



# A MyLab Math Story

Exploring the Impact of Providing Practice with Instant Feedback

## Key findings:

Asifa Aamir, an instructor at Ontario Tech University, believes implementing MyLab™ Math in her Business Math I course is very beneficial in many ways including:

- Performance data and instructor observations indicate that Smarthinking™ online tutoring was a factor in some students passing their courses.
- Reducing administrative load through the automatic marking feature
- Promoting student motivation through instant feedback
- Offering opportunities for authentic practice outside of the classroom
- Supporting student learning through features such as “Help Me Solve This”
- Providing excellent customer service

## Setting

**Locale:** Oshawa, Ontario, Canada

**Enrollment:** 10,000+



**School name:** Ontario Tech University  
(University of Ontario, Institute of Technology)



**Course name:** Business Math I



**Course format:** Face to face



**Course materials:** Since 2013, *Contemporary Business Mathematics with Canadian Applications* by Hummelbrunner and Coombs. More recently, a custom textbook was created using the Hummelbrunner and Coombs book as the main component, while adding a chapter from *Elementary Algebra* by Dugopolski and in 2019 a chapter from *College Algebra* by Barnett et al was also added.



**Timeframe:** Fall 2011 through Fall 2019



**Educator:** Professor Asifa Aamir

## About the course

Business Math I (BUSI 1915) provides a mathematical foundation for students in business. Students review the fundamentals of algebra, with the primary focus on linear settings and applications of algebraic methods to contextual problem solving.

In 2011, Professor Asifa Aamir began teaching Business Math I, at which time it was a flipped hybrid course, without an associated tutorial. Students would watch a recorded hour and a half lecture online followed a few days later by a one and a half hour face-to-face class. In class, Asifa would address applicable questions and students would cover examples and exercises in groups. In 2016, a tutorial was added to the hybrid instructional model and finally in 2019 the course transitioned into a fully face-to-face course. This traditional model consists of 2 one and a half hour sessions and a tutorial with TAs for those students in need of extra assistance. There are different tutorial sections, for those students who are doing well there is a tutorial with 1 teacher assistant (TA) and for those struggling there is a tutorial with 3-4 TAs.

## Challenges and Goals

Asifa's main goal for the course is helping students build a strong mathematical base of basic arithmetic and algebraic knowledge to help them succeed in their academic careers, which then translates to a valuable skill set in their academic and professional lives.

A major challenge stemmed from students not finding the rearranging of formulas to be an intuitive process. They believed they had to make note of a variety of formulas instead of streamlining and rearranging. She also noticed how students lost their ability to quickly recall mental math processes over their 4 years of high school. She wants to help students become efficient at problem solving, and applying mathematical skills efficiently and effectively, two of the competencies critical for any business student. Another related challenge was student's reliance on

computational devices which impact their ability to quickly run mental math, so working with them to rely on quicker mental mathematical processing was key. In places where computational devices were needed and to be used, emphasis was again on doing so efficiently and effectively.

## Implementation

When Asifa first began teaching the hybrid course she sought an effective system that offered valuable tools to help students learn outside the classroom, would integrate seamlessly into her course, allowed her to monitor progress and supported student learning. She felt Pearson's MyLab Math would "help match my needs in the best possible way." The current assessments are:

### MyLab Math Quizzes

All 8-10 quizzes are completed through MyLab Math. Quizzes are conducted on campus, include a worksheet on which they get partial credit for showing the steps used to complete the problems and are timed at 15 minutes. The winter term, online only course, quizzes have a timeframe of 2 days to complete, do not include a worksheet and are timed at 30 minutes.

### Term Tests

There are 2 paper-based, in class term tests. They are given at week 5 (based on topics from weeks 1-4) and week 9 (based on topics from weeks 5-8).

### Final Exam

The final exam is a paper-based, cumulative exam administered at the end of the term.



#### Assessments

- 20% MyLab Math Quizzes
- 80% Term Tests and Final Exam

## The Learning Science Behind MyLab

Many of the benefits Asifa and her students experience with the MyLab Math products are there by design, focusing on best practices around learning science. There are a lot of factors that influence whether a learning solution ‘works’. Drawing upon guidelines based on evidence from the learning sciences, Pearson designs their products with the following instructional principles in mind, to help more learners learn more.

- MyLabs provide students opportunities to **practice** their skills and apply their knowledge, while receiving immediate **feedback** to **gauge their own understanding**.
- MyLabs provide ways of **authentically practicing** the target skills, so learners know what to do right away. This gets around “the inert knowledge problem” where learners cannot transfer their knowledge from the textbook/classroom to real-world application.
- Students have a variety of learning supports (or “**scaffolds**”) available, such as links to relevant videos and appropriate sections in eText, as well as interactive worked examples in the “Help me Solve This” feature. This “just in time” support ensures the learners have a streamlined and effective learning experience.

Immediate feedback: Immediate feedback has been found to be beneficial for learning, whether in digital or analog environments (Azevedo & Bernard, 1995; Shute, 2008). In particular, when students are beginning to learn something new and potentially difficult for them, receiving immediate feedback (even just correct/incorrect) can keep them on track and help them achieve more.

Worked Examples: (As above) Learning from worked examples have been found to be an effective and efficient instructional approach for helping novice students gain proficiency (see Renkl, 2014). For example, after two lessons and practice sessions on databases, undergraduates who practiced with worked examples did better on the unit test. In particular, the worked examples were especially helpful for the students with no prior database knowledge.

## The Educator Experience

Asifa believes students value immediate feedback and instantaneously understanding what problems they got wrong and why. She feels this “*instant feedback is super helpful.*” She finds the immediate feedback feature increases student motivation as it gets their attention and it further increases their motivation because when “*telling them about reviewing on MyLab Math after the quiz it means they are more eager*” to check on their results.

Asifa appreciates how MyLab Math helps reduce administrative burden with the automatic marking feature, freeing up not only her time, but also the TAs time, enabling them to further support students with more specific problems.

She values the algorithmic generated questions as it leads to valuable practice and discourages cheating. It has been helpful for her as she can explain to students that no one’s question was harder than the other, only including different numbers. She feels students “*see the value in having the same concepts with different numbers*” as it offers valuable practice.

Another highlight Asifa finds in using MyLab Math is how it helps support teaching the importance of building information system competency, a learning management system in this case, as that applies to the business environment. She understands they will be working within information systems in their careers, so practicing and gaining comfort in their use is beneficial and a practical real-world skill.

For Asifa, it is imperative that she explains and encourages the use of features such as “Help Me Solve This”, “Show Me An Example” and “Ask the Instructor” features as she has seen first-hand how vitally they support student learning. While it was a hybrid course, MyLab Math assignments were a requirement and these features were utilized more often by students, which she found “*enriched their learning.*” For example,

with “Ask the Instructor” feature, students could reach out to her immediately with the question they were struggling with and the system allowed her to see what particular aspect of the question the student was having trouble solving. She believes those authentic practice opportunities outside of the classroom, and close to real-time ability to get help offer a lot of value, which if utilized effectively, students seem to appreciate and find beneficial.

She uses the information gathered from monitoring student performance to inform tutorials and lectures. With the assistance of her TA, they review the Item Analysis found in the MyLab Math gradebook to see which questions students struggled with most. They then take those questions into the tutorials and review how to successfully complete them. If there is no time in the tutorial to review, Asifa takes it up during the next lecture. She finds it supports engagement as *“it helps students be enthusiastic to practice those concepts more.”* In addition, during exams she likes to utilize the analytics from quizzes to determine which questions she will add as she prefers to have 25 easy questions, 25 hard and 50 medium.

One of the many reasons she has continued to utilize MyLab Math is because of the excellent customer support,

“I stuck with MyLab Math because I had really good experiences with Pearson representatives, especially the tech team. They listen to the problems I have, and they work with us quickly to find the answers. The team has been amazing.”

— Professor Asifa Aamir, Ontario Tech University

## Conclusion

Overall, Asifa has been very pleased with her experience with MyLab Math. She finds it helps support Both teaching and learning in a variety of ways. It helps reduce administrative load as well as provides valuable tools to inform instruction. Further, it creates a positive student experience through instant feedback, helpful features such as “Help Me Solve This” and providing authentic practice opportunities outside of the classroom.