



JOSSTED

JOURNAL OF SOCIAL SCIENCES
AND TECHNICAL EDUCATION

A Case Study of the Implementation of the 21st Century Classroom at a Foreign Branch Campus University in Malaysia in Preparing Graduates for the 21st Century Workforce

(Kajian Kes Pelaksanaan Bilik Darjah Abad ke-21 di Universiti Kampus Cawangan Luar Negara di Malaysia dalam Penyediaan Graduan Untuk Tenaga Kerja Abad ke-21)

*JEFFERSON SIM POH THONG¹, IRENE CHANG HUI CHUNG²

Faculty of Education, Open University Malaysia, Malaysia¹

Policy, Planning and Quality, Swinburne University of Technology Sarawak Campus, Malaysia²

* Corresponding author: simjpt@oum.edu.my

ARTICLE INFO

Article History:

Received 28.05.2023

Accepted 23.07.2023

Published 24.09.2024

Abstract

This is a case study on implementing the 21st-century classroom at a foreign branch campus university in Malaysia in preparing graduates for the 21st-century workforce. This study was conducted as the first step to a more comprehensive research study whereby to understand what a 21st-century classroom and 21st-century workforce is, identify the technological tools being implemented in the 21st-century classroom, and understand how the 21st-century classroom can prepare graduates for the 21st-century workforce. The qualitative data was obtained through face-to-face interviews with four academicians from a private higher learning institution in Sarawak, Malaysia. Carspecken's Critical Ethnography framework guided the semi-structured interviews. The findings were analysed using thematic analysis and found to be consistent with past studies. Hence, this study concluded that implementing the 21st-century classroom is, indeed, directly, and indirectly preparing graduates for the 21st-century workforce, and some recommendations for future research were stated at the end of the study.

Keywords: 21st-century classroom, 21st-century workforce, digital tools, technological tools

INTRODUCTION

With the rapid advancement of technology, without a doubt, the world has become borderless, and people can be seamlessly integrated, both physically and remotely (Cheema, 2020). To survive, higher learning institutions (HLIs) are constantly changing in pursuit of quality, recognition, and progression to become the leading or world-class higher education provider. The main aim of higher education is to prepare graduates to be competent for the future workforce, solve problems and provide value-added agenda to society (Hernández-March et al., 2009; Igwe et al., 2022). Hence, HLIs must adopt various technological tools in their classroom practices (learning, teaching, and assessment) to expose and familiarise students with future-proof skills (Akour et al., 2022; Lamsal, 2022). Many have said that it is the responsibility of the higher education industry to prepare for the future workforce. However, it takes a village to raise a child. Likewise, preparing graduates for the 21st-century workforce requires various stakeholders' engagement and involvement. Every stakeholder in higher education has a purpose, whether internal or external, whether with direct involvement or indirect roles, which include educators, parents, government, industry partners and others. Individually, it does not seem to be impactful. However, stakeholder collaboration by sharing ideas and plans is vital to successful product management. So now the question is, what will the future workforce look like? There are various ideas on the 21st-century classroom, 21st-century skills, and 21st-century workforce. Some said that these are interrelated with each other. The 21st-century classroom equips students with 21st-century skills to foray into the 21st-century workforce. Therefore, this case study investigates implementing the 21st-century classroom at a foreign branch campus university (FBCU) in Malaysia to prepare graduates for the 21st-century workforce.

RESEARCH OBJECTIVES

The research objectives of this study are:

- To understand what the 21st-century classroom is.
- To understand what the 21st-century workforce is.
- To identify what are the technological tools that are being implemented in the 21st-century classroom.
- To understand how the 21st-century classroom can prepare graduates for the 21st-century workforce.

RESEARCH QUESTIONS

The research questions of this study are:

- What is a 21st-century classroom?
- What is the 21st-century workforce?
- What are the technological tools that are being implemented in the 21st-century classroom?
- How does the 21st-century classroom prepare graduates for the 21st-century workforce?

LITERATURE REVIEW

Even before the Covid-19 pandemic, there were various discussions and predictions. Understanding the best ways to future-proof our careers and key trends shaping the workforce of the future is essential. Although there are many predictions, the future remains uncertain and human beings are forced to be able to learn, unlearn and relearn. In addition, human beings are expected to be able to upskill and reskill whenever required. As part of the requirement by the Malaysian regulators such as the Malaysian Qualifications Agency (MQA) and the Ministry of Higher Education (MoHE) and professional bodies such as the Engineering Accreditation Council (EAC) of the Board of Engineers Malaysia (BEM) and Malaysia Board of Technologists (MBOT), HLIs are mandated to prepare or produce

graduates for the 21st-century workforce (Selvalingam et al., 2007; Subramaniam & Bush, 2022). While accrediting the programmes, these regulators and professional bodies ensure that curriculum design and delivery follow what is needed in the 21st-century classroom (Kyne, 2021). Therefore, is the 21st-century classroom able to achieve the intended learning outcomes, especially the 21st-century skills?

21ST CENTURY CLASSROOM

According to Göçen et al. (2020), the 21st-century classroom is student-centred, and the teacher is the facilitator. With technology, learners and facilitators can learn from each other, regardless of their geographical locations, and the curriculum can be integrated and interdisciplinary. Content and learning materials in the 21st-century classroom are research-driven and outcome-based (Thannimalai & Raman, 2018). In addition, active learning is also practised, allowing the curriculum to be designed on the higher thinking order of Bloom's Taxonomy (Apak et al., 2021; Shafie et al., 2019). As most lessons are driven by exploration and creativity (Apak et al., 2021), teachers as facilitators encourage learners to be creative through authentic assessment and utilise various media for classroom practices (learning, teaching, and assessment) (Göçen et al., 2020; Shafie et al., 2019; Thannimalai & Raman, 2018).

21ST CENTURY SKILLS

To participate in the 21st-century classroom, learners must have the right skill sets, such as critical thinking skills, to be problem solvers (Rotherham & Willingham, 2010). In addition, collaboration is also an essential skill to be a player in the 21st-century classroom (Hilliker & Loranc, 2022). To collaborate, learners must have good communication skills to articulate and present ideas (González-Pérez & Ramírez-Montoya, 2022). As the list is non-exhaustive and keeps evolving, due to the flexible and fluid learning environment, learners must be equally creative to design, develop and conduct the classroom among their peers and between their facilitators (Hilliker & Loranc, 2022; Ormrod et al., 2017a, 2017b). In short, the 21st-century skills needed are cognitive and technical skills and soft skills.

21ST CENTURY WORKFORCE

Often, the media reported that higher education failed to produce graduates who were job-ready or industry-relevant. On the other hand, higher education is saying that the industry cannot determine the skills they need and is not willing to pay higher salaries. All stakeholders are pushing for responsibility and ownership. According to a recent study, the future workforce is dynamic and utilises technology to communicate and interact; can apply and analyse; critical and creative thinking; collaboration; and computational thinking (Khan et al., 2022). In addition, digital skills are essential and considered critical life skills (Khan et al., 2022; Strukova & Ruipérez-Valiente, 2022). With digital skills and technological tools, it can further improve the missing social aspects of remote learning and working to avoid disrupting the system when climate, health, and socio-political crises emerge (Strukova & Ruipérez-Valiente, 2022). Therefore, allowing a fluid and dynamic working environment can ensure sustainability.

PREPARING GRADUATES FOR THE 21ST CENTURY WORKFORCE

Who is supposed to be preparing graduates for the 21st-century workforce? Many employers acknowledged that HLIs fail to adequately equip graduates with digital literacy skills (Bybee & Fuchs, 2006; Khan et al., 2022). In response, many HLIs claimed they are empowering traditional learning and teaching environments and strengthening knowledge acquisition through informal learning with innovative technologies and services in the new digital world (Strukova & Ruipérez-Valiente, 2022). Situations and conditions are fluid and uncertain. Hence, most stakeholders cannot determine what skills the workforce has

or what skills need to be prioritised (Bybee & Fuchs, 2006; Khan et al., 2022). This has resulted in unclear communication with HLIs and caused HLIs to focus on the wrong learning outcomes (Sheppard, 2022). It is believed that the best approach to analyse competencies is to process traces online in terms of knowledge and skills to contribute to developing competencies and capabilities of the 21st-century workforce (Strukova & Ruipérez-Valiente, 2022). Technology can aid this through a learning system that provides a database of learning resources and a method for developing, storing, and accessing learning resources (Khan et al., 2022; Sheppard, 2022). Digital literacies are increasingly essential to the effects of the labour market and social participation. With that, it is found that there is a relationship between digital skills and employability (Bejaković & Mrnjavac, 2020; Khan et al., 2022).

In addition to digital skills, past research has shown that many students lack critical skills in finding and evaluating information (Khan et al., 2022). The same study revealed that operation and critical skills are essential drivers of digital literacy (Khan et al., 2022). HLIs and regulators are essential in encouraging greater use of digital learning technology. To be future-ready, graduates should be equipped with operation and critical thinking skills when using technology, as it should be a weapon for improving learning and outcomes for individuals (Khan et al., 2022; Sheppard, 2022). In the 21st-century workforce, employees are expected to be creators of content and products. Therefore, having the expertise in digital technologies and the ability to build, represent, connect, collaborate, and communicate efficiently using digital devices (Bejaković & Mrnjavac, 2020; Khan et al., 2022). With digital skills, it is also believed that employees can remain agile and measure modern up-to-the-minute competencies essential for the unknown future of the 21st century (Bejaković & Mrnjavac, 2020; Strukova & Ruipérez-Valiente, 2022).

From these discussions and findings by different authors, can it be said that having digital skills will ensure that one is digitally literate? Is this enough to prepare graduates for the 21st-century workforce? According to Spires et al. (2019), digital literacy is the ability to articulate any digital reading and writing techniques across multiple media platforms and forms, including (but not limited to) words, texts, motion graphics, visual displays, audio, video, and multimodal methods. In short, being digitally literate is locating and consuming, creating and communicating digital content (Coldwell-Neilson & Cooper, 2019; Spires et al., 2019). How do we assess the current workforce? Is the current workforce already digitally literate? Is the current workforce well-versed with the latest technology and has been using technological tools in their tasks? Or are we putting so much stress and expectations on our graduates when the current workforce is still very traditional? These are endless questions yet to be answered. According to Nikou et al. (2022), it was found that both information literacy and digital literacy have a direct impact on the perceived ease of use of technology but not on the perceived usefulness. In addition, the finding also shows that both literacies indirectly impact the intention to use digital technology in the workplace (Nikou et al., 2022).

In Malaysia, the significant role of information and communication technology in promoting digital literacy is reflected in the national education policy (Zainal & Zainuddin, 2020). Digital literacies are based on three main domains: technology, digital citizenship and cognitive (Mohamed, 2022). These domains are expected to be assessed and measured through an assessment embedded in the national examination (Mohamed, 2022; Zainal & Zainuddin, 2020). With that, it can be said that we are already preparing graduates with 21st-century skills for the 21st-century workforce. The only question that remains is whether it is being practised and whether it is enough.

METHODOLOGY

This qualitative research is a case study (Baskarada, 2014; Gammelgaard, 2017) on implementing the 21st-century classroom at an FBCU in Malaysia in preparing graduates for the 21st-century workforce. It aims to collect empirical data, which focuses on the

quality of the data, acting as the first step to a more comprehensive research study (Baskarada, 2014; Gammelgaard, 2017). The qualitative and real-world data collected is believed to be able to answer this study's research objectives and questions (Harding, 2018).

DATA COLLECTION

Data were collected through face-to-face interviews to answer the research objectives and research questions (Schober, 2018). This study focuses on FBCUs in Malaysia, and at the beginning, two HLIs in this category have been contacted. Both HLIs are in Sarawak, and only one responded and agreed to participate in this study. Therefore, this study interviewed four interviewees from the said HLI. To attain their rich perspectives on the issue, the interviewees comprised two groups of stakeholders in the HLI. Each group has two interviewees, making a total of four interviewees. The first group is two lecturers from two faculties holding senior academic positions. The second group is two support staff supporting the university's learning and teaching activities.

INTERVIEW PROTOCOL

As stated earlier, this qualitative study uses a case study and the qualitative data procedure. Data is collected using the semi-structured interview protocol (Schober, 2018). This study also implements the interview protocol by the Chicago School's Philip Carspecken Critical Ethnography framework (Carspecken, 2013). The interview protocol is divided into Part A and Part B.

Part A: Demographic Questions

The interview questions did not include the name, age and gender of the interviewees as deemed not relevant to the intended research findings and outcomes. As part of the demographic component, the interview protocol collected the interviewees' current position, qualifications, teaching experience and teaching and/ or administrative responsibility.

Part B: Interview Questions

Items	Questions
Concrete lead-off question 1	Based on your current practice in your institution, what is the 21 st -century classroom? Please explain.
Potential follow-up queries	<ul style="list-style-type: none"> • In your opinion, what are the characteristics of a 21st-century classroom? • Currently, at your institution, is the adoption of 21st-century classrooms being institutionalised?
Concrete lead-off question 2	What is a 21 st -century workforce? Please explain.
Potential follow-up queries	<ul style="list-style-type: none"> • In your opinion, what are the characteristics of a 21st-century workforce? • What are the 21st-century skills set required for the future workforce?
Concrete lead-off question 3	At your institution, what are the technological tools that are being implemented in the 21 st -century classroom? Please elaborate.
Potential follow-up queries	<ul style="list-style-type: none"> • Currently, at your institution, what are the educational technology tools that are being used for teaching and learning? • Do you think that the management is making a conscious effort to invest in technological tools as part of continuous quality improvement in teaching and learning?

Concrete lead-off question 4	In your opinion, how does the 21 st -century classroom prepare graduates for the 21 st -century workforce?
Potential follow-up queries	<ul style="list-style-type: none"> • Based on your experience, do you believe that exposing students to technological tools and a new way of learning is preparing them for the future workforce? • Apart from technical skills (ability to use technological tools), do you think soft skills are also crucial in preparing graduates for the future workforce?

Ethical Considerations

As mentioned earlier, consent was obtained from the HLI and the interviewees targeted were selected from the said HLI. To achieve the best interview outcomes, the interview sessions were conducted at the convenience of the interviewees and their workplaces. This is to provide convenience and avoid causing a burden so the interviewees can be comfortable and willing to participate during the interview sessions. At the beginning of the interview sessions, the interviewees were briefed on the study's objectives. They were also informed that this was voluntary, and they could terminate the session when they wanted. All four interviewees were very engaging and cooperative. They completed the interview sessions and answered the questions responsively. All data or responses collected are to remain anonymous. Concerning their profession and position in the HLI, their responses or opinion shall not be used against them. The data or their responses will be analysed objectively, and the outcome of this research will provide a better understanding and recommendations for future studies. Therefore, the interviewees are non-identifiable and coded as Interviewee 1, Interviewee 2, Interviewee 3 and Interviewee 4.

PROFILE OF INTERVIEWEES

All interviewees were lecturers or academicians from the same HLI and held administrative roles. As mentioned earlier, the interviewees are to remain anonymous and non-identifiable. They are coded as Interviewee 1, Interviewee 2, Interviewee 3 and Interviewee 4. Interviewee 1 holds a Master's in education, is pursuing a Doctor of Philosophy, and has more than 25 years of teaching experience in higher education. Interviewee 2 has a Doctor of Philosophy and is registered as a Professional Engineer with more than ten years of teaching experience in higher education.

On the other hand, Interviewee 3 has a Doctor of Philosophy and Graduate Certificate in Learning and Teaching, with more than 20 years of teaching experience. Finally, Interviewee 4 has a master's in education and Graduate Certificate in Learning and Teaching and is currently pursuing a Doctor of Philosophy. Interviewee 4 has more than five years of teaching experience. The interviewees were purposefully selected (Mwita, 2022) based on their profiles and positions in the HLI to provide a more holistic and rich perspective in answering the research questions of this study. All four interviewees hold administrative positions in the HLI, assisting and supporting the faculties, such as managing programmes' internal and external accreditation on learning and teaching matters and providing support (to teaching staff and students) on digital learning tools and platforms.

DATA PRESENTATION AND ANALYSIS

The qualitative data are analysed using thematic analysis based on the sequence of the research questions (Clarke et al., 2015). The findings were consistent with past studies and further elaborated in the following section.

CHANGE INITIATIVE AND ITS IMPACT ON HLI AND THE WIDER CONTEXT

Across the globe, having survived the pandemic and moving into the endemic, HLIs are expected to constantly change in pursuit of quality, recognition, and progression to be world-class higher education providers. During the pandemic, many businesses have suffered and were forced to either downsize or close. However, although also affected, the higher education industry can survive by adopting online or remote learning. This is possible, of course, with the support of technological tools and platforms. However, looking at how the change initiative impacts the HLI, and the broader context is essential. What is the main aim? Are we preparing our graduates for the future workforce with future skills? Will this solve unemployment and underemployment?

21st Century Classroom

When asked about the 21st-century classroom, all four interviewees directly mentioned technological or digital tools and platforms. This has been consistent throughout the four interview sessions. Therefore, it can be said that the 21st-century classroom revolves around technological or digital tools and platforms (Okpako, 2022; Shiels, 2022).

"For me, the 21st-century classroom is where the learning and teaching activities are assisted, supported and enhanced with the usage of technology. These include how the classroom is conducted and how the assessment is done; through technological tools."

"With the vision of people and technology working together, we aim to expose our students to the latest technological tools."

"I am tasked to ensure that our lecturers are equipped with the skills and technology resources to conduct an interactive and progressive classroom setting."

"Therefore, the university has already identified the importance of the 21st-century classroom, even before the pandemic happened. In the beginning, as the physical or on-campus classroom is the key to university life, we were only implementing complementary technological tools to enhance classroom practices."

21st Century Workforce

Many scholars have posited that the 21st-century workforce is flexible, innovative, and creative, as well as having the ability to be agile and adaptive (Bejaković & Mrnjavac, 2020; Bybee & Fuchs, 2006; Nikou et al., 2022). When asked about the 21st-century workforce, all four interviewees responded with a recurring theme consistent with past studies. Therefore, it can be said that the characteristics of the 21st-century workforce are uncertain but can be agile, adaptive, and adoptive.

"Even today, the workforce is forever changing. I don't think there is a clear definition or characteristics for the 21st-century workforce."

"We are constantly required to learn, relearn and even unlearn. Therefore, I believe the 21st-century workforce is also like that. The people contributing to the workforce should be agile, adaptive and able to constantly adopt change and learn."

"I believe that the future workforce is about agility, adaptive and constantly changing."

"I believe the 21st-century workforce should be seamless integration between the industries."

"I envision the future workforce to be fully virtual and collaborative."

On the other hand, one of the interviewees stated that possessing technical and technological skills is not sufficient anymore. This is consistent with past studies stating that graduates these days lack the soft skills to navigate and survive the workforce (Freitas & Almendra, 2022; Jardim et al., 2022).

"Although the industries appreciate a knowledgeable and skillful workforce, it is also noted that they would like to see graduates with higher EQ. Having technical and technological skills alone is not sufficient."

Therefore, it is confirmed by the literature that the 21st-century skills needed by the 21st-century workforce are not only cognitive and technical skills but soft skills as well (González-Pérez & Ramírez-Montoya, 2022; Hilliker & Loranc, 2022).

Preparing Graduates for the 21st Century Workforce

In classroom settings and practices, how can HLIs prepare graduates for the 21st-century workforce? It is believed to be done by simulating real-world situations through assessments (Filippone, 2022; Sheppard, 2022). The findings from the interviews were consistent with past studies, whereby graduates entering the 21st-century workforce should be able to solve real-world problems, handle uncertainties, and manipulate disruption to the best advantage.

"There will be no fixed working hours and no fixed colleagues. Work is project and performance-based, and anywhere around the world. It may sound too futuristic and a bit difficult to control and manage, but I believe this is already happening."

"In my opinion, it should be more practical-based rather than theory-based. Having the ability to solve real-world problems and having the ability to predict future problems and risk management. I believe the pandemic has taught us well to be future-ready."

"I believe to navigate the 21st-century workforce, one should be agile and can adapt and adopt. When you have these abilities, you are always prepared and ready to learn new things and stay relevant and competitive in the workforce."

In addition, to solve real-world problems, graduates must have the technical and technological skills to use and manage technological tools (Bybee & Fuchs, 2006; Zainal & Zainuddin, 2020). The findings of this study support these claims.

"Therefore, fluid assessments whereby students are required to be innovative and creative to solve real-world problems would ensure that they can develop the ability to adapt and learn anything quickly. Of course, exposing students to the latest technology is also very crucial in ensuring that they are well-versed technically as well."

"In my honest opinion, there will never be enough preparation to prepare graduates for the workforce. Everything is constantly changing. What is new today, can be immediately obsolete tomorrow. However, as a higher learning institution, it is our responsibility to ensure that we are preparing our graduates for the real workforce, the best we can. This includes ensuring that they are exposed to the latest technological tools that are required for their work."

Undoubtedly, having the technical and technological skills to use and manage technological tools is essential for the 21st-century workforce. However, through the findings of this study, there is a recurring theme and emphasis on the importance of having soft skills as

well. The findings obtained from the interviews were consistent with past studies (Schislyaeva & Saychenko, 2022; Zykov, 2022), whereby having and mastering soft skills will ensure that graduates can perform and survive the 21st-century workforce.

"In my opinion, preparing them with soft skills is far more crucial. Again, I will like to reiterate that, yes, technology is very important in ensuring that graduates can perform tasks. But, for them to navigate, manage and deliver well in their job performance, they need soft skills as well. Soft skills are not only important for job performance but also important for survival. The ability to stay calm, objective and resilient is very important. That is why we see that these days graduates job hopped and not satisfied, it is because they lack these soft skills."

"When you have these abilities, you are always prepared and ready to learn new things and stay relevant and competitive in the workforce. That's why, I believe that the 21st-century classroom should be a mixture and balance of both technical and soft skills. By using technological tools, students are forced to be adaptive and constantly need to learn new things, this will inculcate those soft skills."

Therefore, the findings were consistent with past studies whereby it was found that being too focused on technical and technological skills can cause a lack of EQ, empathy, and people skills (Riemer, 2007; Van den Berg & De Villiers, 2022).

ISSUES AND CONCERNS AND THEIR IMPACT ON STAKEHOLDERS

There are always financial and cost implications in any venture or action taken. The next big question will always be; What about the return on investment? When asked, "Do you think that the management is making the conscious effort to invest in technological tools as part of continuous quality improvement in teaching and learning?" all four interviewees responded positively and acknowledged the effort invested by the HLI in providing 21st-century classrooms for learning and teaching.

"Yes, through benchmarking with other universities and allocating budgets for research and purchase of technological tools."

"I think it has become somewhat mandatory to look into this matter. Technology is no longer an option and whether is expensive or not, it seems that everyone is investing in it. I would say, yes, the university is making the conscious effort as part of continuous quality improvement on teaching and learning."

"Definitely. It is very competitive these days. Competitors are quick in offering better facilities. If we don't stay ahead, we may lose the market."

"Yes, the university has already invested in Hyflex classrooms scheduled for usage in the second semester of this year."

Next, it is about the concern of the 21st-century classroom being too theory-based and lacking practical skills. To tackle this concern, project-based learning can be conducted in the classroom, and ample training to be provided for both lecturers and students (Martinez, 2022). One of the interviewees also mentioned that the HLI provided training to staff and students on how to use technological tools and which is best for what tasks.

"Training is provided to both staff and students on how to best use any applications within the Adobe suite for their learning and teaching as well as personal and professional tasks."

This is crucial in ensuring all stakeholders can positively accept and adapt to the implemented change initiative. Reducing resistance can also lower the issues and concerns rate (Endsley, 1994; Marks & Thomas, 2022).

IMPLEMENTATION AND EFFECTIVENESS

When asked, "What are the technological tools that are being implemented in the 21st-century classroom?" The interviewees were consistent about implementing them in their classroom practices and mentioned a few examples.

"The university has invested in the Canvas system, a world-class learning management system to facilitate learning and teaching activities."

"During the pandemic, we were forced to act quickly. In the beginning, it was to quickly shift everything to online learning, preparing synchronous and asynchronous learning and teaching activities. Slowly it became a norm for all lecturers to look into delivery using technological tools."

"Adobe Creative Campus status. This allows and provides full access to the Adobe suite to both staff and students."

"Even before the pandemic and the shifting to online learning, for us, we have utilised the learning management system."

"For teaching, it is either Google Meet, Zoom or MS Teams. These are the common communication platforms."

These findings were consistent with the finding of Strukova and Ruipérez-Valiente (2022), whereby it is said that traditional learning and teaching environments were empowered through informal learning with innovative technologies and services in the new digital world (Strukova & Ruipérez-Valiente, 2022). However, can this solve real-world problems with real-world knowledge and skills by providing real-world solutions? As mentioned in the literature, with digital skills, it is also believed that employees can remain agile and measure modern up-to-the-minute competencies essential for the unknown future of the 21st century (Bejaković & Mrnjavac, 2020; Strukova & Ruipérez-Valiente, 2022). Therefore, graduates entering the 21st-century workforce are required to have future-proof skills and future attributes.

As mentioned, and observed, implementing technology and digital in classroom practices is not foreign. The interviewees confirmed that it had already been implemented during pre-pandemic and stated its effectiveness in increasing students' engagement and participation rate in classrooms.

"Even before the pandemic and the shifting to online learning, for us, we have utilised the learning management system as well as digital learning platforms like Kahoot!."

"It is very essential for our learning and teaching activities to be assisted, supported and enhanced with the usage of technology."

"Slowly it became a norm for all lecturers to look into delivery using technological tools such as Adobe Suite and Microsoft Teams. Assessments are also specifically designed for these tools. I believe the hardest part of online teaching is student engagement and participation, therefore with these tools, it can somewhat encourage students to be more participative and stay engaged."

As the world is entering the endemic stage and learning to live with the Covid-19 virus, things will never be the same again. Disruption has provided new opportunities, and humans have found new ways to do old things more effectively. Therefore, post-pandemic, when humans are so used to remote learning and remote working, the higher education industry will never be conventional again (Basch et al., 2022; Urbaniec et al., 2022). To survive, HLIs must now cater for a new kind of market, previously known as adult learners via open and distance learning but is now the primary market with all age groups (Alston et al., 2022; Naidu, 2022). Students appreciate the flexible and fluid learning mode, which can be confirmed by the findings obtained from one of the interviewees.

"However, moving forward, it is not as simple as that anymore. As we move into the endemic phase, universities are opening up their campuses for physical classes. Therefore, there is a new trend in looking at hyperflex classrooms. Hybrid and flexible classroom; whereby half classroom is virtual, and another half is physical, but both can seamlessly interact and learn together."

PREPARING FOR THE FUTURE AND CRITICAL FACTORS FOR SUSTAINABILITY

As mentioned in the literature, according to Nikou et al. (2022), it was found that both information literacy and digital literacy have a direct impact on the perceived ease of use of technology but not on the perceived usefulness. Therefore, HLIs must quickly adopt the latest trend or technological tools to stay competitive. The findings from the interviewees in this study can confirm this as well.

"Definitely. It is very competitive these days. Competitors are quick in offering better facilities. If we don't stay ahead, we may lose the market. Now, the university is exploring Hyflex classroom and Internet of Things and Artificial Intelligence functions in managing learning and teaching to ensure productivity cost saving and sustainability."

"Yes, the university has already invested in hyflex classrooms scheduled for usage in the second semester of this year."

With that, it is evident that HLIs need to predict and prepare for the future, to be timely and relevant. As there are more new models and higher education frameworks in Malaysia, such as micro-credential, APEL and 2U2I, it is getting increasingly competitive (Kumar et al., 2022). With the regulators' vision of student mobility and university collaboration, it is believed that the 21st-century classroom is here to stay, and the 21st-century workforce will remain agile (Akour et al., 2022; Benade, 2017; Wilson et al., 2009).

ETHICAL CONSIDERATIONS OF THE 21ST CENTURY CLASSROOM

With easy access to technology, the world is getting smaller and borderless. And the next issue that arises is privacy and personal data (Chaparro Osman et al., 2022). When classroom practices are recorded or streamed online, there is a possibility of privacy invasion or data breach of the participants, in this case, students. There is no control over who can share and reshare the content, including the students' opinions and other personal data (Mobolaji & Egbokhare, 2016). This is also strongly related to cybersecurity issues, whereby online theft of identity and hacking of computer systems are happening rapidly. Over the years, we have heard or read the news about compromised databases and stolen data. Therefore, HLIS must have proper mechanisms in place to combat these issues.

In addition, with digital copies floating around the cloud freely, there are also licensing and copyright issues with the learning materials (Emery, 2022). Not only that, with collaboration among universities, there will also be issues with the ownership of the learning materials (Larson & Murray, 2008). Finally, being online means that everyone is homogenous and can hide behind the webcam or a blank profile, as well as no physical,

or social interactions, contributing to a lack of personality (George, 2013). The interviewees confirmed this, stating that having people skills is also very important for the 21st-century workforce.

"Being an introvert, I think people skills are very important to survive in the workforce. The future workforce is all about collaborating with people, therefore the ability to handle and deal with people is very important. Our technical skills are useless if we can't articulate it to the right audience."

"I strongly believe that problem-solving skills are very important. Without a doubt, most companies are hiring problem solvers or solution providers. Hence, apart from technical skills, problem-solving skills are very crucial in preparing graduates as the future workforce."

CONCLUSION

With the findings from past studies and confirmed by this study, it can be concluded that online learning is here to stay, and we will never go back to being normal, which is traditional face-to-face classroom teaching and learning. The pandemic has completely changed how we function and how we learn. Moving forward, it is about providing flexibility for everyone (including lecturers and students). Therefore, the future is hyflex, hybrid and flexible (Thomson et al., 2022). The adoption of hyflex is getting more apparent, and HLIs have looked beyond conventional learning. It is also noted that having both digital and technological skills and soft skills are very important for graduates to enter the 21st-century workforce. Exposing students to the latest technology through classroom practices enables students to be digitally literate. It is believed that with digital literacy, students can be agile and survive in any situation. To conclude, it can be said that implementing the 21st-century classroom is, indeed, directly, and indirectly preparing graduates for the 21st-century workforce.

LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

This study only covered one FBCU in Sarawak, Malaysia. As implementing the 21st-century classroom requires significant financial investment, future research can include public HLIs and private HLIs like colleges. Public HLIs have more bureaucracy and take time to implement an initiative change, while colleges are smaller in operations and have lesser budgets. Therefore, future research on this population and sampling will be able to provide a richer comparison between HLIs. In addition, future research can also look at the quantitative findings on the effectiveness by testing whether there is any significant relationship between implementing the 21st-century classroom in preparing graduates for the 21st-century workforce.

REFERENCES

- Akour, I. A., Al-Marouf, R. S., Alfaisal, R., & Salloum, S. A. (2022). A conceptual framework for determining metaverse adoption in higher institutions of gulf area: An empirical study using hybrid SEM-ANN approach. *Computers and Education: Artificial Intelligence*, 3, 100052.
- AAIston, P., Gleave, T., Hirst, M., & MacQueen, H. (2022). Online Science Education at Scale: Open and Distance Learning, MOOCs, and Other Learning Assets for Theory and Practice. In *Technologies in Biomedical and Life Sciences Education* (pp. 383-416). Cham: Springer International Publishing.
- Apak, J., Taat, M. S., & Suki, N. M. (2021). Measuring teacher creativity-nurturing behavior and readiness for 21st-century classroom management. *International Journal of Information and Communication Technology Education (IJICTE)*, 17(3), 52-67.

- Basch, S., Covarrubias, R., & Wang, S.-h. (2022). Minoritised students' experiences with pandemic-era remote learning inform ways of expanding access. *Scholarship of Teaching and Learning in Psychology*.
- Baskarada, S. (2014). Qualitative case study guidelines. *Başkarada, S. (2014). Qualitative case studies guidelines. The Qualitative Report, 19(40), 1-25.*
- Bejaković, P., & Mrnjavac, Ž. (2020). The importance of digital literacy on the labour market. *Employee Relations: The International Journal, 42(4), 921-932.*
- Benade, L. (2017). Being a teacher in the 21st century. *A Critical New Zealand Research*.
- Bybee, R. W., & Fuchs, B. (2006). Preparing the 21st-century workforce: A new reform in science and technology education.
- Carspecken, F. P. (2013). *Critical ethnography in educational research: A theoretical and practical guide*. Routledge.
- Chaparro Osman, M., Nakushian, A., Rebensky, S., Prior, T., & Carroll, M. (2022). User Experience, Knowledge, Perceptions, and Behaviors Associated with Internet of Things (IoT) Device Information Privacy. In *International Conference on Human-Computer Interaction* (pp. 107-123). Cham: Springer International Publishing.
- Cheema, M. S. (2020). Covid-19 revolutionising higher education: An educator's viewpoint of the challenges, benefits and the way forward. *Life Sciences, Medicine and Biomedicine, 4(9), 2020.*
- Clarke, V., Braun, V., & Hayfield, N. (2015). Thematic analysis. *Qualitative psychology: A practical guide to research methods, 3, 222-248.*
- Coldwell-Neilson, J., & Cooper, T. (2019). Digital literacy meets industry 4.0. In *Education for Employability (Volume 2)* (pp. 37-50). Brill.
- Emery, J. (2022). Licensing Online Content to Ensure Patron Privacy.
- Endsley, M. R. (1994). An implementation model for reducing resistance to technological change. *International Journal of Human Factors in Manufacturing, 4(1), 65-80.*
- Filippone, A. F. (2022). *Best Practices in Competency Development for the 21st-Century Workplace: A Delphi Study Cabrini University* (Doctoral dissertation, Cabrini University).
- Freitas, A. P., & Almendra, R. (2022). Teaching and Learning Soft Skills in Design Education, Opportunities and Challenges: A Literature Review. *Developments in Design Research and Practice: Best Papers from 10th Senses and Sensibility 2019: Lost in (G) localisation, 17, 261.*
- Gammelgaard, B. (2017). The qualitative case studies. *The International Journal of Logistics Management, 28(4), 910-913.*
- George, W. K. (2013). Lectures in Turbulence for the 21st century. *Chalmers University of Technology, 550.*
- Göçen, A., Eral, S. H., & Bücük, M. H. (2020). Teacher perceptions of a 21st-century classroom. *International Journal of Contemporary Educational Research, 7(1), 85-98.*
- González-Pérez, L. I., & Ramírez-Montoya, M. S. (2022). Components of Education 4.0 in 21st-century skills frameworks: systematic review. *Sustainability, 14(3), 1493.*
- Harding, J. (2018). Qualitative data analysis: From start to finish. *Qualitative Data Analysis, 1-328.*
- Hernández-March, J., Martín del Peso, M., & Leguey, S. (2009). Graduates' skills and higher education: The employers' perspective. *Tertiary education and management, 15(1), 1-16.*

- Hilliker, S. M., & Loranc, B. (2022). Development of 21st-century skills through virtual exchange. *Teaching and Teacher Education*, 112, 103646.
- Igwe, P. A., Lock, D., & Rugara, D. G. (2022). What factors determine the development of employability skills in Nigerian higher education? *Innovations in Education and Teaching International*, 59(3), 337-348.
- Jardim, J., Pereira, A., Vagos, P., Direito, I., & Galinha, S. (2022). The Soft Skills Inventory: developmental procedures and psychometric analysis. *Psychological Reports*, 125(1), 620-648.
- Khan, N., Sarwar, A., Chen, T. B., & Khan, S. (2022). Connecting digital literacy in higher education to the 21st-century workforce. *Knowledge Management & E-Learning: An International Journal*, 14(1), 46-61.
- Kumar, J. A., Richard, R. J., Osman, S., & Lawrence, K. (2022). Micro-credentials in leveraging emergency remote teaching: the relationship between novice users' insights and identity in Malaysia. *International Journal of Educational Technology in Higher Education*, 19(1), 1-23.
- Kyne, M. (2021). Engineering accreditation objectives and their relationship to the quality assurance standards for engineering education programmes in Ireland.
- Lamsal, B. (2022). Exploring Issues Surrounding a Safe and Conducive Digital Learning Space in Nepal: A Preparation for Online Education in the Post-Pandemic Era. In *Socioeconomic Inclusion During an Era of Online Education* (pp. 246-263). IGI Global.
- Larson, R. C., & Murray, M. E. (2008). Open educational resources for blended learning in high schools: Overcoming impediments in developing countries. *Journal of Asynchronous Learning Networks*, 12(1), 85-103.
- Marks, B., & Thomas, J. (2022). Adoption of virtual reality technology in higher education: An evaluation of five teaching semesters in a purpose-designed laboratory. *Education and information technologies*, 27(1), 1287-1305.
- Martinez, C. (2022). Developing 21st-century teaching skills: A case study of teaching and learning through project-based curriculum. *Cogent Education*, 9(1), 2024936.
- Mobolaji, A. O., & Egbokhare, O. A. (2016). Students' awareness of privacy risks in Online Interactions: a case study of students of higher institutions in Ibadan Metropolis, Nigeria. *Journal of Environment and Culture*, 13, 64-84.
- Mohamed, S. B. (2022). *A procedure that uses the latest advances in modern measurement theory to align the assessment of digital literacy with the policy requirements of Malaysia: Demonstrated through its application to the national high-stakes examination* (Doctoral dissertation).
- Mwita, K. (2022). Factors influencing data saturation in qualitative studies. *International Journal of Research in Business and Social Science (2147-4478)*, 11(4), 414-420.
- Naidu, S. (2022). Threats and tensions for open, flexible, and distance learning post-COVID-19. *Distance Education*, 43(3), 349-352.
- Nikou, S., De Reuver, M., & Kanafi, M. M. (2022). Workplace literacy skills—how information and digital literacy affect the adoption of digital technology. *Journal of Documentation*, 78(7), 371-391.
- Okpako, A. C. (2022). Integrating technology in 21st century classroom in Nigeria. *Mosogar Journal of Science Education*, 8(1), 103-112.
- Ormrod, J. E., Anderman, E. M., & Anderman, L. H. (2017a). Classroom Assessment Strategies. In *Educational psychology: Developing learners* (Global ed.). Pearson.

- Ormrod, J. E., Anderman, E. M., & Anderman, L. H. (2017b). Creating a Productive Learning Environment. In *Educational psychology: Developing learners* (Global ed.). Pearson.
- Riemer, M. J. (2007). Communication skills for the 21st-century engineer. *Global J. of Engng. Educ*, 11(1), 89-100.
- Rotherham, A. J., & Willingham, D. T. (2010). "21st-century" skills. *American Educator*, 17(1), 17-20.
- Schislyaeva, E. R., & Saychenko, O. A. (2022). Labor Market Soft Skills in the Context of Digitalization of the Economy. *Social Sciences*, 11(3), 91.
- Schober, M. F. (2018). The future of face-to-face interviewing. *Quality Assurance in Education*, 26(2), 290-302.
- Selvalingam, S., Billings, R., & Booth, D. (2007). The professional standing of partially or wholly licensed engineering programs in the Malaysian context. In *AaeE 2007: Eighteenth Annual Conference of the Australasian Association for Engineering Education*.
- Shafie, H., Majid, F. A., & Ismail, I. S. (2019). Technological pedagogical content knowledge (TPACK) in teaching 21st century skills in the 21st century classroom. *Asian Journal of University Education*, 15(3), 24-33.
- Sheppard, S. (2022). A Curriculum Development for 21st Century Learners: Using Project Based Learning to Teach the Four Cs Required for Today and Tomorrow's Workforce.
- Shiels, M. (2022). *Assessment: the movie: the alignment of assessment with 21st Century classroom learning and teaching practices* (Doctoral dissertation, Monash University).
- Spires, H. A., Paul, C. M., & Kerkhoff, S. N. (2019). Digital literacy for the 21st century. In *Advanced methodologies and technologies in library science, information management, and scholarly inquiry* (pp. 12-21). IGI Global.
- Strukova, S., & Ruipérez-Valiente, J. A. (2022). Using Online Digital Data to Infer Valuable Skills for the Modern Workforce. In *Handbook of Research on New Media, Training, and Skill Development for the Modern Workforce* (pp. 89-109). IGI Global.
- Subramaniam, N., & Bush, R. (2022). Recommendations Towards Improving Technical and Vocational Education and Training in Malaysia.
- Thannimalai, R., & Raman, A. (2018). Principals Technology leadership and teachers technology integration in the 21st-century classroom. *International Journal of Civil Engineering and Technology*, 9(2), 177-187.
- Thomson, R., Fisher, J., & Steinert, Y. (2022). Twelve tips for small group teaching 2.0- Rebooted for remote and HyFlex learning. *Medical Teacher*, 1-6.
- Urbaniec, M., Małkowska, A., & Włodarkiewicz-Klimek, H. (2022). The Impact of Technological Developments on Remote Working: Insights from the Polish Managers' Perspective. *Sustainability*, 14(1), 552.
- Van den Berg, L., & De Villiers, K. (2022). Talking with technology: Using vlogs as assessment tool to improve sports students' communication skills and content learning. In *EdMedia+ Innovate Learning* (pp. 143-159). Association for the Advancement of Computing in Education (AACE).
- Wilson, K. E., Vyakarnam, S., Volkmann, C., Mariotti, S., & Rabuzzi, D. (2009). Educating the next wave of entrepreneurs: Unlocking entrepreneurial capabilities to meet the global challenges of the 21st century. In *World Economic Forum: A Report of the Global Education Initiative*.

- Zainal, A. Z., & Zainuddin, S. Z. (2020). Technology Adoption in Malaysian Schools: An Analysis of National ICT in Education Policy Initiatives. *Digital Education Review*, 37, 172-194.
- Zykov, S. V. (2022). Social Aspect of Digitalization: The "Human Factors". In *IT Crisisology Casebook: Smart Digitalization for Sustainable Development* (pp. 139-150). Singapore: Springer Nature Singapore.