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A MyLab Math Story:

Promoting student engagement and reducing administrative burden

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Key Findings

An instructor from Monash University in Australia found the benefits of utilising MyLab Math and Learning Catalytics in her Business Statistics course to be many:

- **It significantly reduced administrative burden**
- **The test bank was extremely comprehensive and helpful**
- **The grouping function in Learning Catalytics increased interactivity between students and made for a more enjoyable learning experience**
- **It helps keep track of and promote student engagement**
- **There were high levels of customer support from Pearson**

Summary

In this Educator Story, MyLab Math is used in a Business Statistics course, which is delivered through a blended learning mode. The instructor has highlighted the benefits of MyLab, as well as using Learning Catalytics, to facilitate interaction and receive instant feedback from a large number of students in lectures. MyLab features such as the Study Plan proved to be very helpful in promoting both student engagement and learning for this instructor.

Description of Course

Students enrolled in this course are typically full-time 1st-year students working toward a Bachelor of Business degree. Some of these students are enrolled in double degrees incorporating the Bachelor of Business. This course runs for 12 weeks and is offered two semesters per year. Enrolments range between 700 to 1000 students each semester.

The assigned textbook used in this course is *Basic Business Statistics Concepts and Applications* by Berenson et al. Students use MyLab Math both inside and outside of class. Each week, students are required to first take a Moodle lesson and complete the pre-class activities, before attending a lecture. A Moodle lesson typically has videos, slides and questions. After the Moodle lesson, there is a 5-question quiz to complete. The quiz results provide the instructor with an indication of whether or not the students have engaged in the pre-class learning prior to the lecture.

In the lecture, the focus is on using the statistical tools, as the students should already have learned the theory and had some practice with the pre-class activities. The weekly lecture is 2 hours in length; additionally, there is a 1.5-hour tutorial each week. Since this is a compulsory course for all students in the Faculty of Business, the lecture is repeated 2 to 3 times a week with potentially over 300 students in a lecture theatre. After the lecture, the instructor will send out an online homework assignment for the students to complete before they go to their group tutorial.

Product Implementation

This Business Statistics course is a foundational course, teaching students how to deal with data in business. The first purpose of this course is to give the students a broad brush of basic quantitative skills such as using Excel pivot tables and producing data analyses, basic descriptive statistics like charts, graphs, significance testing and some mathematical modelling including regression and time series analysis. The second purpose of this course is to prepare them for

subsequent study, as some of them may decide to do a masters or a doctoral degree later on, which requires more complex statistical analysis.

Since there are hundreds of students in the lecture, the instructor also uses Learning Catalytics to create a seating plan and grouping option to support interactivity. The instructor said:

"What I needed was some way of interacting with potentially over 300 students and getting a sense as to who's understanding and who is stuck."

As this is a highly practical course, the instructor needed a tool like Learning Catalytics to enable her to communicate and interact with the students live during the lecture. She is able to get instant feedback and monitor their learning progression while giving the lecture. If need be, she can adjust her instruction in real time. Moreover, since the instructor is an experienced Learning Catalytics user, she has separated all the different components of a question, enabling her to identify problematic components and focus on a specific component with more explanation. This avoids the situation where a question is answered incorrectly but the instructor is unable to pinpoint where the students went wrong. Her feedback on Learning Catalytics has been very positive:

"I find Learning Catalytics really powerful and it provides instant feedback for the student along the way as well."

By the time the students leave the lecture, they have their uncertainties and issues clarified and have practised what they need to do to complete the homework assignment before their tutorials.

The online homework assignment consists of multiple choice and fill-in-the-blank questions, without descriptives. They have at least 3 attempts for the questions. These questions are pulled from the Study Plan within MyLab Math. According to the instructor, students find the online support useful as she mentioned:

"The students find the 24/7 online help such as 'Help Me Solve This' and 'View An Example' very helpful for doing their online homework assignments."

After the homework assignments are submitted, the instructor will download the results and create a summary from the Gradebook in MyLab Math. This summary shows how many students got each of the questions right or wrong. The summary is sent to the tutors before the next tutorial, who then close the feedback loop at the start of each tutorial by discussing the results and clarifying any questions if needed. After that, the tutorial focuses on working through a set of questions delivered through Moodle, which includes short-answer calculation type questions and questions involving the interpretation of data.

In-semester assignments and engagement tasks account for 40% of the total grade, which are broken down as follows:

- Homework and tutorial engagement worth 1% per week, with a total of 10%
- Moodle quizzes worth 0.5% per week, with a total of 5%
- The mid-term semester test totals 10%
- Two other miscellaneous homework assignments account for 10% and 5%, respectively

The final exam makes up the remaining 60% of the overall grade.

The adaptive Study Plan, which includes questions from a large test bank, the availability of 24/7 online support for students, and the ability to create original pieces of assessment within MyLab Math are all reasons that led this instructor to select MyLab Math to help support her teaching in this course.

Instructor Experience and Perception

The instructor provided a lot of positive feedback about how MyLab Math and Learning Catalytics helped her to create a positive experience for her students. Here are some of the most significant observations:

In the past, the instructor would develop her questions and deliver them on paper for the mid-semester test. Over time, she replaced it with an **online mid-semester test**, administered through MyLab Math. With as many as a thousand students, the administrative burden of using paper-based testing, not to mention finding enough seats, had become prohibitive. In addition, there are always students who are sick, overseas or require customised testing conditions. With the online test using MyLab Math, the instructor is able to conduct the test in tutorials and has more flexibility in managing and accommodating students who need special consideration. This successfully and significantly reduced the administrative burden.

The questions in the **Test Bank** are really useful in covering the course material, and the instructor is able to edit them if she chooses. For example, in setting a probability question, instead of just asking the students to provide a probability answer, the instructor customised the question to require the student to compose the probability statement is as well.

"The questions in the test bank are the best set of multiple-choice type questions that I've seen in my time; the most comprehensive."

As the online mid-semester test (worth 10% of the final grade) and the multiple choice section in the final exam (worth 30% of exam) both come from Test Bank questions, this gives a strong incentive for the students to become more familiar with the bank of questions: how the questions are worded and how to answer them. According to the instructor, this has led to an increase in the usage of the Study Plan and hence student engagement. The instructor added:

"One of the really fantastic advantages for students is using the test bank questions online."

One of the great features in Learning Catalytics is the **grouping function** in lectures. The instructor can upload a seating plan for the lecture theatre and ask the students to find themselves on the map. As a result, when the instructor identifies that students are struggling with a concept (via a high proportion of incorrect answers), she is able to create student groups based on location, comprising mixed responses and re-send the question to these groups. Each student receives the question again but with the added instruction to *'discuss their answer with 'John' who is sitting in the row in front of you, two seats to your left'*. The instructor asks the group to workshop what they believe to be the right answer and has observed that this practice resulted in an improvement in the percentage of students with the correct answer. She believes students love this type of interactivity for their learning.

The educator believes that the successful adoption and ongoing use of any digital platform is dependent on a **high level of support and customer service**. In her experience, over many years in education, she has found this to be a problem with most online platforms, but not so for Pearson's MyLab Math.

"At Pearson, the customer support team is one of the most important critical success factors for MyLab Math.

"From day one, I found the customer service from the Pearson team to be exemplary … which contributed even further to my sense of security in adopting the MyLab software."

Pearson's account management team provided a customised workshop to introduce the team tutors to MyLab Math, so that they are ready prior to the start of semester. At the end of the semester, the Pearson team also customised usage analytics to enable the educator to conduct further statistical analysis.

Student Engagement

As pointed out by the instructor, in the last 5-10 years, one of the most common challenges that many educators have is how to improve student engagement. She spoke about this clearly when she told us:

"My big focus is on improving student engagement."

With the increase of digital learning and teaching methods that don't necessarily require in-person attendance, there has been a drop-in student engagement. This is particularly applicable for first year university students, as this is often the first time that there is no parent-teacher interaction to keep students accountable. If the students do not attend the lectures or study independently, nothing will happen to them immediately. But if they remain disengaged from their studies, they may eventually fail the course.

To solve this problem, some educators may withhold materials online, but our instructor adopts the approach of adding value in the lecture that is not available elsewhere, trusting that this will naturally attract students to attend lectures. She believes the interaction that Learning Catalytics facilitates is a good example of improving the student experience, as students seem to enjoy the interaction in lectures. This focus on improving student experience thereby effectively supports student learning through increasing their active engagement.

MyLab Math provides several tools for our instructor to keep track of student engagement. Analytics about Study Plan usage allow her to track how much time students spend on the learning tools. The instructor is confident that the more time her students spend on online pre-class activities and the Study Plan, the better the learning outcomes are likely to be. Our instructor points this out explicitly in her class, as strong encouragement for students to be more engaged in their learning.

Through Learning Catalytics, she can also monitor lecture attendance and learning progress. As student engagement improved, the proportion of students who failed and the amount by which they failed decreased.

"When students get less than 10% - 15% for the entire unit, that is a disengaged student. That's not someone who's having trouble. That's someone who's just not there. The proportion of those students is getting smaller and smaller. So for me, that's a win, that's a success."

Conclusion

The instructor in this educator story teaches a large number of students in this course. She finds the features in the MyLab Math such as the Study Plan, Assignment Manager, and Gradebook extremely useful for teaching and student engagement. She also finds the use of Learning Catalytics in class very effective in promoting student engagement. The instructor said she would recommend MyLab Math to other instructors because it is easy and intuitive to use, and she believes it adds value and support to the teaching and learning of this course.