MyLab Economics educator study analyzes Study Plan and test scores at John Abbott College

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<td>Fall 2016</td>
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| MyLab Economics with *Macroeconomics* by Ragan | ● Data show a strong correlation between average MyLab quiz scores and average test scores.  
● Students completing over 100 exercises in the MyLab Study Plan earned average test scores at least seven percentage points higher than students who completed fewer than 100 Study Plan exercises.  
● 91 percent of respondents on the student survey found the MyLab Study Plan to be extremely or very helpful to their understanding of the course material. |

Setting

Situated on the western tip of the island of Montreal, in Sainte-Anne de Bellevue, John Abbott College (JAC) enjoys a rural setting just a half-hour drive from downtown Montreal. Since opening in 1971, JAC has been a significant part of English post-secondary education in Québec and is one of five English language Colleges of General and Professional Education (CEGEP) located there. JAC offers a wide range of career and pre-university programs, where students will spend two years
preparing for university or three years studying a profession or trade. Today, the public, Anglophone college caters to over 6,500 day students and more than 2,000 continuing education students from Québec, Canada, and abroad.

About the Course

Medoune Seck has been teaching for approximately nine years and has been at John Abbott College since 2014. Macroeconomics is a two-credit Social Sciences course enrolling approximately 35 students per section, is required of all students in social science, and is a prerequisite for all other economics courses. Macroeconomics introduces large-scale economic factors including the determination of gross domestic product, unemployment rate, consumer price index, business cycles, and the creation of money and balance of payments. Fiscal and monetary policies are examined within the context of the Canadian economy, and international trade and finance in relation to the Canadian experience are also discussed. The course requires basic math skills including graphical analysis and solving equations.

Challenges and Goals

Seck considers some students in the social science program at risk due to deficiencies in math and a lack of motivation for the study of macroeconomics. The course is challenging, many students struggle, and the pass rate has been low in the past. These issues encouraged Seck to modify his traditional approach to teaching the course. Believing that students need to practice and interact with the course material, he sought a digital course companion that could provide his students with multiple opportunities for practice and which incorporated immediate feedback to increase motivation. Seck appreciated that the MyLab learning aids provide hints and assistance on a just-in-time basis—support he believed would increase motivation, as students would see that their effort led to progress toward their course goals. Seck also expected that use of MyLab would free up time in class for more teacher-student interaction and less static lecturing.

Seck's goals included:

- Provide students with multiple opportunities to practice and receive immediate feedback (Seck believed that increased understanding of economic concepts should lead to improved grades);
- Open his students' perspectives on how to learn independently (MyLab promotes this important life skill); and
- Introduce students to hybrid learning, the new reality of instructional technology.

Implementation

**MyLab assignments:** MyLab Economics is required; the program is used primarily by students working at home on a personal computer. Students use MyLab for understanding content, homework assignments, and assessments. Seck's goal in assigning MyLab homework is to provide students with sufficient exposure to quantitative material necessary to prepare for tests and to
provide adequate practice opportunities. He believes that the real learning occurs during this practice. Because the concepts are new to them, students must work with the ideas and apply what they understand from lecture.

At the beginning of the semester, Seck’s students viewed the Pearson Truth in Numbers video to see what other students had to say about their MyLab experience. Taking time to stress the academic value of MyLab and its central role in his course, Seck encouraged his students to participate fully in the MyLab assignments. Additionally, he offered students several options for purchasing course materials, so students felt empowered to make their own selection based on cost and convenience:

- New print text with MyLab access code
- MyLab access code with built-in eText
- MyLab access code only with option to purchase a print book at a location of their choice

Seck’s use of MyLab Economics has increased each semester. Initially, he assigned bi-weekly homework assignments with two attempts per question. Eventually, homework transitioned to a formative assignment comprised of 20 questions covering key concepts with unlimited attempts at completion, following the advice of Vincent Tinto in Completing College: Rethinking Institutional Action (2012), who wrote: “To be effective, assessments must be frequent, early, and formative.” Seck’s current MyLab implementation consists of the following assignments and assessments:

**MyLab homework problems:** Students complete five low-stakes homework assignments, comprised of 20 questions which are a mix of multiple-choice and multi-step quantitative problems, including graphing exercises. Exercises are chosen based on learning objectives covered in the chapter and are algorithmic so students can practice as much as needed. Students have unlimited attempts at completion and the final attempt is recorded as the score. Learning aids, which provide hints and assistance on a just-in-time basis as students work through a problem, are turned on for homework assignments. Student responses on a voluntary, end-of-semester survey of Seck’s students (49 percent response rate) indicate that the learning aids provided support when needed. One student’s comment was echoed by many on the survey: “I liked the feedback given on questions whether they are right or wrong, it helped me understand the material better.”

**Study Plan:** The personalized learning Study Plan in MyLab monitors student performance on homework and quizzes and continuously makes recommendations for areas of remediation based on that performance. The Study Plan offers students customized activities based on their personal proficiencies to help them get back or stay on track. Seck does not require the Study Plan, but strongly encourages its use. In the beginning of the semester, few students were taking advantage of this opportunity prior to the first test. Seck identified that students performing well on test 1 had spent more time in MyLab, and in particular, had worked more problems in the Study Plan. Using MyLab data for students earning the top three test scores, Seck explained to his class how these students had spent more time in the MyLab overall, used many of the optional features in MyLab, and worked a significantly higher number of problems in the Study Plan. Prior to test 2, Seck noted a significant increase in Study Plan usage and time spent in MyLab increased overall.
When asked about the Study Plan, 75 percent of survey respondents said the Study Plan was extremely or very useful in their study of Macroeconomics. One student shared the following, which was concluded by many students on the survey: “The Study Plan definitely helps, I studied it thoroughly for the last test and the results show.”

MyLab quizzes: Quizzes in MyLab correspond to the homework assignments and students must earn a minimum score of 75 percent on homework in order to access the quiz. Quizzes are comprised of 10 multiple-choice questions and learning aids are turned off. This helps bridge the gap between homework assignments which are more quantitative problem-solving questions and tests which are generally multiple choice. Students have 25 minutes for completion and must finish the quiz once it has been opened. Seck allows two attempts at the quiz and the higher of the two scores is recorded in the gradebook as the final grade. Multiple versions of the quizzes are offered, and the questions are randomized and algorithmic to minimize cheating. Students complete five quizzes total and the highest four grades are recorded.

Additional course assessments: Students complete three paper-and-pencil tests in class. The first and last tests are comprised of 30 multiple-choice questions and one short-essay question (from a choice of two questions). 75 percent of the student score is based on the multiple-choice questions and 25 percent is attributed to the essay. Students have 75 minutes for completion. The second test, written by Seck, is comprised of three-to-four multi-part problems similar to those found in MyLab, along with two short-answer essay questions. Students also complete a current events analysis paper, summarizing and analyzing a news article on a relevant macroeconomics topic.

Assessments

- 60% Tests (3)
- 20% MyLab quizzes (6)
- 10% MyLab homework assignments (6)
- 10% News article project

Results and Data

Figure 1 is a correlation graph; 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 <.05 shows the existence of a positive correlation between these two variables.

- A strong positive correlation exists between average MyLab quiz scores and average test scores, where \( r=0.67 \) and \( p<0.05 \).
For students, the formative MyLab assignments are intended to help them identify where they are in terms of successfully completing the summative quizzes and exams. Seck believes that the MyLab assets have a positive impact on quiz and exam scores, noting that students who spend time on homework assignments and use the Study Plan more frequently are more successful.

**Correlation between average MyLab quiz score and average test score**

![Correlation between average MyLab quiz score and average test score](image)

Figure 1. Correlation between Average MyLab Quiz Score and Average Test Score, Fall 2016 (n=106)

Students were divided into three groups based on the number of exercises they completed in the optional MyLab Study Plan (figure 2):

- **Low use**: completed fewer than 25 exercises
- **Moderate use**: completed 25–99 exercises
- **High use**: completed 100 or more exercises

Data show that students with the highest use of the Study Plan had average test scores seven percentage points higher than moderate Study Plan users and 11 percentage points higher than low Study Plan users.
The Student Experience

Responses from the Fall 2016 end-of-semester survey of Seck’s students indicate that the majority of responding students recognize the value of MyLab Economics.

- 87 percent of respondents indicated they were satisfied or very satisfied when asked to rate their experience with MyLab Economics.
- 71 percent of respondents said that MyLab prepared them extremely or quite well for the three in-class tests.
- 94 percent of respondents said they were definitely or probably likely to recommend MyLab to other students and instructors.

Students responses to the question “What did you like most about MyLab?” include:

- “[I liked] the different methods used to encourage learning.”
- “I really like how you are able to get feedback right away. If I’m busy but have half an hour of waiting time, I can easily study Macro and receive feedback instead of waiting for my instructor to reply.”
- “Great tool to practice exercises. I like that you can retry the same question with new variables. Having the explanations after every questions was very useful (especially when there were
equations involved). The program encourages independent learning, which I really appreciate because I have an easier time learning on my own.

- “MyLab gave you a variety of different types of questions for every topic which really helped understand the theoretical and practical parts of each topic.”
- “The MyLab homework provided a check for me to see if I really knew the material and as practice for exam questions.”
- “The homework, quizzes and Study Plan helped me in preparation for tests in class. I really think it was a useful tool. I liked the idea that I was able to do it any time during the day because I did have other things to do as well.”
- “I really like how we got input whenever we got an answer wrong so we can see where we went wrong and how to fix it. I also liked how it came up with similar questions when you asked for it.”

**Conclusion**

Seck identified the need to change his course methodology to improve student understanding and motivation in the macroeconomics course. He adopted MyLab Economics to keep students engaged as they worked through homework problems and to offer numerous opportunities for practice. He believes students are more likely to persevere when they have support as they work toward the correct answer, and the learning aids in MyLab provided this assistance. His students are no longer passive learners but engaged in their own journey toward independent learning. This hybrid methodology allowed Seck to focus on the more challenging topics in lecture and interact on a more personal level with individual students. MyLab was successfully used to reinforce and extend the learning experience beyond the walls of his classroom.