90 percent on Grader Projects earned higher average exam scores (14 percentage points higher) and higher Capstone Grader Project scores (17 percentage points higher) on all three applications (Word, Excel, and PowerPoint). This potentially suggests that working to achieve higher scores on Grader Projects may successfully prepare students for MyLab IT application exams. As one student commented on an end-of-semester survey, "The option to correct and resubmit assignments proved to be quite effective and excellent practice for the exams (learn from mistakes)."

Average exam scores for students with Grader average 90 percent and higher and for students with Grader average less than 90 percent

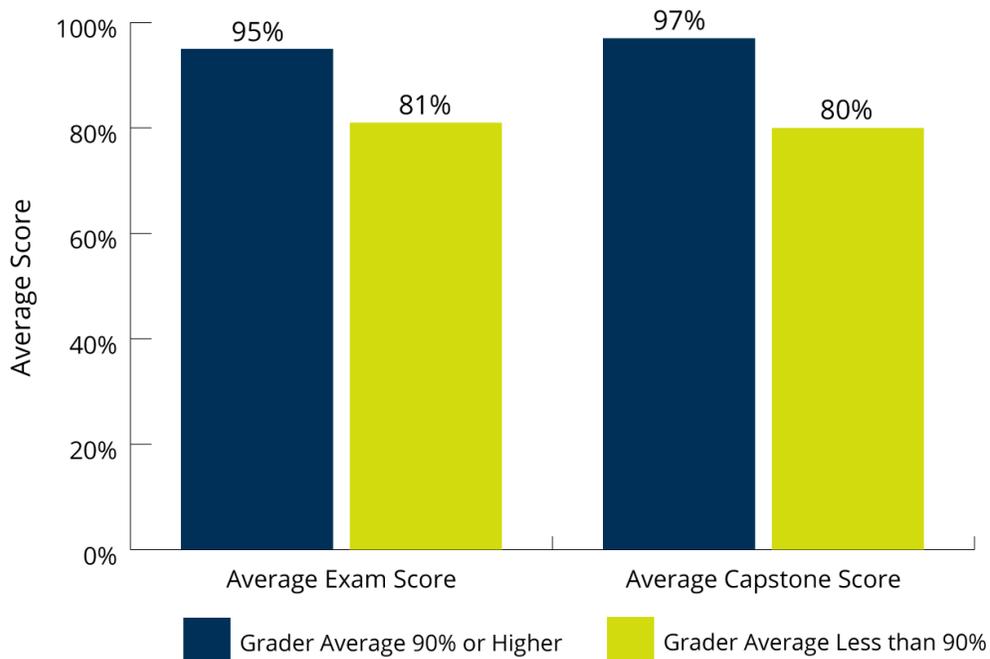


Figure 1. Fall 2016 Average Exam Score for Students with Grader Project Average 90 Percent and Higher ($n=106$) Compared to Students with Grader Average Less than 90 Percent ($n=97$); Average Capstone Score for Students with Grader Average 90 Percent and Higher ($n=135$) Compared to Students with Grader Average Less than 90 Percent ($n=68$)

The Student Experience

Towards the end of the Fall 2016 semester, approximately 200 students were asked to participate in a 14-question online survey about their use of MyLab IT and its impact on their learning and assessments. In total, 81 of the students participated in the survey, a response rate of 40.5 percent. Of the 81 students who responded, 30 percent took Business Computing in a face-to-face course format, 33 percent in a hybrid format, and 30 percent in an online format.

MyLab IT access: 95 percent of student survey respondents affirmed they were able to successfully log in to MyLab IT during the first week of class.

MyLab IT use: When unable to start or complete a Simulation Training, 91 percent of respondents reported they always (72 percent) or usually (19 percent) used the available learning aids (Read, Watch, Practice) for assistance. One student commented:

- *“Those learning aids are what made learning so easy. Sometimes visual aids are needed when written explanation doesn’t suffice.”*

99 percent of respondents strongly agree (63 percent) or agree (36 percent) that, “The Simulation Trainings in MyLab IT helped me get familiar with and practice skills in Microsoft Office before completing the Grader Projects.” One student commented:

- *"I liked how in the Trainers you could watch someone else do it, and it taught you valuable tips!"*

100 percent of student respondents strongly agree (72 percent) or agree (28 percent) that, "The Grader Projects in MyLab IT helped me get familiar with and learn the skills in Microsoft Office." One student commented:

- *"I liked that when you got parts of a Grader wrong, you were able to see what you got wrong and submit the Grader for a better mark."*

Learning aids/multiple attempts: 57 percent of respondents reported always (and 17 percent usually) completing a second or third attempt on the Grader Projects if they were unhappy with their grade on the first attempt. Student comments include:

- *"Often, my mistakes were simple things resulting from me not reading the instructions fully, but which I knew how to do. It was nice to be able to go back and correct those."*
- *"The multiple attempts and corrections where a huge help that I really enjoyed, it makes the course feel like it's about learning rather than grades."*

79 percent of respondents reported they always used View Submissions to help correct their errors for the Grader Projects. Student comments include:

- *"This was very helpful—the 'View Submissions' tool allowed me to see where I had gone wrong and helped me understand exactly what I was required to do."*
- *"The immediate feedback on submitted assignments...allowed me to correct my errors while the information was still fresh in my mind."*

College and career readiness: 92 percent of respondents said they were able to use the Word skills, 95 percent the Excel skills, and 78 percent the PowerPoint skills learned from MyLab IT in real-life situations (another course, a job, internship, etc.) during the course of the semester. Student comments include:

- *"Learning the page formatting and tabs came in handy in my English class."*
- *"These Excel skills made my accounting course so much easier, I was able to finish my assignments with ease and did well on them."*
- *"The Excel course taught me Solver which related directly to my finance course, so that was a huge help."*
- *"I was already familiar and comfortable with Excel prior to this class, but it still helped me so, so much. I loved the training on tables as well. I use this now each month when I do my personal finances and bank reconciliation. So useful!"*

Overall experience: 99 percent of respondents strongly agreed (76 percent) or agreed (23 percent) they would recommend MyLab IT to other students taking the course.

Selected responses to the question "What did you like best about MyLab IT and why?" include:

- *"Easy to use, interactive, FUN!!! I really learned a lot using MyLab IT. I would recommend it."*
- *"The MyLab IT is very nicely organized, and it just provided everything needed to complete assignments in one place."*

- *"I like that it got us to practice all of the skills and then try to apply them in real-life projects (Graders) and not just in tasks."*
- *"MyLab IT software was a great software to learn the components of the course. It provided prompt feedback on assignments..."*

Conclusion

Implementing MyLab IT in a flipped classroom has changed how Jenne teaches. By requiring MyLab IT assignments to be completed prior to his lectures, Jenne knows that students have already covered the basics, enabling him to focus lectures on the course's most challenging topics. Thanks to Jenne's clear schedule and mandatory timetable for assignment completion, students are able to work more independently. Jenne reports that some students complete assignments well ahead of the due dates. In fact, Jenne also reports that students in the flipped/blended environment attend class less frequently because their work in MyLab IT takes the place of learning concepts via lecture. "The need for lecture depends on what type of learner the student is," says Jenne. "With MyLab IT, traditional lecture is no longer the only—or even the best—way to teach this course." Jenne currently has no plans to change the way he teaches the course. He concludes, "The course is working well. The students enjoy it and learn the skills they need, and my student evaluations are excellent."