Investigating Blended Learning Practices in Malaysian Higher Education: A Narrative Approach to the Malaysia Education Blueprint and IR 4.0 Integration

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ABSTRACT

Blended learning has gained considerable attention in Malaysian higher education, particularly following the shift in teaching modes necessitated by the COVID-19 pandemic. This study explores the implementation and perceptions of blended learning practices among lecturers in a private higher education institution in Selangor. It focuses on their alignment with the Malaysia Education Blueprint (2013–2025) and the integration of Industry 4.0 (IR 4.0) technologies in teaching. Using a qualitative narrative approach, the experiences of two lecturers were analyzed to provide insights into the benefits, challenges, and strategic adoption of blended learning. The findings reveal that while educators acknowledge increased student engagement and flexibility, they also express concerns related to digital readiness and institutional support. The study highlights the relevance of ICT integration in achieving educational goals and maximizing student outcomes, as outlined in Shifts 7 and 10 of the Blueprint. Furthermore, the lecturers' innovative use of digital tools and social media platforms illustrates how blended learning can support critical thinking and independent learning in line with Education 4.0 objectives. This study contributes to ongoing discussions on curriculum transformation in Malaysian higher education and underscores the importance of strategic planning and professional development for effective blended learning implementation.

Keywords: Blended Learning, Best Practice, Technology, Malaysian Higher Education, Ir 4.0

INTRODUCTION

Blended learning is integrated as a 'combination' or 'fusion' of face-to-face education and additional technologies in the learning process, according to Liu et. al (2023) in their study. Comparatively, blended learning has transformed or is seen as a good improvement that is needed in education plans as this blended learning has been seen as a 'substitution' of the normal classroom setting. Blended learning gained more attention and focus due to the pandemic outbreak in 2020 which enabled the learners to have education in a different mode from the norm (physical class). Implementing blended learning has improved not just to vary the learning process and outcome but to eventually adapt new skills (adversity in IT skills) which is crucial in the new IR 4.0 industry. Blended learning enables the flexibility of the teaching and learning process whereby students can access education at any time, any place, digitally.

Malaysia Education Blueprint 2015-2025 has been a reference and strong pillar in addressing education improvements. As detailed in the blueprint, there are 11 Shifts to transform the system into a holistic and better education. The eleven shifts to transform the system are concurrently following the six levels of education ecology, which have been implemented in our education plan. This study would like to focus on Shift 7: Leverage ICT to scale up quality learning across Malaysia and Shift 10: Maximize student outcomes for every ringgit. This blueprint will deliver and achieve the objectives and expectations of the student's teaching and

learning process. Industrial Relation 4.0 has brought a new dimension of technology in education as it would prepare students for upcoming challenges and advancement as IR 4.0 reshapes almost every aspect of life. Innovations through IR 4.0 demand students have the capacity and skills required to be implemented through their learning years in university. To adequately succeed and strive in the job market and industry, implementing technology in education has been accepted and invented a new term 'Education 4.0'.

In Elayyan (2021), the education system is closely integrated with IR 4.0 technologies, which are anticipated to substantially influence learning opportunities, educational policies, and instructional methods.

Advancement of technology due to the Industrial Revolution brought significant changes to the education industry whereby Education 4.0 stimulates the uses of technology in the teaching and learning process and enables students to access education at any time digitally (Awang, Taib & Muda, 2020). To adequately have the necessary skills and knowledge, changes are required in implementing Education 4.0, particularly in the teaching methods, techniques, and suitable facilities. According to Kassim & Phuah (2018) & Adnan et al (2021), the education system is deemed to prepare students with the necessary skills to meet the industry requirements.

Therefore, this study aims to get a narrative from the educator's perspective and a narrative to correlate the implementation of blended learning in classroom implications and effectiveness concurrent to the Malaysian Education Blueprint 2013-2025 and the prospect of IR 4.0. It is vital as the education plan is supposed to reach the objective planned as it is nearing the implementation of the new education plan after 2025. Past research has crucially pointed out the importance, advantages, and disadvantages that shall be implemented in the future which shall be applied the same for this study.

LITERATURE REVIEW

Blended learning has increasingly become integral to Malaysia's educational landscape, particularly following the COVID-19 pandemic and the associated movement control orders. Teachers, students, parents, and educational institutions have sought effective methods to integrate blended learning into standard educational practices. A study by Masrom et al. (2019) investigated undergraduate student satisfaction with blended learning approaches in Malaysia. Their findings highlighted prevalent digital platforms such as Moodle, Kahoot!, Padlet, and YouTube, widely utilized by students. The study reported positive student satisfaction across key criteria, including perceived quality, personalized learning environment, previous learning experiences, perceived value, and interaction, underscoring blended learning's beneficial impact from the students' perspective.

Yean et al. (2024) provided a practical analysis aligned with the Malaysian Education Blueprint 2013-2025, emphasizing frameworks intended to cultivate sustainable independence and collective success among learners. Balakrishnan (2020) elaborated on the Blueprint's development, noting its creation as a response to declining educational quality as measured by international benchmarks such as the Program for International Student Assessment (PISA) and Trends in International Mathematics and Science Study (TIMSS). Recent data from PISA (2022) indicated that Malaysia remains behind ASEAN counterparts like Singapore, Brunei, and Vietnam, illustrating the urgency for educational reforms. The Blueprint specifically addresses these issues through enhancements in Technical and Vocational Education and Training (TVET) and by upgrading technological resources for teaching in educational institutions nationwide (Yean et al., 2024).

Blended learning, characterized by Chaeruman et al. (2018), incorporates multiple teaching methodologies, effectively merging traditional face-to-face interactions with online learning modalities, including both asynchronous and synchronous platforms as described by Miller and Mildenberger (2021). Although blended learning existed prior to 2020, its importance has notably intensified within Malaysian higher education due to pandemic-driven necessity. Institutions have increasingly adopted blended methodologies by combining conventional classroom interactions with digital components such as uploading materials to student portals, conducting quizzes, and managing assignments via platforms like Google Classroom and Kahoot!. Traditional

education, often reliant on textbooks, printed materials, and occasionally projected slides, is now being fundamentally redesigned to align better with contemporary educational demands and future industry expectations. According to Mozelius and Hettiarachchi (2017) and Masrom et al. (2019), blended learning is pivotal for educational institutions to maintain global relevance and competitiveness.

Masrom et al. (2019) identified a crucial need to assess blended learning effectiveness compared to traditional methods, emphasizing the role higher education plays in preparing students for industry demands, particularly within the context of the Fourth Industrial Revolution (IR 4.0). IR 4.0 necessitates robust technological adaptability and critical soft skills, such as effective communication, creativity, problem-solving, and people management, as articulated by Ramasamy and Lee (2022).

The focal point of this study is specifically related to Shift 7 of the Malaysian Education Blueprint: leveraging Information and Communications Technology (ICT) to enhance learning quality nationwide. The Blueprint underscores the necessity of integrating technological innovation into education to elevate Malaysia's global educational standing and competitiveness. According to the Blueprint (2013-2025), the core objective of Malaysian education is to equip learners with essential skills and knowledge to thrive in an increasingly globalized, competitive, and technology-driven world (Malaysia Education Blueprint, 2013-2025, p.63). Yean et al. (2024) further highlighted the economic significance of improving educational standards, referencing the positive correlation between higher PISA scores and GDP per capita (Malaysia Education Blueprint, 2013-2025, p.98). This emphasizes the imperative of educational transformation, particularly regarding IR 4.0 readiness among Malaysian graduates, crucial for national economic growth.

Shift 10 of the Blueprint also stresses maximizing educational outcomes relative to investment, underscoring the Ministry's recognition of education's pivotal role in nation-building and sustainable economic development (Malaysia Education Blueprint, 2013-2025, p.59). Contemporary research, including Ramasamy and Lee (2022), further contextualizes the transformative impact of IR 4.0 on the employment landscape, emphasizing a significant digital skills gap. Whiting (2020) projected extensive shifts in workforce requirements by 2025, where roles will increasingly integrate automation and digitalization. The Cognizant Centre for the Future of Work (2017) estimates that nearly a quarter of emerging job areas will demand advanced digital competencies, highlighting the urgent need for educational institutions to address these evolving industry requirements proactively. By 2030, as emphasized by the World Economic Forum (WEF, 2020), graduates must possess embedded employability skills to remain competitive, necessitating proactive educational reform and adaptation.

Consequently, the study's pertinence is firmly established through its alignment with existing scholarly discourse. Malaysian higher education institutions must actively embrace innovative teaching strategies, incorporating blended learning methodologies that effectively engage students while optimally utilizing institutional and governmental resources.

METHODOLOGY

Participants

The study was conducted at a private higher education institution in the Klang Valley, Malaysia. Two Malaysian lecturers who actively implement blended learning in Ministry of Higher Education (MOHE) compulsory subjects (MPU) participated. Both held master's degrees; one was a senior lecturer with experience since 2015, and the other was an early-career lecturer with approximately one year of teaching experience. Participants were recruited purposively based on their direct involvement in blended teaching across certificate, diploma, and degree levels.

Data Collection

Data comprised a single 36-minute semi-structured interview conducted bilingually (Bahasa Melayu and English) to accommodate participant preference. Prompts targeted current blended practices, alignment with

the MEB, and the role of IR 4.0-related tools. With consent, narratives were documented and transcribed for analysis. Illustrative quotations are reported as S1 and S2.

Data Analysis

We used inductive, iterative coding to identify salient practices, rationales, and perceived outcomes. Codes were clustered into themes through constant comparison, attention to deviant cases, and memoing. To enhance trustworthiness given the small sample, we applied analyst triangulation (team discussion of codes and excerpts), maintained an audit trail of coding decisions, and performed member-checking by sharing a synopsis of interpretations with participants for confirmation.

Ethical Considerations

Participants' identities were anonymised (S1, S2). Quotations were lightly edited for clarity without altering meaning. The study followed institutional norms for voluntary participation and informed consent.

RESULTS

Participant Demographic Details

The participants selected to participate in this study are local Malaysian lecturers. This study consisted of 2 narratives and perspectives of the lecturers in implementing blended learning in higher education in Malaysia. Both participants have been in the education line for more than a year, and they are currently teaching in one of the private institutions in Malaysia. Both participants, labelled as Speaker 1 and Speaker 2, have a master's degree as their highest qualifications, which is also a requirement needed to teach in the institutions. Speaker 1 has much more experience in teaching since 2015 as she has been a senior lecturer whereas Speaker 2 has just started in the teaching profession a year after graduating. Speaker 1 and Speaker range around 24 years old to 35 years old.

Background of their teaching subjects are the compulsory government subjects by the Ministry of Higher Education (MOHE) which are compulsory for students across Certificate, Diploma, and Degree levels to pass these subjects as part of the graduating conditions. The subjects are as below:

- Penghayatan Etika dan Peradaban (Appreciation of Ethics and Civilization)
- Falsafah Isu dan Semasa (Philosophy and Current Issues)
- Bahasa Kebangsaan A (National Language A)
- Critical Thinking
- Bahasa Melayu Komunikasi1, 2 (Malay Communication 1, 2)

Strategically, the private institution they are teaching is situated at Klang Valley therefore they have both local and international students as well. Since the institution they are teaching covers both international and local students, the subjects may differ in the specifications. Local students that are coming from Sijil Pelajaran Malaysia (SPM) and have scored Credit in Bahasa Melayu (Malay Langauge), are exempted from taking National Language A. Whereas for General Certificate Secondary of Education (IGCSE) known also as O-Level are still required to take basic Bahasa Melayu/Malay Language which known as National Language A. Other subjects such as Appreciation of Ethics and Civilization, Philosophy and Current Issues, and Critical Thinking, are necessary for all students to enrol in these subjects. International students are deemed to take Malay Communication 2 as a compulsory subject which comprises simple Malay Language as long as they are studying in an institution in Malaysia.

The interview lasted for 36 minutes, and it was conducted in a dual language which comprises Malay Language and English Language throughout the interview setting. This is to accommodate participants in sharing their experiences and narratives on their teaching methodology in the classroom.

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Speaker 1 is taking over the local students teaching a few subjects simultaneously such as National Language A, Appreciation of Ethics and Civilization, Philosophy and Current Issues, and Critical Thinking. She is assigned around 3-4 classes for each subject. Whereas Speaker 2, focuses on teaching both international and local students within similar subjects with the addition of Malay Communication 2.

This private institution consisted of a few levels of education such as Certificate level, Diploma level, and Degree level. These two speakers cover all three levels of education in terms of MOHE Compulsory subjects. Therefore, they are sharing different perspectives of students from each level.

Blended Learning

Through the narratives and perspectives of the participants', blended learning has been utilized in their teaching and learning process in the classroom. They are implementing the idea of combining both physical and online learning material by uploading the materials to the LMS and students are required to understand and fathom the learning outcome pre-class. Then, during the class, they conduct interactive learning or active learning which requires students to move around or give their opinion.

"S1 : So if we're at Sunway, our LMS is Blackboard. That's our main priority. For General Studies Subject, we started in 2019. The LMS had already been around at Sunway for a while, but for our department, 2019 was basically the starting point. And in 2020, during COVID, we managed to get training for it."

"S1 : So basically, everyone already understands and can use it—there are no issues. The LMS is really, helpful, even during online classes. Why? Because the sections within the Collaborate feature in the LMS are very useful and complete. So, when we provide it to students, there are no issues at least for online learning. Now, since we're applying blended learning, what we do is break it down into pre-class, during class, and after class activities. This is to support the blended learning approach. At the same time, we must apply tools. But sometimes people think that "tools" always refer to high-end technologies.".

Speakers 1 and 2 mentioned that students from the institution need to utilize their student portal as part of their learning process as the student portal has become the main platform for students even though the physical classes are still conducted. The materials such as presentation slides, readings, and videos that can be explained in more detail regarding the sub-topics can be uploaded to the student portal or LMS, making sure that the student can have access to the materials anytime, anywhere, and numerous times. This would benefit students as it meets the objectives of blended learning in the context of Education 4.0. It supports the idea that has been mentioned by Sadiyoko (2017) which states that education shall be revamped and changed throughout the years and education shall be made flexible to accommodate the student's needs.

The sharing by the participants disclosed that Research Question 1 (What are the current blended learning practices in Malaysian higher education institutions?) has been answered, whereby the current higher education level in Malaysia is assimilating blended learning through their institution. Assimilating in asynchronous learning methods has been a choice of lecturers that would inhibit more of student's engagement and effectiveness in the classroom. This is proven when the participants were mentioning:

S2: Sometimes even in the middle of teaching, we can still do activities because students get bored. Especially for language subjects—I personally never leave out the whiteboard and marker.

S1: It sometimes depends on the subject. Each subject may require a different approach. Then we also must consider the students—the students are different too. One class might have a certain style, another class is different. Like S2 mentioned, for example in Current Issues, in subjects like Philosophy and Current Issues, every theory we teach needs to be related back to current events. That's why for assignments; the focus is more on current issues.

S1: For their final assessment project, they're required to relate theories to current issues. So, we give them the opportunity to explore and make those connections. They can choose any issue—be it international or local. And the students often meet or even exceed our expectations.

S1: That's right. And another thing is that lecturers also need to stay up to date. Because when they come into class, they must be able to support students. For example, when students are working on assignments, what do they need to know? So, we give them ideas. Like what platforms they can use to create more appealing slides that follow current trends. That's where it starts.

Research Question 2 (How do these practices align with the goals of the Malaysia Education Blueprint), can be concluded that all the learning outcome that implemented in the classroom setting are designated to follow the 'Table 4' as mentioned by participant in the interview. Table 4 is referring to the outline that has been a pillar constructed by the Malaysian Qualification Agency (MQA) regarding the subjects outlined that consisting of supposed course learning outcomes (CLO) aligned with the program learning outcomes (PLO). Both participants agreed that the Shift 7 (Leverage ICT to scale up quality learning across Malaysia) achieved through the learning adapted in the classroom by blended learning. The quality mentioned would be more into the adaptation of the distance learning as part of the infrastructure in education is eligible to the students' needs and locations. Quality of the student are valued and observed through the "Table 4" thus, participants as a lecturer can enhance or improve the upcoming lesson plan of another class and subjects.

S1: Yes, of course, the objectives are achieved, because the students are applying what they've learned. In our lesson plan, we have pre-class, during class, and after class components. That's where we evaluate whether students have achieved the intended outcomes or not. Then, we respond to that in the reflection section.

S1: Yes, so everything is linked together. In our Table 4, we list the lesson outcomes we expect from students during the class session. So during class, if we observe that students are responding and participating, we can tell that they are able to engage. That confirms that our reflection is valid and that the outcomes are indeed achieved.

As for Shift 10 (Maximizing student outcomes for every ringgit) would be very compelling in how to make the most of a student's capacity in absorbing the knowledge that they learned in the classroom and having it practically implemented in real-life situations. Through this interview, it can be concluded that these subjects (MPU/ General Studies) are also supporting this notion. Concurrent to the knowledge that students have achieved through analyzing phases, reality, and theory stumbled to be organized by the students in a coherent form, whereby they may formulate the interconnection of reasons and continuation of the current issues. All these skills would amplify the higher-order thinking skills that are much needed in the current globalization through any industry they go into later. Both participants, sharing their experiences in the classroom, stated that students are intrigued to find more on the current issues that correlate with the theory they are learning in the classroom and take the initiative or lead in discussing the arises issues. Higher-order thinking skills are part of the skills that highly required to be embedded since they are a student which will prepare them during the working surrounding. The idea of having general ideas of our complex ethnicity, culture, religions and beliefs in higher education in Malaysia regardless of the nationality of the student, would create a better world of understanding, tolerable and respecting each uniqueness.

Integration of IR 4.0 technologies in blended learning environments as the third Research Question can be concluded that both participants agreed that blended learning is essential for today's learning enhancement, as students might be less stimulated in class. They are stating that even in physical classes, they would still implement the context of technology to make the classes more interesting and able to gauge the student's attention. The context of IR 4.0 technologies in MPU/ General Studies subjects might not indulge into specifically technologies such as Artificial Intelligence (AI) or Internet of Things (IoT) but to help up with "generating ideas" as mentioned by one of the participants, as a guideline. These MPU/ General studies subjects are more prominent in developing students into critical thinkers, whereby these advanced technologies in IR 4.0 assist in giving more ideas to their versatility of the correlation of theories learned. They mentioned

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in the interview that instead of abolishing the usage of it entirely, why not imply it as a guiding tool, but using student's own personal touch in delivering it.

S1: But students can use AI. For example, when they're doing research, I'll need to advise them. Previously, ChatGPT was trending. So, when my students had to complete a language-related assignment, I asked them, "Oh, you want to use ChatGPT? No problem." But I also asked, "How do you plan to use ChatGPT to ensure the content and language usage are accurate?" It needs to be reviewed, because in MPU subjects, language accuracy is important. So, they need to make sure their language is correct. I'll ask them to read it and see if it sounds right. When I check their work, I'll say, "Your language usage here is incorrect—try to adjust it." There are settings within ChatGPT that we need to tweak.

S2: Usually, students can use ChatGPT to get ideas. But they need to mix both—AI and their own input. We can't fully rely on it. But on the other hand, not using it at all also makes things difficult.

Speaker 2 also added in her classes due to the correlation back to the subject (Appreciation of Ethics and Civilization), she is keener on using social media as part of their additional tools. She utilizes social media that is frequently used by students such as TikTok. Upon this method and approach, students can correlate with the current issues alongside their learning theories which can elevate the understanding of the knowledge in return.

S2: I just have a different method. Since they're young, like what S1 mentioned earlier—if the class is large, it's fine even if we don't do formal activities because they enjoy talking. Just through discussions, a lot of class time gets used. So, if there are any additional activities, I'll usually give them as homework.

As for tools, S1 has already covered that since we all use mostly the same ones. But I personally like using media—like TikTok and Twitter, especially since I teach Appreciation of Ethics and Civilization, which deals a lot with current issues. I enjoy using those platforms because students no longer use Facebook or Instagram—that's for sure. They're more into TikTok and Twitter now, and both are rich with current issues.

So, I would ask them, "Have you seen the latest issues on Twitter or TikTok? What's trending now?" That's my approach.

The usage of technologies in this context (data analytics) through social media (TikTok) has proven that even in the MPU subjects, students can still implement the IR 4.0 to connect them with the theories they are learning in the classroom. If compared to other core subjects that may require specific technologies, the approach taken by the participant is much more connected to sociology. Students are given the opportunity to hone their observation skills which then develop their reflective judgement from their perspectives. The blended learning implemented by the participants in the classroom is initiated as active learning which is interconnected and stimulates the thinking skills of students. Students are given pre-class assessments or exposure, indicated under the knowing and understanding more with the explanation in the class. Afterward, students can demonstrate the theory learned by correlating it with the current issues that happened within the social media context. By then, students may initiate the discussion to compare the theory and reality which are categorized under the analysing phase. These would also be answering Research Question 4 (What are educators' narratives about their experiences and perceptions of blended learning). Integration of the technologies in the blended learning is not just taking in technology as a substitution for the physical classes, but it is giving wings for students and lecturers in expanding the breadth of the knowledge whereas they can delve into the related issues.

S2: I personally like using media—like TikTok and Twitter—especially because I teach Appreciation of Ethics and Civilization, which focuses on current issues. That's why I enjoy using these platforms. Students nowadays no longer use Facebook or Instagram—that's for sure. They're more active on TikTok and Twitter, and both platforms are full of current topics. So I usually ask them, "Have you seen any issues on Twitter or TikTok? What's trending now?" That's my method.

S2: That's what helps students remember. And they really do remember. For example, not everyone is interested in politics. But when we talk about it—like, "Did you see this case?"—after class, they'll crowd around me asking, "Miss, what really happened in that case?"

S2: Students enjoy it when we relate the lesson to media. So as lecturers, it's not just about using tools or technology—we also need to keep up with their trends.

DISCUSSION

Through this study, the learning practices in higher education in Malaysia especially the private institution, administering the blended learning in their curriculum as a whole integration. Participants are both utilizing all sorts of technology that can boost the effectiveness of the lesson in the classroom such as implementing the LMS as well as additional of emotional assistance technology such as Word Cloud, Mentimeter and Kahoot! These appliances are vital in keeping the attention span and at the same time, delivering the lesson outcomes to the students. These practices are expected by the past studies from Albiladi & Alshareef (2018), Han & Shin (2016) whereby they were mentioning in their study that upon the years, alongside with the modernization of the technology and advancement in education would assimilate the blended learning as a much more interactive, engaging and collaborative learning.

Participants also shared that student are much more prefer the engagement of the technology that they are familiar with, to correlate with the current issues or theories that they learned in the classroom. Participant utilizing the growth of the social media such as TikTok to get the student's attention to the current issues which draw the analogy on the theories learned. The practices that orchestrated by the participants could enhance the effectiveness in learning as part of the integration of blended learning. These can be proven by Nortvig, Petersen & Balle (2018) as they stated in their study that students in a physical class with the assimilation of the online settings which including all the student's engagement and the participation of the teachers itself would eventually benefit to the student's effectiveness in the lesson conducted.

Graham (2021) also mentioned that in his 3M elaboration of blended learning consisted of media, methods and modality which all are covered by the participants in their blended learning classes. The modality in this case would be the mixture of the online setting and physical interaction in the classroom. The participants stresses that physical interaction is still a must and vital to the students but they added up online assimilation (media) which is blended learning using the tools and technologies in the classroom (LMS, Word Cloud, Mentimeter, Kahoot) and discussed the case studies (method) and real issues that happened in the real world with the theories they learned in the classroom by utilizing the social media (TikTok). All of the sequences meet the description by Graham (2021) in terms of blended learning which then changes the learning theories that may develop from connectivism to constructivism learning theories. With the use of social media for example, participants need to observe and be as their guidance to help students in correlating and create their own learning based on the curriculum.

Practices align with the goals of the Malaysia Education Blueprint 2013-2025

Participants in this study are certain that the goals of the Malaysia Education Blueprint 2013-2025 which specifically aiming for Shift 7 and Shift 10 are align with the practices that conducted in the learning. Shift 7, which focusses on leveraging the ICT or technology in the learning and enhancing the quality of the education is achievable. These are due to the ICT or technology that has been critically embedded in the lessons, which empowering the accessibility of resources according to the student's pace and time. Participants encouraged students to facilitate the use of technology to the students concurrently with their learning in the classroom. Aside from just the local resources, they are able to grasp the knowledge of international resources such as the current issues, the diversity of the trends that are compatible with their case study and they may implement in the classroom later by conducting a debate session within their classmates. Students are capitalizing on the resources that they can find and search for and utilize them for the benefit of understanding the theories learned in the classroom. Aside from this, students are also given an opportunity to be independent learners as they

can figure out the necessary resources within the classroom without depending on just materials given by the lecturers. These independent learning skills are needed for them to adapt and survive in the Industrial Revolution (IR) 4.0 later when they are working as these soft- skills are not implemented directly to students when they start working.

Thus, it is also concluded that the Shift 10 which focusses on maximizing the student's outcomes for every ringgit (Malaysia Education Plan 2013-2025, 2011) would be indicated as achievable. By the end of 2025, the outcome generated by the students and graduates that have implemented blended learning throughout their higher education level, would impact the investment that has been nourished. Participants in this study stated that the students are exceptional when they are given the opportunity to create and come up with their idea of projection as they are able to exceed the expectation of the participants as lecturers. This proves that with high quality of investment been made into education, it would contribute to the student's efficiency and effectiveness in learning. Within this, students, parents, teachers, institutions and government are playing a crucial role in making the improvement in revamping the education systems.

The Relationship between Blended Learning in Higher Education and the Malaysia Education Blueprint 2013-2025 and the IR 4.0.

The relationship between blended learning in higher education alongside with the Malaysia Education Blueprint 2013-2025 and IR 4.0 in the narrative context can be seen when the participants were sharing their experiences in deploying the technology or industrial technology that has been taking more places in society.

The relationship on these variables would be coherent with the proposed blended learning framework that was developed by Lim et al (2019) which focuses on 7 different dimensions. In this study, it would be coherent with Dimensions 1, 2 and 3.

Dimensions 1 would be focusing on the curriculum. In this phase, implementation of technology would be based on the curriculum. Curriculum works as the main pillar of the structure of education itself but, it should not just be as the guidance but instead be incorporated as why the learning outcomes are set on certain expectations and how the outcomes are implemented (Lim et al, 2019). Through this study, both participants are incorporating the vitality of the curriculum as their base line. They are not just focusing on delivering the learning itself, but they went beyond on how to make students correlate with the theory that they have studies in the classroom. They embedded critical-thinking skills as part of the learning process which cultivates students for emotional intelligence (specifically, social skills) that are necessary in the working world later. The attribution of the social skills would help students and graduates navigate the world afterwards.

From the interview conducted, participants utilize the connection of social media that most students would have used in the normal life, as a part of the innovations or adaptive learning to enhance the understanding of the theory learned in the classroom, which leads to curiosity of the current issues. This process subsequently follows through Bloom's taxonomy, which encapsulates the applying, analyzing, and evaluating phase thus enhancing student's higher thinking skills in their final project, creating the possible remark that they may learn through their studies. The revised Bloom's taxonomy states that the cognitive skills that a student shall have upon is the idea of evaluating or constructing the theory learned with the changes or info that the student initially has. Thus, the relationship between the blended learning implemented in the classroom and especially in higher education is interconnected with the IR 4.0. These two variables would be deemed to meet the outline of the Malaysian Education Blueprint 2013-2025 in Shift 7 (Leverage ICT to scale up quality learning across Malaysia) as both teachers and lecturers are making use of the social media as part of the way to reinforce the quality learning in classroom has evolved. Subsequently, participants also inserted technology as part of their blended learning in terms of surveying the mental and emotional conditions of their students in the classroom.

Strategic Dimensions 2 in the proposed framework used stated that the vision and policy alignment imposed as the next step that cultivating the prospects of the blended learning in higher education. Within this study, it is contemplated to acknowledge that our current higher education system in Malaysia is dedicated to improving

on our educational system and conduction. The most anticipated actions and implementation that show the intensity in providing equal and high-quality education to all students would be the enforcement of technology in blended learning. Aside from LMS as the conventional way of accumulating the materials mentioned by the participants but, cohesively, the technology sometimes ranges from simple to grueling to conduct in the classroom. For instance, to grasp the students' attention and conditions before the learning started, the participants are using technology such as Mentimeter. This platform enables the lecturers to understand the initial conditions of the students by asking students to express their feelings at that moment. Therefore, the participants were able to grasp their students' conditions and proceeded with teaching accordingly. The proposed framework envisioned that higher education institutions shall constitutionally have the same basis that supporting the conduct of ICT or technology implementation environments with the aim of enhancing the connectivity with the students which at the same time, cultivating the skills needed in the current generations (Bates and Sangra, 2011). Within the implemented pre-class that was conducted by the participants, the relationship between the students' engagement alongside with the technology has reached a concord of how ICT that implemented in the blended learning can affect the lesson plan prepared by the lecturers. Therefore, with a grounded basis or guideline by the higher education institutions themselves, the blended learning that is implemented shall have vast connections to enhance the student's engagement within the course, without abandoning the vital lesson outcomes.

Whereas Strategic Dimensions 3 focuses on the infrastructure, facilities, hardware, resources and support would be equivalently pertinent to the enhancement of blended learning in higher education. Throughout the revamped curriculum and resourcefulness of the lecturers in implementing the blended learning, the infrastructure and support by the higher education institutions would be vital to adequately prepare students for the intensity of blended learning. In this study, the participants are likely to utilize the learning materials that they can maneuver in the classroom with the students such as Padlet, Mentimeter, Word Cloud as they can have direct engagement with the students and at the same time, participants are also able to measure the student's learning outcomes. Higher education is now implementing the Bring Your Own Device (BYOD) initiative which encourages students to bring their own laptops or electronic devices to facilitate their studies upon coming to classes. This initiative has brought positive in terms of individualized and self-learning pace for each student as they would have their own time and space to study.

With the initiative as well, it has achieved the Education 4.0 objectives as well as providing the personalization of the study. Through this study, the correlation between the implementation of blended learning in higher education with the Malaysian Education Blueprint 2013-2025 is achieved which covers both Shift 7(Leverage ICT to scale up quality learning across Malaysia) and 10 (Maximize student outcomes for every ringgit). Complement to this correlation, the participants mentioned that the students can continue their project concurrently on their own time and subsequently met with the lecturers to discuss the details of the information needed, the structure of the project and as motivation to students. Thus, the implementation of the higher education in implementing the BYOD did bring positivity to students especially. Lim et al (2019) stated also that the teachers prominently constructing their own lesson plan and compiling the directed resources specifically for the subjects, generally would upload them into the student learning portal. Thus, this would open the available resources for the students to refer from, and digest from it. This notion is also supported by the participation's sharing experience in their classrooms setting, whereby every class that is conducted might have different lesson plan to match the student's condition, understanding and pace. The effectiveness of blended learning that implemented would be indicated achieved as they implement it accordingly.

CONCLUSION

This study demonstrates that blended learning has become an essential component in the evolving landscape of Malaysian higher education. Through the narratives of two lecturers, it is evident that blended learning practices not only support the flexibility and accessibility of education but also foster critical thinking and student engagement. The alignment of these practices with the Malaysia Education Blueprint 2013–2025, particularly Shifts 7 and 10, reinforces the importance of leveraging ICT to enhance teaching quality and maximize learning outcomes. Additionally, the incorporation of Industry 4.0 elements—though modest—

signals progress toward Education 4.0 readiness. The use of digital platforms such as learning management systems, interactive tools, and social media contributes to a dynamic and student-centered learning environment. To sustain and scale these efforts, institutional support, continuous professional development, and infrastructure enhancements are imperative. Ultimately, this research offers valuable insights for policymakers, educators, and stakeholders aiming to design future-ready curricula that address both national educational goals and global technological advancements.

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