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Tania Prinsloo
University of Pretoria

Pariksha Singh
University of Pretoria

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COVID-19: Leapfrogging 8,000 Students from Face-to-Face to Online Learning in Three Weeks

Tania Prinsloo

Department of Informatics
University of Pretoria

Pariksha Singh

IT Laboratories
University of Pretoria

Abstract:

In this paper, we discuss how a large residential university had to cope with the coronavirus disease of 2019 (COVID-19) pandemic. In particular, we discuss how a course with approximately 8,000 students had to move to an online environment in a matter of weeks. All stakeholders took numerous actions to perform the move: top management supplied 2,000 loan laptops to students, suppliers zero-rated their data bundles, and assistant lecturers made videos, PowerPoint slides, and even telephone consultations. This colossal effort paid off with only a slight decrease in pass rates after the first semester.

Keywords: COVID-19, Online Learning, Action Points, Lessons Learnt.

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1 Introduction

In early 2020, top management at the University of Pretoria sent staff the directive to make a square fit into a circle—to make online teaching happen at the biggest residential university in South Africa that had used face-to-face teaching as its model for 131 years due to the coronavirus disease of 2019 (COVID-19) pandemic and to do so in record time without compromising content and quality. The COVID-19 pandemic made face-to-face teaching impossible to continue as usual, but students needed to be able to finish their academic year (from January to December with the first semester usually ending in June). In this paper, we focus on a module, Academic Information Management (AIM), that had approximately 8,000 students and how the staff and students managed to finish the module by mid-July without a drastic decrease in pass rates. Although various departments in the university had already introduced blended learning, which included online textbooks and collaborative learning (Hodges, Moore, Lockee, Trust, & Bond, 2020), the jump had to occur quickly.

2 Background

The university introduced AIM in 2003 (Singh & Prinsloo, 2019). The 8,000 students who took this module were all the first-year students from different faculties. In the module, they learn navigating information literacy (NIL), which deals with finding, evaluating, processing, presenting, and managing information resources for academic purposes using appropriate technology. The module also teaches students how to use the Windows operating system and Microsoft Word, PowerPoint, and Excel. The module runs as a full one-year course (i.e., AIM 111 and AIM 121) or for only one semester (i.e., AIM 101) depending on how students perform in a proficiency test at the beginning of the year. South Africa has a very diverse student population: some students have never touched a computer before (Nyahodza & Higgs, 2017), while other students know Microsoft Windows and Office well and only focus on NIL in the lecture hall, but the module's exam tests all content. The model worked well until the COVID-19 pandemic occurred in early 2020. Thus, not only did many students need to loan laptops (approximately 2,000 of them), but many also needed data to access the work. The university managed to negotiate that students could access the Blackboard learning system and a testing program called the Skills Assessment Management (SAM) system without the need to buy data (Singh & Prinsloo, 2019). However, students still needed access to a data point, which, in some cases, simply did not exist. South Africa has a very diverse population, and a digital divide excludes a large section of the population from basic human rights, such as running water and electricity (Bornman, 2016).

3 Methodology

We used action research methodology for this paper since it is practical, theoretical, collaborative, reflexive, and contextual (Arnold & Norton, 2018).

4 Before and After the COVID-19 Pandemic

4.1 The Brick-and-mortar Model before Tragedy Struck

The university has traditionally run the AIM module with face-to-face lectures over three campuses. It has 18 computer laboratories that house approximately 50 workstations each. Each workstation comprises all the software that students need for the course. Each laboratory has a projector and screens so students can easily see projected information. An assistant lecturer facilitates the content over two-hour sessions. Students book a session to attend AIM according to their own individualized timetable. AIM has approximately 200 sessions per week. Each session normally attracts over 80 percent attendance.

Teaching, learning, and assessments for AIM occur synchronously, which allows students to interact in class and receive immediate feedback to queries. Consultation is also synchronous and occurs from Monday to Friday for six hours per day.

We outline the way in which AIM has worked in Figure 1. The module focuses on student contact and weekly sessions with scheduled tests and exams taking place in the computer laboratories. But the status quo changed swiftly on 17 March, 2020, when that model became obsolete. The university decided to schedule a recess and reopened on 20 April, 2020.



Figure 1. Teaching Prior to COVID-19

4.2 Adapting to a New Environment

In a matter of weeks, the AIM team had to respond without delay to the call to move 8,000 students from a face-to-face traditional lecture laboratory to an online platform (Zhao, Bandyopadhyay, & Bandyopadhyay, 2020). The team first moved in the same direction as the university and arranged to zero-rate (i.e., providing subsidized digital content and/or access to the Internet at no charge to the user) the third-party tools that connect to Blackboard. Doing so took a great deal of testing and help from the university's IT department and Cengage—an education and technology company that many universities use to enhance courses—to ensure students could learn without having to buy data.

The AIM team then set out to create voice-over PowerPoint videos and notes for the content that the course still needed to cover. The team received training from the head of IT laboratories, developed standard templates, and created videos. The team created videos for all objectives that the course needed to cover. Assistant lecturers worked tirelessly to develop interactive material that would facilitate learning. They also created revision videos to reinforce learning.

The head of the IT laboratories trained the assistant lecturers, who, in turn, developed new PowerPoint slides to enhance online resources and to help assistant lecturers prepare for a Blackboard Collaborate session (i.e., a Web conferencing/webinar platform designed for online teaching). Instructors create virtual classroom and online meeting spaces to share presentation material and communicate with students and the other participants via synchronous audio, video, and chat tools (Tonsmann, 2014). These sessions lasted two hours each and occurred every week from 4 May, 2020, until semester one ended. Many students attended these sessions that covered weekly content. The head of the IT laboratories developed new schedules to cover the AIM syllabus in time. Note that students find it worthwhile to hear a “voice” from the teacher when learning, not just a set of slides (Bao, 2020). Narrated PowerPoint slides, therefore, worked very well.

The assistant lecturers then created discussion board sessions via Blackboard where students could pose questions and concerns, which assistant lecturers facilitated. Students, lecturers, and administrators also used email. The Department of Education and Innovation at the University of Pretoria trained a certain group of assistant lecturers and tutors who then used telephone tutoring and posted subject material to students to avoid disadvantaging some students. The online environment also allowed students to become more responsible for their own learning, get into the habit of learning independently, plan their studies and schedules around their own time, and work at their own pace.

Although the above worked well for AIM, many students did not have devices at the beginning of lockdown period, and the university had to make provision for a time-consuming delivery period for such students. Some students lived in areas with no electricity or Internet connectivity, and they had to apply to return to the university. The university also needed to overcome load shedding. Some third-party systems that needed data were not zero-rated, and the university had to provide it to students. Online learning also isolates and distances students from the group norm that could have contributed to motivate peers and share knowledge considering that many students perform much better with face-to-face interaction.

Despite the myriad challenges, the pass rate for AIM 111 decreased by a mere three percent from 2019 compared to 2020, whereas AIM 101 actually had a one percent increase in its pass rate. Consequently, one could make a strong case to present AIM 101 as a fully online module in the future.

Figure 2 shows all the changes that the head of the IT laboratories and the group of assistant lecturers have made since the university started with full online learning. We discuss the five points in detail below.



Figure 2. Teaching After the COVID-19 Pandemic

4.2.1 Action Point 1: Voice-over PowerPoint Videos

A group of assistant lecturers created voice-over PowerPoint videos so that students could go over the content and interact with the activities presented. Immediately after the government enforced the lockdown in South Africa, the AIM department looked at ways to continue with teaching, learning, and assessments online with minimum disruption. Consequently, the lecturers divided the work among themselves to create suitable content for each student. They had to begin this task over a two-week period. The assistant lecturers created videos, but students expressed dissatisfaction with them because:

- They lacked a user-friendly and professional aesthetic.
- Each video had a different theme and layout.
- Some videos lasted too long, and students could not concentrate for such a prolonged period of time.
- Some videos had poor sound and images because their creators used microphones and computers that differed in quality to create them.
- Some scripts contained grammatical mistakes.
- Video creators sometimes used tone, pace, and pauses incorrectly and spoke monotonously.
- The videos took a long time to load due to their large size.

First, the head of the IT laboratories needed to determine what content to develop immediately and the best way to create it in line with first-year students' capabilities. She had to consider over 8,000 students who came from different backgrounds and who differed in their English proficiency. The assistant lecturers needed to know how to create videos for huge groups taking different variables into account.

After the initial presentation period, the head of the IT laboratories performed the following steps:

- She created a standard template with the help of the assistant lecturers that all 25 assistant lecturers used.
- She standardized the look and feel of the slide deck by implementing a chosen theme and theme colors, font and size.
- She, together with the assistant lecturers, agreed on the approximate length of each video.
- She wrote and moderated scripts for language, grammar, content, and language level.
- She included interactions or exercises in videos even if just for asking questions.
- She chose the best voices for the voice-overs using better-quality computers with proper equipment.
- The videos then went through another moderation round to eliminate errors and to make sure our product sounded professional at the level first-year students would understand.

The same student cohort better received the new content and downloaded it more often. Indeed, many students mentioned in the Blackboard Collaborate sessions that they liked the new videos and could understand and follow them better. Students also enjoyed humor in the videos and the crossword puzzle and games that underpinned the learning content.

4.2.2 Action Point 2: Blackboard Collaborate Sessions

Students attended sessions so that they could engage with the content and feel as if they attended a face-to-face class with online questions and student-lecturer interaction. Instructors used online tools such as Kahoots so students would actually interact, and they proved enjoyable for students to use. Different groups of assistant lecturers followed similar processes as in the first action point when creating content for sessions to ensure meaningful sessions.

4.2.3 Action Point 3: Assignment Modifications

The head of the IT laboratories extended assignments, and students could master the content by learning from their previous attempts. Assignment submissions had structures programmed into their back-end so students could not submit others' assignments. SAM assignments had built-in integrity violation checks, which forced students to download and submit only their own work. SAM and Blackboard worked hand-in-hand to ensure the checks worked.

4.2.4 Action Point 4: Consultation

Instructors consulted with students using different platforms to include as many learners as possible. For example, they used the Blackboard Discussion tool through which students could post questions and discuss answers. This tool proved highly successful because assistant lecturers answered questions without delays. Instructors also consulted with students via email and replied within 24 hours. In the last 30 minutes of the Blackboard Collaborate sessions, students could also consult with lecturers. A few students and lecturers also consulted through Google Meets, Skype, and Google Hangouts.

4.2.5 Action Point 5: Assignments and Make-up Tests

The assistant lecturers set all questions relating to the theory sections using a scenario-based approach. With the help of the assistant lecturers, the head of the IT laboratories created a large database of questions that varied in difficulty and randomized them for each student via the randomization tool in Blackboard to reduce copying and increase fairness. The head of the IT laboratories and the assistant lecturers tested all the aspects of the SAM system, and students could attempt a single assignment multiple times. The assistant lecturers encouraged students to submit one attempt before a class, which helped with knowledge building and the "flipped-classroom" approach.

5 Lessons Learnt

The assistant lecturers at the IT Laboratories learnt many general lessons, such as:

- 1) The need for a fully functional online platform, preferably a zero-rated one that does not require students to pay for data.
- 2) The importance of online quality-assessment tools such as SAM from Cengage. This tool allowed for interactive content training.
- 3) The need for up-to-date technology and up-to-date devices.
- 4) The need to make students responsible for their own learning.
- 5) The need to create remote teaching strategies to promote student-centered learning (Naciri, Baba, Achbani, & Kharbach, 2020).
- 6) The need for students to have a conducive home environment for online learning.
- 7) The need to examine the effect that such a pandemic has on student's mental health (Toquero, 2020).
- 8) Technology cannot replace the lecturer but can aid in the teaching, learning, and assessment.

Furthermore, the staff at the IT Laboratories learned several specifically lessons in AIM:

- 1) When creating online content, one cannot just put a video together and expect students to successfully learn. One needs to remember that voice-over PowerPoint videos need to capture the audience and be interactive for learning to occur (our first steep learning curve).
- 2) An online Blackboard Collaborate session needs to be interactive to keep students interested and involved in the class. Online educational games can help instructors assess if students understand concepts, and it makes teaching and learning fun. Kahoots and crossword puzzles represent simple but exciting ways to improve student involvement.
- 3) We found that increasing how many times students could attempt assessments worked well when using a flipped classroom approach or when helping students master concepts. Students received immediate feedback for all practical questions via the SAM interface and could watch videos on the spot that dealt with problem areas. They could then retry them and resubmit. Testing for smaller objectives in a continuous-assessment class also works well since students always need to stay involved, and smaller tasks do not consume too much time over overwhelm students.
- 4) We learnt that some students with computer literacy skills could complete AIM 101 online. Before the COVID-19 pandemic, the staff at the IT laboratories found it difficult to decide whether to teach a module online. However, after the COVID-19 pandemic forced everyone to go online, it became a requirement. Online teaching has the potential to reduce the resources that educators need, such as laboratory space and number of lecturers. With AIM 111 and AIM 121, educators can build a hybrid module for face-to-face and online classes.
- 5) The online environment's layout and design has just as important a role as the content in ensuring that students can follow a structured path. A LMS should not only pose as a repository of information; rather, it should serve as a platform that students can use to engage with module content. Furthermore, educators need to engage with students either via Blackboard Collaborate, discussion boards, or any online tool.
- 6) Educators should consider assessments carefully and manage them online as online assessments differ from traditional examinations. Educators cannot viably manually mark 8,000 student assessments; however, online tools must be engaging and reliable.

6 Conclusion and Future Research

The COVID-19 pandemic has significantly changed the teaching landscape in 2020. Our university had to convert a face-to-face course, AIM, to a fully-functioning online one in a matter of weeks. The university managed to achieve this goal due to buy-in from all stakeholders, from top management, the management team at the IT laboratories, and the assistant lecturers who made voice-over PowerPoint slides, recorded videos, and tutored over the telephone. The university also provided approximately 2,000 loan laptops to students, zero-rated data, and made software available. The university has an objective to increase access to online information and resources for users who cannot afford data costs (Romanosky & Chetty,

2018). We found no significant decrease in pass rates for AIM 111; rather, we found a strong case to convert AIM 101 to a fully-fledged online module going forward. In the future, we plan to send out a questionnaire to the AIM students to learn from their experiences. Also, we plan to more comprehensively break down the pass rates over all three campuses to shed some light on how students at certain campuses performed compared to students at others.

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About the Authors

Tania Prinsloo is a senior lecturer in the Department of Informatics at the University of Pretoria . She is the department's coordinator at the IT laboratories and assists with various aspects at the Laboratories, including training at the beginning of the year, class visits and content moderation. Her main research focus is ICT for Development, further branching into ICT for Education and ICT for Agriculture. She enjoys writing about projects that has a high success rate and to share positive experiences with the research community. She completed her PhD in 2017, where she looked at the impact and sustainability of livestock traceability systems in Namibia and Eswatini. During 2018, she won a Newton Grant which enabled her to spend six weeks at the University of Reading in the UK, where she worked with colleagues from the Agricultural Department. She obtained a Y2 rating from the National Research Foundation in South Africa in 2019 and aims to continue her research in line with the Sustainable Development Goals.

Pariksha Singh is in higher education for the last 22 years where student-centered education is her goal. As a manager of Student Relations at a renowned university in South Africa, her key focus is based on improving teaching, learning and assessments for courses with very large numbers. She completed her Masters in Information Technology where she tested open source code for quality using software she programmed to read code and deduce the quality of different variables. She also attained her ISTQB international software testing certification and ISTQB Agile Extended international certification. She is currently involved with information and digital literacy for first year university students and her main area of research is to personalize learning for academic information management. Dealing with cohorts in excess of 9000 students, technology has become one of the main resources and her focus is to use technology effectively and efficiently to improve the lives of all students. She works with a wide range of stakeholders in bridging the gap using Academic Information Management between school and first-year university students.

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