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Executive Summary

An initial literature review was conducted on blended learning during COVID times. It was noted that the darker moments were not mentioned in initial COVID research, but instead initial COVID research pointed to the use of technology. Some research during COVID times did not reflect on best practices in online education.

In the DigiTel Pro project, a course on designing for Blended Learning included lessons learned during COVID times and provided suggested course design improvements to increase learner engagement.

Support for emergency educational shifts can include:

- Open Educational Practice – where staff and lecturers share, contribute to, and reuse materials with an open license and openly collaborate, discuss, and brainstorm.
- a Lecturer Satchel with institute specific support – an electronic space where a list of resources is given to lecturers so they know what tools are supported and can easily access
- Change Management considerations such as
 - weekly webinars - a weekly webinar where educators can share their experiences and challenges regarding education
 - centralizing licenses for tools – optimizing support for tools in an organization
 - allowing a space for piloting tools – new technology arises regularly and sometimes it is good to be an early adapter, thus providing a space for testing is necessary
 - one-pager guide for tools that are not GDPR approved or reviewed – Not every technology follows GDPR regulations, but in some conditions, such as when computer science students build their own technology, then it is necessary to allow for non-GDPR approved use, but it should be clear how to best use something to ensure privacy if possible
 - Adding social elements or social learning spaces online – social elements includes the use of icebreakers to encourage learner interactions and clarifying how to collaborate during a coursework with peers/others including but not limited to groupwork. Social learning spaces is the actual location where you encourage the learners to interact such as a discussion board called “café”.

There appears to be a growing need for Open Educational Practice and more open collaboration in order to provide more options to learners and the best practices to lecturers.

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Introduction

This article is a concise analysis of the current COVID situation, taking into account, the needs of teaching and support staff in an emergency situation (IO1) and conditions for change management (IO6) to design and develop blended education. TU Delft is a partner in the EU project '[Digitel Pro](#)' in collaboration with DCU, KU Leuven, UOC, and EADTU. This is an analysis of (a) completing the literature review from 2018 on and (b) refocusing the conclusions on the COVID 19 needs as the Digitel Pro partners have already made a comprehensive analysis for the EMBED project.

Best Practices for Blended Learning during COVID times are still emerging. It is unclear whether everyone truly uses the same definition for blended and hybrid teaching within the literature produced during COVID times as not all authors provide a definition in their articles. Some of the authors who published in 2020 and 2021 are completely new to online teaching. Although online education has been around since at least 2003, it is surprising to see authors mention that distance learning is still in developmental stages in 2021. Distance learning will continue to evolve; however, distance learning is well established as an educational mode with various formats such as online, blended, hybrid, and virtual exchange. Perhaps new during COVID times was that all courses had to shift online, whereas prior to COVID some educators could avoid online formats entirely.

The original plan pre-COVID for implementing Blended Learning throughout an entire campus was described in the document: Research report on state of the art in blended learning and innovation (Goeman, Poelmans, & Van Rompaey, 2018), found here: <https://embed.eadtu.eu/results>. This article expands on that Research report by explaining the COVID scenarios and what emerged as the secondary or emergency plan, as well as best practices noted by instructors for education during rapid changes for COVID restrictions.

Clarifying Terms

There is a commonality between Hybrid and Blended learning during and post COVID. Previously Blended and Hybrid Learning were interchangeable terms for the same course format, which was a mix of online and on-campus course formats. Some have defined what percentage of the course that must be online in order to be considered hybrid or blended. That percentage varied by location and sometimes by institution. For example, in the past in the USA 30-79% of the course must be blended in order to gain the term 'Hybrid' or 'Blended' instead of using the term 'on-campus' ([Allen & Seaman, 2010](#)).

Previous research (Goeman, Poelmans, & Van Rompaey, 2018) defined common terms in Blended learning to be:

- *Blended Learning* is learning as a result of a deliberate, integrated combination of online and face-to-face learning activities.
- *Blended Teaching* is designing and facilitating blended learning activities.
- *Blended Education* is the formal context of blended learning that is determined by policies and conditions with regard to the organization and support of blended learning.

During and post COVID times, Hybrid is being redefined with a similar description more closely aligned with Virtual Exchange programmes in that the students within the same registration may be in different locations throughout the globe, but they interact in the same asynchronous space and typically have an online synchronous meeting. Virtual Exchanges (VE) involve a course in one country connecting with another course in another country, although both groups of students can register for the same course in order to have a virtual exchange in the same space. VE is not necessarily a course format on its own. It utilizes an Online, Blended, or Hybrid course format between universities or colleges. The terms blended, hybrid, or online are utilized when the course resides in one institute. There have been blended models in VE, but with the COVID regulations on travel, there has been limited if any VE depending on the country offering education and the home country of the student. The Virtual Exchange Program (VEP) pilot spearheaded by TU Delft is a virtual alternative that allows international students (from partner universities in the VEP alliance) completing an academic have the credits for that course count towards their Bachelor or Master degree credits for their bachelor or master program at their local institution on completion of an online course (usually a MOOC) in the VEP. The program thus enables students to gaining broader access to world-class expertise, enriching their knowledge and expanding their portfolio, whilst taking advantage of the flexible online format and establishing ties with peers across the globe. Similarly, to other VE efforts, the VEP project encountered challenges with regards to adapting existing regular (exchange) administrative procedures and with dealing with different academic calendars, which affect course registration deadlines, exams dates and transcript availability, also due to the fact that the online courses are not all and/or entirely self-paced.

During COVID regulations, VE fits in Hybrid and Online formats. Because lecturers are busy creating content and shifting courses online or updating online courses, they have less time for VE that are not already in place. This past year has not shown a drastic increase in courses becoming VE, but more instructors are hearing about VE.

Throughout the past year, with the fast-paced shift to remote teaching, new terms were added: remote teaching and remote learning. Remote teaching refers to on-campus courses that shifted to online, blended, and hybrid formats as an emergency response to lockdowns. At first many shifted to live lectures with little changes in their teaching design. Over time, instructors began to develop blended learning despite the knowledge that the courses would return to on-campus formats. The term for remote learning described the learning experience for students who registered for on-campus courses, but at some time during the course, the format was moved online due to COVID restrictions. Therefore, it is possible that much of the new authors in 2020 and 2021 in the Online and Blended learning course formats could have been referring to Remote Teaching, a course not specifically designed for online or blended.

Teacher Readiness

During COVID lockdowns, as educators were forced into online spaces last minute, the topic of teacher readiness became more prominent in distance learning. Teacher readiness refers to how comfortable or ready the educator is to teach in online formats. The Pencil Metaphor that originated in 2012, suggested a range of comfort level for lecturers in teaching online within 6 categories: Leaders, Sharp Ones, Hangers-on, "Ferrules, and Erasers (van Valkenburg, 2015). Many of those who resisted teaching online previously, or the Erasers, were forced to teach in online formats in 2020 and 2021. Although popular with Learning Developers and Instructional Designers, this metaphor could invoke emotional reactions

from lecturers, particularly from those listed as “Erasers”. Support for these groups then shifted from motivating them to try out online formats to helping them survive the fast-paced shift and avoid common mistakes.

We argue that this pencil metaphor should be retired and replaced as 2020 and 2021 have made it clear that not every subject can fully be taught online. Some subjects need Blended Teaching rather than strictly online, particularly those with hands-on lab activities. Instructors who already had taught online or created blended learning materials were at an advantage during COVID to those who had never taught in blended formats. One reason is that Blended Teachers are more tech savvy than lecturers completely new to online course formats. Success factors included the instructors’ ability to adapt the course beyond the field and humanize the experience of learning with the sensations that “we are all in this together”. Lecturers newer to teaching in online formats can move slowly online through Blended Teaching as they slowly add more online resources to their course over time while gaining feedback from students and peers.

It followed that courses that already had a blended learning design were easier to shift to remote teaching with limited planning compared to fully face-to-face courses that had little or no blended learning in place because the blended courses already had online materials that had been created pre-COVID. Blended Learning Lecturers who reused materials they created even during COVID times saved preparation time for the next course run. Thus, Blended Learning pre-COVID freed up more time for instructors.

Dark Side of Isolation During Repeated Lockdowns

During lockdowns in the Netherlands, there was a rise in suicide rates (CBS, 5-2-2021) and depression (CBS, 29-6-2021). Globally student suicide rates went up, and so concern for student well-being, as countries submerged into curfews and strict lockdowns (CBS 2021; Macalli, et al 2021; Ensaf & Abbas 2021). Attempts were made to engage learners to decrease dropout rates and prevent suicide.

Reported sexual assault (which can spread STDs) decreased during curfew and was underreported as both the people involved could be in trouble for breaking curfew and COVID regulations with a stranger (Asik & Ozen, 2021). There was a rise in rates of Chlamydia and Gonorrhea in the US during COVID, partially due to limited testing and the way dating changed during COVID (Pinto, et al., 2021). COVID has been found to re-activate human herpesvirus subfamily (HHV), causing breakouts and activating dormant viruses (including other STDs) (Katz et al, 2021; Nadeem et al 2021; Naendrup et al 2021). During COVID lockdowns wait times to get to testing for various medical support was more limited and included delays for STD testing (van Zyl, 2021) partially because some STDs can cause COVID like systems, thus restricting the patient’s direct testing for STD. There was a reduction in standard STD testing in the USA which can catch asymptomatic diseases (Pinto, et al., 2021).

During the stricter COVID regulations, more counselling resources were backed up by as many as 3-6 months (van Zyl, 2021). Without these normal spaces to talk and without social spaces outside of education, students disclosed things that were not expected by others, similar to floodlighting. Floodlighting as described by Brené is when a person discloses what is perceived by others as too much information, such as dark thoughts or surviving dark moments (Brown, 2015). According to Brené Brown, disengagement is linked to shame and the aversion to vulnerability. Bessel van der Kolk pointed out that people who floodlight do not intentionally do that and that they are not seeking attention, but

rather can get stuck in cycles of trying to explain their floodlighting moment if others withdraw from them which can cause further awkwardness (van der Kolk, 2015).

It was observed in informal conversations with international students during lockdowns with curfews that some did not have space to talk with others about negative or dark thoughts because they wanted their family back home to view them as successful and not worry. As a result, some students were left locally with little or no places to talk about negative or dark thoughts. Over time, some remote learners were discussing these negative or dark thoughts, such as isolation and depression, in educational spaces that, pre COVID, were rarely used for discussing such topics.

Data is not yet available on the effects of lockdowns with curfews on international students or immigrants in general. Throughout parts of the world, a “cuddle buddy” was allowed for those who were single. Singles who were isolated and saw no family, but not all experienced safe interactions.

Students who were also single parent had the additional burden of home-schooling besides their own work and school. The classroom became a place where they could socialize more than work, discussing the struggles involved with home-schooling a child and other isolation issues. As children fell behind in schoolwork, resources for support of youths with depression and suicidal thoughts had long waitlists in the Netherlands (Troubled children face long waits for psychiatric help, officials call for action, 2021).

Methodology

This study is an expansion of the prior report from 2018 on Blended Education with a focus on COVID times in order to create an emergency plan, a better course design, and to ease the process of students coming back to campus to Blended Teaching formats when campuses open again. A literature review on learner engagement is forthcoming.

Main Research Questions

- What were the needs of teaching staff and teaching support staff in emergency education situations?
- What are the conditions for change management?

Emergency Plan

Although remote teaching due to COVID regulations has been done now for more than a year, it is still too early to comprehensively describe all the support needs for successful remote teaching to formulate a complete campus-wide emergency plan. This article includes an initial emergency plan in 3 parts that could potentially be implemented in other institutions as well. The teaching staff and teaching support staff during the emergency education situation revealed a need for access to resources but more importantly the need to know what they had all in one place as a resource toolkit. Change management for the campus is not easy, but COVID has shown a need globally to rethink how digitalization on campus is implemented. Adding social elements to online learning spaces could increase student engagement, particularly for those in isolation. Lecturers and those that support students can have an understanding that students may floodlight and may not have outlets for support during lockdowns. Taking into consideration the above conditions, best practices were compiled in collaboration with lecturers at TU Delft.

Lecturer Emergency Satchel

As lockdowns rolled back, lecturers needed a toolkit special for lockdown occasions whereby they could quickly find self-help resources to improve their workspace at home, their ability to create videos from home, their skills in live classrooms/webinars, and to gain knowledge about student needs during isolation. They needed to be able to find workshops, self-paced courses, and full courses that could walk them through how to move their courses to Blended and Online and back again as needed. TU Delft posted a [Lecturer Satchel](#) on its [Teaching Academy website](#) during the 2021 winter lockdown as COVID restrictions tightened up just before the holidays (Lecturer Backpack for Teaching in Online Formats, 2021).

Change Management

TU Delft created a social space in [weekly webinars](#) for lecturers where they could go with questions on their various needs while transitioning between spaces; additionally, they could request future webinars on other educational topics of interest (Weekly Webinars, 2022). Open educational practice enables lectures and staff to collaboratively create materials together, but also plan and brainstorm together. The webinars allowed for space of open practice. During curfew lockdown in 2020, one of these topics was Lecturer's Wellbeing. This request from the lecturers came months after Student Wellbeing became a hot topic on campuses across the globe. Lecturers needed a space to discuss the opportunities available to them for wellbeing, as well as what caused additional strain and how peers were reacting to the current COVID restrictions.

One of the issues noted during these informal chats was a growing need for centrally localized resources, also for more experienced lecturers. The central location of resources between universities can be of great value and at the minimum within the university's own structure so that lectures/staff at one faculty could benefit from the same resources. Campuses generally provide the most support to lecturers with little to medium experience in blended and online teaching. Experienced lecturers need a space to pilot tools under guidance of Educational Tooling Experts where the lecturers and experts together can come back with best practices. Licenses for special tools such as VideoScribe are often faculty-driven but should be centralized within an institute for any lecturer with the desire to create animated videos, and who already has gained skills in creating videos on their own. One reason for the central localization of resources is that social spaces for lecturers are needed, particularly during COVID and post COVID times so that lecturers can request fast-changes at a campus-wide scale.

TU Delft has an Educational Tooling Committee that provides advice for tools based on GDPR, and the committee shares this advice through the [Educational Tooling](#) webpage (Educational Tooling, 2022). Because new educational tools and software will continue to be released, it is not possible for any committee to review all tools and to provide best practice advice for all of them under various possible scenarios. Additionally at TU Delft, an engineering university, there are classes where students are required to develop tools or software and test their products. Not all tools created by students will be GDPR approved or reviewed. Thus, lecturers could be taught how to evaluate tools and how to implement them in their classes in such a way that students are made aware of the possible risks if a tool is not GDPR approved or reviewed. A one-page document could be compiled for lecturers to use when using tools not supported by their institution or that are not fully GDPR approved.

Suggested Social Elements

Student interactions drive the learning in both collaborative learning and intercultural learning.

Collaborative learning is defined by Dillenbourg (Dillenbourg, 1999, p. 1) as “a situation in which two or more people learn or attempt to learn something together” (Bruffee, 1993). To add intercultural learning, this would mean that two or more people are focused on intercultural learning together.

Collaborative Learning involves intercultural learning if the collaboration involves a cross-cultural experience “...expands students’ view of multiculturalism... (and) enhances their self-concept and cross-cultural communication and collaboration competence” (Cifuentes & Murphy, 2000) (Yang, Kinshuk, Sue-Jen, & Huang, 2014).

There are some basic social elements that can be added to any course that may increase the learning for students who experienced more isolation than others. The following is a list of social element ideas that can be added:

- Social café
- Icebreaker as part of an introduction
- Icebreaker for course specific topic/s
- Game based learning
- Group work
- Peer review
- Peer feedback
- Quests with Groups
- Key Takeaways
- Short tasks
- Teach “this” and practice “this”
- Breakout session and Sharing Out
- Celebration moments
- Sharing out how to fail and get back up again
- Explain this (have peers explain concepts to one another)

Here are some examples of icebreakers:

- When you look at the syllabus or programme, what appears to be the most challenging for you?
- How do you cope with failure?
- What was the last challenge that you overcome after failing?
- What skills have you gained in the field already?
- What now seems easy that was hard for you last year?
- If you look at the most difficult part of the programme, what would be the “good enough” feeling for you that makes you feel like you succeeded?
- What does success in this field mean/feel/look like to you?

A journal or reflection activity helps learners walk through their failures and track their successes. For those who floodlight, the focus is on the negative and an inability to see the positive. By journaling they face the reality that they are not as bad as their internal negative narration suggests.

Icebreakers

A common icebreaker involves discussing similarities and differences. Asking about similarities and differences before student interactions is part of the preparation to reduce potential communication misunderstandings during the collaboration. Having more similarities than differences is not unique in research findings. Signorini, Wiesemes, and Murphy challenged Hofstede's concepts of differences and found more common ground or similarities between students (Signorini, Wiesemes, & Murphy, 2009). Shifting to focus on similarities can improve the intercultural learning experience and create opportunities to be bicultural (Alred, Byram, & Fleming, 2003).

We suggest adding icebreakers based on the timing in the course and if there is a need for the students to collaborate. For the introduction week, the icebreaker should be fun and not related to the course content. During weeks 1-3, any icebreakers used could be mildly connected to the content. During weeks 4-7, icebreakers used could be connected to the content. From weeks 8 and on, consider using icebreakers to connect the learners to the programme level.

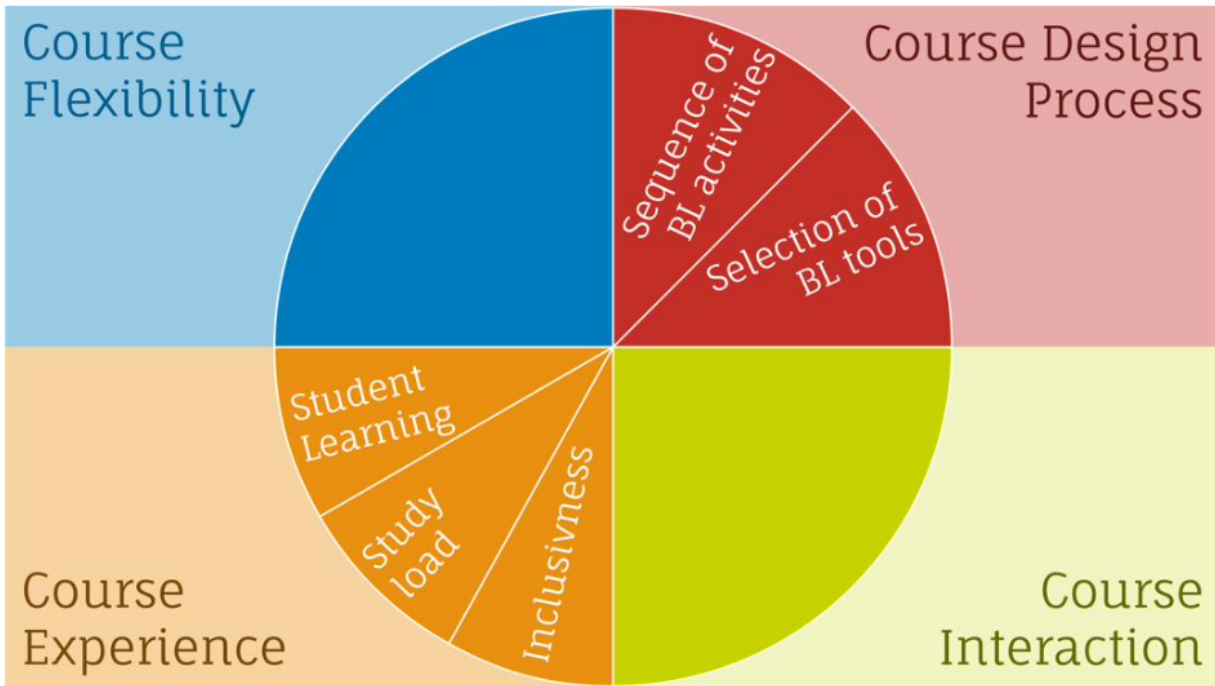
Best Practices

COVID times brought things to light that we were not expecting in education, but it also enabled lecturers to improve online teaching skills and select what worked better for them and their students. At TU Delft, lecturers were interviewed, and a survey was given to participants at Open Education Global (OEGlobal 2021) to better understand what worked well for lecturers and what did not (Wahls, Ouwehand, & Dijkstra, 2021). A request for a list of social engaging elements in a course was included, and the list included in this article is pulled from the data from the OE Global 2021 survey further described below.

Course: Blending Your Education

Encouraging Blended Learning will provide flexibility for the unknown future. The EMBED project describes how to encourage blended learning within an organization. At the course level, the [EMBED](#) project provided a self-assessment guide that the DigiTel Pro Blending Your Education course utilizes (EMBED, 2020).

There are 4 dimensions to consider when blending your course: Course Design Process, Course Interaction, Course Experience, and Course Flexibility. During the course, teachers/lecturers can focus on one dimension as they re-develop their course into a blended format (Self-assessment Course level, 2020). The course combines considerations of these 4 dimensions with practical guidance on how to create a Blended Learning Wave so that participants learn to actively choose between synchronous and asynchronous learning activities.



The course also provided further detailed examples of how to add the above-mentioned social elements into the course, including preparing teachers/lecturers for the possible challenges they might encounter in implementing the required changes. Moreover, the course includes the sharing of best practices as noted by TU Delft lecturers.

OE Global Survey

A survey was taken at the OE Global 2021 conference; of its 8 respondents, 4 gave approval for their data to be used for research. In this survey, the course formats were broken down into blended (2) and remote (2). When asked if there was a request for more social elements in their course, 2 responded yes, 1 responded no, and 1 did not respond. The type of social elements currently in the respondents' course were: group work and peer review. When asked what type of social element they needed for their course, one responded 'mental health check-in as students dealt with eviction, job losses, border closing, etc.' When asked what they had changed in the past 2 years, there responses were as follows: more use of google docs, Padlet, video quizzes, and constant feedback. When asked what the nicest social element was that they had experienced, one responded: 'Small chat with students connecting before learning, games involving polls or challenges.'

Discussion

Despite all the above-mentioned unusual situations, isolation experienced during curfew is not likely to be a repeated occurrence, as curfew has been used sparingly throughout history. However, changes in course design to be more inclusive can prepare our future generations to deal with similarly challenging situations. The suggested improved course design adjustments can create a more inclusive course space for learners with extreme or unusual situations.

Much of the research focuses on instructor input or feedback or analysis of student work/data. What is lacking is direct student input and viewpoint. Survey completion of learners who drop out of a course is lower than the number of students still in a course, thus getting a complete picture of the student population can be difficult.

Bringing Students Back

It was noted that isolated students may show similar traits to people with complex PTSD in that they may have experienced trauma during repeated lockdowns. During the informal chats in the weekly webinars, it was remarked that students mentioned having flashbacks of lockdowns and being afraid of future lockdowns. Future research could be done that applies complex PTSD trauma therapy concepts to education such as including more social learning spaces and adding fun to course work, which could be an added value for learners as they return to campus.

A potential challenge as students return to campus is relating to the ability to integrate back into social norms. Similar to those with complex PTSD, for those students who were more isolated and possibly experienced trauma during repeated lockdowns, returning to campus may require more social engagement and fun elements in order to feel like a community again. Because COVID restrictions limited the personal element of choice, students could benefit from having choices whenever possible. If lecturers and program coordinators note disengagement even during the in-person portion of Blended Learning, they can re-evaluate the situation by creating a social space and ensuring that there are fun moments to reactivate learners. With time and socialization, social norms can return with new perspectives.

Feedback

This report was released early, and feedback was given by staff, experts, and lecturers. It was noted that the following additional topics should be considered: technology license agreement stability, release of updates (not for start of semester), centralized support that decides some basics campus wide, plan for moving target of scheduling changes of room during emergency planning, emergency plan could include a plan to move students between quarters, improved technology, difference between technology owned by lecturer and by university considering comfort level, and more support on the tech side for the classrooms.

Conclusion

In summary, fast shifts to online educational formats or “remote teaching” is not the same as planned online education. Support for emergency educational shifts can include:

- Open Educational Practice
- a Lecturer Satchel with institute specific support
- Change Management considerations such as
 - weekly webinars
 - centralizing licenses for tools
 - allowing a space for piloting tools
 - one-pager guide for tools that are not GDPR approved or reviewed
- Adding social elements or social learning spaces online.

Initial research findings show similarities between isolated students and people with complex PTSD in the sense of experiencing flashbacks and fear of situations they cannot control. A forthcoming literature review on learner engagement will be conducted.

Although this paper discusses education format choices and implications during COVID and post-COVID times, the content here can be applied to further improve online and blended education for the future by adding social elements to increase student engagement. Further research could be done on student engagement and social elements in online and blended education.

Beyond webinars, open education practice can take place in many ways. It is prudent to consider how to enable lecturers and staff to collaborate and brainstorm together to make way for innovation and implement it more smoothly. There is a growing need for open education practice.

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