COVID-19 and rapid digitalization of learning and teaching: quality assurance issues and solutions in a Sino-foreign higher education institution

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Abstract

Purpose – This paper aims to report and analyze the lessons learnt from a case study of the implementation of the move from onsite to online learning at a Sino-Foreign higher education institution.

Design/methodology/approach – This paper reports a case study based on an analysis of three elements of the move to digital education during the COVID-19 pandemic. In suggesting three elements, it argues that the first and most immediate move away from onsite teaching should be thought of as emergency response teaching, and it is the lessons learnt from this vital and necessary stage that have informed the subsequent implementation of a more digitalization process.

Findings – The case study identifies the journey that the university is going through to deliver digitalized education, and how the pandemic hastened what had already been started. It illustrates how the pandemic has been useful in highlighting where we are, what decisions have been made and what still needs to be done with regard to readiness for the disruption likely by Industry 4.0.

Research limitations/implications – The study was conducted at one institution, which along with eight other similar institutions is unique within China. Findings, especially the processes of making decisions, while relevant to the wider discussion on digitalization and Industry 4.0, should also be considered in this light.

Practical implications – While the focus of the paper is on COVID-19 and Rapid Digitalization of Learning and Teaching, the main implication is that universities need to better prepare their teaching staff for digitalized education, especially if they are wanting to engage with disruption brought about by Industry 4.0.

Originality/value – The paper is based on a single university case study of a rather unique university within China. The discussion illustrates the need for flexibility and decisiveness in making key decisions on managing disruption, but with strategic direction in mind, illustrated in the study by COVID-19, but with future digitalization initiatives also to the fore.

Keywords Disruption, Instructional delivery, Digital infrastructure, Quality assurance (QA), Blended learning

Paper type Case study

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Introduction

The United Nations or UN (2020) has highlighted how the COVID-19 pandemic has created the largest ever disruption of education systems, calculating that approximately 1.6 billion learners in more than 190 countries and all continents have been affected. They continue that closure of schools, universities and other learning spaces have impacted 94% of the world’s student population, with the majority moving to various forms of online learning. Tesar (2020) has similarly discussed how the outbreak of the pandemic since early 2020 has dramatically impacted higher education development in various aspects, including the shift of face-to-face teaching to online teaching and learning, the cancellation of physical events and activities, the impact on international student mobility with resultant impact on (university) finances, and the formation of what is now being called a “new normality” in higher education.

While there has undoubtedly been disruption, there has also been opportunity within the sector. The pandemic has provided opportunities for a re-thinking of what higher education means and should look like in the 21st century, how the learning and teaching experience can change through increased use of technology, and rethinking of the appropriacy of assessments for determining if students are ready for today’s workplace needs. Sambell and Brown (2021) for example highlight the opportunity to make interventions that could potentially change higher education assessment for good arguing that many features of the alternative assessments that have been put into practice online during the pandemic could make lasting and significant changes to future systems and processes. In addition, the potential and opportunity for sustainable assessment Boud and Soler (2016) is highlighted, that can contribute to learning beyond the completion of a particular course or programme.

As highlighted, perhaps the most documented in an impressive body of literature on the pandemic and its impact on education has been the rapid (some may say abrupt) shift from onsite to online learning solutions. While this provided a solution for many of the learning needs of the students, there have been many challenges with Ramirez (2020) highlighting the difficulties for subjects such as sports and physical education, those that require(d) substantial laboratory or studio work, and on-the job training.

The aim of this paper is to report on and analyze the lessons learnt from a case study of the implementation of the move from onsite to online learning at a Sino-Foreign higher education institution. In doing so, the focus is on quality assurance (QA) issues at each of three stages of response that have been highlighted. These stages are the initial move from onsite to online delivery using technology, or emergency response stage; the move to “informed” online teaching; and the development of more sustainable future-oriented assessments using lessons learned. The paper also discusses why these specific terms have been used. Drawing from lessons learnt, the paper takes a position that the responses to the pandemic have provided a catalyst for change that was going to be needed sooner rather than later, as the arguably bigger challenge facing higher education is not being future ready for Industry 4.0.

Literature review

Quality assurance

The meaning of quality in education is an area of debate, often with little consensus. Measuring the quality of the offer is not new nor is it a unique concept in education, often being used to invoke the idea of having something that is distinctive and special (Green, 1994). The UK’s Quality Assurance Agency (QAA) suggests that maintaining the highest quality within higher education is paramount in ensuring that it meets the needs of society, including students and the public (QAA, 2017). Altbach et al. (2009) highlight the importance of QA in higher education practice, suggesting that it attracts the most scrutiny and monitoring by stakeholders in the Industry. Harvey and Newton (2004) suggest QA
should be seen as a way to give stakeholders confidence that expectations will be met.

Continuing with the theme of standards and maintaining quality in education, Vlasceanu et al. (2007) argue that QA has a focus on accountability and improvement of the educational offer, while Stensaker et al. (2011) suggest that QA in higher education be seen as a generic term to cover all forms of external quality monitoring, evaluation or review.

Quality Enhancement (QE) is often thought to be one of the main purposes of QA. Harvey and Newton (2004) suggests QE is a process of improvement which enhances the individual skills of the learners, as well as enhances the quality of the institution or degree programme or academic module. Biggs (2001) sees QE is simple terms of being about enabling teachers to teach better, with Lomas (2004, p. 158) suggesting that this “enabling” is a transformative process, with Iralkli (2008) highlighting the continuous process consists of reflection, planning, implementation and evaluation. Biggs (2001, p. 37) introduces the idea of “micro quality enhancements” which are applied in the classroom until they acquire a critical mass whereupon they become “macro quality enhancement” measures where policy changes may need to be made for enhancement to take place successfully. This focus on the learner or student at the micro level is important, with Hodgkinson and Brown (2003) emphasizing the importance of individual learning.

Quality assurance in online learning

Year 2020 has been one of the most challenging years faced by higher education as a result of the COVID-19 pandemic. China was one of the first countries to have been affected nationally, to shut down schools and university campuses, and also one of the first countries to react with a move to online learning and teaching. The scale of this move to online education should not be underestimated, with internet-based teaching being either quite new in Asia or considered traditionally as low quality (Ramirez, 2020), with Japan and Singapore as notable exceptions. However, the pandemic left most countries, including China, with little or no option but to move rapidly to adopt technology-based education systems such as online-learning Ramirez (2020) to support learning and teaching, not as an informed choice where appropriate systems had been put in place over time, but as a rational and immediate necessity to enable learning and teaching to continue to take place.

Defining quality in online learning is challenging (Esfijiani, 2018). Again, there is little consensus, as it can be seen from many different dimensions (Esfijiani, 2018), with different meanings for different stakeholders. Instruments to measure quality include commercial instruments, government or national policy or standards and individual frameworks (Shraim, 2020), with indicators including accreditations, measurements and standardizations, at the micro (learner), meso (courses/programmes) and/or macro (institutional/national) levels (Shraim, 2020). He goes on to state that QA for online and QA for conventional or onsite programmes are not identical, and therefore there is a need to integrate online learning into national QA systems.

Izumi et al. (2020) in an initial analysis of Asian institutions responses to the pandemic concluded that it was crucial for institutions to think about how campus operations could continue in all areas of university business (such as learning and teaching, research, business development), and that they needed to develop a Business Continuity Plan (BCP) which included having appropriate policies and procedures in place to ensure an adequate response, business recovery and (eventual) campus reopening. Many preliminary studies have identified some of the issues associated with the rapid shift to online learning, including skills gaps, training and technology issues (Abdullah et al., 2020; Oducado and Moralista, 2020), health-related concerns (Tria, 2020) and the potential of blended learning initiatives in the future (Schroeder, 2020).

Within the UK, the QAA (2020) issued a set of guiding principles to aid decision-making, in line with Izumi et al.’s recommendation for a BCP (2020), as well as a discussion on how
standards and quality could be preserved during the pandemic. One of the key words was “flexibility”, in what approaches to take, in delivery patterns, and in decision-making, without compromising standards. For example, it recognized that before Covid, changes to programmes and modules, which would include delivery modes and assessment types, would usually go through many layers of approval within an institution, involving as many people as possible; but that such an approach may not be fit for purpose under pandemic conditions. It talks about the need to be flexible in accepting greater immediate risk, with a focus on mitigating the risk later, though recognizes the need for clear and appropriate documentation on how decisions have been made. Advice includes (a reminder to) focus on learning outcomes, with equality between online and onsite assessment types, and taking the opportunity to rethink assessment approaches. This is also in line with UN (2020) recommendations on education during COVID-19, which suggests reimagining education and accelerating changes in learning and teaching. Issues identified include those surrounding digital poverty gaps, the need to engage staff and students equally, and issues around skills gaps of both staff and students and the need to reform training, again in line with those identified by the UN (2020).

Quality assurance in transnational education (TNE)/Cross-Border higher education (CBHE) in China

With the internationalization of higher education and higher education institutions, it has become important and necessary to expand QA processes to facilitate cross-border educational activities and recognize qualifications of provisions delivered in different regions. Baker et al. (2019, p. 55) identified that “quality control is considered to be an important issue for the future development of offshore programs”. Transnational Education (TNE) or “Cross-Border Higher Education (CBHE)” has been a global trend now for a considerable number of years, and can take many forms including branch campus; joint venture institutions; independent institution; acquisition/merger; study centre/teaching site; affiliation/networks; and virtual university (Knight, 2006). China has been especially receptive to TNE and/or CBHE, encouraged by the Chinese Ministry of Education (MoE) issuing of Regulations of the People’s Republic of China on Chinese-Foreign Cooperation in Running Schools in 2003 with amendments after a decade in 2013 (Ministry of Education, 2003). Qin and Te (2016) suggest that China has become a major country not only in exporting students overseas but also in importing international education, with for example the number of joint ventures and programmes increasing from 143 in 2002 to 848 in April 2019. Assuring the quality of educational provisions in these joint ventures and programmes has become a necessity for viability. The UK Quality Assurance Agency (QAA) for example undertakes TNE reviews aiming to safeguard and improve academic standards and quality of UK higher education delivered overseas, which leads to UK higher education awards.

While the relationship between QA and QE has been discussed in some of the literature, its relationship in the Sino-Foreign context has been under researched, especially when QA comes from two directions: China and UK, where greater challenges of integrating two different QA systems into single one for satisfying both QA expectations are inevitable.

Methodology
This study uses a case study approach to look at the QA issues arising from the move from onsite to online learning as a result of the pandemic at one Sino-Foreign collaborative university within China since February 2020. The university, Xi’an Jiaotong-Liverpool University (XJTLU) is one of nine full Joint Venture (JV) institutions within China and was
co-founded in 2006 through a partnership initiative between Xi’an Jiaotong University, a member of the C9 League representing the nine top universities in China, and the University of Liverpool, a Russell Group research-led university in the UK. XJTLU is independent of its founding partners, and offers undergraduate, postgraduate taught and postgraduate research degrees. Students on undergraduate programmes are eligible for a double degree; a Chinese degree awarded by XJTLU (as it has its own degree awarding powers) as well as the degree awarded by the University of Liverpool. Postgraduate taught and postgraduate research programmes lead to single Liverpool awards for the time being. The University has two campuses: its initial and main campus in Suzhou Industrial Park, and a new campus in the county town of Taicang, also part of Suzhou, where a new Entrepreneur College is located, which was launched in 2018 for exploring Entrepreneurial Education. The university degrees come under the QA regulations for both the UK and China.

Yin (2018) defines case as “a contemporary phenomenon within its real life context” (Yin, 2018, p. 13), building on Stake’s (1995) earlier work which sees case as a “specific, complex functioning thing with a boundary and working parts” (Stake, 1995, p. 2); in other words, a complex integrated system of constituent parts. Merriam (1998) suggests that case studies are particularistic, focusing on a specific situation or event; descriptive in that they yield rich data; and heuristic in that they add to the understanding of what is being studied.

Data for the study was collected through three channels. First, semi-structured interviews were held with key decision makers during the pandemic. These included members of the pandemic control committee, set up by the university after instruction by municipal education leaders, and also school level Deans for leaders of learning and teaching, who drive the learning and teaching agenda at the University. Interviews focused on how changes to assessment had been made, and what the criteria for change were. In total, five of the university’s seven School-level Deans for Learning and Teaching were interviewed, and four members of the pandemic control committee. In addition, data was taken from (online) observation as to actual practice taking place, through online membership of classes using the virtual learning environment. These totaled seven online class observations covering subjects as diverse as Biology, Electrical Engineering, Design, Urban Planning, Economics, China Studies and Film Studies. Personal reflection on successes and non-successes during the initial pandemic period are also included. Finally, data was collected from students who had not been able to attend onsite in-class lessons, to identify their learning experience. This was in the form of an online questionnaire and the respondents were exclusively international students.

For the purposes of the data analysis, interviews and observations were subjected to a content analysis. Content analysis allows valid inferences to be drawn from data in their context (Krippendorff, 2012). Following a model known as emergent coding, drawn from Glaser and Strauss’ (1967) concept of grounded theory, the data being investigated can be used to develop a research question which is applied to the subsequent data. For this study, the main research question posed was “what lessons can be learnt from the response of the pandemic to prepare the university for Industry 4.0”. All the data collected was reviewed and coded to the three stages previously highlighted.

The case and case context
As highlighted, XJTLU is a Sino-Foreign JV institution, delivering both UK and Chinese degrees at undergraduate level, and UK degrees only at postgraduate level. As such, it is an English Medium of Instruction (EMI) institution, where EMI can be described as the teaching of teaching academic subjects using English, but not the teaching of English itself (teaching in English rather than teaching of English) in non-English native speaker
countries (Macaro, 2018). China has seen spectacular growth in EMI courses and programmes, with a number of initiatives at all levels of HE (Perrin, 2017).

As an EMI institution, XJTLU has grown from 164 when it opened in 2006 to having nearly 18000 registered students in 2020. Over 90% of students at the University are Chinese native speakers, and over 50% of staff are non-native speakers of English. The University Strategic Plan has a (pre-COVID-19) target of having 20% of the student body international by the mid 2020's. Like many transnational education (TNE) EMI institutions, the University XJTLU faces a challenge in creating what is often termed “a truly international university” working and teaching in English without compromising quality within its context. The UK QAA, in a review of UK transnational education within China (QAA, 2013), recommended the English language support that was offered to all students at XJTLU.

While promoting EMI courses and programmes within universities, the Chinese Government has reformed and promoted online education. Current estimates (pre-COVID-19) suggest that the number of such online courses offered by Chinese universities is more than 500, with nearly three million participants or students, though take-up is slow and quality often considered poor (Shang and Cao, 2017).

In May 2015, China’s State Council announced an initiative, named “Made in China 2025”, to improve its manufacturing industry. Much of this is proposed through education reform which should take account of the possibilities offered by Industry 4.0. Industry 4.0 refers to the way that the industrial process will change with the digital revolution, through the use of the Internet of Things and SMART technologies. Education 4.0 Orazbayeva et al. (2020) is an educational response to Industry 4.0 and places the student at the center of the higher education ecosystem. Education 4.0 is primarily driven by four key directions that, if implemented, would help redefine the present higher education system: employability, student experience, research excellence and society.

Partly in response to this plan XJTLU has started to explore and develop a new education model that is industry and disciplinary focused, with an aim to inform and contribute to the enhancement of higher education provision in China. This new education, university and campus concept (Taylor, 2012), ties in with XJTLU’s ambition to be a pioneering promoter and builder of an Innovation and Entrepreneur Community.

**Findings**

So as to present the findings that emerged from the qualitative data, three major themes emerged. These have been labelled as management control, digital infrastructure and instructional delivery. These three themes are presented below within the three stages of response.

**Management control and leadership**

The pandemic started earlier in China than elsewhere. In January/February 2020 with the pandemic springing to prominence, a decision was taken by senior management to move rapidly to online delivery, prior to official government announcements, with existing resources reviewed and used to develop a range of facilities. This meant that faculty (initially) were faced with the disruption of suddenly needing to deliver their onsite designed materials online. Communication was quick and effective to staff and students, keeping them fully appraised of the developing situation as quickly as possible. Decisions taken included adjusting teaching schedules and the timely publication of information, creating a Coronavirus task force made up of a number of key elements of the university at all levels of
representation, posting regular epidemic prevention advice with a focus on self-protection, and postponing the start of the second semester.

In addition, contact was made with the University of Liverpool to facilitate an easy route to them for students to continue their study at Liverpool if they could not return to XJTLU. As the pandemic took hold in both countries, management decisions were made quickly to ensure online delivery between both institutions was possible, and also the University of Liverpool was able to provide assistance and support in both academic and non-academic areas to XJTLU staff.

Emergency response teaching continued until at least April 2020, when the university reopened for those staff who were in China and had passed quarantine rules. Teaching however remained online until the beginning of the academic year 2020/21, in September. In April/May 2020, a review of the emergency response teaching was carried out. A decision was taken to develop and adopt a blended approach using a hybrid model (Alammary et al., 2014). To ensure all students could study, modules for the academic year 2020/21 were developed for both online (synchronous and asynchronous) learning and onsite delivery. Where classes were large, online teaching also continued to ensure social distancing requirements are met.

As the University moved into the third identified phase, that of future oriented Learning and Teaching, the decision to develop hybrid degree programmes and modules for the next few years has meant that there has been considerable rethinking about XJTLU’s future approach to online learning, with the Learning Mall very much at the fore. As stated, the original (pre-pandemic) plan for the Learning Mall was a semi-independent online and onsite learning unit that would focus on providing upskilling opportunities for businesses and communities who had already left university. However, management and technologist respondents emphasized that the need to respond to the pandemic has meant that there has been a rethink on how the Learning Mall would be used. Complementing the current virtual learning environment, the Learning Mall is now developing degree level modules, which can be used as part of existing degree programmes, or are existing modules adapted for online use. Lessons learnt from both the emergency response teaching, and later online education phases have been incorporated into the module development.

Digital infrastructure
At the beginning of the pandemic the university had to “make do” with the digital infrastructure that it already had, or was in the process of purchasing. The initial focus was on the university website, making sure that it was able to provide up-to-date information for students and staff in both English and Chinese. This provided information about university operations, communications and announcements, as well as detailing the policies and official documents produced for the public by the government. There was also a section related to frequently asked questions and answers, as well as useful tips and reminders. All respondents were appreciative of how quickly the university move in this direction, but a familiar message emerged as the initial emergency stage continued that updates of information became less frequent, less useful to those not in China, and less advice and much more of an instruction.

Three initial developments that took place were fast-tracking the development of Big Blue Button (BBB), a web conference system for online learning; upscaling Sonic Foundry’s Mediasite, a software product for recording live lectures, and the use of Zoom for meetings. Whilst all three were initially welcomed and successful, as online teaching progressed each has encountered a number of problems. BBB has been found to be less useful when uploading large files for learning and teaching, Mediasite has encountered issues with large
class sizes and the Chinese firewall and Zoom stopped being supported in China, meaning an alternative needed to be found.

In addition, the university fast-tracked its Learning Mall initiative, which had started its development before the pandemic. Initially developed as the university response to Chinese government nationwide online learning initiatives, where the Chinese Government has chosen to “Launch an International Online Teaching Platform in Higher Education”. From being a virtual learning platform, much like Moodle or Blackboard, the decision was taken to make it much more.

Alongside the decision to introduce blended learning as part of the second phase of response, discussions took place about how technology support could be enhanced, and whether the university was using the most appropriate technologies now that there was a period of reflection. Respondents felt that they had not been adequately involved in these discussions, or that their voices were not heard as loudly as the “technologists”.

Apart from the need to ensure that the Learning Mall was able to operate with it new role, there were no new digital infrastructure initiatives, while the technology related issues raised earlier continued to dominate.

**Instructional delivery**

In terms of instructional delivery, very little change was made at the initial emergency response stage. Perhaps most importantly, an online non-credit bearing course was developed called “Developing Global Citizenship” so that students could become familiar with the concept of online learning and the technology. While some limited changes were made to modules/programmes to reflect changes in delivery and recognise what could/could not be taught, opportunities were also given for changes to be made to assessments so that the agreed assessments could be taken online. Examples include changing exams to open book exams, and converting exams to coursework. This was further developed in the next stage. The approval processes were initially the same, but conducted remotely, though some shortcuts were needed. There was however no compromise on QA processes.

At the programme level, the move to a blended experience however also brought a number of concerns about the learning experience, especially whether those who study online have the same experience as those who would study onsite. Identified issues included how to ensure a seamless learning experience, and how to manage instructional complexity and roles and responsibilities, while technology issues never seem to go away, including accessibility to hi-speed internet connections by international students (Dziuban et al., 2018).

As blended or hybrid learning moved from being niche to mainstream as a result of the pandemic, concerns about equity of assessment and the outcomes of programmes and modules become more acute. Issues highlighted included the learning experience of students who are in practice or lab-based degree programmes, especially from international students.

Academic staff also highlighted the concern that their training needs in developing blended materials and how to teach with and using blended technology, how to determine effective delivery methods, and the need for more agile assessments without causing QA chaos.

Moving into the third phase, there was in-depth discussion about the permanence of the digital initiatives and what this means in reality for staff and students. Perhaps most valuably have been the lessons learnt about QA and QE for the online offer. These include first, the importance of bespoke materials being made to compliment and exploit the technology, rather than expecting the technology to match the materials. Smaller bite-sized “chunks of learning” have been created, taking into account learner attention spans, as well as upload issues. Modules created have built in interactive elements to ensure that students
remain active, and that the lecturer is not just a remote figure. In addition, a QA system has been specifically developed, in recognition that existing QA systems are based around an assumption of onsite delivery in a non-disruptive age. The QA system is designed to be comprehensive yet flexible under the changed operational methods. It is made up of three separate elements; QA of the materials that are being developed and/or used for online learning, more traditional QA methods to capture hybrid learning, and thirdly an annual report to the University of Liverpool to confirm the quality of the degrees and modules on offer.

Other measures that have been developed include a resource annual review, carried out independently to provide annual review of specific problematic resources and content, both online and onsite.

Discussion
The case study presented in this paper has tried to present and develop the issues that have been highlighted by key stakeholders as a result of the pandemic but which are important for making the University relevant in the digital world.

The importance of quick decision-making has been highlighted, as well as strong leadership. It is noticeable however that while this was high profile at the beginning of the pandemic, there was a noticeable falling away of visibility as the University moved through the stages. It should also be noted that the more centrally controlled institution as found in China may have an advantage when it comes to implementing decisions in an emergency.

Equally, the adaptation of new and existing technologies to facilitate the move to online learning was quick and efficient. It would be difficult to conclude that it was effective as there were clearly issues that had not been resolved as the University moved into the more sustainable future-oriented assessments period.

Perhaps however, the greatest source of information from the study relates to the impact on teaching and staff, highlighted through the instructional delivery theme. The move to online delivery has highlighted the importance of the lecturer in the traditional onsite domain, and their changing role to being a facilitator in the virtual domain. The move to emergency response teaching created many challenges for lecturers who had been prepared for a face-to-face interaction. This seemed to especially be the case for small class teaching, or problem-based teaching initiatives, where the group interaction experience was missing.

Under non-pandemic times, online and onsite teaching would use vastly different methodologies and learning aids. Staff, perhaps most importantly, make a choice as to which mode they prefer to teach (Rapanta et al., 2020). Online programmes have been planned with their remote audience in mind, staff will have been trained in how to best use the resources available, and programmes and modules would have been through a QA process designed for this purpose (Rapanta et al., 2020).

The changing role of the lecturer is also highlighted in their relationship with the materials being used and how it is delivered. Within the classroom, the lecturer controls the dynamics of the class. Materials can be considered and discussed at a depth within the lecturers’ control. However, the role of the lecturer changes once the move online takes place. Parchoma et al. (2019) emphasize the need to design conditions under which learners have a better chance to learn. Goodyear (2015) refers to this as a design for learning perspective, with lecturers being both constructors (lesson/module/materials designers) and actors (enactors of the lessons) within the learning process.

As with the materials and design issues highlighted, the type of student who would normally be attracted to an online programme or course is traditionally also different from those who may be in a classroom. The flexibility offered by online education means that
non-traditional students such as those who are working, who are older, or who cannot access a campus on a full-time basis can be provided with a flexible and convenient learning experience to meet their needs. Classroom teaching on the other hand is typically aimed at those following the traditional school to university to work route.

Within the pandemic, the luxury of time to create the idea situations was not afforded. Lecturers fell back on what was at hand before more standardized technology became available. Feedback from students was not positive of the experience, but appreciative of the efforts made. Existing technology already in use within the university and used by a small number of teaching staff was then used on a massive scale. The emphasis was not on making dramatic changes to course material, but to do what was needed to ensure that the students had an increasingly positive learning experience once the semester started. As a result, there was a prevalence of lectures being recorded as if they were being delivered in the classroom, and then uploaded on the two platforms of Mediasite and BBB, and minimum changes to assessments.

Moving away from emergency response teaching, an unequal learning and teaching experience was identified in some disciplines. This was highlighted through the type of degree studies, the learning conditions at home and dependency of student and staff's technical competencies. While the humanities and social sciences were readily adapted to the new learning experience, this was much more difficult for lab and practice-based subjects, with some delays to the completion of the modules introduced until students could be back on campus. While digital poverty was not a big issue with most of the Chinese students, having adequate space for study was an issue where the traditional Chinese family and accommodation structure means many generations living together, and unsuitable places for effective study. International students, and Chinese students who were overseas at the time of border closures experienced issues with internet accessibility, stability and capacity; often due to the way that lectures had been recorded and uploaded in their entirety. Staff and students also had to have a steep learning curve in terms of how to use the technology effectively. Staff training was conducted online, but this assumed that staff had a certain level of competence initially. Students however received little or no training, because of the mistaken assumption that digital natives would readily adapt to the new study conditions. Students also indicated the difficulty in self-motivation for study, with the learning materials and approaches taken by staff encouraging the more traditional passive approach of Chinese learning styles (Bao, 2019).

The study accepts that the future seems to be with blended or hybrid learning, while highlighting some of the barriers to effective implementation which could influence sustained QA.

While this case study is specific to XJTLU, there are lessons that have been learnt that are applicable to other JV institutions, both within China and beyond. The importance of having key working relationships with partner universities is highlighted. Whilst XJTLU is lucky to have a university such as Liverpool as a founding institution, it has also been working with other partner universities to provide mutual learning and teaching support, including recognising credits at local universities for its students who cannot return. Equally, the development of QA processes to ensure that online delivery is of the same standards and quality can be borrowed. The quick, but guided, movement away from emergency response to online education is also a lesson that can be learnt and is applicable elsewhere. This requires training for both staff and students. One highlighted area is the need to train the trainer; in effect to train the educational developers within the institutions so that they can provide quality continual professional development sessions to all staff. Recognising a mutual need among all JV institutions within China, which have English as
the medium of instruction, XJTLU’s educational developers (EdDev) have been working
during the pandemic to create and launch an EdDev network within China, with a vision is
to create a network to share knowledge, experience, expertise and support ongoing learning.
Training of staff in the move towards more online learning and teaching is one of the first
aims.

In some respects, Ramirez (2020) sums things up well in suggesting that QA in HEIs in
the digital world of Industry 4.0 is driven by sustainability standards, which he highlights
come through academic performance, adaptability, efficiency and collaboration. Ramirez
(2020) contends that maintaining sustainability standards means maintaining QA in the
digital world, and will help ensure that future disruptive events such as a pandemic, or
digital outrage can be positively met head on.

Conclusions and further thoughts
The transition from onsite to online learning and teaching means changes within
institutions, including changes to support for all stakeholders, as well as the decision-
making processes. This process has been hastened by the pandemic, with online delivery
moving very much into the mainstream. However, it is worth remembering that a revolution
of sorts was already taking place as universities started to cope with changes as a result of
industry 4.0 and disruptive technologies.

The University Industry Innovation Network (UIIN) in their Future Universities thought
book Orazbayeva et al. (2020) identified what they considered to be future global trends of
higher education. Ideas postulated included transdisciplinary education with a greater focus
on the world of work, the need for greater collaboration with industry and the application of
technology in the learning process. Going further, there is a recognition of the need for
operating mode of universities to become more and more virtual, with an increased
importance of online courses for both students and professionals. The importance of AI is
also recognized. Technology is seen as a means to an end rather than the means itself, and
an overhaul of the education system with teaching and learning that is flexible, collaborative, transdisciplinary and curiosity-driven is considered likely.

This was all considered necessary a full one to two years before the pandemic struck, and
one thing that the pandemic has shown is that the university sector is not ready for such a
drastic shift. The UIIN suggested the need for an overhaul of the education system, and the
pandemic seems to have provided just that. This is certainly the case with XJTLU, which
was probably further along the Industry 4.0 path than other institutions because of its
initiative in developing its Entrepreneur College on the Taicang campus. However, lessons
still needed to be learnt.

Achieving sustainability means that systems and decisions need to be robust but flexible to
enable change to be made. Management decision-making systems need to be overhauled so that
they retain the speed that became the norm during the height of the pandemic, but the robustness
of pre-COVID times. Digital assessment strategies need to be developed to ensure that QA is not
compromised when assessments are designed and delivery modes established.

Institutional vision, as shown throughout the pandemic, is needed to be able to
implement initiatives such as the Learning Mall, and the continued use of teaching modes
such as blended or hybrid learning. This vision should recognize how long it takes to
implement meaningful change if it is to be long-lasting. Examples include the need to train
the trainers prior to change, testing the technology to ensure that it is fit for purpose and
changing it if not, rather than applying a sticky plaster approach to paper over cracks.
Learning support processes are required so that the student experience does not suffer.
Perris and Mohee (2020) suggest QA is key to sustainable blended learning. Recent
experience suggests the flexibility of blended or hybrid learning in offering a choice of both asynchronous and synchronous options as both an emergency response, and more sustained future study mode indicate that blended learning can also sustain QA.

How technology has been used and its effectiveness at each of the three stages will determine how effective academic performance is, and how it is perceived by staff and students. The initial switch to online learning was possible because the technology was already in place. But the move from niche to mainstream use also exposed some of the limitations of both the technology, and how it was being used by academics. The move from emergency response to more recognized online learning, along with changes to assessments and discussion on delivery went a long way to alleviating many issues previously identified by students. However, it is also clear that students were more tolerant in the early stages, accepting that changes had happened on a needs must basis. As time has gone on, students have become less tolerant as some academic staff continue to fail to master the different techniques needed for online delivery. Some staff and departments have been extremely effective however in adapting to what can now be considered a new norm, which is also illustrated by the numbers of academic staff who are volunteering to be part of the Learning Mall initiative, where once there was a wall of skepticism.

It is possible to conclude on a couple of levels the lessons that have been learnt as a result of the move away from onsite teaching during and as a result of the pandemic. At the local level, the need for a strategy or plan to “plan for the unexpected” is important. This coincides with the need to have flexible and agile systems which allow for decisions to be made without compromising the product, that is the quality of the educational offer. Recognizing the limitations of the key elements to increased digitalization is important; these being staff, students and the technology. Staff and students both need training; it cannot be assumed that all can acclimatize to a move online easily. Technology and teaching materials need to become better acquainted with how they can complement each other. Smaller unit of teaching, or byte-sized content are more likely to keep students’ attention and lead to less technological issues. But staff need training in how to move from onsite teaching where they are more in control and the focus, to online, where the focus is the material. The role of a blended approach is clearly important in maintaining quality of the educational offer, as is flexibility is designing assessments that are fit for digital purpose. But of far greater importance, at the strategic level it is possible to conclude that the pandemic and the response of universities, illustrated through this case study, have highlighted how prepared institutions are for the likely disruptions that industry 4.0 will bring, and what still needs to be done to sustain their relevance in the future.

References


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