



## IDENTIFYING 21ST-CENTURY SKILLS GAP IN THE ESL/EFL MALAYSIAN POSTGRADUATE EDUCATION SYSTEM

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### *Abstract*

*Literacy in the 21st century entails creating and approving knowledge and data. Due to the abundance of information available, users must be able to sort through the uncertainty and be able to verify opinions from several aspects. Those who are pursuing postgraduate studies in particular need to be critical thinkers because simply understanding the material is not enough. Nonetheless, adjusting and transferring digital skills may be difficult for postgraduate overseas students as they have to use their linguistic skills to address issues with online navigation. The current study intends to look into how Malaysian and Chinese English language postgraduate students integrate and apply some 21st-century abilities to their research. One public university in Malaysia received voluntary responses from 207 respondents (96 postgraduate students from Malaysia and 111 overseas students from China) to a series of 21st century skills survey questions that were adapted from Kelly, Knowles, and Euisuk Sung (2019). The survey consists of four relevant 21<sup>st</sup> century skills that are identified as important to postgraduate students, which are collaborative, critical thinking, communication as well as creativity and innovation. The findings show that Creativity and Innovation has the lowest mean score. This study emphasizes the importance of having a variety of digital abilities for these postgraduate ESL/EFL students to succeed in the digital world. This study offers insights into the difficulties and possibilities for the development of digital skills in various cultural contexts by examining the skills gap between ESL/EFL students of Malaysia and China.*

**Keywords:** 21<sup>st</sup> century skills; digital literacy; critical thinking; communication; creativity and innovation

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## INTRODUCTION

Ensuring timely graduation or Graduate on Time (GOT) is crucial for the sustainability of postgraduate programs and higher institutions. This not only provides confidence and accountability to stakeholders but also helps maintain competitiveness among potential candidates. According to Higher Education Statistics (2020) by the Ministry of Higher Education Malaysia in May 2021, 7831 students enrolled in PhD programs and 18612 in Master programs in Malaysia, but only 3407 (43.55%) managed to graduate on time. These statistics have significant implications for local higher learning institutions and their stakeholders, particularly when the number of students who graduate on time is lower than enrolment rate.

A local study by Muthukrishnan et al. (2022) in Malaysia revealed that relevant skills (such as research and other 21<sup>st</sup> century skills), institutional support and self-management skills influenced the postgraduate students' motivation to GOT. The findings suggest that postgraduates need to have the skills to manage the resources available around them to motivate them to complete their studies. Other studies also suggest that the skills of using technology play a significant role to reinforce, extend, and deepen learning (Grounds & Moore, 2017). For example, whilst browsing for relevant information and searching for legitimate sources, digital skills are invaluable to sieve and validate the information. Thus, postgraduates need to harness their research digital skills and apply them in appropriate learning situations. However, there is a growing concern regarding Malaysian university students to critically use digital contents to meet their information needs (Shariman et al., 2012). Krisnamurthy and Shettapanavar (2019) cautioned postgraduates who lacked efficient search and retrieval of information strategies in the Internet proved to be struggling in their postgraduate studies. In a study with 59 postgraduate students and four lecturers, it was found that while the postgraduates expressed proficiency in using ICT skills, collaborating, and lifelong learning, they lacked critical and creative thinking abilities and communication skills (Lee et al. 2014). Therefore, postgraduate students require not only digital skills but also the ability to effectively apply these skills in order to complete their programmes in a timely manner.

In language learning, especially English as a Second Language (ESL) or English as a Foreign Language (EFL), having the digital skills may help students since they are exposed to and use the language in context. Using technology appropriately creates a meaningful learning context where the acquisition of language and literacy skills is heightened by digital skills (Mohd Ramli 2021; Raffone & Monti, 2019). A study by Rinekso, Rodliyah and Pertiwi (2021) showed that ESL learners with digital literacy perform the acts of searching, comprehending, evaluating, creating, and sharing information. It is highlighted that these learners used digital tools for academic or research and general purposes. Essentially, ESL/EFL learners of this present day do rely on the Internet as a way to enhance their language skills. Having the digital skills and to use them effectively will enhance their linguistic abilities (Romero & Bobkina, 2021). In the modern world, students must acquire relevant skills that meet the demands of globalization, rather than relying on skills taught in the 20th century.

In recent years, Malaysia has become a favoured destination for higher education, especially among mainland Chinese students. The number of Chinese students in Malaysia grew to about 28,590 by 2021 (Statista Research Department, 2022). In China, 1.051 billion, or 74.4% of the total population of China is using the Internet in their daily lives. These figures suggest that Chinese students may have a good understanding of digital technologies, however, they may face challenges when using them in other countries. Jiang (2018) found that Chinese students encountered difficulties with digital practice upon arriving in their destination country. Their digital platforms are usually in Mandarin. As EFL learners adapting to different digital tools and culture, such as those used in Malaysia, can be challenging since most platforms are in English. There seems to be a gap between the students' use of digital technologies in their own time and those used by institutions. For example, students from China may be more familiar with social media applications such as Taobao, Weibo, Douyin, DingTalk, and Meituan, while Malaysian students may be more familiar with tools like Google Meet, Zoom, Whatsapp and Webex. Kanyange and Msiska (2016) found that preservice teachers in China lacked technological literacy as well as cross-cultural and global awareness. According to Huang (2020), more than 750 million Chinese citizens use WeChat to read posts on "Friends Circles" daily. However, when communicating with people outside China, they may need to use other communication platforms since WeChat is not widely used internationally. This shows that students' existing technology use patterns can limit and impede their academic progress in postgraduate study (Jiang, 2019). Therefore, students from China need to adapt to the technologies available in the country where they intend to study.

Digital literacy skills such as collaborative, critical thinking, communication as well as creativity and innovation are important to postgraduate students. These skills are crucial for the workforce of the twenty-first century, when the ability to communicate knowledge clearly and critically and to work successfully in a team is increasingly expected. The current study aims to investigate how local and international (China) postgraduate students in Malaysia integrate and incorporate some of the 21st-century skills in their studies.

## **LITERATURE REVIEW**

The concept of 21st-century skills has been widely discussed in the educational field, referring to a set of knowledge, skills, work habits, and character traits that educators, school reformers, college professors, and employers believe are critical for students to succeed in today's world. The basic premise behind the concept of 21st-century skills is that students must be taught in-demand and universally applicable skills. This means that educational institutions like schools, colleges, and universities must prioritize the effective teaching of such skills to students. The modern era demands that students learn relevant skills that reflect the demands placed upon them in the global modern world, rather than skills learned by students in the 20th century. To homogenize current educational initiatives with the fourth industrial revolution and its associated innovations and technologies, four 21st-century skills are deliberated on in subsequent paragraphs. The guiding principles for these skills are based on a conceptual framework, the

TPACK framework, developed by Koehler et al. (2014), and the 21st-century framework developed by Education Performance and Delivery Unit Malaysia (PADU).

One of the critical 21st-century skills required by university students is data literacy, which is the ability to read, understand, and interpret data. Data literacy plays an essential role in social studies education where the prevalence of data visualization encountered by students will only be increased by the improvement and access to technologies. Data literacy skill also acts as a data-sharing tool. According to Enakrire (2021), researchers equipped with data literacy skills are more likely to understand the existing data presented and link various data together to convert it into useful information for their own use. For instance, studying the number of COVID-19 cases every day facilitates the effort to tabulate a graph that illustrates the amount of daily confirmed cases of COVID-19 that allows researchers to examine the trend and prepare for upcoming situations. Therefore, being proficient in data is an important skill for university students to stay competitive in the 21st century. The popularity of data visualization viewed by students will only grow as technology improves and becomes more accessible. Furthermore, researchers equipped with data literacy skills are more likely to comprehend current data and combine disparate datasets to create usable information.

The rapid advancement of technology has resulted in a shift in the skills required for success in the workforce. Collaboration, critical thinking, and communication are essential 21st century skills that are becoming increasingly important in the digital age. Collaborative teams can achieve better results than individuals working alone, critical thinking skills are positively associated with academic achievement, and effective communication skills are positively associated with job performance. Therefore, educators and even employers must prioritize the development of these skills to ensure individuals are equipped for success in the 21st century workforce.

### ***Collaborative Skills***

Collaborative skills are interactions in a social structure or frameworks. Researchers in sociology, anthropology, and even science have been influenced by the shared or situated cognition approach, which stresses the social frameworks in which interactions take place (Dillenbourg et al., 1996). As a result, attempts to study collaboration that disregard social structures are probably skewed. Knowledge is created through the interactions of its contributors. This method stresses how group behavior as a whole is greater than the sum of its constituent components. In other words, dependent on the inputs of group members, group interactions evolve in ways that are not always predictable.

Collaborative skills are important for postgraduate students as they work on research projects, dissertations, and other academic endeavors. A case study of eight of the participants from Saudi Arabia and China confirmed that collaborative learning supports ESL learners' development of higher order thinking skills in a traditional grammar classroom. Moreover, collaboration efficiency depends on the design of collaborative learning activities (Zhou, 2021). Collaborative skills enable students to work effectively with others, share ideas, and build on each other's strengths to produce high-quality work (Van

Laar, 2020). In the digital age, digital skills are essential for collaboration, as many academic activities take place online. For instance, postgraduate students may need to use digital tools and technologies such as video conferencing, online document sharing, and project management software to collaborate effectively with peers and faculty members who are located in different locations. In addition, a case of a Malaysian ESL classroom shows that collaborative learning methods make the students depend on each other in their pursuit of knowledge and make the learning process more meaningful and interesting (Ibrahim et al, 2015). Postgraduate programs can incorporate collaborative digital skills development into their curriculum to help students build these skills throughout their studies (Wang, 2010). By developing collaborative digital skills, postgraduate students can not only work effectively with others in their academic pursuits but also build skills that are in high demand in the workplace. Collaborative digital skills enable students to work with colleagues across departments, disciplines, and even countries, increasing their career prospects and overall success in their chosen fields.

### ***Critical Thinking Skills***

Developing digital skills and critical thinking skills is essential for post-graduate students to succeed in their academic and professional pursuits. In addition to possessing subject-specific knowledge, post-graduate students need to be able to use digital tools and technologies to conduct research, analyze data, communicate findings, and collaborate with others (Van Laar, 2020). Furthermore, critical thinking skills are essential for post-graduate students to evaluate and analyze complex information and arguments and make informed decisions about their research and career paths. To develop digital skills and critical thinking skills, post-graduate students can take advantage of various resources such as workshops, online courses, and mentorship programs. Additionally, post-graduate programs can incorporate digital literacy and critical thinking skills development into their curriculum to help students build these skills throughout their studies. By developing digital skills and critical thinking skills, post-graduate students can not only succeed in their academic and professional pursuits, but also become lifelong learners who are able to adapt to new challenges and opportunities in the digital age (Van de Oudeweetering & Voogt, 2018). Saleh (2019) argued that the acquisition of critical thinking skills by ESL/EFL learners is vital. This is due to the inherent nature of language learning, which encompasses activities like analysis, synthesis, reflection and problem solving.

Moreover, the presence of social, cultural and administrative obstacles further underscores the significance of integrating critical thinking into the teaching and learning of English. There is the need for an emphasis on critical thinking and visual literacy skills in the EFL/ESL university classroom, as visual communication gains prominence in a competitive world while students remain to lack preparation in this area. Essential needs were detected concerning the interpretation of the cultural meanings of the texts online, and the identification of their supposed intentions (Romero & Bobkina, 2021). Many universities have expressed concern about ESL students meeting the academic demands of university courses and have developed skills-based courses to support these students. As mentioned by Carter (2020), academic programs that champion innovation, creativity, and pushing boundaries are designed to cater to ESL international students who pursue studies in Canada. Thus, ESL teachers need to ensure that

they are equipping students with the academic and critical thinking skills necessary to be successful at higher levels of education and in the workplace. Critical thinking underpins all of these concepts.

### *Communication Skills*

Effective communication skills enable students to articulate their ideas, listen to and respond to feedback, and collaborate with others effectively (Van Laar, 2020). In the digital age, digital skills are essential for communication, as many academic activities take place online. Postgraduate students may need to use digital tools and technologies such as email, video conferencing, and social media to communicate with peers and faculty members who are located in different locations (Wang, 2010). To develop communication digital skills, postgraduate students can take advantage of various resources such as online communication tools, public speaking workshops, and mentorship programs. Additionally, postgraduate programs can incorporate communication digital skills development into their curriculum to help students build these skills throughout their studies. For ESL/EFL learners, communication skills can be developed through effectively planned activities in improving their all skills in general and speaking skill in particular. To survive in the 21st century successfully, the knowledge of English, especially communication skills is essential (Akhter, 2020). By developing communication digital skills, postgraduate students can not only work effectively with others in their academic pursuits but also build skills that are in high demand in the workplace. Strong communication skills enable students to collaborate with colleagues, present their ideas effectively to diverse audiences, and succeed in their chosen careers.

### *Creativity and Innovation Skills*

Developing creativity and innovation skills is essential for postgraduate students to succeed in their academic and professional pursuits. Creativity and innovation skills enable students to think outside the box, generate new ideas, and approach problems in novel ways. In the digital age, digital skills are essential for creativity and innovation, as many tools and technologies can facilitate the generation and implementation of innovative ideas. Postgraduate students may need to use digital tools and technologies such as ideation software, prototyping tools, and social media to enhance their creativity and innovation skills (Van Laar, 2020). To develop creativity and innovation digital skills, postgraduate students can take advantage of various resources such as online innovation workshops, digital innovation labs, and mentorship programs.

Additionally, postgraduate programs can incorporate creativity and innovation digital skills development into their curriculum to help students build these skills throughout their studies. By developing creativity and innovation digital skills, postgraduate students can not only succeed in their academic pursuits but also become innovative problem-solvers who can contribute to their field and the wider community. These skills are highly valued in the workplace and can help students stand out and succeed in their careers (DiLiello & Houghton, 2008). What teachers should do is providing the students with an appropriate learning environment and activities. Integrated skills learning is also an effective means for

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<https://doi.org/10.33541/jet.v6i1.190> Pardede developing creativity. Research findings have shown creative thinking affects students' English language proficiency, and integrated skills learning enhances creativity.

## METHODOLOGY

The main aim of the study was to investigate postgraduate Malaysia and China of a local university 21st century skills. This study employed a quantitative approach that utilized a questionnaire to collect data. The researcher adapted Kelly, Knowles and Euisuk Sung (2019) 21st Century Skills Scale as it is aligned with the Ministry of Higher Education (MOHE) curriculum development framework (2014) and one of the skills which is learning and innovation skills (collaboration, critical thinking, creativity and communication skills). This study adapted the 21st Century Skills survey even though it does not include all the 21st century skills. The researchers acknowledge that there are other skills, but these skills proved to be more significant and relevant. Kelly, Knowles and Euisuk Sung (2019), who developed the survey, believe in emphasizing students' ability to think critically, examine problems, gather information, and make informed, reasoned decisions while using technology. Thus, the survey focuses on the learning and innovation skill category that encompasses creativity, critical thinking, communication and collaboration. Students should not only learn how to apply content knowledge but also engage in critical thinking, problem-solving, and analysis (Kelly, Knowles & Euisuk Sung, 2019). A total of 207 postgraduate students (Malaysian 96 students, Chinese 111 students) from one public university in Malaysia have volunteered to participate in the study. Survey Monkey platform was used to disseminate the questionnaire to the respondents.

The 21st Century Skills Scale Survey comprised two main sections and a total of 56 items. The first section has 50 items of 21st Century Skills statements measured by Likert scale, ranging from *Strongly Disagree* to *Strongly Agree*. The second section contains 6 items on demographic data of the respondents. Kelly, Knowles and Euisuk Sung (2019) developed the 21st Century Scale instrument for high school students in their Problem Based Learning tasks. The survey was tested on 276 students to gauge their collaboration, critical thinking, creativity and communication skills. This resulted in an improved 21st Century Scale survey that can be used as an achievement measure in 21st Century Skills.

These researchers highlighted that there is a void of 21st century skills instruments that can measure achievement and hoped that this instrument can help other researchers to gauge their students' 21st Century Skills (Kelly, Knowles & Euisuk Sung, 2019). For this study, therefore, the questionnaire was firstly pilot tested at a public university in Malaysia. The overall alpha coefficient was .902. For this study, participants are referred to as Respondents 1-207 in the SPSS software. Descriptive statistical analysis was used to analyze the data collected for this study.

## RESULT AND DISCUSSION

### *Demographic Data*

The questionnaire is divided into two parts, which are the demographic data and the inventory of digital literacy skills. In the first part, the demographic data of the postgraduate students were identified where the majority of the respondents 53.8% are from China followed by Malaysia 41%. 56.7% of the respondents are from 18 to 24 years age group, followed by 20.7% from the 25 to 34 age group, 17.8% from 35 to 44 group, 3.8% from 45 to 54 group, and 2 respondents from the age group of 55 to 64. 36% of the respondents have limited access to the Internet while 63.9% do not have access problems. They used several types of devices to access the Internet such as laptop (54.6%), smartphone (26.8%), tablet (10.3%) and desktop (8.2%). They mostly access the Internet from home (84.5%), from work (13.4%) and 1% each from the library as well as from outside. These respondents are enrolled into Language and Applied Linguistics postgraduate programmes of a local university. The inventory of digital literacy is evaluated in the part that follows. Four determinants were measured: Critical Thinking (11 items), Collaboration (22 items), Communication (9 items) and Creativity and Innovation (8 items).

### *Four Determinants of 21st Century Skills Among Postgraduates From Malaysia and China*

#### *Critical Thinking Skills*

The scale percentage, distribution of the mean and standard deviation for each item on 21st-century critical thinking skills among postgraduates from Malaysia and China is shown in Table 1. All the survey items under critical thinking skills have the highest percentage in the (4) Agree category except for items no 7, 8, and 9. It is important to note that item no 7 *Understand questions that lead to critical thinking* has the highest percentage (74%) in the (3) Undecided category. All 3 items (no 7, 8, and 9) have the highest percentage also for the Strongly Agree category (5). The analysis for each item under this category shows that item 8 *Gather relevant and sufficient information from different sources* and item 9 *Justify choices of evaluation criteria*, has the highest mean score which are 4.03 and 3.96 respectively. Item 4 has the lowest mean score (3.83) which is *Identify in detail what needs to be known to answer a science inquiry question*. However, the majority (65.4%) chose Agree (4).

Table 1: Critical Thinking Skill Survey Input

<b>Critical Thinking</b>	<b>Mean</b>	<b>SD</b>
Survey Item		
Revise drafts and justify revisions with evidence.	3.95	.686
Develop follow-up questions that focus or broaden the inquiry	3.86	.708
Understand how knowledge or insights might transfer to other situations or contexts	3.93	.755
Identify in detail what needs to be known to answer a science inquiry question.	3.83	.700
Evaluate reasoning and evidence that support an argument.	3.90	.663
Develop follow-up questions to gain understanding of the wants and needs	3.91	.692
Understand questions that lead to critical thinking	3.91	.568
Gather relevant and sufficient information from different sources	4.03	.620



Justify choices of evaluation criteria	3.95	.615
10.Thoroughly assess the quality of information.	3.96	.650
11.Recognize the limitations of our design and know when to consider alternatives	3.93	.679
<b>TOTAL</b>	<b>3.92</b>	<b>.669</b>

The overall mean score and standard deviation for the collaboration skills is 3.92 and 0.669, respectively. Hence, the postgraduate students in this study perceived critical thinking skills as familiar and important in their postgraduate programmes. Such skills would allow them to solve problems critically and synthesize different information online. They must be able to make intelligent inquiries and justify choices made. Students must equip themselves with critical thinking skills in order to move forward in their academic inquiry (Arslangilay, 2019; Van Laar et al., 2020).

Technology has developed into a solid foundation for the development of an innovative educational system and interactive learning materials (Chua & Jamil, 2012). Learning and innovation skills, which include critical thinking and problem solving, communication and cooperation, as well as creativity and innovation, are one of the elements of 21st-century learning skills (Trilling & Fadel, 2012; Romero & Bobkina, 2021). The results show that students are aware of the importance of having critical thinking abilities at the graduate level. By cooperating with collaborative learning, cooperative activities and information gathering skills, students can improve their critical thinking and problem-solving abilities (Gokhale, 1995; Carter, 2020; Perdede, 2020). This is consistent with the idea of virtual education, which supports individual learning, critical thinking, and the desire to study and get new information. Learning a language is different from learning science or mathematics. While the fundamentals of linguistic knowledge could be learned through formal education, the complexities and nuances that make up skill-mastery are learned through the application of theories that require many stages of quantitative and qualitative research and exploration processes. As such, having critical thinking skills in the digital age is paramount.

### *Collaboration Skills*

The distribution of the mean and standard deviation for each item on 21st-century collaboration skills among postgraduates from Malaysia and China is shown in Table 2. The analysis for each item under this category shows that item *Be polite and kind to course-mates*, has the highest mean score which is 4.37. The item with the lowest mean score (3.43) is *Help resolve issues without asking the lecturers for help*. The overall mean score and standard deviation for the collaboration skills is 4.02 and 0.760, respectively.

Table 2: Collaboration Skill Survey Output

<b>COLLABORATION</b>	<b>Mean</b>	<b>SD</b>
Survey Item		
Be polite and kind to course-mates	4.37	.731
Acknowledge and respect other perspectives.	4.25	.724
Follow the rules for team meetings.	4.10	.693
Make sure all course-mates' ideas are equally valued.	4.07	.712

Offer assistance to others in their work when needed.	4.06	.680
Improve my own work when given feedback.	4.15	.693
Use appropriate body language when presenting.	4.03	.754
Come physically and mentally prepared each day.	3.92	.735
Follow rules for course mates making.	4.02	.753
Make detailed plans about the use of technology.	3.89	.785
Make detailed plans about how to work together.	3.99	.759
Use the time, and run meetings, efficiently.	3.95	.770
Consistently use technology as agreed upon by the course mates to manage project tasks.	4.02	.757
Complete research to contribute to the course mates.	4.13	.695
Involve all course mates in tasks.	4.14	.709
Interact with course mates effectively.	4.06	.683
Assign roles as needed, based on course mates' strength.	3.98	.719
Help resolve issues without asking the lecturers for help.	3.43	.956
Provide feedback useful to course mates and lecturers	4.00	.736
Create a task list that divides group work reasonably among course mates	3.96	.842
Help the course-mates to solve problems and manage conflicts.	4.01	.732
Track my progress toward goals and deadlines.	3.85	.649
<b>TOTAL</b>	<b>4.02</b>	<b>.760</b>

According to Roschelle (1992), collaboration is a process of constructing shared meanings or convergence, and conversational analysis research has identified characteristics of interactions that allow participants to reach convergence through the creation, maintenance, and repair of shared knowledge. The same definition of collaboration is given by Roschelle and Teasley (1995), who define it as coordinated, synchronous behavior that is the consequence of a sustained effort to develop and maintain a shared perspective of a problem. The shared knowledge structure that facilitates problem-solving by combining objectives, descriptions of the current problem state, awareness of viable techniques, as well as the connections between these things, is what they refer to as the joint problem space. Roschelle and Teasley (1995) assert that cooperation occurs within this shared problem space, which offers the framework required to enable fruitful discussions about the issue. Partners need to be able to introduce and accept knowledge, keep an eye out for signs of divergent meanings in exchanges, and correct any discrepancies that are found in order to build a shared problem space.

The findings indicate that both local and international postgraduate students in Malaysia perceive collaboration as one of the important skills in their study. These participants also acknowledged the effectiveness of interactions, particularly the engagement and negotiation abilities as important indicators of actual collaboration. The level to which interactions affect participants' thinking is referred to as interaction. Negotiability is the degree to which no one group member can force his or her viewpoint unilaterally on the other members of the group; rather, all members must work towards a shared understanding. According to Dillenbourg (1999), there are not many possibilities to watch negotiations while dealing with simple, clear-cut issues because there is not anything to dispute on. Furthermore,

miscommunications may be crucial for learning since they make participants create justifications for their actions and viewpoints. Using collaborative techniques in solving issues and problems, for instance, demonstrated the participants’ ability to employ cooperative cognitive processes in their studies (Van Laar, 2020).

More than 70% of the respondents admitted that they made detailed plans about the use of technology. This finding is supported by Kreijns et al. (2003) who indicated the importance of computer-supported collaborative learning (CSCL) in today’s learning environment. CSCL employs online networks to facilitate and record online interactions between two or more people who may be spread off geographically or chronologically. A significant portion of this study has developed concurrently with new tools for facilitating remote communications, such as email, chat, instant messaging, and more recently, synchronous video conferencing services.

**Communication Skills**

The Agree (4) category in the Communication determinant table 3, has the highest percentage in all survey items. Item no 3 *Complete tasks without having to be reminded*, 6 *Clearly communicate alternatives or opposing perspectives* and 8 *Create a clear and interesting introduction and conclusion* has a higher percentage in category Uncertain (3) compared to the other items.

As mentioned by Shockley-Zalabak et al., (2010) effective communication skills are essential in the workplace. As these are postgraduate students, who are mostly committed to their jobs, they realize the importance of having communication skills. Communication at the workplace involves email, messaging apps, and video conferencing. To be able to communicate effectively is paramount. Thus, this determinant has the highest percentage at category Agree (4). Table 5 demonstrates the overall findings:

Table 3: Communication Determinants

<b>COMMUNICATION</b>	<b>Mean</b>	<b>SD</b>
Survey Item		
Organize information well.	3.95	.745
Adopt a communication style appropriate for the purpose, task, or audience.	4.02	.691
Complete tasks without having to be reminded.	3.70	.946
Present all information clearly, concisely, and logically.	3.95	.710
Answer questions clearly and concisely.	3.98	.684
Clearly communicate alternatives or opposing perspectives.	3.89	.701
Speak clearly and professionally.	3.93	.752
Create a clear and interesting introduction and conclusion	3.92	.694
Use appropriate media to enhance understanding.	4.01	.729
<b>TOTAL</b>	<b>3.93</b>	<b>.75</b>

Communication skills are believed to be predominantly learned through modeling and observation in postgraduate programmes, typically without formal feedback or formal assessment. Various teaching and

learning approaches that integrate communication skills into studies have been employed through a series of lectures, workshops, and simulations. Since communication has many facets, it is important to evaluate all of them, including non-verbal interactions, developing the doctor-patient connection, and empathy. These teaching and learning approaches were proven effective. Majority of the respondents agreed that they observe communication techniques and strategies (such as adopting appropriate communication style for different purposes, showing effort to present all information clearly, concisely, and logically as well as answering questions in clear and concise manners) when performing academic activities.

To deal with the disruptions caused by technological breakthroughs in the present era, postgraduate students also need a variety of abilities. A skill like effective communication is a crucial component of the skill set expected of graduates today, and it is readily and appropriately acknowledged in both academic settings and business settings (Akhter, 2020). Communication skills classes are regarded as essential parts of nearly every Malaysian university and institution's curriculum. It is hoped that the professionals produced by these institutions are able to meet the standards required by the globalized world in terms of their effectiveness in communication.

### *Creativity and Innovation Skills*

It is important to highlight that creativity and innovation has the lowest mean (3.88) among all determinants tested in this study (Table 4). Creative thinking skill allows people to be more competitive at the workplace when providing constructive and innovative ideas to solve problems (Anjarwati et al., 2018; Atmojo & Sajidan, 2020; Azid & Md-Ali; 2020). Lacking this skill means the students may not be able to go beyond solutions that they have at hand. Being innovative is the next level of critical thinking as students may not just evaluate information but also create new knowledge or explore multidisciplinary fields (Nakano & Wechsler, 2018). In this digital era, these postgraduate students have to venture into new fields of interests as information is easily available to everybody. This finding shows that these postgraduates may be restricted to the field that they are focusing on as they do not rank the items very high compared to other skills.

Table 4: Creativity & Innovation Determinant

<b>CREATIVITY &amp; INNOVATION SKILL</b>	<b>Mean</b>	<b>SD</b>
Survey Item		
Find sources of information and inspiration when others do not.	3.88	.786
Create ideas geared to the research/projects.	3.84	.710
3.Create new, unique, surprising research/projects.	3.74	.761
4.Elaborate and improve on ideas.	3.96	.711
Use brainstorming to generate original ideas.	3.96	.746
Use creativity and imagination.	3.93	.776
Promote a variety of creative perspectives.	3.87	.687
Combine different elements into a complete research/projects.	3.86	.716
<b>TOTAL</b>	<b>3.88</b>	<b>.74</b>

**Overall Skills**

The postgraduates from Malaysia and China are compared in terms of their level of determinant skills from their mean score as shown in Table 5. Malaysia postgraduates have the higher means in all 4 determinants as compared to postgraduates from China. The highest mean is in Collaboration skills in both countries and the lowest is in Creativity and Innovation skill. Digital literacy is in percentage and is the mean of all four determinants.

Table 5: Difference of determinants between Malaysia and China

Skills	Malaysia	China
	Mean, Std Dev	Mean, Std Dev
Critical Thinking	.80, .098	.77, .103
Collobaration	.83, .089	.79, .109
Communication	.80, .107	.77, .107
Creativity & Innovation	.79, .117	.76, .114
Digital literacy	.81, .092	.77, .099

**CONCLUSION**

It is useful to synthesize existing knowledge concerning the factors that cause differences in the level of 21st-century digital skills among postgraduates. More data and research are needed to support the factors or variables that affect these postgraduates' digital skills. In the case of this study, the findings can shed some light on the skills that these students need support.

With Malaysia's higher education system shifting towards the National Blueprint, the number of foreign postgraduate students, particularly from China, has increased. However, this sudden influx of students has highlighted the need for better and updated skills to meet the demands of the 21st century. Thus, it is crucial to examine the review of skills to fulfill this requirement. By comparing the digital skills employed by both local and international postgraduates in Malaysia, universities can develop a better learning environment by reducing all learning gaps and barriers. As the number of international postgraduate students continues to rise in Malaysia, it is necessary for higher learning institutions to constantly reexamine the 21st-century skills-modules used in this nation to ensure that an updated curriculum that meets current needs of the society is produced and established.

***21<sup>st</sup> Century Skills in Postgraduate Education: Where Is The Gap?***

Recognizing growing gaps and formulating solutions that can result in creative teaching strategies and modules that supports students' development is important to enhance the current higher education system in Malaysia. Therefore, it is important to emphasize that among all the skills that were tested and assessed, creativity and innovation seem to be the least preferred and practiced among the respondents. This finding suggests that a crucial element of Malaysia's postgraduate education programs that relates to 21st century

capabilities is still lacking. According to Zanella (2004), creativity is essential in all aspects of life, including the creation of knowledge. Consequently, the preparation of creative scholars who contribute to the production of new knowledge clearly distinguished by an ethical, political, and aesthetic commitment should be a great endeavor of graduate education. Nonetheless, there are many barriers that prevent the development of creativity in graduate settings. The difficulty that many master's and doctorate students face over the requirements to earn the degree, which "turns post-graduation into a burden to be borne for a certain time," (Duarte, 2006:103).

Scholars around the world seem to have a huge concern regarding the deterioration of creative thinking and effective communication skills among postgraduate students. According to previous researchers (Morris et al. 2013; Hoffman et al., 2004), the undergraduate curriculum places a strong emphasis on communication skills, but as students move on to postgraduate programs, attitudes towards communication skill development tend to deteriorate. In 2008, Whitlock Faulkner and Miell interviewed a group of advisers and students to identify the pedagogical activities used to foster and support creativity among postgraduate students during supervisory meetings. The results showed that while formal instruction and monitoring support the development and improvement of research abilities, creative approaches should also be used at this level of education, including collaborating with peers and advisers, experimenting with concepts, and taking calculated risks. According to Alencar et al. (2017), there are not any standardized tools that assess how much higher education instructors engage in classroom behaviors and practices that foster creativity. At postgraduate levels, research and academic writing skills are prioritized over other important skills in the learning program. Over time, there has been a noticeable erosion or reduction in students' communication and creative thinking abilities. This calls for immediate discussions and future studies. Training in critical, communication and creative thinking skills is acknowledged as a crucial element of postgraduate education courses especially for ESL learners (Akhter, 2020). According to research by Fall et al. (1997), students who discussed new material appeared to have a better knowledge of the facts and how to interpret them. When compared to the no-discussion group, these students offered more accurate facts, more interpretations, and higher-quality interpretations after the discussion opportunity.

The impacts of discussion varied according to student ability, with low-ability students benefiting more from discussion than high-ability students. The best way to educate and acquire critical, communication and creative thinking skills is to directly observe the student's performance and then get comments from a knowledgeable teacher. It takes a lot of preparation and resources, including simulation exercises overseen by knowledgeable instructors, for this kind of small-group instruction. Uneven learning outcomes may be the result of a lack of practice. In order to produce graduates that fulfill the requirements demanded by the globalized world in terms of their communication efficacy, maturity and creativity, break-through methods equipped with a thorough assessment are required especially for ESL/EFL learners. Innovative techniques for capturing students' thought processes and problem-solving skills through online collaborative assessment assignments are crucial for ensuring that the information transfer process does not just function at a surface level.

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