



**KEY ELEMENTS OF DIGITAL LITERACY IN MALAYSIAN TECHNOLOGICAL  
LEARNING**

**ESTHER CHIN TZE-N**

**2001925**

**SUPERVISOR: DR. SITI UMMAIZAH**

**UALZ 3023 - FYP2 REPORT**

**SUBMITTED IN  
PARTIAL FULFILMENT OF THE REQUIREMENTS  
FOR BACHELOR OF ARTS (HONS) ENGLISH EDUCATION  
FACULTY OF ARTS AND SOCIAL SCIENCE**

**JANUARY TRIMESTER 2024**



## **ACKNOWLEDGEMENT**

First and foremost, I am deeply thankful to Dr. Siti Ummaizah for her boundless patience and constant support throughout this journey. Your insights have played a pivotal role in guiding me to complete the study.

I extend my heartfelt appreciation to my dad for raising me with love and care, and his boundless wisdom. Additionally, I am grateful to my significant other for their mental and emotional support,

I would also like to acknowledge the support of my friends, who have been a constant source of encouragement and companionship.

Last but not least, I am immensely grateful to all the participants who generously contributed their time and insights to this study. I sincerely appreciate their consent for allowing me to use their information in this study.

## **APPROVAL SHEET**

This research paper attached hereto, entitled Key Elementa of Digital Literacy in Malaysian Technological Learning prepared and submitted by Esther Chin Tze-N in partial fulfilment of the requirements for the Bachelor of Arts (Hons) English Education is hereby accepted.

---

Supervisor

Date

Supervisor's name: Dr. Siti Ummaizah

## **ABSTRACT**

The 21st century has seen a significant increase in the use of technology in education, especially in Malaysia. The recent Covid-19 pandemic has accelerated this trend, making digital literacy a crucial skill for both Malaysian students and Educators, especially at the tertiary level. However, while the importance of digital literacy is well recognized, the specific aspects of digital literacy that are essential for tertiary education are not well defined. This study aims to discover what is the digital literacy level of Malaysian University students, using Universiti Tunku Abdul Rahman as a sample. The study also aims identify the key elements of digital literacy that are vital for tertiary education in Malaysia. The study achieves this through a set of semi-structured interviews to obtain a set of qualitative data, which would then be put through thematic analysis and analysed to draw the related conclusions. The study concludes that digital literacy is crucial for students to succeed in tertiary education and highlights the specific aspects of digital literacy that students and educators should focus on to aid in students' pursuit of higher education. The study also highlights the challenges faced in researching digital literacy, and how future research could help devise better strategies to aid in improving the overall digital literacy level of tertiary educational students.

## Table of Contents

|  |     |
|--|-----|
| ACKNOWLEDGEMENT .....  | I   |
| ABSTRACT .....   | III |
| Chapter 1: Introduction .....  | 1   |
| 1.0 Introduction .....   | 1   |
| 1.1 Background of Study .....  | 1   |
| 1.2 Problem Statement .....  | 2   |
| 1.3 Research Aims .....  | 3   |
| 1.4 Research Objectives .....  | 3   |
| 1.5 Research Questions .....   | 3   |
| 1.6 Significance of Study .....  | 3   |
| 1.7 Research Limitations .....   | 4   |
| 1.8 Definition of Key Terms .....  | 6   |
| Chapter 2: Literature Review .....   | 7   |
| 2.0 Introduction .....   | 7   |
| 2.1 Theoretical Framework .....  | 7   |
| 2.2 Digital Literacy in Malaysia .....                                       | 8   |
| 2.2.1 21 <sup>st</sup> Century Learning .....                                | 8   |
| 2.2.2 Online Learning .....  | 9   |
| 2.3 Past studies .....   | 10  |
| 2.3.1 Digital Literacy of Malaysia .....                                     | 10  |
| 2.3.2 The Impact of Technology .....   | 11  |
| 2.3.3 Relationship Between Technological Learning and Digital Literacy ..... | 12  |
| 2.3.4 Digital Literacy Skills in Education .....                             | 13  |
| 2.3.5 Common Digital Literacy Techniques Among Students .....                | 14  |
| 2.4 Conclusion .....   | 15  |
| Chapter 3: Methodology .....   | 16  |
| 3.0 Introduction .....   | 16  |
| 3.1 Research design .....  | 16  |
| 3.2 Research Sample .....  | 17  |
| 3.3 Research Instruments .....   | 17  |
| 3.4 Data Collection .....  | 19  |
| 3.5 Data Analysis .....  | 19  |
| Chapter 4: Data Analysis and Findings .....                                  | 21  |
| 4.0 Introduction .....   | 21  |
| 4.1 Overview of the Lecturer's level of Digital Literacy. ....               | 21  |

|   |    |
|---|----|
| 4.2 Research Question 1: What is the digital literacy of UTAR students in terms of tertiary education? .....  | 23 |
| 4.2.1 Interview Question 2: How would you personally define digital literacy in the context of Malaysian tertiary education? .....  | 23 |
| 4.2.2 Interview Question 3: Using your earlier definition as a basis, how generally digitally literate do you think your UTAR Students are? .....   | 25 |
| 4.2.3 Interview Question 3: Using your earlier definition as a basis, how generally digitally literate do you think you and your fellow UTAR Students are? .....  | 26 |
| 4.2.4 Interview Question 5: (Cognitive) In your opinion, how effective are your UTAR students regarding the proper understanding of basic digital tools and technologies to tertiary level students? .....  | 26 |
| 4.2.5 Interview Question 5: (Cognitive) In your opinion, how effective are you and your fellow UTAR students regarding the proper understanding of basic digital tools and technologies to tertiary level students? .....                                 | 28 |
| 4.2.6 Interview Question 7: (Cultural) How effective are your UTAR students regarding the knowledge of “netiquette” and how to generally behave online impactful to a student’s success in tertiary education?.....                                       | 29 |
| 4.2.7 Interview Question 7: (Cultural) How effective are you and your fellow UTAR students regarding the knowledge of “netiquette” and how to generally behave online impactful to a student’s success in tertiary education? .....                       | 29 |
| 4.2.8 Interview Question 9: (Constructive) How effective are your UTAR students regarding the ability to reuse and readapt online content, especially in accordance with plagiarism and copyright laws, crucial to tertiary students?.....                | 30 |
| 4.2.9 Interview Question 9: (Constructive) How effective are you and your fellow UTAR students regarding the ability to reuse and readapt online content, especially in accordance with plagiarism and copyright laws, crucial to tertiary students?..... | 31 |
| 4.2.10 Interview Question 11: (Communication) How effective are your UTAR students regarding communication norms and expectations online? .....   | 33 |
| 4.2.11 Interview Question 11: (Communication) How effective are you and your fellow UTAR students regarding communication norms and expectations online? .....  | 33 |
| 4.2.12 Interview Question 13: (Critical) How effective are your UTAR students regarding the identification of the credibility and reliability of online information?.....   | 34 |
| 4.2.13 Interview Question 13: (Critical) How effective are you and your fellow UTAR students regarding the identification of the credibility and reliability of online information? .....   | 35 |
| 4.3 Research Question 2: What are the aspects of digital literacy that UTAR students should prioritize developing for tertiary education?.....  | 36 |
| 4.3.1 Interview Question 4: (Cognitive) In your opinion, how crucial is proper understanding of basic digital tools and technologies to tertiary level students? .....  | 36 |
| 4.3.2 Interview Question 6: (Cultural) Is the knowledge of “netiquette” and how to generally behave online impactful to a student’s success in tertiary education? .....  | 37 |
| 4.3.3 Interview Question 8: (Constructive) Is the ability to reuse and readapt online content, especially in accordance with plagiarism and copyright laws, crucial to tertiary students? .....   | 39 |
| 4.3.4 Interview Question 10: (Communication) How beneficial is it for tertiary students to be familiar with communication norms and expectations online?.....   | 40 |

|   |    |
|---|----|
| 4.3.5 Interview Question 12: (Critical) How much does a student benefit academically if they know how to identify the credibility and reliability of online information?..... | 41 |
| 4.4 Participant’s Closing Thoughts .....  | 42 |
| 4.5 Conclusion .....  | 44 |
| Chapter 5: Discussion and Recommendation .....  | 45 |
| 5.0 Introduction.....   | 45 |
| 5.1 Discussions .....   | 45 |
| 5.1.1 Overall Levels of Familiarity / Proficiency .....   | 45 |
| 5.1.2 Levels of Familiarity / Proficiency for Each Element .....  | 46 |
| 5.1.3 Importance Level of Each Element.....   | 48 |
| 5.2 Implications.....   | 49 |
| 5.3 Limitations .....   | 50 |
| 5.4 Recommendations.....  | 50 |
| 5.5 Conclusion .....  | 51 |
| References.....   | 52 |
| Appendix.....   | 57 |



## **Chapter 1: Introduction**

### **1.0 Introduction**

Due to the 21<sup>st</sup> century learning initiative in Malaysia, the frequency of technological learning is steadily increasing day by day. This is also a result of the covid-19 pandemic which served as a major catalyst in the development of technological learning in Malaysia. As a result, it is unsurprising that digital literacy is a skill that is turning into a large part of the Malaysian education system. Afterall, it is proven that digital literacy is a core factor contributing to the effectiveness of technological learning. However, while digital literacy is ever growing, and is gradually seeing an increase in research focus in the context of education, the elements of digital literacy are not as well defined (Demirtas, 2023). Therefore, this study aims to identify the elements of digital literacy that are vital for tertiary education.

### **1.1 Background of Study**

The 21<sup>st</sup> century brought about many changes to humanity. Among the most prominent is the 4<sup>th</sup> industrial revolution (IR4.0). IR4.0 is merely the beginning of the digitalization of data, many fields including education soon opted for a more technological approach since its dawning. Countries such as Malaysia viewed IR4.0 as a good opportunity to begin implementing technological learning (Bujang et al., 2020). However, education would move at a cautious pace into its digital phase due to the apprehensions of traditional minded teachers or economic disadvantages until a tragedy dubbed the Covid-19 pandemic caused all of that to change. Since the pandemic forced countries into lockdown, digital learning otherwise known as E-learning became a necessity. This brought on a plethora of issues for Malaysia for instance, a lack of amenities, a lack of digital literacy, a lack of teachers' adaptability, and a lack of students' motivation (Yeap et al., 2021). While the Malaysian government was quick to spring into action by providing rural parts of Malaysia with stable internet connection and

handing out gadgets such as tablets to the B40 families, Malaysia's digital literacy rate stands in the way of the adaptation to a fully online class. Even though the necessary facilities were provided, digitally illiterate teachers found it hard to adjust to the new norm and struggled to keep the motivation levels of their digitally illiterate students at an optimal spot. Thus, as the pandemic draws to a close it is unsurprising to see many schools preferred to settle back into the old regime of physical classes despite the ministry of education strongly encouraging educational institutions to include technology in their curriculum.

## **1.2 Problem Statement**

Studies such as Flores et al. (2022) discuss situations whereby a lack of digital literacy among teachers negatively impact the teacher's ability to communicate. Such studies focus on the negative impacts of a decreased availability of technology and thus, push for technology as a necessity instead of viewing technology as just another learning tool. Additionally, Wigati and Fithriyah (2022) is one of the many articles that tackle how digitally literate teachers were more equipped to educate students during the pandemic, ultimately reaching the same conclusion that digital literacy is important for the technological learning environment Malaysia is trying to achieve. Studies have proven that technological learning can benefit education and have connected that there is a clear relationship between technological learning and digital literacy. However, while we have enough knowledge on why a lack in technology is bad, the knowledge pertaining to the specific aspects of digital literacy that is essential is close to zero. Basically, studies have shown that digital literacy is an important factor of technological learning but, only a scarce amount of research have attempted to tackle the relationship between the two. One such research is by Golodov et al., (2022), where what was observed was how the lack of digital skill on the teachers' end could affect the digital transform of education without focusing on the fact that technology at the end of the day is merely a tool. While there are studies that explain why digital literacy is vital for technological learning, the

specific aspects of digital literacy that should be target in higher education can be defined in greater detail (Rinekso, 2021). Therefore, this research attempts to identify the key aspects of digital literacy that can aid a student in tertiary education.

### **1.3 Research Aims**

This study intends to identify the rate of digital literacy among UTAR Kampar students to determine if the current level of digital literacy among the students is sufficient for them to succeed in higher education. Another aim of the study is to narrow down the aspects of digital literacy that students should focus on to excel in their tertiary education. All in all, this research aims to provide a guideline for the aspects of digital literacy that should be focused on.

### **1.4 Research Objectives**

- i) To investigate the digital literacy rate of UTAR students in terms of tertiary education.
- ii) To discover the aspects of digital literacy that UTAR students should prioritize developing for tertiary education.

### **1.5 Research Questions**

- i) What is the digital literacy of UTAR students in terms of tertiary education?
- ii) What are the aspects of digital literacy that UTAR students should develop for tertiary education?

### **1.6 Significance of Study**

Ever since the pandemic the Malaysian government has been actively striving to incorporate technology into the education system. Not many Malaysian citizens have access to stable wifi and devices like a tablet, computer, and smartphone which quickly became compulsory items to advance with E-learning. This prompted the government to ensure internet connectivity throughout the nation and give away devices to families in need to ease the

financial burden on citizens who could not afford to adapt in light of the pandemic. As of 2022, the Malaysian government set aside a handsome sum as a budget for the internet connectivity and devices to curb the issue by 2023 (BOTS Team, 2022). Although, the government's efforts managed to aid the people to an extent, one glaring issue remains. The digital literacy of the country is remarkably low, with Malaysia ranking as the second least digitally literate country among the ASEAN countries (Kusumastuti & Nuryani, 2019). At the end of the day, technology is a tool and not knowing how to use it can be detrimental especially in an educational setting. Therefore, this study is vital to determine the aspects of digital literacy that needs to be targeted to ensure the technology gifted by the government can be used as it was intended. Furthermore, the information gathered can be utilized by the Ministry of Higher Education (MOHE) to either create a programme or aid universities to facilitate student's growth in these aspects to better adapt to 21<sup>st</sup> century learning. Finally, universities can use the information from this study to organize workshops that target the aspects of digital literacy that may be most beneficial. After all, Malaysia's plan for the future of education is to include technology into the system at increasing heights. Not to waste the opportunity the pandemic provided to ensure technology is mandatory in the system.

### **1.7 Research Limitations**

This paper will primarily rely on demographics in UTAR Kampar as the scope and source for data collection due to limited outreach, resources, and time. As a result, it is unrealistic that the data collected can or should be applied to Malaysian universities as a whole as different universities will have different cultures, facilities, and education methods. These variations can affect the accuracy of this studies results when generalized to such degree as a lack in facilities (due to location or finances) and the academic aims of each university can change the aspects of digital literacy that students should adopt. Thus, a more quantitative approach of this study

can be adapted by future researchers to bridge the geographical and social-cultural gap before applied on a national degree.

As for limitations, the methodology used will obtain data based on a detailed interview of a handful of participants that will be gathered randomly through certain groups of lecturers and students. It is a glaring weakness of this study, as it is unrealistic to catalogue detailed opinions of students and lecturers from all fields of study that the university offers. This creates another limitation, that being personal biases and attitudes towards learning cannot be reasonably removed. For example, a student or lecturer from different fields will prioritize different aspects of digital literacy to focus on due to the nature of their respective fields.

Moreover, the number of participants is yet another limitation to this study. Due to the nature of qualitative studies, the number of participants that will be gathered will be limited. Although the information from the interviews will be detailed, it is unrealistic to gather information from students in every faculty and course in the UTAR Kampar campus. Since different faculties and fields have different requirements, it is also expected that the importance of different elements of digital literacy may differ. Hence, the accuracy of the findings may vary especially when considering a student's faculty or course.

Finally, another limitation of this study is time. This is because the cross-sectional research design is conducted only at a single specific point in time. Additionally, if there was more time available, a more in-depth study could be carried out, resulting in a wider range of information across more faculties which would lead to more accurate data. However, this cannot be achieved due to the time constraint for conducting this research. Consequently, future researchers may opt to conduct a longitudinal study on the subject matter to bridge the research gap of this study.

## **1.8 Definition of Key Terms**

### **1) Technology**

Technology usually refers to scientific devices (such as machines ) and the software the gadgets contain (Dziak, 2023). However, because this research is based on how digital literacy affects the use of technology as a learning tool, this paper will be focused on the educational aspect of technology. Namely, educational technology. Subsequently, technology will be specifically defined as gadgets, platforms, websites, and applications that students or teachers use during tertiary education classes for this study.

### **2) Digital Literacy**

Digital refers to electronic technology the creates, keeps, and synthesizes data (Sheposh, 2023). Literacy can be defined as either the ability to read and write or the competence of an individual in a certain field (Purdy, 2022). This means being literate in a field also means having the ability to comprehend knowledge from a specific field. According to Pangrazio et al., (2020) digital literacy can thus be considered as a list of skills to critically navigating through the information of the digital world. This definition is one that will be adopted for this study.

## **Chapter 2: Literature Review**

### **2.0 Introduction**

This chapter will address the theoretical framework and past studies on the key elements of digital literacy in Malaysian technological learning.

### **2.1 Theoretical Framework**

Digital literacy as a concept has its origins mostly attribute to Paul Glistler (1997, as cited in Fulton & McGuinness, 2016), who argued that literacy as a concept can be extended to technology as well. The concept was then further developed and is now associated with a society or individual's ability to effectively use ever modernising forms of technology. Two theories of digital literacy were adapted and integrated into this paper's theoretical framework, to study this variable's effect on education. The two theories being adapted are "digital literacy as defined in tertiary education" and "the 8 elements of digital literacy". Both theoretical concepts were adapted to better suit the research objectives of this current study.

Firstly, for the definition of digital literacy in tertiary education, according to Osterman's (2012) research, there are three ways in which it is broadly defined: "the ability to effectively use basic digital tools to find, analyse, and create information", "the ability to understand said information in various digital formats from a variety of digital sources", and "the ability to perform tasks effectively in a digital environment". These three definitions provide a foundation for identifying and analysing the digital literacy rate of students in tertiary education. By closely referring to these 3 definitions, a set of questions were designed for this study's structured interview to determine the digital literacy rate of research participants. This is further detailed in this paper's methodology section.

The second concept integrated with this set of definitions is the "8 elements of digital literacy". According to Belshaw (2014), digital literacy can be divided into 8 elements or

aspects. These are also referred to as the “8Cs of Digital Literacy”. These 8Cs are: “Cognitive”, “Confident”, “Cultural”, “Constructive”, “Communicative”, “Civic”, “Critical”, and “Creative”. As this study is concerned particularly with tertiary education, only 5 out of the 8 aspects were selected. The first element, cognitive, is the basic ability to effectively utilise common digital tools. The second element, cultural, is concerned with the way people understand digital culture, such as “netiquette”. The third element, constructive, is measured by how well an individual is able to appropriately readapt and utilise online content within the legal and social bounds of copyright and plagiarism. The fourth element, communicative, is how well the individual is able to communicate online while respecting the communicative norms and expectations of online platforms. Next, the fifth and final element, is “Critical”, which is an individual’s ability to assess the reliability, credibility, and overall quality of online content and information. The 3 unselected elements, “Confident”, “Civic”, and “Creative”, are far less relevant to educational contexts. Thus, the other 5 elements were then used as a basis for the creation of 5 interview questions respectively. These questions would gauge the importance of those elements to educational development.

## **2.2 Digital Literacy in Malaysia**

This subsection will provide a general overview of the foundational concepts and contextual information relevant to the current study and digital literacy.

### **2.2.1 21<sup>st</sup> Century Learning**

In 2015, the Ministry of Education Malaysia (MOE) had launched a campaign known as the “21<sup>st</sup> Century Learning Teachers Campaign” (PADU, 2019). Also known as “Pendidikan Abad ke 21” (PAK21) the campaign was formulated during the “second wave of Malaysia Education Blueprint 2013-2025”, and aimed to prepare students for the future, and particular, the “Industrial Revolution 4.0” (Aziz, 2018).



According to the Education Performance and Delivery Unit (PADU, 2019), PAK21 aims to address the importance that effective teaching holds in cultivating skills appropriate for the modern age and the future. Many initiatives have been taken to push the movement forward in schools across Malaysia. This includes the sponsorship of education enhancing technologies such as Chromebooks and digital blackboards. Schools across the nation are also actively encouraged to adapt new and innovative teaching techniques to aid in encouraging the development of critical thinking skills among their students, particularly through the use of digital devices and classroom technologies. PAK21 as a whole serves as important context in understanding the current wave of technological and “E-learning” in Malaysia, as it is a full-fledged policy pushed by the ministry of education, who recognizes its importance.

The campaign also encourages students to educate them about modern technology and its uses in self-learning and other educational pursuits. Digital literacy thus often comes into the forefront of issues in Malaysia. Despite the strong push, many teachers in rural struggle to keep up, not only because of the lack of resources, but also due to the lack of technological skills and knowledge to properly push the campaign. This applies to the students as well, who struggle to use the resources at their disposal effectively for learning (Muhamad & Goh, 2019).

### **2.2.2 Online Learning**

E-learning, also known as online learning, is a form of education in which communication technology is used to enhance a student's learning environment (Lundin, 2022). Typically, online learning occurs virtually, and takes place in a digital, computer-based environment, utilizing various communication platforms that are widely available. This in turn, greatly informs instructional methods, practices, and techniques. Through the use of technology, practices such as instructional presentations and interactive lessons become possible. This form of education is typically used in colleges and universities globally, and in

certain countries, is also readily available in secondary schools. This is especially true after the Covid-19 pandemic, which serves as a catalyst for the growth of online learning as a viable alternative to traditional in-school learning (Mukhtar et al., 2020).

According to Azuar (2022), online learning in Malaysia first became truly viable out of necessity due to the global pandemic. However, its benefits over traditional education has now granted it longevity beyond the pandemic. For tertiary education, the option is significantly less costly for students to attend. Meanwhile, primary and secondary education stand to benefit from the implementation of technology within their classrooms, creating a hybrid-system. It is forecasted that Malaysia will not discontinue online learning post pandemic, but instead retain it to further enhance and widen educational opportunities for those within the nation.

### **2.3 Past studies**

This subsection will review and analyse 5 past studies that are relevant to the current research. Concepts from each study will be compared with each other and will inform this study's methodology and framework.

#### **2.3.1 Digital Literacy of Malaysia**

The first article is Kusumastuti and Nuryani's (2019) "Digital Literacy Levels in ASEAN (Comparative Study on ASEAN Countries)". The article set out to discuss the level of digital literacy among ASEAN nations, and aimed to conclude whether there was a significant disparity between the literacy levels of the related countries. The paper defined digital literacy by multiple characteristics, which includes the abilities to critically interpret messages, verify information, analyse online discourse, and distribute meaningful messages to other parties. The paper also describes digital literacy as dynamic, which means it often changes according to factors such as technological development, place, time period, and even culture. The study collected its quantitative data from the Inclusive Internet Index, which was

initially with the input of more than 4000 participants. The paper studied this data by comparing it to various digital literacy indicators, such as media literacy and communication literacy. Through this, and by analysing the results with SPSS through a Kruskal Wallis Test, the article concluded the digital literacy ranks for each country, and also concluded that there was no significant disparity between the ASEAN countries.

Despite there being no large disparity, Malaysia was ranked second worst among ASEAN countries, with the only country behind it being Cambodia (Kusumastuti & Nuryani's, 2019). Malaysia's digital literacy can be concluded as insufficient when compared to its peers, and it reveals much about the country's condition when considering the application of new educational technologies. Despite having high digital literacy among its urban and young residents, rural citizens often struggle with adapting. For relevance to the current study, the research's methodology covers the criteria for digital literacy in depth. These criteria are defined clearly and easily identifiable. As such, they have been referenced and adapted into the testing instruments (survey) to be used during the current research, alongside the theoretical framework laid out earlier in this chapter. When determining the digital literacy of each participant, the collected answers will be compared with the listed criteria. This is further discussed in chapter 3.

### **2.3.2 The Impact of Technology**

The second article reviewed was "Educational technology and its impact on the efficiency of the educational process in higher education.", by Al Njadat et al. (2021). As the title states, the paper studied the effects educational technology potentially has on higher education. The first hypothesis being that educational technology positively influences the teaching process in the perception of educators. The second hypothesis was that the more resources were available to educators, the more effective educational technology was in

improving teaching. The study applied a descriptive-analytical method, as questionnaires were designed and distributed to the selected sample. The questionnaire measure three criteria, that being “communication skills”, “learning and thinking skills”, and “technology skills”. Participants ranked these criteria on a five-item Likert scale. Statistical Package for Social Sciences (SPSS) was used to analyse the collected data. The results clearly showed a positive relationship between technology and effective education. Educators clearly found the use of technology to be highly valuable in enhancing their students’ learning, and they also valued better access to resources. The research thus concluded that technology use is crucial in aiding the future development of education, and both its hypotheses were proven true by the data.

Overall, the paper’s findings show that when technology is used appropriately by educators, it can enhance the way they teach. The study suggests that educators are readily accepting of using educational technology to assist in the classroom beyond just for communication and contact with their students. Through the systematic analysis of data via SPSS, these analyses were ensured to be empirically accurate based on the quantitative values obtained. Therefore, the current study aims to adapt and reference the research instrument to gather data regarding educator perceptions. Finally, the paper’s proven hypotheses that educator digital literacy improves quality education could also be extrapolated to apply to students as well, especially at the tertiary level where self-learning is prevalent.

### **2.3.3 Relationship Between Technological Learning and Digital Literacy**

The next article reviewed was “How Universities Entrust Digital Literacy to Improve Student Learning Outcomes During the COVID-19 Disruption” by Basir et al. (2021). The paper aimed to discover the ways in which universities have been utilizing digital teaching tools in the past decade. The purpose of this was to better inform and understand digital tool usage in light of the pandemic’s context. Despite not being a review article, the chosen

methodology to complete this study was to rely on online searches, using keywords to discover relevant academic articles from 2010 to 2021. Then, these articles were analysed to conclude the techniques being applied in universities. The article concluded through its findings that according to the analysed articles, learning applications have potential to revolutionize learning, and thus educational technology should be further pursued.

Though not directly linked to student application of digital literacy and technologies, the study reveals how impactful technology could be in tertiary education. Paired with the previous study's conclusion, it becomes clear that there is a direct positive relationship with digital literacy in the form effective technology use and learning outcomes. This highlights the significance of the current study and serves as foundation and justification for the current study's research objectives. The results also help inform the methodology of the study, where the applied techniques will be used to confirm the appropriateness of this study's elements.

#### **2.3.4 Digital Literacy Skills in Education**

The fourth article reviewed was "The Importance of Digital Literacy in Geography Learning for Geography Education Students at Fish Unima" (Karwur et al., 2023). The research aimed to discover the digital literacy skills of geography students at "FISH Unima". The study focused on identifying and categorizing the digital skills displayed and did so through qualitative research methods and data collection. The study used observation, documentation, interview, and triangulation to obtain its specific results. The paper also analysed its data through various techniques which include conclusion drawing/verification. In the end, it was concluded that several skills were present among the sampled students, primarily being "the ability to use the internet", "the ability to recognize computers as a means and technology in learning", "the ability to obtain various information needed in learning", and "the ability to understand sources as learning materials".

The reviewed study is closely related to the current study, where several skills and abilities relevant to digital literacy were investigated. Both studies also specifically used a local sample from an educational institution to extrapolate its results to apply in general. The reviewed study's thorough process was therefore deemed as crucial information to be considered in the investigation of digital literacy elements and aspects. As this study aims to focus its aim on the aspects of skills that are most beneficial to students, the reviewed article's content, such as data analysis and collection methods could be quickly adapted to test the effectiveness of each individual element.

### **2.3.5 Common Digital Literacy Techniques Among Students**

Finally, the last article reviewed was "Digital literacy practices in tertiary education: A case of EFL postgraduate students" (Rinekso, 2021). The study aimed to investigate various digital literacy techniques used by ESL (English as Second Language) postgraduate students and the purposes behind the digital tools used by the research participants. The study also aimed to identify the ways that the participants conceptualized digital literacy. In the paper's research, an online open-ended questionnaire and semi-structured interview were used to collect the necessary data from the participants. Thematical analysis was also utilised, particularly through the framework of "Eight Dimensions of digital literacy". The results indicated that each participant used digital tools with a wide range of academic and general purposes. The study then concluded that colleges and universities should provide training for their students to enhance digital tool usage. The study ends by recommending further exploration into digital literacy practices.

The study reviewed here has objectives very similar to the current study, where the reviewed study is investigating digital literacy as a whole, while the current study aims to zone in on the most relevant elements of digital literacy in education. Essential, the paper has laid

the groundwork future studies such as this one to further explore the concept of digital literacy in tertiary education. Its choice to analyse qualitative data helped reveal deeper insights into the discussed issues, and its framework is an alternative but similar to the current study's framework. Both "8 dimensions" and "8 elements" theories have an overlap in content with some core differences, and thus the overall methodology used to conduct the research was closely followed by the current paper to best optimize the study's results. Overall, the study provided crucial evidence for the theories of digital literacy and serves as strong foundation for future research.

## **2.4 Conclusion**

In summary, digital literacy as a concept is flexibly applicable to education and the two fields have been studied quite frequently in relation to each other. Yet, the specific aspects that contribute to the most effective learning experience for tertiary students is still unknown. The foundational work laid by past studies allow for the current study to explore this gap will greatly benefit both students and educators.

## **Chapter 3: Methodology**

### **3.0 Introduction**

This chapter will illustrate the methods that will be used to carry out this paper's study. The chapter will include the study's research design, research sample, research instruments, data collection, and data analysis.

### **3.1 Research design**

The current research will be collecting and analysing primarily qualitative data. Qualitative data, according to Brown and Gibson (2009), qualitative data is defined as non-numerical information that describes something's quality or characteristics. This data type was selected over quantitative data as it allows for more depth in detail and insight to the perceptions of both students and lecturers. The data will be collected through a structured interview with research participants and will be used to obtain a deeper insight on what aspects of digital literacy are key to tertiary education.

This paper will use cross-sectional design as its basis for research. According to Spector (2019), Cross-sectional or survey design, is an observational study that compares different populations simultaneously during a given point in time. Cross-sectional design also allows for the analysis of multiple variables simultaneously, comparing them "cross-sectionally" to obtain the best data to be analysed. As such this research design is most appropriate for studies that involve two or more variables.

Following this, cross-sectional design was therefore selected because multiple populations need to be surveyed. Particularly, lecturers and students both need to be interviewed to gather the necessary data for the conducting of thorough and accurate analysis. Other than population, this paper will also be comparing two variables, these being digital literacy and effective tertiary education. Thus, a cross-sectional analysis is the most



appropriate. Additionally, the design is relatively cost-effective and time efficient. This is relevant to the limited resources and time allocated to this study.

### **3.2 Research Sample**

The sampled population for this study will be tertiary level students and lecturers from UTAR Kampar. To understand the relationship between different aspects of digital literacy and learning effectiveness in tertiary education, the personal insight of those directly involved in tertiary education will be ideal for this paper. Additionally, using UTAR Kampar as a source for participants is ideal due to convenience and availability to researcher. UTAR also has students from a wide range of backgrounds, reducing potential biases caused by economic, regional, or social factors.

As for the sampling method utilised in this study is stratified random sampling. This sampling method aims to achieve an equal and fair sample from two groups, regardless of the group's difference in size. This method does so by first separating the population into groups, or "strata" before randomly selecting participants from said strata (Ghosh, 1958). Within the tertiary education population, there are significantly more students than there are lecturers. The two strata for this study, as mentioned above, would be "students" and "lecturers". Then, from these strata, the selected number of participants are invited to the study. This method is the most appropriate to achieve the research objectives as the number of participants must be equal between both groups to ensure that the study is accurate and without bias.

### **3.3 Research Instruments**

The structured interview consists of 11 questions split among 3 sections. These sections are "Introduction", "5 Elements of Digital Literacy", and "Closing Thoughts". The questions were designed in accordance with the adapted and integrated frameworks listed in the previous section. These are, as mentioned "digital literacy as defined by tertiary education" and "8 elements of digital literacy". Additionally, 3 elements of digital literacy were not included in

the interview, as they lacked relevance in an educational context (Confident, Creative and Civic). The interview questions are as listed below:

1. Introduction (Assessment of digital literacy rate)

- a. Please briefly describe your familiarity and proficiency with basic digital tools, such as word processing software and web browsers. (This question will be skipped if the interviewee is a student).
- b. How would you personally define digital literacy in the context of Malaysian tertiary education?
- c. Using your earlier definition as a basis, how generally digitally literate do you think (your UTAR Students/ you and your fellow UTAR students) are?

2. 5 Elements of Digital Literacy (Aspects to develop)

For each question in this section, follow up with:

- i) “Are you able to apply these abilities effectively yourself?” (For Students)
- ii) “Can your students apply these abilities effectively themselves?” (For Lecturers)
  - a. (Cognitive) In your opinion, how crucial is proper understanding of basic digital tools and technologies to tertiary level students?
  - b. (Cultural) Is the knowledge of “netiquette” and how to generally behave online impactful to a student’s success in tertiary education?
  - c. (Constructive) Is the ability to reuse and readapt online content, especially in accordance with plagiarism and copyright laws, crucial to tertiary students?
  - d. (Communication) How beneficial is it for tertiary students to be familiar with communication norms and expectations online?
  - e. (Critical) How much does a student benefit academically if they know how to identify the credibility and reliability of online information?

3. Closing Thoughts

- a. Do you have any additional insights regarding digital literacy in relation to tertiary education?

### **3.4 Data Collection**

For the qualitative interview, participants will be contacted, and a meeting time would be arranged. Participants are given the option to conduct the interview physically or digitally, according to their preference and schedule. The interview will be structured and aims to obtain in depth insight and perceptions on digital literacy's effect on effective learning in tertiary education, and the data obtained will be analysed to observe its potential application beyond this scope. The interview will also be recorded for transcription and interpretation. Participants will have to give consent before the interview is recorded. Additionally, participants will remain anonymous for sake of privacy.

To ensure ethical standards are followed as they are required for human research, only consenting participants will take part in the questionnaire and interviews. The interview questions will be written to avoid causing any emotional distress. Participation will be voluntary, and participants will not be forced to complete the interview if they no longer desire to. Participants have the option to refuse to answer any of the questions provided.

### **3.5 Data Analysis**

For qualitative data, the thematic analysis method will be used. This method aims to systematically organize and interpret a set of collected qualitative data by identifying and analysing common patterns or themes within that data (Braun & Clarke, 2012). This method of data analysis is done through several stages. These steps are, in order, "Become Familiar with the data", "Generate initial codes", "Search for themes", "Review themes", "Define themes", and "Conduct write up".

In the first step, for the researcher to familiarize themselves with the data, the transcripts of the structured interviews would be re-read multiple times to obtain a thorough understanding

of the interviewees' answers. Next, the data needs to be coded into smaller groups and chunks. For example, specific segments of the data would be given initial labels such as "perceived benefits", "challenges", and "aspects of digital literacy". Moving on to the third step, shared characteristics that link the initial coding labels are identified to obtain any potential themes in the set of data. For this research, themes such as "enhanced learning opportunities" and "effective research" could be identified from the initial codes. Moving on, the consistency and coherence of these themes should be reviewed to ensure that the themes remain aligned with the central concept of the study. Once these themes are concluded to be appropriate, they should then be clearly named and defined. For example, these themes could be marked as "Theme 1: Aspects of digital literacy", "Theme 2: Perceived level of benefit for tertiary education", and "Theme 3: Enhanced Learning opportunities". Finally, these themes should then be used and compared to interpret and construct an overarching narrative about the interviewees' perception on the aspects of digital literacy that should be developed for tertiary education. The themes present in the students' answers and lecturers' answers will also be interpreted and compared to achieve deeper understanding of the issue. These thematic interpretations should align with the answers provided by the interviewees and will be checked to ensure that their answers were accurately interpreted in good faith. For the digital literacy rate of students, the same data analysis method will be applied. Themes that could emerge from the first section of the interview are, for example, "Theme 1: High confidence", and "Theme 2: Lack of understanding". These themes would then inform whether the students of the participants, or the participants themselves, are digitally literate. The ratio of digitally literate and digitally illiterate will be compared to obtain a theoretical "digital literacy rate".

## Chapter 4: Data Analysis and Findings

### 4.0 Introduction

This chapter, through the thematic analysis approach, will present the data collected from the semi-structured interviews of 5 lecturers and 5 students through segments of the final results table (full table available in appendix). The results of the interviews would then answer the stated RQ1 and RQ2. Here, the appropriate codes were selected, which were then used to generate appropriate themes to be later used for data analysis.

### 4.1 Overview of the Lecturer's level of Digital Literacy.

The following analysis is based on the first interview question “Please briefly describe your familiarity and proficiency with basic digital tools, such as word processing software and web browsers” which was skipped for students the following data was acquired. This question was designed to help answer the first research question. As the lecturers are being interviewed to gauge the literacy levels of their students, the lecturers themselves must first be at least moderately literate. There were 3 themes identified in direct relation to the proficiency and familiarity of the interviewed lecturers.

*“My familiarity, I would say is that I’m not 100% familiar with everything, but I am there. As for my proficiency, maybe I would say that I’m intermediate to advanced. I’m not a beginner for sure. I think I’m in that range.”*

(Lecturer 1, page 1, Q1a(i), line 1)

The first consistent theme, seen in all 5 lecturers, is “intermediate familiarity and proficiency”. This can be seen in the example above, with the lecturer stating outright that they are intermedia. The lecturers also generally implied that they know a good amount about digital technologies, but ultimately have gaps in their knowledge. This result is consistent with what was observed in the second theme, “word processors and web browsers used”.

*“My familiarity, I would say is that I’m not 100% familiar with everything, but I am there. As for my proficiency, maybe I would say that I’m intermediate to advanced. I’m not a beginner for sure. I think I’m in that range.”*

(Lecturer 2, page 2, Q1a(ii), line 6)

A majority of the lecturer’s mentioned fundamental software, such as Microsoft Word, Google Docs, and Google chrome, with the exception of Lecturer 1, who uses a niche browser in addition with the fundamental software. This gives a general overview that the lecturers have an acceptable level of literacy needed to operate in tertiary education and are thus able to appropriately judge the literacy levels of their students.

*“What I do, mostly, especially in those classes, is to produce texts in a form or in a structure that is legible enough for students, also in a way that they will be able to respond to it, especially when classes are interactive.”*

(Lecturer 2, page 1, Q1a(ii), Line 2)

*“... only particularly with the software's that involve teaching. Because I had to access students' work, particularly after MCO, where students' assessments are all done digitally and submitted digitally..... So, for web browsers, I would say I am proficient, similarly for teaching purposes.”*

(Lecturer 5, page 2, Q1a(v), Line 2 & Line 8)

Finally, the lecturers showed consistently that they primarily improve their digital literacy for the sake of using them in their own classes to teach their students. Overall, the data shows that lecturers in general need to have a fundamental understanding of digital literacy, which indicates the current importance it has in this era. It can also be concluded that the

interviewed teachers will be able to accurately gauge the literacy levels of their students. Hence, the data received from them can be trusted.

#### **4.2 Research Question 1: What is the digital literacy of UTAR students in terms of tertiary education?**

The following sub-topics are the research questions that were asked to identify the answer to the first research question of this study. As a result, the following subtopic are based on the questions used to directly glean information regarding the UTAR student's digital literacy rate.

##### **4.2.1 Interview Question 2: How would you personally define digital literacy in the context of Malaysian tertiary education?**

To properly analyse the digital literacy levels of UTAR students, digital literacy itself must be defined. This interview question was thus asked to get a rough gauge of digital literacy's definition in the eyes of the participants. There were 4 themes identified within this set of answers.

*“Nowadays, the technology is a huge part of our life. Everyone must be able to use it. In every aspect of our life, it could be education, it could be entertainment, it can be anything, digital technology will be there.”*

(Lecturer 3, page 4, Q1b(iii), Line 4)

The first theme is “digital literacy as a current day-to-day necessity”. Within this theme, participants consistently expressed the sentiment that digital literacy is a must have for even basic daily functions.

*“In other words, manipulating the information that they get from the internet or from digital sources, and then creating their work digitally as well, that's my definition of digital literacy.”*

(Lecturer 5, page 5, Q1b(v), Line 16)

*“The better that we apply this knowledge of using digital tools and software, the better the level of digital literacy. That’s my point of view as a student.”*

(Student 2, page 5, Q1b(vii), Line 4)

The second theme present is digital literacy defined as “knowledge coupled with skill to be applied practically”. Here, multiple respondents expressed that their understanding of digital literacy is it is the culmination of skill and knowledge of digital tools, and its subsequent practical application.

*“I wouldn’t say that Malaysian digital literacy is up there yet. We are still, I guess, still learning, still adapting, still familiarizing ourselves.”*

(Lecturer 1, page 5, Q1b(v), Line 3)

The third consistent theme is “low levels of familiarity / proficiency”. Lecturers in particular defined digital literacy in the Malaysian context as generally insufficient or lacking.

*“Alright, so it’s a very broad term.....Digital literacy, to me, it’s the ability to manipulate the content that they find from the internet.”*

(Lecturer 5, page 4, Q1b(iii), Line 1)

Finally, is the theme that “digital literacy is a broad concept”. Participants all gave significantly different answers for digital literacy’s definition, and one such lecturer also pointed out that the topic is difficult to define due to its conceptual breadth.

The overall definition of digital literacy in the eyes of the respondent could thusly be concluded as the ability to apply knowledge of digital tools in a practical setting, and that it exists as a fundamental necessity that must be improved in the Malaysian context.



#### **4.2.2 Interview Question 3: Using your earlier definition as a basis, how generally digitally literate do you think your UTAR Students are?**

This question was only asked if the participant was a lecturer. This interview questions aims to directly answer RQ1. Within this question, 3 themes were identified: Generational divide, Expectations vs reality, and intermediate familiarity / proficiency.

*“ I would think that they will be more familiar. They can do better with the technology as compared to me. During my years, when I was young, we don't have this technology.”*

(Lecturer 3, page 8, Q1c(iii), Line 2)

Firstly, lecturers expressed that the generational divide between student and teachers create a gap of literacy levels between them, and some teachers may struggle to keep up.

*“ .....perhaps their digital literacy is around intermediate. That's what my expectation is towards my student, to any of the classes that I teach. To me, I feel like they are intermediate, but some of them surprise me, as they're not really there...”*

(Lecturer 1, page 7, Q1c(i), Line 2)

Secondly, lecturers also expressed that despite the generational advantage that students have, they don't necessarily meet expectations, as some would still have lower literacy levels despite being exposed to digital technology at a younger age.

*“ If I would have rate them on a scale of 0 to 10? Yeah, I would say maybe 4 or 5-ish.”*

(Lecturer 2, page 7, Q1c(ii), Line 1)

Finally, lecturers identified an intermediate level of literacy among their students. Though some are very literate and skilled, others are completely lacking, making the overall verdict intermediate.

In conclusion, lecturers think that students in UTAR are relatively high intermediate in terms of digital literacy thanks to their generation being born in a digital world, but some may not meet up to this expectation, lowering the average.

#### **4.2.3 Interview Question 3: Using your earlier definition as a basis, how generally digitally literate do you think you and your fellow UTAR Students are?**

This question was only asked if the participant was a student. This question aims to judge whether student expectations of their literacy level matches that of the lecturers. Here, 2 themes were identified: “use of digital tools” and “intermediate levels of familiarity / proficiency”.

*“This is because we need to use basic digital tools such as PowerPoint slides and Canva for our assignments.”*

(Student 4, page 11, Q1c(ix), Line 2)

Firstly, students indicated that they strongly related the use of digital tools as related to digital literacy and adopt it as part of their criteria on whether someone is digitally literate.

*“I think I'm like, literate enough... .. But I think the rest, they're (other students) capable.”*

(Student 1, page 10, Q1c(vi), Line 1 & Line 8)

Second, the self-reported levels of literacy were intermediate. This general conclusions matches that of the lecturers.

#### **4.2.4 Interview Question 5: (Cognitive) In your opinion, how effective are your UTAR students regarding the proper understanding of basic digital tools and technologies to tertiary level students?**

This question was only asked if the participant was a lecturer. This interview questions aims to directly answer RQ1. Here, 2 themes were identified: “varied levels of familiarity / proficiency”, and “digital literacy for academic purposes”.

*“My students? Well, I don't have a particular idea on how well-versed they are, but they definitely are very good at using all these apps.”*

(Lecturer 4, page 19, Q2b(iv), Line 1)

*“As I've mentioned, I think they are quite okay.”*

(Lecturer 5, page 19, Q2b(v), Line 1)

Firstly, every lecturer gave varied answers about student's proficiency in regard to this element of digital literacy, ranging from intermediate to great. This supports the earlier results that interpretation of literacy level maybe at the individual level and must be generalised to obtain a substantial conclusion.

*“Some of them I've observed, they even ask ChatGPT where to eat. Even with that kind of question, they rely on technology..... If I would comment about integration to education, if you are being overly reliant on technology, it would affect your intelligibility.”*

(Lecturer 3, page 18, Q2b(iii), Line 6)

Secondly, lecturers also made a distinction between digital literacy for everyday use, and digital literacy for specific academic purposes. This distinction reveals a possible reason for the varied results: students may be proficient for daily usage but may lack in experience and skill for academics.

Hence, students are generally literate, but there may be issues when it comes to academics and tertiary education.

**4.2.5 Interview Question 5: (Cognitive) In your opinion, how effective are you and your fellow UTAR students regarding the proper understanding of basic digital tools and technologies to tertiary level students?**

This question was only asked if the participant was a student. This question aims to judge whether student expectations of their literacy level matches that of the lecturers. Here, 2 themes were identified: “use of digital tools” and “high-moderate levels of familiarity / proficiency”.

*“ I feel like we've learned a lot from them in the sense of using tools such as Mentimeter, Padlets, and all these things that we can in the future apply.....”*

(Student 3, page 20, Q2b(viii), Line 6)

Firstly, students once again indicated that they strongly related the use of digital tools as related to digital literacy, reinforcing the data from earlier.

*“ I believe it would be an 8 out of 10.”*

(Student 4, page 20, Q2b(ix), Line 1)

Secondly, students indicated that they are more confident in their use of basic digital tools, rating themselves at at-least a high moderate level.

Students thus are shown to strongly relate the use of digital tools with academic success and believe that they have more than just the fundamentals skill in regard to this element. This is distinct from the lecturer’s varied levels of assessment.

**4.2.6 Interview Question 7: (Cultural) How effective are your UTAR students regarding the knowledge of “netiquette” and how to generally behave online impactful to a student’s success in tertiary education?**

This question was only asked if the participant was a lecturer. This interview questions aims to directly answer RQ1. Here, 2 themes were identified: “low levels of familiarity / proficiency” and “challenges in assessment”.

*“They need lots of improvement. I think, to rate them on a scale out of 10, I think a 3.”*

(Lecturer 2, page 27, Q2d(ii), Line 1)

Firstly, lecturers indicated that in terms of netiquette, students are lacking in this aspect of digital literacy.

*“This is this is the part where we can't really analyse it... .. it's kind of very hard for me to actually rate on these particular behaviours of the students.”*

(Lecturer 4, page 27, Q2d(iv), Line 1)

Lecturers also indicated that this element is hard to access, as it depends on the individual.

It can be concluded that the cultural element of digital literacy is in fact however, lacking among UTAR students, but it is difficult to confirm.

**4.2.7 Interview Question 7: (Cultural) How effective are you and your fellow UTAR students regarding the knowledge of “netiquette” and how to generally behave online impactful to a student’s success in tertiary education?**

This question was only asked if the participant was a student. This question aims to judge whether student expectations of their literacy level matches that of the lecturers. Here, 2 themes were identified: “High levels of familiarity / proficiency”, and “general level of politeness”.

*“ I think it’s the same as the previous question, like 4 out of 5. Same with my peers.”*

(Student 1, page 28, Q2d(vi), Line 1)

Contrasting the lecturer’s answers, the students generally perceived their level of netiquette to be high, understanding its use and functions.

*“Definitely 8 out of 10. There’s a general sense of politeness.”*

(Student 5, page 29, Q2d(x), Line 7)

Similarly, they also perceived that UTAR students have a general level of politeness online. These results contrast those given by the lecturers. A potential reasoning for this is due to cultural differences caused by age gaps: what defines being polite is different for the two groups.

**4.2.8 Interview Question 9: (Constructive) How effective are your UTAR students regarding the ability to reuse and readapt online content, especially in accordance with plagiarism and copyright laws, crucial to tertiary students?**

This question was only asked if the participant was a lecturer. This interview questions aims to directly answer RQ1. 3 themes were identified in the answer set of this question: “varied levels of proficiency”, “plagiarism and academic integrity”, and “specific problem groups”.

*“It depends on the students. Some of them, it’s very good. Some of them, they don’t know.”*

(Lecturer 3, page 34, Q2f(iii), Line 1)

Once again, lecturers indicated that for this element, there is a varying level of literacy, with no single consensus, as show in the two examples.

*“.....they go out looking for these loopholes, or the fact that they find ways around plagiarism software.....its very much “Whatever I see is what I'm going to regurgitate and put on paper”.*

(Lecturer 2, page 34, Q2f(ii), Line 4 & Line 6)

Additionally, a key issue that is focused on by the lecturers in regard to this element is that of plagiarism. Lecturers deem that it is an issue when students don't utilize the constructive element of digital literacy correctly, causing students to unethically plagiarize content.

*“International students, for example, we could see that they are just copy pasting straight away. They did not produce any references or citation.....”*

(Lecturer 3, page 34, Q2f(iii), Line 4)

Finally, lecturers also indicated that these issues occur with specific problem group, likely for their own reasons. Overall, the data shows that UTAR students vary in their ability to be constructive with digital content, with some problem groups lowering the average performance of the student body.

**4.2.9 Interview Question 9: (Constructive) How effective are you and your fellow UTAR students regarding the ability to reuse and readapt online content, especially in accordance with plagiarism and copyright laws, crucial to tertiary students?**

This question was only asked if the participant was a student. This question aims to judge whether student expectations of their literacy level matches that of the lecturers. 3 themes were identified here: “use of digital tools”, “plagiarism and academic integrity”, and “varied levels of familiarity and proficiency”.

*“Even if they're lazy to do it themselves, they will use different tools online, we will use different tools. We have quill-bot, Chat GPT we tend to use the help of these tools to paraphrase things for us.”*

(Student 3, page 35, Q2f(viii), Line 2)

Once again, participants consistently show a focus of digital tools as a foundational part of digital literacy, supporting the cognitive element as an underlying core principle.

*“We are not actually acknowledging the effort of those who created the content that helped us.”*

(Student 2, page 35, Q2f(vii), Line 4)

The theme “plagiarism and academic integrity” shows that the students believe that plagiarism is a core concern thanks to the advent of AI, and students are committed to the idea that students must be able to construct new content appropriately.

*“So, I think for this, there is still room to improve in my opinion..”*

(Student 2, page 35, Q2f(vii), Line 7)

*“I would say very skilled because we have a lot of online tools nowadays.”*

(Student 3, page 35, Q2f(viii), Line 1)

The students themselves also had varying perceptions on the literacy level of themselves and their peers, in terms of the constructive element. The answers here consistently support the rest of the data and conclusions.



#### **4.2.10 Interview Question 11: (Communication) How effective are your UTAR students regarding communication norms and expectations online?**

This question was only asked if the participant was a lecturer. This interview questions aims to directly answer RQ1. Here, 2 themes were identified: “Varied levels of familiarity and proficiency” and “Adaptation of language structure”.

*“I feel like they are good... I would say, yeah, they're good. They're up there like maybe 8, 9.”*

(Lecturer 1, page 41, Q2h(i), Line 3)

*“I would say the students are kind of lacking.”*

(Lecturer 4, page 43, Q2h(iv), Line 10)

Once again, lecturers were not able to uniformly decide on the level of communication digital literacy possessed by their students.

*“They need to differentiate the kind of language that they use online”*

(Lecturer 3, page 42, Q2h(ii), Line 3)

Additionally, lecturers also identified the importance of adapting language structure and usage in relation to communication in digital literacy. This shows that digital literacy as a concept covers elements beyond simple digital tools, which may also show why the levels of literacy continue to fluctuate between students.

#### **4.2.11 Interview Question 11: (Communication) How effective are you and your fellow UTAR students regarding communication norms and expectations online?**

Here, 2 themes were identified: “low levels of familiarity / proficiency” and “lack of experience”.

“I’ll put myself on the lower category... I’m not as well versed,”

(Student 3, page 44, Q2h(viii), Line 2)

For the communication aspect, students generally reported a lower level of proficiency, particularly citing emails as a source of frustration.

*“So personally, for myself, I would say, because we do not use emails as much, I would say I still have a lot to learn.”*

(Student 3, page 44, Q2h(viii), Line 1)

On that note, a second recurrent theme is low proficiency caused by a lack of experience, which relates to how students have little experience in writing emails to understand how to accurately write them.

Hence, a lack of experience can directly contribute to lower levels of proficiency and digital literacy, as seen in this communication element of digital literacy.

#### **4.2.12 Interview Question 13: (Critical) How effective are your UTAR students regarding the identification of the credibility and reliability of online information?**

Here, a total of 4 themes were identified: “Intermediate levels of familiarity / proficiency”, “plagiarism and academic integrity”, “specific problem groups”, and “lack of experience”.

*“I think they’re quite well versed.....But how well versed they are, four, five (out of 10).”*

(Lecturer 2, page 51, Q2j(ii), Line 1)

Firstly, lecturers generally agreed that students are intermediate in regard to critical thinking in digital literacy.

*“Most of the students nowadays, they're just taking things for granted, that everything on the internet is legit.”*

(Lecturer 4, page 53, Q2j(iv), Line 12)

They also discussed concerns about academic integrity, urging the importance of ensuring any academic work done must be factual and accurate.

*“But for some, they don't have any idea, especially for fresh students, as they do not have the experience yet to know which are credible and reliable..”*

(Lecturer 3, page 52, Q2j(iii), Line 4)

Lecturers also expressed that specific groups are lacking in this regard, particularly, the newer batches of students. In accordance with the final theme, this group likely struggle due to their lack of experience.

It can be thusly concluded that UTAR students are intermediate in their critical abilities due to its importance to academic integrity and achievement. It also further reinforced that experience is crucial in building digital literacy, as newer students are the specific ones struggling with this element.

#### **4.2.13 Interview Question 13: (Critical) How effective are you and your fellow UTAR students regarding the identification of the credibility and reliability of online information?**

This question was only asked if the participant was a student. This question aims to judge whether student expectations of their literacy level matches that of the lecturers. Here, 2 themes were identified: “varying levels of familiarity / proficiency” and “room for growth / improvement”.

*“I believe I'm giving it a 3 (out of 10) for this.....”*

(Student 4, page 54, Q2j(viii), Line 1)

*“I'd say it's my only 10 out of 10.”*

(Student 5, page 54, Q2j(x), Line 5)

Students once again self-reported different levels of literacy for themselves and their peers in this aspect.

*“We are doing quite well but not quite the best yet... So, I would say we are at about 70 to 80% there.”*

(Student 2, page 54, Q2j(vii), Line 2)

Notably, students also recognized potential rooms for improvement in both them and their peers, indicating that this element becomes better with experience, aligning with previous data.

#### **4.3 Research Question 2: What are the aspects of digital literacy that UTAR students should prioritize developing for tertiary education?**

The following sub-topics are the research questions that were asked to identify the answer to the second research question of this study. As a result, the following subtopic are based on the questions used to glean information regarding the importance of the 5Cs in tertiary education.

##### **4.3.1 Interview Question 4: (Cognitive) In your opinion, how crucial is proper understanding of basic digital tools and technologies to tertiary level students?**

The following analysis is based on questions relevant to the 5 Cs of digital literacy and their importance academically. The question and resulting data were aimed to answer RQ2. The final results of all 5Cs will be analysed together to make a comparison of the most critical

elements of digital literacy in tertiary education. Here, 2 themes were identified: “Importance of the skill academically” and “importance of the skill beyond academics”.

*“It's very important for students to have proper understanding of basic digital tools... a lot of lectures also like to use Excel sheets and Google Docs”*

(Student 3, page 16, Q2a(viii), Line 6)

Participants, regardless of them being a lecturer or student, uniformly recognized the cognitive skill in academics, especially in the modern era. Many cited the fact that basics tasks have now become digital as a core reason.

*“... But then when you start your career, HR and employer are looking into these skills.”*

(Lecturer 1, page 13, Qa(i), Line 14)

Secondly, participants, primarily lecturers, also recognized the skill's importance beyond academics, touching on its importance in the work force. One student also discussed its importance in daily life, especially in engaging and maintaining social circles.

Overall, it can be seen clearly that the cognitive element is a fundamental part of digital literacy and is crucial for students both in and out of tertiary education.

#### **4.3.2 Interview Question 6: (Cultural) Is the knowledge of “netiquette” and how to generally behave online impactful to a student's success in tertiary education?**

The following analysis is based on questions relevant to the 5 Cs of digital literacy and their importance academically. The question and resulting data were aimed to answer RQ2. The final results of all 5Cs will be analysed together to make a comparison of the most critical elements of digital literacy in tertiary education. Here, 3 themes were identified: “Importance

of the skill academically”, “professionalism in online communication”, and “Plagiarism and academic integrity”.

*“Yes, it is important, but to relate it to students’ success in tertiary education, I cannot see how they are connected.”*

(Lecturer 5, page 24, Q2c(v), Line 1)

Firstly, in terms of the skill’s importance academically, participants indicated that the skill was important, but not necessarily academically. It serves its role but is not as crucial as the other aspects.

*“Yeah, just like in real life, you also have to have manners when interacting with people through online means.”*

(Student 1, page 24, Q2c(vi), Line 1)

On that same note, participants indicated that professionalism on digital platforms and mediums are a crucial aspect of digital literacy that students need to grasp.

*“In education, what happens is we use the internet a lot and with or without the intent to plagiarize, some people, we take it as references and we do give the necessary credit to the authors of certain articles.”*

(Student 3, page 25, Q2c(viii), Line 7)

Finally, in terms of netiquette, participants also touched on various other aspects such as plagiarism and stealing of content.

This not only shows how prominent plagiarism is in tertiary education, but also shows that netiquette is a very broad concept covering many different ideas. Overall, this element may be less fundamental than others, but still present.

### **4.3.3 Interview Question 8: (Constructive) Is the ability to reuse and readapt online content, especially in accordance with plagiarism and copyright laws, crucial to tertiary students?**

The following analysis is based on questions relevant to the 5 Cs of digital literacy and their importance academically. The question and resulting data were aimed to answer RQ2. The final results of all 5Cs will be analysed together to make a comparison of the most critical elements of digital literacy in tertiary education. Here 3 themes were identified: "ethical use of technology", "importance of the skill academically", and "plagiarism and academic integrity".

*“.....this is actually not just with the purpose to score... it's important for us to really acknowledge the online content created by someone else.”*

(Student 2, page 32, Q2e(vii), Line 3)

Firstly, participants stated that technology needs to be used ethically, as improper use can be very harmful to others, and thus should be done with care. Using these tools ethically is thus a part of literacy.

*“Oh, yeah, 100%. It is very important for them to actually know how to do this....”*

(Lecturer 1, page 29, Q2e(i), Line 1)

Secondly, it was indicated in these results that the constructive is extremely crucial to academics, as without it success would be impossible. Plagiarism due to incapability to construct and synthesize will cause a complete failure in completing the requirements of a degree.

*“So, you have to do proper citation..... It’s important for them to know, not only for assignment’s sake, FYP, but also for their careers.”*

(Lecturer 1, page 29, Q2e(i), Line 5)

Finally, plagiarism and academic integrity once again reappears in this set of data, reinforcing its importance and prominence. Overall, because plagiarism is such a major issue, this element is a crucial part of academic success as it is needed to combat the issue.

#### **4.3.4 Interview Question 10: (Communication) How beneficial is it for tertiary students to be familiar with communication norms and expectations online?**

The following analysis is based on questions relevant to the 5 Cs of digital literacy and their importance academically. The question and resulting data were aimed to answer RQ2. The final results of all 5Cs will be analysed together to make a comparison of the most critical elements of digital literacy in tertiary education. 3 themes were identified within the transcripts of this question: “adapting to technology”, “importance of the skill academically”, and “importance of the skill beyond academics”.

*“Clarity of communication varies across different online platforms... The way information is conveyed depends on the platform chosen.”*

(Lecturer 2, page 38, Q2g(ii), Line 1)

Firstly, a core part of this element discussed is the ability of one to adapt technologically. Different platforms have different norms and standards of communication; thus, it is crucial to adapt accordingly.

*“It’s crucial academically to know how to behave in different situations... Knowing the tone for emails, for example, is beneficial for students.”*

(Lecturer 4, page 38, Q2g(iv), Line 1)



As for the element's importance, the data suggests that this element is of least importance. Generally, respondents, outside of the samples given, did not give concrete answers about its importance academically, however, they did indicate its importance beyond academics and within daily life instead.

*“Knowing how to speak when is crucial in navigating tertiary educational life... Without this knowledge, you’ll end up offending a lot of people you really shouldn’t.”*

(Student 5, page 41, Q2g(x), Line 4)

Analysing this result in accordance with RQ2, communication is the least important academically, but may have strong importance beyond that context.

#### **4.3.5 Interview Question 12: (Critical) How much does a student benefit academically if they know how to identify the credibility and reliability of online information?**

The following analysis is based on questions relevant to the 5 Cs of digital literacy and their importance academically. The question and resulting data were aimed to answer RQ2. The final results of all 5Cs will be analysed together to make a comparison of the most critical elements of digital literacy in tertiary education. Finally, for the critical element, there are 3 themes, “importance of the skill academically”, “importance of the skill beyond academics”, and “plagiarism and academic integrity”.

*“Quite a lot, because if they fail to identify what is not a reliable source, or what is incorrect data, and then proceed to not research about it further, it would change the outcome of their research, because what they were basing it on was wrong.”*

(Student 1, page 49, Q2i(vi), Line 1)

From these elements, the data reveals that the critical element is extremely crucial and fundamental to student success in tertiary education. Student must fundamentally have this skill, or else their work will be inaccurate and thus completely rejected.

*“At worst, you begin believing and promoting conspiracy theories, racial stereotypes, the list is endless. It’s a no brainer. It’s a must have.”*

(Student 5, page 51, Q2i(x), Line 8)

Participants also made it clear that the skill is not just critical for students, but fundamentally crucial for every digital tool user. Being unable to identify what is non-reliable can bring severe negative consequences.

*“...for you to use the information that you have read online, and not to claim it as your own, but to also cite it properly...”*

(Lecturer 5, page 48, Q2i(v), Line 10)

Finally, without the critical element of digital literacy, people would deeply fail to adhere to academic integrity needs as information will end up force, and there is also a risk of plagiarism.

Critical is extremely crucial element to digital literacy in the Malaysian university context, and thus must not be overlooked.

#### **4.4 Participant’s Closing Thoughts**

In the closing thoughts, 5 themes were identified. As the question was open ended, no singular theme had a high frequency among participants. Hence, only a few sample statements could be provided. The 5 themes are “AI”, “ethical use of technology”, “challenges”, “importance / relevance of digital literacy”, and “solutions”.

*“Now, you can just go chat with GPT, 'give me ideas', you already get the outline of the story and you can just go from there and work on it..”*

(Lecturer 1, page 56, Q3a(i), Line 7)

Firstly, AI was thoroughly discussed throughout every data set. No singular question had enough hits to constitute a singular theme within the question, however, “AI” instead exists as an overall theme present throughout every question asked in the interview. This is evident here in the closing thoughts, where lecturers once again brought up the issue of AI in education.

*“I didn’t grow up in Malaysia, but in the United Arab Emirates. There they really drilled in plagiarism as an aspect when we did our research papers.”*

(Student 1, page 60, Q3a(vi), Line 1)

Secondly, the ethical use of technology in relation to plagiarism and morals is once again brought up, reinforcing its significance.

*“Students need to be open because technology is changing.....Every day there will be something new going on.....”*

(Lecturer 3, page 59, Q3a(iii), Line 13)

As indicated by the participants, challenges educators may face to overcome the issue of low digital literacy include the constant change of technology and need to educate literacy at a very young age.

*“.....digital literacy is not developed in tertiary education, it's too late... it has to start earlier.”*

(Lecturer 5, page 59, Q3a(v), Line 2)

Furthermore, participants stressed here that digital literacy is very relevant and crucial, especially in this current era due to the growing dependency on digital technologies.

“.....parents should play a part before their children go to school. They should be taught the proper way to use digital tools.”

(Lecturer 5, page 60, Q3a(v), Line 6)

Finally, participants also followed a theme of providing solutions to overcome low digital literacy rates. These include government, institutional, and parental action.

#### **4.5 Conclusion**

Overall, the results show that digital literacy has a strong relevance and importance to students in tertiary education. However, the level of literacy among UTAR students are only intermediate, which is deemed as lacking. Many lecturers and students also gave relatively varied answers about the literacy levels of students. It is clear however that in many cases, students need to ensure their literacy levels increases to an acceptable level.

## **Chapter 5: Discussion and Recommendation**

### **5.0 Introduction**

This chapter will cover and discuss the collected data, specifically covering the most prominent and reoccurring themes identified from the transcript. The limitations of this study and recommendations will both also be discussed here.

### **5.1 Discussions**

This section will focus on discussing the conclusions that can be drawn by the research data. Each conclusion was made through thematic analysis, and the themes were generally weighed by their frequency, focus, and relative prominence throughout all interview answers.

#### **5.1.1 Overall Levels of Familiarity / Proficiency**

Out of every theme discussed, the most prominent one presented was “varied level of familiarity / proficiency”. It presented itself in many different survey questions targeted to gauge the literacy level. This data, with the highest frequency of mentions throughout the survey, and was the most focused theme by far. The prominence of this theme in every participant, both lecturers and students, shows that digital literacy as a concept is very broad and hard to specifically define. Students and lecturers both gave scores that were different from every other participant, showing that digital literacy may also better be analyzed at the level of an individual instead of a general consensus of a population, as there are too many concepts to generalize and present. The theme also covers why digital literacy still exists as a modern issue, as it is far too broad to actually create meaningful and effective strategies around (ETX, 2023). Not to mention that this theme of varying skill is also supported directly by the minor theme “digital literacy is a broad concept”, where participants directly called to attention this topic’s breadth.

On that same note of familiarity / proficiency levels, another common theme that is related to this is the theme of “intermediate level of familiarity & proficiency.” This further suggests that the literacy level vary greatly, but even more so between specific elements of literacy. Some of the elements presented themes of varying proficiency, while others were high-intermediate. Other thematic levels of proficiency also existed, such as low and high, but through lecturer judgement and student confirmation, this study has concluded that among UTAR students, the digital literacy rates are varied from student to student but can be generally summarized to be at an intermediate level. These results are consistent with other similar research on the matter (Samsuddin et al., 2021).

Another aspect of familiarity / proficiency is the prominence of the theme “use of digital tools”. In context with digital literacy, most participants referred to the use of digital tools in tertiary education specifically. Students mentioned that their classmates would use digital devices to easily record lecture notes, while other students and lecturers referred to educational software such as Padlet and Mentimeter. Thus, it is important to note that the scale used to measure digital literacy levels, both for general and specific elements, is being influenced by one’s ability to use digital tools, as that is a primary aspect of digital literacy for most participants. The theme also supports the Cognitive element of digital literacy is fundamental to the concept, as the element directly discusses the effective use of digital tools. This result also aligns with previous definitions of digital literacy, which focused on the usage of digital tools and their effective management (Bieza, 2020).

### **5.1.2 Levels of Familiarity / Proficiency for Each Element**

As for the familiarity / proficiency levels for each element, the themes presented by both lecturers and students were put together to be analysed. Firstly, the cognitive element, the theme presented by lecturers was the proficiency level varied, while students concluded that they were high-intermediate. It can thus be concluded that UTAR students are relatively high-

intermediate with the cognitive element, but there is great variation between the skilled and unskilled students.

Next, for the cultural element, lecturers stated that they believed it was quite low among their students, while the students themselves considered themselves to be high proficiency. Based on this result, it can be concluded that students may be very low proficiency, with the difference in perception by students and lecturers being explained by the Dunning-Kruger effect (Campbell, 2023). This psychological principle states that when someone is very unskilled or ignorant about a topic, they believe they are highly skilled and educated in the topic, because they do not have the knowledge to know how much it is that they are lacking. The students may have rated themselves and their peers highly due to these effects. Another possible explanation is that these students are in fact high-intermediate skilled, but only for their own culture. The cultural elements results may have been different between lecturer and student not because the students overestimate themselves, but because cultural values are different, and thus the difference in rating.

For the constructive element, lecturers mentioned that their students varied in their literacy levels, and here is the only instance where students gave answers in agreement with the lecturers. As thematically, both groups presented that UTAR students varied in constructive digital literacy, it can be concluded that students in UTAR have no consistent or shared pattern of literacy levels when it comes to the ability to synthesize information from online materials.

As for communication, lecturers once again followed the theme of varied familiarity / proficiency, while students on the other hand self-reported low levels of digital communication literacy. Similar to the cultural element, the communication element has different answers from both groups, possibly due to cultural differences. The lecturers may be undecided on the student's literacy levels, but as students have more experience with communication platforms,

they are able to accurately access their low literacy levels (Chen & Ha, 2023). As such, a safe conclusion that can be made is that UTAR students have a low-intermediate level of communication literacy.

Finally, for the critical element, lecturers indicated they perceived students to have intermediate capabilities in discerning credibility of online information, while the students themselves followed the theme of there being a wide variety of literacy levels among students. Following the logic previously established in this paper, it will be safely concluded that students have an intermediate level of proficiency in this regard, but the results may vary depending on students.

### **5.1.3 Importance Level of Each Element**

Here, the hierarchy of importance for each element will be discussed. Firstly, the participants unanimously agreed that the cognitive aspect of digital literacy is extremely, important. As the themes of both “use of digital tools” and “importance of the skill academically” indicated throughout the entire study, being able to use digital tools effectively is the first step to form any higher levels of digital literacy, and it is seen by both lecturers and students as a necessary fundamental skill. As such, this was placed at the top.

Next, it was concluded that the cultural element is less important than cognitive. Participants believed that the skill holds strong relevance to tertiary education, it does not hold as much value as the other elements that were mentioned in relation to digital literacy and tertiary education.

For the third element of constructive literacy, the study thematically showed that this element is specifically crucial to education. Here, the themes related to this element only illustrated how crucial it was academically but does not touch on how it could be important beyond the university context. Concerns such as plagiarism and academic integrity were also



brought up, which links to the importance in education but not work, as plagiarism plays a far large role in research and academics as compared to career building.

Next, the fourth element, which is communication, is directly opposite of constructive. According to the themes presented, such as “professionalism”, this element has little importance to academic and tertiary educational efforts but plays a massive role in the workplace and the future career of students. Though it can affect academics, such as when contacting university staff and lecturers, its consequences are less impactful than the other elements.

Finally, the critical element of digital literacy, is also fundamentally important for tertiary education. As indicated by the themes of both "plagiarism and academic integrity", and “important of the skill academically, being able to discern credibility and source reliability is fundamental to research and applies directly to completing academic assignments.

Gauging these results, the conclusion that can be made to answer research question 2 is that cognitive, constructive, and critical share the role of being the most fundamental elements of digital literacy for UTAR students, while cultural is the second most important and communication is the least. These 2 elements play large roles in the university’s students’ life rather than for academics specifically.

## **5.2 Implications**

For education itself, in reference to the themes and statements made by participants, universities could consider introducing short digital literacy courses for new intake students to help them become equipped to tackle their studies. These workshops should target weaker groups, as the theme of “specific problem groups” was minorly focused on in the study. University management could provide these courses to international students who struggle with the language barrier, low-income students who have less experience with digital technologies,

and all student who are fresh intake to the university. Parents should also play a role in promoting good digital literacy development in their children long before they enter university, and many interview participants indicated that they feared tertiary education was too late to start developing digital literacy.

### **5.3 Limitations**

A core limitation of this study is that it does not consider the differences that could possibly arrive due to university culture. As different organizations have generally different values and attitudes, results may differ greatly, as perceptions of importance also changes. To overcome this, the general attitude of UTAR was considered, and was used to compare to the results of the studies. Any result that can be interpreted as altered by UTAR culture was negated or deliberately interpreted and acknowledged as such.

Another limitation is that due to the breadth and depth of the topic, it is difficult to make exact solid conclusions from the data as the breadth of the topic makes it a complex and open-ended issue to be analysed, with multiple different interpretations of the data possible. To overcome this barrier, the multiple interpretations were acknowledged, and any interpretation that was irrelevant or lacked supporting evidence was negated.

The final limitation of these results is that even though the study considers multiple different views, the results may still not be accurate when adapted, such as, being applied to the individual level to help improve digital literacy rates. This study acknowledges that all data collected, and all conclusions drawn were made in the tertiary education, general context specifically, and may not be accurately once adapted and changed.

### **5.4 Recommendations**

In the future, the study could be further explored through research into specific elements and how they might affect education. For example, quantitative studies into how each element

may affect a student's grade or academic success could be done. Additionally, research into how these literacies may affect an educator's ability to teach tertiary education could also be done to analyse the multi-layered aspect of this issue, and explore an alternate angle. Additionally, future research could observe how digital literacies can develop over time, creating a map to the best way of developing these techniques in students.

## **5.5 Conclusion**

The study, through meticulous data collection and thematic analysis, has revealed some of the complexities regarding digital literacy, particularly those within the context of Malaysian tertiary education. The analysis revealed that the topic is multifaceted, causing the digital literacy to fluctuate greatly as many internal and external factors play a role in shaping student digital literacies, and there are many implications for both students and educators. Central to the findings is the prominence of the theme "varied levels of familiarity / proficiency", underlining the challenges in assessing the digital literacy rate. The specific elements relevant to Malaysian tertiary education are cognitive, constructive, and critical, while cultural and communication competencies were less important and had contractor data from lecturers and students, unlike the straightforward conclusions that could be drawn from the main 3 elements. The study overall highlights the critical role that digital literacy plays in modern educational environments, and topic invites many future opportunities of research and applications to improve the current educational system of Malaysia. By addressing and identifying the issues with lowered digital literacy rates, relevant strategies can be planned and executed to overall aid in the current crisis of digital technological misuse, especially in schools and universities.

## References

- Al Njadat, E. N., Al-Ja'afreh, S., & Almsaiden. A. H. I. (2021). Educational technology and its impact on the efficiency of the educational process in higher education. *Cypriot Journal of Educational Sciences*, 16(4), 1384–1394.  
<https://doi.org/10.18844/cjes.v16i4.5987>
- Aziz, A. (2018, December 21). *Embrace 21st-century learning approach* . The Malaysian Reserve. <https://themalaysianreserve.com/2018/12/21/embrace-21st-century-learning-approach/>
- Azuar, A. (2022, January 6). *Digital Learning to stay post-pandemic*. The Malaysian Reserve. <https://themalaysianreserve.com/2022/01/06/digital-learning-to-stay-post-pandemic/>
- Basir, A., Kamaliah, K., Harahap, A., Fauzi, A., & Karyanto, B. (2021). How Universities Entrust Digital Literacy to Improve Student Learning Outcomes During the COVID-19 Disruption. *Jurnal Iqra' : Kajian Ilmu Pendidikan*, 6(1), 235–246.  
<https://doi.org/10.25217/ji.v6i1.1146>
- Belshaw, D. (2014) *Essential elements of digital literacies*. US: Gumroad, Inc.  
<https://doughbelshaw.com/essential-elements-book.pdf>
- BOTS team (2022, October 11), #TECH: Right move to help Malaysian organisations remain competitive in digital-first era – IDC. *The New Straits Times*.  
<https://www.nst.com.my/lifestyle/bots/2022/10/839417/tech-right-move-help-malaysian-organisations-remain-competitive>
- Braun, V., & Clarke, V. (2012). Thematic analysis. *APA handbook of research methods in psychology*, 2(1), 57–71. <https://doi.org/10.1037/13620-004>
- Brown, A. and Gibson, W. (2009) *Working with qualitative data*. London: SAGE Publications Ltd.

<https://books.google.com.my/books?id=zdzYwxtXKWQC&lpg=PP2&ots=NX2kOFh74P&dq=qualitative%20data&lr&pg=PA1#v=onepage&q=qualitative%20data&f=false>

- Bujang, S. D. A., Selamat, A., Krejcar, O., Maresova, P., & Nguyen, N. T. (2020). Digital Learning Demand for Future Education 4.0—Case Studies at Malaysia Education Institutions. *Informatics*, 7(2), 13. <http://dx.doi.org/10.3390/informatics7020013>
- Demirtas, C. (2023). Investigation of Research on Digital Literacy in Education: A Science Mapping Study. *International Online Journal of Educational Sciences*, 15(1), 207–221. <https://doi-org.libezp2.utar.edu.my/10.15345/iojes.2023.01.015>
- Dziak, M. (2023). Technology. *Salem Press Encyclopedia of Science*. <https://research-ebSCO-com.libezp2.utar.edu.my/linkprocessor/plink?id=da5c74fb-a813-3dc8-b8d2-5786e2b87047>
- Flores, J. M. V., Yupanqui, R. M., Gamarra, S. S. C., Tivera, F. F. L., & Sarmiento, L. K. C. (2022). Digital literacy in the communication skills of peruvian teachers in times of the Covid - 19 pandemic: A systematic review. *Archivos Venezolanos de Farmacologia y Terapeutica*, 41(10), 722–727. <https://doi-org.libezp2.utar.edu.my/10.5281/zenodo.7513080>
- Fulton, C., & McGuinness, C. (2016). Chapter 2 – Your Learning in a Digital World. In C, Fulton & C, McGuinness (Ed.), *Digital Detectives* (12th ed., pp. 9-17). Chandos Publishing. <https://www.sciencedirect.com/science/article/pii/B9780081001240000027>
- Garrison, D. R. (2011). *E-learning in the 21st century : a framework for research and practice* / D.Randy Garrison. Routledge. <https://research-ebSCO-com.libezp2.utar.edu.my/linkprocessor/plink?id=e121d0c6-e940-3a7c-92d6-922b01359ac1>

- Ghosh, S. P. (1958). A Note on Stratified Random Sampling with Multiple Characters. *Calcutta Statistical Association Bulletin*, 8(2-3), 81-90.  
<https://doi.org/10.1177/0008068319580204>
- Golodov, E. A., Gerlach, I. V., Spirina, O. N., Kopchenko, I. E., Khlopkova, V. M., & Chiyanova, E. V. (2022). Professional deficits of teachers in the field of ICT competencies, manifested in the conditions of digital transformation of education. *Perspektiv Nauki i Obrazovania*, 58(4), 58–73. <https://doi-org.libezp2.utar.edu.my/10.32744/pse.2022.4.4>
- Karwur, H. M., Lobja, X. E., Sulistyosari, Y., & Korompis, M. E. (2023). The Importance of Digital Literacy in Geography Learning for Geography Education Students at Fish Unima. *Technium Social Sciences Journal*, 49, 189–195. <https://doi-org.libezp2.utar.edu.my/10.47577/tssj.v49i1.9800>
- Kusumastuti, A., & Nuryani, A. F. (2019). Digital Literacy Levels in ASEAN (Comparative Study on ASEAN Countries). *Proceedings of the 13th International Interdisciplinary Studies Seminar, IISS 2019, 30-31 October 2019, Malang, Indonesia*. (1<sup>st</sup> ed., pp. 269-279). EAI Publishing.  
[https://books.google.com.my/books?hl=en&lr=&id=O3I5EAAAQBAJ&oi=fnd&pg=PA269&dq=statistics+digital+literacy+Malaysia&ots=xFRwQ4-p7a&sig=1tXQ24gvNzxPwq7tGYIwayWLDBs&redir\\_esc=y#v=onepage&q=statistics%20digital%20literacy%20Malaysia&f=true](https://books.google.com.my/books?hl=en&lr=&id=O3I5EAAAQBAJ&oi=fnd&pg=PA269&dq=statistics+digital+literacy+Malaysia&ots=xFRwQ4-p7a&sig=1tXQ24gvNzxPwq7tGYIwayWLDBs&redir_esc=y#v=onepage&q=statistics%20digital%20literacy%20Malaysia&f=true)
- Lundin, L. L. (2022). E-Learning. *Salem Press Encyclopedia*. <https://research-ebSCO-com.libezp2.utar.edu.my/linkprocessor/plink?id=8711f1da-c742-30d6-b88d-c4f766f50e0e>

- Muhamad, M., & Goh, H. S. (2019). Teachers' perspective of 21st century learning skills in Malaysian ESL classrooms. *International Journal of ADVANCED AND APPLIED SCIENCES*, 6(10), 32–37. <https://doi.org/10.21833/ijaas.2019.10.006>
- Mukhtar, K., Javed, K., Arooj, M., & Sethi, A. (2020). Advantages, Limitations and Recommendations for online learning during COVID-19 pandemic era. *Pakistan journal of medical sciences*, 36(COVID19-S4), S27–S31. <https://doi.org/10.12669/pjms.36.COVID19-S4.2785>
- Osterman, M. D. (2012). Digital literacy: Definition, theoretical framework, and competencies. Proceedings of the 11th Annual 134 College of Education & GSN Research Conference, 1(1), 135-141. <https://digitalcommons.fiu.edu/cgi/viewcontent.cgi?article=1213&context=sferc>
- PADU (2019). 21st Century learning teachers campaign launch (2019) *Ministry of Education Malaysia*. <https://www.padu.edu.my/events/21st-century-learning-teachers-campaign-launch/>.
- Pangrazio, L., Godhe, A.-L., & Ledesma, A. G. L. (2020). What is digital literacy? A comparative review of publications across three language contexts. *E-Learning and Digital Media*, 17(6), 442–459. <https://doi.org/10.1177/2042753020946291>
- Purdy, E. R., PhD. (2022). Literacy. *Salem Press Encyclopedia*. <https://research-ebSCO-com.libezp2.utar.edu.my/linkprocessor/plink?id=5c5da43b-3d3d-3c89-a800-6fb618cad661>
- Rinekso, A. B., Rodliyah, R. S., & Pertiwi, I. (2021). Digital literacy practices in tertiary education: A case of EFL postgraduate students. *Studies in English Language and Education*, 8(2), 622–641. <https://doi-org.libezp2.utar.edu.my/10.24815/siele.v8i2.18863>

- Sheposh, R. (2023). Digital technology. *Salem Press Encyclopedia of Science*.  
<https://research-ebSCO-com.libezp2.utar.edu.my/linkprocessor/plink?id=21a79be4-3798-3d17-90ae-6c74d866bdb4>
- Spector, P. E. (2019). Do Not Cross Me: Optimizing the Use of Cross-Sectional Designs. *Journal of Business and Psychology*, 34(2), 125–137. <https://doi.org/10.1007/s10869-018-09613-8>
- Wigati, I., & Fithriyah, M. (2022). Post Covid-19 Strategy Through Supporting Teacher Digital Literacy as the Sustainable Decision to Enhance Education System: Indonesia Case Study. *2022 International Conference on Decision Aid Sciences and Applications (DASA), Decision Aid Sciences and Applications (DASA), 2022 International Conference On*, 851–857. <https://doi-org.libezp2.utar.edu.my/10.1109/DASA54658.2022.9765309>
- Yeap, C. F., Suhaimi, N., & Nasir, M. K. M. (2021). Issues, Challenges, and Suggestions for Empowering Technical Vocational Education and Training Education during the COVID-19 Pandemic in Malaysia. *Creative Education*, 12(08), 1818–1839. <https://doi.org/10.4236/ce.2021.128138>



## Appendixes

### Appendix A

#### Mapping of Themes to Participant's Statements

| <b>Interview Question 1: Please briefly describe your familiarity and proficiency with basic digital tools, such as word processing software and web browsers. (This question is skipped for students)</b> |   |
|--|---|
| <b>Theme</b>   | <b>Text from Transcription</b>  |
| <p>Theme 1: Intermediate familiarity / proficiency</p>   | <p>Lecturer 1: .As for my proficiency, maybe I would say that I'm <u>intermediate to advanced</u>.</p> <p>Lecturer 2: My Familiarity is, I would say <u>intermediate</u>, as well as my proficiency.</p> <p>Lecturer 3: I am familiar, but then to say that I'm proficient, <u>maybe to a certain extent</u> I am proficient, but <u>not that expert</u> in using these digital tools.</p> <p>Lecturer 4: I'm <u>not really a techie guy</u>, but then again, sometimes I'll use it to generate slides.</p> <p>Lecturer 5: I think I am quite familiar and quite proficient with the tools. <u>But only particularly</u> with the software's that involve teaching.</p> |
| <p>Theme 2: Word processors and web browsers used</p>  | <p>Lecturer 1: But recently I use <u>Brave</u> because people say that <u>Brave is similar to Chrome</u>, but it won't take much of your RAM. So, I</p>   |

|  | <p>am going with that one for now.....Word processing, like <u>Microsoft Word</u>, and <u>Google Doc</u>, for those, I would consider I'm kind of familiar with it.</p> <p>Lecturer 2: . So, in a sense, when <u>I do use Microsoft Word</u>, for example, what I take advantage of is editing or actually making comments.</p> <p>Lecturer 3: So, the basic ones, we have Microsoft teams, <u>Microsoft Office (Word)</u>, and those sort of things. Yeah, I'm OK with that.</p> <p>Lecturer 5: So, for <u>web browsers</u>, I would say I am <u>proficient</u>, similarly for teaching purposes.</p> |
|--|--|
| <p><b>Interview Question 2: How would you personally define digital literacy in the context of Malaysian tertiary education?</b></p> |  |
| <p><b>Theme</b></p>  | <p><b>Text from Transcription</b></p>  |
| <p>Theme 1: Digital literacy as a current era day-to-day necessity.</p>  | <p>Lecturer 1: It's like what the government is doing, like "al <u>money is now credited into your e-wallet!</u>", so you <u>have to use</u> your e-wallet.</p> <p>Lecturer 2: I would define it as a <u>super core necessity</u> right now..... <u>Very, very necessary</u>, because it's shown its <u>role as a</u></p>  |

|   |  |
|---|--|
|   | <p><u>central part in allowing</u> for immediate research and immediate feedback.</p> <p>Lecture 3: <u>Nowadays</u>, the technology is a <u>huge part of our life</u>. Everyone <u>must be able to use it</u>. In <u>every aspect of our life</u>, it could be education, it could be entertainment, it can be anything, <u>digital technology will be there</u>.</p> <p>Lecturer 4: I would say that it's the <u>future of education</u> <u>nowadays</u>..... Because <u>everything is being digitalized</u> now</p> <p>Student 2: ..... how we apply our own knowledge of using these digital tools and digital software in <u>our learning on a daily basis</u>.</p> <p>Student 3: Digital literacy from my understanding, is about how well we can use online tools. It can be PowerPoint slides, it can be Excel sheets, worksheets, and <u>whatever we use in our daily studies</u>.</p> |
| <p>Theme 2: Digital literacy is knowledge coupled with the skill to be applied practically.</p> | <p>Lecturer 1: So with digital literacy, if you are open to <u>use technology in your daily life</u>, then I guess you will <u>day by day improve yourself</u>.</p> <p>Lecturer 3: . I define it as "<u>to what extent is a human familiar with technology</u>"..... I think</p>   |

the definition of digital literacy is the awareness, or the familiarity of humans, with the digital world.

Lecturer 5: In other words, manipulating the information that they get from the internet or from digital sources, and then creating their work digitally as well, that's my definition of digital literacy.

Student 1: Digital literacy is being able to use the software needed for researching publishing papers and doing assignments, that kind of stuff.

Student 2: The better that we apply this knowledge of using digital tools and software, the better the level of digital literacy. That's my point of view as a student.

Student 3: Digital literacy from my understanding, is about how well we can use online tools.

Student 5: I would simply say it's the knowledge and skill to appropriately utilise the available digital tools around us to fulfil academic tasks and functions.

**Interview Question 3: Using your earlier definition as a basis, how generally digitally literate do you think your UTAR Students are? (For lecturers)**

| Theme                             | Text from Transcription   |
|-----------------------------------|---|
| Theme 1: Generational Divide      | <p>Lecturer 1: I guess with students, considering that they are <u>Gen Z</u>, perhaps their digital literacy is around intermediate.....think it comes from a place where people say “<u>Gen Z, they are born with technology. You guys are born with computer, with this and that.</u> So, by right, <u>you should know how to function</u> with it”, but in reality, it’s not really everybody.</p> <p>Lecturer 3: I would think that <u>they will be more familiar</u>. And they can do better with the technology as <u>compared to me</u>. Because <u>during my years, when I was young</u>, we don't have this technology yet.</p> <p>Lecturer 5: Hence, you might have <u>teachers who are not very familiar</u> with all the software's and computers and whatnot. But students’ wise, no issue, because they are <u>born into the digital era</u>.</p> |
| Theme 2: Expectations vs. Reality | <p>Lecturer 1: .....perhaps their digital literacy is around intermediate. That's what my <u>expectation</u> is towards my student, to any of the classes that I teach. To me, I feel like they</p>   |

|   | <p>are intermediate, but some of them <u>surprise me, as they're not really there.</u></p> <p>Lecturer 5: .....they cannot <u>expect all students</u> are <u>well versed</u> in digital technologies..... yes, they are born into the digital era, but <u>some of them</u> do not <u>use digital equipment</u> to <u>learn academically.</u></p>   |
|---|--|
| <p><b>Interview Question 3: Using your earlier definition as a basis, how generally digitally literate do you think you and your fellow UTAR Students are? (For students)</b></p> |  |
| Theme   | Text from Transcription  |
| <p>Theme 1: Use of digital tools</p>  | <p>Student 2: .....when I attend the lecture classes, most of the students, they are using <u>tablets</u>, they're using <u>iPad</u>, or they're using their <u>laptop</u> to <u>record out the lecture notes</u></p> <p>Student 3: .....the only thing I knew how to use was probably the <u>basic elements</u>, such as <u>Word documents and PowerPoint slides</u>, but even the word documents and PowerPoint slides, there's so many functions.....</p> <p>Student 4: This is because we need to use <u>basic digital tools</u> such as <u>PowerPoint slides and Canva</u> for our assignments.</p> |
| <p>Theme 2: Varied levels of familiarity / proficiency</p>  | <p>Student 1: I think I'm like, <u>literate enough</u>..... But I think the rest, they're (other students) <u>capable.</u></p>   |

|  |   |
|--|---|
|  | <p>Student 2: Well, I think as for UTAR students, the digital literacy level is actually <u>quite good</u>.</p> <p>Student 3: For myself, how digitally literate I am, I would say, if you give me a scale of 1 to 5, I'm probably <u>on the scale of 2 to 3</u>.....But in most cases in UTAR students, I would say they're actually <u>quite digitally literate</u>, because they're more <u>on the scale of 4</u>.</p> <p>Student 4: I believe that most UTAR students including myself are <u>competent</u> in digital literacy.</p> <p>Student 5: .....as a general, university student, I'd say I have a <u>pretty good grasp on things</u>. The <u>same goes for my peers</u>.</p> |
|--|---|

**Interview Question 4: (Cognitive) In your opinion, how crucial is proper understanding of basic digital tools and technologies to tertiary level students?**

| Theme   | Text from Transcription   |
|---|---|
| Theme 1: Importance of the skill academically | Lecturer 2: It's <u>extremely crucial</u> ... Without it, not only are they <u>not going to be able to get their assignments processed and submitted</u> , they're also <u>not going to be able to engage in meaningful group discussions</u> . |

|  |  |
|--|--|
|  | <p>Lecturer 3: Having this information or having this ability to be familiar with technology is <u>very, very, very important for students nowadays...</u></p> <p>Student 1: I think it's <u>necessary because you need to know how to navigate a website to submit your documents...</u> Yeah, so it's quite important.</p> <p>Student 3: It's <u>very important for students to have proper understanding of basic digital tools...</u> a lot of lectures also like to use Excel sheets and Google Docs.</p>   |
| <p>Theme 2: Importance of the skill beyond academics</p> | <p>Lecturer 1: A friend of mine did his degree in public admin, <u>but after graduating</u> that he realized that now in order for you to just be in HR, it's not really just about HR... So, if you have the ability to go for all these classes, go for it, because I feel like <u>digital literacy is very important.</u></p> <p>Lecturer 2: ... But then <u>when you start your career, HR and employer are looking into these skills.</u></p> <p>Lecturer 3: <u>Everywhere they will be there with you,</u> you want to do anything you will be using technology... So, it is <u>very crucial</u></p> |



|  | <p><u>for students to be able to incorporate technology in their daily life</u>, because it will help them to explore life.</p> <p>Student 2: It's a need for us to have a proper understanding.....if we want <u>to blend in with our social circles</u>, we will also need have a proper understanding.</p>  |
|--|--|
| <p><b>Interview Question 5: (Cognitive) In your opinion, how effective are your UTAR students regarding the proper understanding of basic digital tools and technologies to tertiary level students? (For lecturers)</b></p> |  |
| Theme  | Text from Transcription  |
| <p>Theme 1: Varied levels of familiarity / proficiency</p>   | <p>Lecturer 1: I feel like their understanding is, <u>not to say bad</u>, but if you were to rank it from 1 to 10, 1 is the worst, 10 is “I know everything”, I guess our students are around <u>5, 6</u>.</p> <p>Lecturer 2: I would say they're <u>pretty apt</u>. Their usage in terms of technical aspects, <u>it's quick, its efficient, they produce output very quickly</u>.</p> <p>Lecturer 3: They are <u>more familiar</u> with these digital tools. And I <u>believe they are good</u> in using them.</p> <p>Lecturer 4: My students? Well, I don't have a particular idea on how well-versed they are,</p> |

|  |   |
|--|---|
|  | <p>but they definitely are <u>very good at using all these apps.</u></p> <p>Lecturer 5: As I've mentioned, I think they are <u>quite okay.</u></p>  |
| Theme 2: Digital literacy for academic purposes  | <p>Lecturer 2: .....they are <u>self-reliant</u> when it comes to producing output. It's just the <u>going in and sourcing for information</u> that they <u>need lots of help with.</u></p> <p>Lecturer 3: Some of them I've observed, they even ask ChatGPT <u>where to eat.</u> Even with that kind of question, they rely on technology..... If I would comment about <u>integration to education,</u> if you are being overly reliant on technology, it would <u>affect your intelligibility.</u></p> <p>Lecturer 5: So basic digital tools, <u>they know how to operate</u> them and all that, but <u>not specifically related to academic purposes.</u></p> |
| <p><b>Interview Question 5: (Cognitive) In your opinion, how effective are you and your fellow UTAR students regarding the proper understanding of basic digital tools and technologies to tertiary level students? (For students)</b></p> |   |
| <b>Theme</b>   | <b>Text from Transcription</b>  |
| Theme 1: Use of digital tools  | <p>Student 2: I think for the for the bare minimum needed, we still fulfill, because we can use the <u>iPad</u> to record out notes. I think</p>  |

|   |   |
|---|---|
|   | <p>basically, we already know, we know how to use the three <u>basic Microsoft software</u>, which are <u>Microsoft words, PowerPoint, and also Excel.</u></p> <p>Student 3: I feel like we've learned a lot from them in the sense of <u>using tools</u> such as <u>Mentimeter, Padlets</u>, and all these things that we can in the future apply.....</p> <p>Student 5: There's a lot of things on <u>Microsoft Word</u> for example that I know, but some I don't</p>  |
| <p>Theme 2: High-intermediate levels of familiarity / proficiency</p> | <p>Student 1: I think I'm <u>well versed enough.</u> Maybe a bit more, but like, <u>a scale from 1 to 5, I guess like a 4.</u></p> <p>Student 3: For me and my peers, I would say, we understand it <u>moderately</u>, in a sense that, we <u>understand</u> the things that we need to use just enough so we can complete our assignments.</p> <p>Student 4: : I believe it would be an <u>8 out of 10.</u></p> <p>Student 5: I'd like to imagine I'm <u>very well versed</u>, but the honest answer, maybe its <u>6 or 7 out of 10?</u></p> |

**Interview Question 6: (Cultural) Is the knowledge of “netiquette” and how to generally behave online impactful to a student’s success in tertiary education?**

| Theme  | Text from Transcription  |
|--|--|
| <p>Theme 1: Importance of the skill academically</p> | <p>Lecturer 1: It's <u>very important</u> for them to know it because we are moving towards a digital world.</p> <p>Lecturer 2: If we include, in netiquette, the need to put things in one's own words, the need to process information and not regurgitate or not plagiarize, then I think it is <u>extremely necessary</u>.</p> <p>Lecturer 3: Yes, I <u>strongly agree</u> with this statement. Netiquette, how to generally behave online? Yeah, right now we see a lot of situations whereby the way, especially social media users behave on their sites, it's not good.</p> <p>Lecturer 4: <u>Yeah, definitely</u>. I mean, like the way they carry themselves is definitely going to determine their success.</p> <p>Lecturer 5: <u>Yes, it is important, but to relate it to students’ success in tertiary education, I cannot see how they are connected</u>.</p> <p>Student 5: I mean, if you’re <u>texting a lecturer or university official</u>, of course</p> |

|  |  |
|--|--|
|  | <p><u>that's important. Don't use emojis unnecessary or send them memes or what not.</u></p>   |
| <p>Theme 2: Professionalism in online communication</p>  | <p>Lecturer 1: I feel that when it comes to netiquette, that's more relevant at a personal level... So, it is <u>very important for them to actually know how to do this.</u></p> <p>Lecturer 5: So, if we don't <u>behave properly online</u>, this not only impacts us but other users of the internet.</p> <p>Student 1: Yeah, <u>just like in real life</u>, you also <u>have to have manners when interacting with people through online means.</u></p> <p>Student 2: I believe <u>this knowledge is important for us</u> to actually apply when we are using the internet to <u>communicate with someone</u>, or even with someone that we don't know.</p> |
| <p><b>Interview Question 7: (Cultural) How effective are your UTAR students regarding the knowledge of “netiquette” and how to generally behave online impactful to a student’s success in tertiary education? (For lecturers)</b></p> |  |
| <p><b>Theme</b></p>  | <p><b>Text from Transcription</b></p>  |
| <p>Theme 1: Low levels of familiarity / proficiency</p>  | <p>Lecturer 1: <u>Not quite. Not really.</u></p>   |

|   |   |
|---|---|
|   | Lecturer 2: They <u>need lots of improvement</u> . I think, to rate them on a <u>scale out of 10, I think a 3</u> .   |
| Theme 2: Challenges in assessment   | Lecturer 3: I think it <u>depends on the individual</u> , but in general, I think things are getting better right now.<br><br>Lecturer 4: This is this is the part where <u>we can't really analyse it.....</u> it's kind of <u>very hard for me to actually rate</u> on these particular behaviours of the students.   |
| <b>Interview Question 7: (Cultural) How effective are you and your fellow UTAR students regarding the knowledge of “netiquette” and how to generally behave online impactful to a student’s success in tertiary education? (For students)</b> |   |
| <b>Theme</b>  | <b>Text from Transcription</b>  |
| Theme 1: High levels of familiarity / proficiency   | Student 1: I think it’s the same as the previous question, like <u>4 out of 5. Same with my peers</u> .<br><br>Student 2: I believe we still have <u>enough netiquette</u> , because so far <u>I don't see any cyber bullying</u> cases happening in UTAR<br><br>Student 3: Personally, in my case, me and my friends, the close ones I know, I would say we are quite <u>well versed in netiquette</u> . |

|   |  |
|---|--|
|   | <p>Student 4: If I were to rate that it would be <u>like a 7 out of 10</u>. I like to think that we are <u>more or less responsible for our actions</u>.</p> <p>Student 5: Honestly, I think this will be the only category where I can give you a <u>confident 9 out of 10</u>.</p>                                   |
| Theme 2: General level of politeness  | <p>Student 2: .....we know what things we <u>are supposed to say</u> and what things we are <u>supposed not to say</u>.</p> <p>Student 4: I like to think that we are <u>more less responsible for our actions</u>.</p> <p>Student 5: <u>Definitely 8 out of 10</u>. There's a <u>general sense of politeness</u>.</p> |
| <p><b>Interview Question 8: (Constructive) Is the ability to reuse and readapt online content, especially in accordance with plagiarism and copyright laws, crucial to tertiary students?</b></p> |  |
| <b>Theme</b>  | <b>Text from Transcription</b>   |
| Theme 1: Ethical use of technology  | <p>Lecturer 1: So, it is very important for them to know how to do this referencing... You have to <u>do proper citation and proper everything else</u>.</p> <p>Lecturer 3: So, students need to know when you can use it, and then not just use it... They</p>  |

|   |   |
|---|---|
|   | <p>do need to also <u>produce citations</u>. Give credit <u>to the original author</u>.</p> <p>Student 2: ...this is <u>actually not just with the purpose to score...</u> it's important for us to <u>really acknowledge the online content created by someone else</u>.</p> <p>Student 3: I think it's important <u>because if we are not taught this ethic</u>, this behaviour, to give <u>necessary citations or credit to the authors.....</u>I feel like this behaviour will continue into our working life, which can also negatively impact us.</p> |
| <p>Theme 2: Importance of the skill academically</p>  | <p>Lecturer 1: Oh, <u>yeah, 100%</u>. It is <u>very important for them</u> to actually know how to do this... So, it is <u>very important</u> for you to know how to do this referencing.</p> <p>Student 1: Yes, <u>because if you don't paraphrase</u>, or you <u>don't cite your sources</u>, you get a <u>zero in your research paper</u>.</p> <p>Student 5: So yeah, I'd say <u>its unbelievably crucial to student success</u>. There's a lot to be gained from doing it correctly.</p>  |
| <p><b>Interview Question 9: (Constructive) How effective are your UTAR students regarding the ability to reuse and readapt online content, especially in accordance with plagiarism and copyright laws, crucial to tertiary students? (For lecturers)</b></p> |   |



| Theme  | Text from Transcription  |
|--|--|
| <p>Theme 1: Varied levels of familiarity / proficiency</p> | <p>Lecturer 1: From my experience of looking how they are, from <u>1 to 10</u>, I would say, like <u>6, 7</u>.</p> <p>Lecturer 2: <u>Very minimally</u> actually. Sadly, at this stage, they've been <u>very very, very minimally well versed</u>.</p> <p>Lecturer 3: It <u>depends on the students</u>. Some of them, it's very <u>good</u>. Some of them, they <u>don't know</u>.</p> <p>Lecturer 4: Lecturer 4: Oh, well, <u>very well</u>. Definitely. Yeah. I mean, they are <u>able to find content</u>, they're <u>able to modify the information</u>, they are <u>able to reuse it</u>, <u>definitely</u>.</p> <p>Lecturer 5: Yeah, <u>I think so</u>.</p> |
| <p>Theme 2: Plagiarism and academic integrity</p>          | <p>Lecturer 2: .....they go out looking for these loopholes, or the fact that they find ways around plagiarism software.....its very much “Whatever I see is what I'm going to regurgitate and put on paper”.</p> <p>Lecturer 3: Based on my experience, and based on my observation, Malaysian students are <u>better in using technology</u>. International students, for example, we</p>  |

|  |   |
|--|---|
|  | could see that they are just <u>copy pasting straight away</u> .  |
| <b>Interview Question 9: (Constructive) How effective are you and your fellow UTAR students regarding the ability to reuse and readapt online content, especially in accordance with plagiarism and copyright laws, crucial to tertiary students? (For students)</b> |   |
| <b>Theme</b>   | <b>Text from Transcription</b>  |
| Theme 1: Use of digital tools  | <p>Student 3: Even if they're lazy to do it themselves, they will use <u>different tools online</u>, we will <u>use different tools</u>. We have <u>quill-bot</u>, <u>Chat GPT</u> we tend to use the <u>help of these tools</u> to paraphrase things for us.</p> <p>Student 4: However, there are a group of students who will simply just copy the content and they put it into <u>an AI website</u>, where <u>the website will ultimately adjust it</u>.</p> <p>Student 5: To do it properly, a lot of research needs to go into it, and <u>a lot of tools are involved</u>.</p> |
| Theme 2: Plagiarism and academic integrity   | <p>Student 2: We are not actually <u>acknowledging the effort</u> of those who created the content that helped us.</p> <p>Student 3: .....we <u>adapt it or we paraphrase it</u> so that we are <u>not plagiarising the content</u>.</p>  |

|  | <p>Student 4: This group of students, they are lazy, but smart, as they also fulfil the criteria of technically <u>not plagiarising online content</u>.</p>   |
|--|---|
| <p><b>Interview Question 10: (Communication) How beneficial is it for tertiary students to be familiar with communication norms and expectations online?</b></p> |   |
| Theme  | Text from Transcription   |
| <p>Theme 1: Adapting to Technology</p>   | <p>Lecturer 1: It's necessary to understand <u>different communication norms online</u>, especially for those planning careers in social media or content creation... The approach to <u>communication online differs from face-to-face interactions</u>.</p> <p>Lecturer 2: Clarity of communication <u>varies across different online platforms</u>... The way information is conveyed <u>depends on the platform chosen</u>.</p> <p>Lecturer 3: Technology is unavoidable in this era... <u>Students need to be familiar with online communication as it's essential for survival</u>...</p> <p>Lecturer 5: Students must <u>recognize the platform they're on and adapt their communication accordingly</u>... <u>Different</u></p> |

|  |   |
|--|---|
|  | <p><u>platforms require different communication styles.</u></p>   |
| <p>Theme 2: Importance of the skill academically</p>   | <p>Lecturer 1: The benefit of <u>understanding online communication norms depends on one's future plans...</u> For careers in social media or content creation, it's essential... <u>Students need to consider what they want to do</u> and make an effort towards that direction.</p> <p>Lecturer 4: Communication is not just about meeting face to face... It's <u>crucial academically</u> to know <u>how to behave in different situations...</u> Knowing the tone for emails, for example, is <u>beneficial for students.</u></p> <p>Student 3: I would say <u>it's very beneficial...</u></p> <p>I feel that it will be beneficial for students to know the proper techniques to communicate online through different platforms be it emails, or Microsoft teams because <u>it can help them sound more professional in a way,</u> depending on the situation.</p> |
| <p><b>Interview Question 11: (Communication) How effective are your UTAR students regarding communication norms and expectations online? (For lecturers)</b></p> |   |
| <p><b>Theme</b></p>  | <p><b>Text from Transcription</b></p>   |

|  |   |
|--|---|
| <p>Theme 1: Varied levels of familiarity / proficiency</p> | <p>Lecturer 1: I feel like they are <u>good</u>... I would say, yeah, <u>they're good</u>. They're up there like <u>maybe 8, 9</u>.</p> <p>Lecturer 2: Right now, <u>if it's a scale, maybe 5 to 6</u>.</p> <p>Lecturer 3: <u>Very good</u>. They <u>know how to operate things</u>.</p> <p>Lecturer 4: I would say the students are <u>kind of lacking</u>.</p> <p>Lecturer 5: At times, I still see <u>like a gap</u>.</p>  |
| <p>Theme 2: Adaptation of language structure</p>           | <p>Lecturer 1: They're just like, "Hey, this is funny. Hey, so you should do this". So, I feel like they still see that but in a more <u>chill, relaxed kind of way</u>.</p> <p>Lecturer 3: They need to <u>differentiate the kind of language that they use online</u>... They seem to be a bit confused.</p> <p>Lecturer 4: Language wise, you've got <u>choice of sentence structure</u>, the choice of <u>words format</u>, everything is there maybe. They seem to be a bit confused. Communication is like similar, but <u>different medium of communication requires different set of system</u>. So yeah, they need to know that.</p> |

|   |   |
|---|---|
|   | Lecturer 5: There was a practical exercise that we did... You will see many different names to the file, but they renamed the file in <u>not so appropriate manner</u> .  |
| <b>Interview Question 11: (Communication) How effective are you and your fellow UTAR students regarding communication norms and expectations online? (For students)</b> |   |
| <b>Theme</b>  | <b>Text from Transcription</b>  |
| Theme 1: Low levels of familiarity / proficiency  | <p>Student 2: I think before going to IA (internships), most students, including me, we are <u>not so good</u>.....</p> <p>Student 3: I'll put myself on the <u>lower category</u>... I'm <u>not as well versed</u>, but my peers... some of them know how to read and some of them <u>don't have the skills</u>.</p> <p>Student 5: I <u>struggle with knowing how to exactly conduct myself through e-mail</u>... I would say I'm personally lacking in this regard.</p> |
| Theme 2: Lack of experience   | <p>Student 2: I think before going to IA (internships), most students, including me, we are not so good because.....we seldom use e-mail or other platforms to communicate.</p>   |

|  | <p>Student 3: So personally, for myself, I would say, because we do not use emails as much, I would say I still have a lot to learn.</p>  |
|--|---|
| <p><b>Interview Question 12: (Critical) How much does a student benefit academically if they know how to identify the credibility and reliability of online information?</b></p> |   |
| Theme  | Text from Transcription   |
| <p>Theme 1: Importance of the skill academically</p>   | <p>Lecturer 1: Yeah, I think it's <u>very, very beneficial for them</u> because in the academic world we have <u>predatory journals</u> and high-ranking journals... this skill is going to <u>be useful not only for now when you are doing your FYP, but when you go to work later.</u></p> <p>Lecturer 2: They benefit in a <u>very significant way</u> academically.....not knowing how to <u>filter out what's not credible</u>.....puts them in a position where everything <u>goes wrong.</u></p> <p>Lecturer 5: I think this is <u>the most important part out of everything</u> we just discussed... all the information that you put into your work <u>has to be credible, and it has to be reliable.</u></p> <p>Student 1: <u>Quite a lot</u>, because if they <u>fail to identify what is not a reliable source, or what is incorrect data</u>, and then proceed to not research about it further, it would <u>change the</u></p> |

|   |   |
|---|---|
|   | <p><u>outcome of their research</u>, because what they were basing it on was wrong.</p> <p>Student 2: I think if we know <u>how to identify the credibility and reliability of the information</u>, it will <u>aid us in the progress of completing our assignment</u> and make it <u>more academic and more professional</u>.</p> <p>Student 5: Oh, <u>extremely!</u> Without it you'd write a paper that's <u>completely false</u>, full of narratives created by people who will most definitely not have the best intentions.</p> |
| <p>Theme 2: Importance of the skill beyond academics</p>  | <p>Lecturer 1: ...this skill is going to be <u>useful...</u> when you go to <u>work</u> later. You'll be dealing with a whole lot of scenarios... So, I think it is <u>very important and it's very beneficial for the students</u>.</p> <p>Student 5: At worst, you begin <u>believing and promoting conspiracy theories, racial stereotypes</u>, the list is endless. It's a no brainer. It's <u>a must have</u>.</p>   |
| <p><b>Interview Question 13: (Critical) How effective are your UTAR students regarding the identification of the credibility and reliability of online information? (For lecturers)</b></p> |   |
| <p><b>Theme</b></p>   | <p><b>Text from Transcription</b></p>   |



|  |  |
|--|--|
| <p>Theme 1: Intermediate levels of familiarity / proficiency</p> | <p>Lecturer 1: "I think it's easily a ranking of <u>4, 5 (out of 10)</u>, because I feel like they <u>don't see the importance</u> of this yet..... they <u>don't really bother much</u> about it."</p> <p>Lecturer 2: I think they're <u>quite well versed</u>.....But how well versed they are, <u>four, five (out of 10)</u></p> <p>Lecturer 3: At the most basic level, I think they <u>would know the template</u>.....But for some, they <u>don't have any idea</u>, especially for fresh students...</p> <p>Lecturer 4: They're <u>very good in finding information</u>, but when it comes to <u>credible, reliable and information</u>, that's the part which <u>has always been questionable</u>..... In my record its only at a <u>slight moderate level</u>, they <u>are not really good</u>.</p> <p>Lecturer 5: I think it's <u>hit or miss</u>... If you were to ask me how UTAR students perform in this particular area? Yeah, it's a <u>hit or miss</u>.</p> |
| <p>Theme 2: Plagiarism and academic integrity</p>                | <p>Lecturer 1: I feel like they <u>don't see the importance</u> of this yet. Rather, there is just "Look for papers for citation" and that's it. If</p>  |

|  |  |
|--|--|
|  | <p><u>I can cite, it's in my paper, it's relevant to whatever that I'm doing, I'm good.</u></p> <p>Lecturer 4: Most of the students nowadays, they're just <u>taking things for granted</u>, that <u>everything on the internet is legit.</u></p> <p>Lecturer 5: There are students that <u>plainly copy and pasting</u> work from the internet <u>without properly citing</u>, and when asked, they <u>are not able to demonstrate</u> how they found the information in the first place.</p> |
|--|--|

**Interview Question 13: (Critical) How effective are you and your fellow UTAR students regarding the identification of the credibility and reliability of online information? (For students)**

| <b>Theme</b>  | <b>Text from Transcription</b>   |
|---|--|
| <p>Theme 1: Varying levels of familiarity / proficiency</p> | <p>Student 1: I think like, <u>2 or 3 (out of 5)</u> for me. Same with my peers. This one's <u>a bit lower</u> I'd say.</p> <p>Student 2: I think <u>6 out of 10</u>. I think me and my UTAR peers we <u>really know how</u> to find relevant online information.....</p> <p>Student 3: For me, I will say now, after three years, I would say we are on the <u>scale of about 8 out of 10</u>. We are doing quite well <u>but not quite the best yet.</u></p> |

|  |   |
|--|---|
|  | <p>Student 4: I believe I'm <u>giving it a 3</u> (out of 10) for this.....</p> <p>Student 5: I'd say it's my only <u>10 out of 10</u>. In terms of UTAR students though, I'm pretty sure I'm one of the rarer exceptions to this..... I think UTAR students are overall, <u>6.5, maybe 7.5 out of 10</u>.</p>   |
| <p>Theme 2: Room for growth / improvement</p>  | <p>Student 2: I think 6 out of 10... there is <u>still room to improve because I believe not all the time</u> that the online information that we found is <u>really accurate</u> to what we have written in our assignment.</p> <p>Student 3: We are doing <u>quite well but not quite the best yet...</u> So, I would say we are at <u>about 70 to 80% there</u>.</p> <p>Student 5: I know most of my peers <u>definitely started out struggling.....</u> Now, <u>they're doing a lot better</u>.</p> |
| <p><b>Interview Question 14: Do you have any additional insights regarding digital literacy in relation to tertiary education?</b></p> |   |
| <p><b>Theme</b></p>  | <p><b>Text from Transcription</b></p>   |
| <p>Theme 1: AI</p>   | <p>Lecturer 1: Now, you can just go <u>chat with GPT</u>, 'give me ideas', you already get the</p>  |

|   |  |
|---|--|
|   | <p>outline of the story and you can just go from there and work on it.</p> <p>Lecturer 2: .....that's focusing on certain theories, and if five of them bring you <u>the exact same output</u>, I mean, the <u>content is exactly generated by GPT</u>.....</p>  |
| <p>Theme 2: Ethical use of technology</p> | <p>Lecturer 1: .....another side of digital literacy is how to use it <u>ethically</u>, right?</p> <p>Because it's very easy to just use it in daily life and <u>trash talk people online</u>.</p> <p>Student 1: I didn't grow up in Malaysia, but in the United Arab Emirates. There they really <u>drilled in plagiarism</u> as an aspect when we did our research papers...</p> |

1. Introduction (Assessment of digital literacy rate)

a. Please briefly describe your familiarity and proficiency with basic digital tools, such as word processing software and web browsers. (This question will be skipped if the interviewee is a student).

i. Lecturer 1: My familiarity, I would say is that I'm not 100% familiar with everything, but I am there. As for my proficiency, maybe I would say that I'm intermediate to advanced. I'm not a beginner for sure. I think I'm in that range. I think in terms of web browsers, I'm familiar with the usual ones, such as Chrome, Firefox, Safari. But recently I use Brave because people say that Brave is similar to Chrome, but it won't take much of your RAM. So, I am going with that one for now, so that's how familiar I am. Word processing, like Microsoft Word, and Google Doc, for those, I would consider I'm kind of familiar with it, because for my thesis, I had to learn the whole thing with formatting, reviewing, editing, and whatnot. So, I am kind of familiar with it, though some feature I may not be too familiar. In terms of familiarity and I am familiar and for proficiency, I am intermediate.

ii. Lecturer 2: My Familiarity is, I would say intermediate, as well as my proficiency, especially with word processing software. What I do, mostly, especially in those classes, is to produce texts in a form or in a structure that is legible enough for students, also in a way that they will be able to respond to it, especially when classes are interactive. So, in a sense, when I do use Microsoft Word, for example, what I take advantage of is editing or actually making comments. But the overall spectrum of word processing, I think it's still pretty intermediate. As for

web browsers, I guess my proficiency is quite extensive. All the way back from when it was just internet and websites, and after that, moving on, into social networking, and in video based social networking, as well, as recently in the last maybe 10 years, I used it a lot, especially when it came to academic research.

- iii. Lecturer 3: To be honest, yes, I am familiar, but then to say that I'm proficient, maybe to a certain extent I am proficient, but not that expert in using these digital tools. So, the basic ones, we have Microsoft teams, Microsoft Office, and those sort of things. Yeah, I'm OK with that. But then, we have much more complicated and complex software, and I'm not very familiar with those. Because in my class, I teach the language learning theory subjects, and most of it, we're not going to use any complicated software. So I think, yes, I'm familiar, but not 100% proficient.
- iv. Lecturer 4: If you ask me, I am using Microsoft Teams. Now, of course, Google is a must-have, right? So definitely, I am using Google for finding information, finding particular apps, or websites, and all the AI texts now. I'm not really a techie guy, but then again, sometimes I'll use it to generate slides, to include some teachings and some information that I would like to add in
- v. Lecturer 5: I think I am quite familiar and quite proficient with the tools. But only particularly with the software's that involve teaching. Because I had to access students' work, particularly after MCO, where students' assessments are all done digitally and submitted digitally, and then even assessed digitally. So more so during the MCOs there wasn't a final

assessment where you come back physically for our final examination, students submit their final assessments digitally. Paper submissions are not allowed so we have to grade them on the computer. So, for web browsers, I would say I am proficient, similarly for teaching purposes. For example, students need to look for resources online. They are given our in-house web-based learning portal, where it is a learning environment engineered for them. Students would require basic knowledge about how to get the materials from it. And obviously, the teacher would have to know how to make it available to the students. So that's my proficiency.

b. How would you personally define digital literacy in the context of Malaysian tertiary education?

i. Lecturer 1: I would say that, well, considering our technology isn't that advanced, and considering that most of us are still learning what is e-wallet, I wouldn't say that Malaysian digital literacy is up there yet. We are still, I guess, still learning, still adapting, still familiarizing ourselves. Even in, say like in big cities, where people say people know everything, it is not necessarily the case with digital literacy. It's like reading books. If you like to read books, you'll be familiar with it. So with digital literacy, if you are open to use technology in your daily life, then I guess you will day by day improve yourself. So to define that, I would say digital literacy in Malaysia is very much based on the fact that we have to force somebody to use it. It's like what the government is doing, like "all money is now credited into your e-wallet!", so you have to use your

e-wallet. So, I guess that's the kind of digital literacy that we have now.  
We have to spoon feed everybody.

- ii. Lecturer 2: I would define it as a super core necessity right now. Then again, that's starting from when the pandemic hit. Very, very necessary, because it's shown its role as a central part in allowing for immediate research and immediate feedback. And on another level, my definition of it would be that in the Malaysian context, per se, it hasn't reached its full potential, or at least it is held being held back from its full potential due to of course, logistical issues, economic factors as well. So that's one of the things that I think is a downside.
- iii. Lecturer 3: This is an interesting question. How do I personally define digital literacy? I think this will be in line with your explanation just now. I define it as “to what extent is a human familiar with technology”, and presently, nowadays, the technology is a huge part of our life. Everyone must be able to use it. In every aspect of our life, it could be education, it could be entertainment, it can be anything, digital technology will be there. So, I think in university, especially, we need to train our students to be familiar with these digital things. I think the definition of the (digital) literacy is the awareness, or the familiarity of humans, with the digital world.
- iv. Lecturer 4: I would say that it's the future of education nowadays. Because with everything, especially with AI and the introduction of AI tech, digital literacy has become one of the most important focus in the academic field. Because everything is being digitalized now. That's the



future, but I'm still not sure yet about how it is going to play its role. So far, so good.

- v. Lecturer 5: Alright, so it's a very broad term. I think it's improving, I'd say, quite generally speaking because students are getting younger, right. They all learned with technology at a very young age, unlike the teachers like myself who are so called “digital immigrants”, because we transitioned from the analogue era into the digital era. It takes some time for us to get used to it and all that, because how we were trained when we were younger, as a student, it was all analogue. And then now it's digital. So, the digital literacy among teachers, it's a bit lacking, I would say, but the problem also solves itself, because teachers are getting younger as well. Every year, there's a new batch of students graduating and becoming teachers. A few years on, then we'll have more digitally literate teachers. With that, when it comes to students, digital literacy, to me, it's the ability to manipulate the content that they find from the internet. Meaning they have to know, for instance, copy and pasting. If you could identify resources online, you have to know how to make use of it. In other words, manipulating the information that they get from the internet or from digital sources, and then creating their work digitally as well, that's my definition of digital literacy.
- vi. Student 1: Digital literacy is being able to use the software needed for researching publishing papers and doing assignments, that kind of stuff. And also, being able to, maybe, like use social media to communicate with other people. I guess that's about it.

- vii. Student 2: In my point of view, digital literacy in the context of Malaysian tertiary education is how we apply digital tools and how we apply our own knowledge of using these digital tools and digital software in our learning on a daily basis. The better that we apply this knowledge of using digital tools and software, the better the level of digital literacy. That's my point of view as a student.
  - viii. Student 3: Digital literacy from my understanding, is about how well we can use online tools. It can be PowerPoint slides, it can be Excel sheets, worksheets, and whatever we use in our daily studies. And as a Malaysian student in uni, I will define it as the knowledge of what we implement when we're doing our assignments, the things that we use, or rather how efficient we are in using technology, especially when it comes to assignments, group work, and things like that in context of lectures.
  - ix. Student 4: I believe that digital literacy is the use of technology, digital advancements and so on. These materials are also being utilized in universities, colleges, and other institutions.
  - x. Student 5: I would simply say it's the knowledge and skill to appropriately utilise the available digital tools around us to fulfil academic tasks and functions. Something as simple as knowing how to properly format an e-mail, or something more complex like knowing how to appropriately and ethically utilise AI for assignments, I think its all covered as part of digital literacy.
- c. Using your earlier definition as a basis, how generally digitally literate do you think (your UTAR Students/ you as a UTAR student) are?

- i. Lecturer 1: I guess with students, considering that they are Gen Z, perhaps their digital literacy is around intermediate. That's what my expectation is towards my student, to any of the classes that I teach. To me, I feel like they are intermediate, but some of them surprise me, as they're not really there. Not to say it's a bad thing because it's a learning process, right? I think it comes from a place where people say "Gen Z, they are born with technology. You guys are born with computer, with this and that. So, by right, you should know how to function with it", but in reality its not really everybody. And because digital literacy is not just about using a phone, it's also about living in it, making it so that you are well-versed when it comes to digital technology, the use of it and whatnot. So, I guess I would say the literacy is intermediate, but some can be beginner.
- ii. Lecturer 2: If I would have rate them on a scale of 0 to 10? Yeah, I would have to rate them maybe 4 or 5-ish. And it could be in part because of their use of online networks and, the internet per se has been very largely for gaming as very obviously shown, and also for immediate communication. An example of this are social media profiles and then of course, all the video entertainment. They have Instagram reels, TikTok, and YouTube. But how literate they are, I am looking at the scale of how much they are able to translate that information, whatever it is that you are absorbing from all these websites, how able they are to translate this into comprehensible information in a classroom setting, that is where I see the literacy there, there's lots of room for improvement and they're pretty midway, around 4. When it comes to collaborative

work, for example, three or four students are working on an assignment to describe the difficulties faced during a cyber bullying episode, what they tend to do, up to this point is very much copy pasted, there's very little personal input. There is no angle that reflects the self-reflexivity or personal approach to the whole thing. They can very much just copy paste it, if not, very recently, just AI generate it. So in that sense, yes, they are able to draw out whatever output that they're looking for using AI. But the skills that are involved in processing that information, as a person, the self-reflexivity is lacking. They're able to use it, but when it comes to actually putting them down when the output is requested by me either in spoken form or put it down in a paragraph and submitted as an assignment, there's very little that is not taken and just regurgitated.

iii. Lecturer 3: Okay. Because me and my students, we are of different generations, I would think that they will be more familiar. And they can do better with the technology as compared to me. Because during my years, when I was young, we don't have this technology, yet. Maybe some basic ones, but then the complex and more advanced kind of technology, we didn't have it with us last time. But then nowadays, you are born with this thing. You are more familiar with those things as compared to me. So, I think in general, UTAR students are more familiar with digital technology. It will benefit them a lot.

iv. Lecturer 4: I think they are way better than what I can be doing with whatever digital devices and maybe tech itself. The student nowadays, they are too much into it even, that we need to find ways to control their

plagiarism. As for my students, I think they are great with the usage of digital devices.

- v. Lecturer 5: Like what I mentioned earlier about teachers, the more senior teachers, like what I mentioned, transitioning from analogue to digital, some teachers might be left out in a way that they do not equip themselves with the digital knowledge that they require. Hence, you might have teachers who are not very familiar with all the software's and computers and whatnot. But students' wise, no issue, because they are born into the digital era. And a lot of them likewise, for example, my son, he has his first smartphone at the age of three. For myself, my first phone, I was not even a smartphone, I was 17 or 18 with my first phone. There were no smartphones until I started working when I was about 25. The year 2010. So that said, UTAR students, they are definitely more digitally literate. However, digital literacy, like what I mentioned earlier, it's kind of broad. They know how to manipulate information that they get online, but not necessarily relate it to academics. Teachers will have to understand that, when they go into class, they cannot expect all students are well versed in digital technologies, and they know how to complete all the tasks, because, yes, they are born into the digital era, but some of them do not use digital equipment to learn academically. They use it for gaming use it, for ecommerce, like online shopping. They know the apps, they know the software, but not related to economy. So going back to your question, how digitally literate to I think the students in UTAR, I think they are quite good with the digital technologies at hand, but not specifically about academics. Like looking for journal

articles, at times in my class students do struggle, not knowing which the academic appropriate sources are to get journal articles. That could be an issue.

- vi. Student 1: I think I'm like, literate enough. I guess you could say the skill ceiling for digital literacy isn't too high. So the more skilled you are, the faster you are at working. But generally, once you know how to do it, you just kinda improve your efficiency at it. So according to that basis, I think I'm literate enough. For fellow Utar students, I think also literate enough. But maybe they haven't really been taught how to research before. So, with things like citing sources and finding research articles and whether they're credible or not, they might not now. But I think the rest, they're capable.
- vii. Student 2: Well, I think as for UTAR students, the digital literacy level is actually quite good because from my observation, when I attend the lecture classes, most of the students, they are using tablets, they're using iPad, or they're using their laptop to record out the lecture notes. I think this shows that basically, most UTAR students will know how to use the digital devices to actually record our notes or to actually do revision instead of printing it out physically. Our digital literacy level is at the points where our tools are benefiting us in recording spoke word, doing our revisional studies, or taking current minutes.
- viii. Student 3: For myself, how digitally literate I am, I would say, if you give me a scale of one to five, I'm probably on the scale of two to three. Before coming into uni, especially, the only thing I knew how to use was probably the basic elements, such as Word documents and

PowerPoint slides, but even the word documents and PowerPoint slides, there's so many functions, but even I didn't know how to use all these functions. And when you have assignments, different lecturers have different requirements, And so, I feel like after coming to university and doing a lot of these things, I became a bit more fluid in using digital technology such as words and documents, because a lot of like shortcuts and all, when they asked us to change the margins and all that, I had to Google and watch YouTube to find out all this. That's why I would say, personally, for me, I would put my scale of two to three. But in most cases in UTAR students, I would say they're actually quite digitally literate, because they're more on the scale of four, because a lot of them actually rely a lot on technology. And I have also learned a lot from my fellow friends on how to use certain technology.

- ix. Student 4: I believe that most UTAR students including myself are competent in digital literacy. This is because we need to use basic digital tools such as PowerPoint slides and Canva for our assignments. These are two of the main digital platforms students need to use for their presentations. When I compare UTAR students to my friends from other universities in Malaysia, my friends from other universities are not as competent at utilizing those two platforms when compared to UTAR students. Not only that but my friends from other universities are also not as competent in using other websites for their assignments too. Lecturers in other universities often have to hold classes to teach their student how to use these websites and platforms. So, I believe that

UTAR students are quite independent in comparison as they often strive to improve our digital literacy.

- x. Student 5: I would say, I'm not very digitally literate in the broader sense. But in a university context, and as it relates to specifically academic purposes, I'd say I'm 8 out of 10. Many people use AI to copy paste, I use AI as a jumping off point to help when my ideas run dry, or I use it to get through writer's block. Though I struggle with other more professional academic tools such as databases and other research tools. But as a general, university student, I'd say I have a pretty good grasp on things. The same goes for my peers.

## 2. 5 Elements of Digital Literacy (Aspects to develop)

- a. (Cognitive) In your opinion, how crucial is proper understanding of basic digital tools and technologies to tertiary level students?
  - i. Lecturer 1: It's very important for them to know it because we are moving towards a digital world. Just a few days back, I heard somebody talk about how even at the university level, there are not many courses or even a program dedicated for AI. We don't really have that, but rather at the moment, even in our faculty, everything is embedded into the courses. I'm not sure about FICT, whether they have like specific courses for that or program for AI, but I think for FAS, they are embedded. For example, the subject New Technologies for Language Learning, we have to revise it and we have to include AI into it. The thing is that with digital literacy, I guess for now, students may not really see the importance of it yet because assignments are not really about them fully utilizing it. Rather it's just them learning it, like for example,



ChatGPT. “How can I manipulate chatGPT to help me with this, with this, with that”, but they don't really see it entirely yet. But then when you start your career, HR and employer are looking into these skills. A friend of mine did his degree in public admin, but after graduating that he realized that now in order for you to just be in HR, it's not really just about HR. So, he took about a year or so while doing part-time proofreading and whatnot, to learn about all these skills related to AI, mining, data mining, everything, and now he's working as a business analyst. So, I guess for linguistics students, our thinking is directed towards just technology used in classrooms, but it's not necessarily the case nowadays. If you have this digital literacy, this digital competency, you are actually above other candidates. I'm not sure about public universities, how they are about this topic, but from what I heard from my friends, I know it's all recorded, but with you guys, I feel like some of you understand how important it is and you put effort into it. So, if you have the ability to go for all these classes, go for it, because I feel like digital literacy is very important. Now that we are in IR 4.0 and we're shifting, I think sooner or later we're going to have like an IR 5.0 and that's already in the talks and employers are expecting higher. The expectation is so high that even for myself, I feel like I'm not ready for that, looking at the job scope, I feel like I don't think I'm just going to be a lecturer. But yeah, that is why I feel like digital competency is something that university students should really take into consideration and take as a priority for their futures sake.

- ii. Lecturer 2: It's extremely crucial. Central, as I mentioned earlier, and I say this, because without it, not only are they not going to be able to get their assignments processed and submitted, they're also not going to be able to engage in meaningful group discussions, which I've observed, take place pretty much entirely digitally these days. Students engage in their group assignment discussions on traditional modes, like, for example WhatsApp chats, and all that. But then they've also started going into new platforms like discord. So they use these platforms to get all these discussions done, which I think is brilliant, because it not only saves time, it allows the quieter ones to engage a little more or less confronting. And in that sense, it is really necessary. So up to now, I've only been speaking in terms of their assessments and the assignment processing, and discussions, but also in the amount of research that you're going to be able to do with proper digital literacy skills. Without which, depending on just whatever knowledge that they've gathered in their life experience in high school, as well as whatever they can physically glean from the library research and all, something very great is going to be lacking, going to be left behind.
- iii. Lecturer 3: Having this information or having this ability to be familiar with technology is very, very, very important for students nowadays, especially young graduates, because, as I mentioned, you cannot run away from technology. Everywhere they will be there with you, you want to do anything you will be using technology. Like with advancements, now we have ChatGPT to decide where to eat. You ask technology to help you answer questions. Same goes for education. You

can ask the technology or internet to help you to get the answer. We used to rely on books, physical books. We went to the library to search for information. Now, no, it is everywhere. Just type in your keywords and you're done. Going back to the question, it's very crucial for students To be able to incorporate technology in their daily life, because it will help them to explore life.

- iv. Lecturer 4: It is very important, because understanding is the basis for anything. And in order to use such sophisticated digital tools, that can be used for anything can be good or bad, a proper understanding on how it works is needed. What are its capabilities? Will it be exceeding? Will it be exceeding its limits on the students? Or will it be actually changing their pathway from learning to instead be totally dependent on AI and technology? It's very important for anyone, for lectures for students, to understand what they're getting themselves into.
- v. Lecture 5: I think it is very important. They need to have basic foundation of what digital tools are. It might go a little bit off topic, but I'm not sure whose responsibility it is, to ensure that they have that foundation. I don't think it is the responsibility of a teacher in tertiary education to teach students in class about basic digital tools. So, they come into the education expected to know the basic knowledge, and hence, the responsibility now for us teachers. But I am not sure if they can find slots to equip students with these digital tools, knowledge and whatnot. It is very important to me, and I do expect students coming into tertiary education to already have this knowledge about digital tools.

- vi. Student 1: I think it's necessary because you need to know how to navigate a website to submit your documents, how to send an e-mail to contact a lecturer. Yeah, so it's quite important. Because most of our work now is done through computers like researching articles online, it's a bit hard to get them in like paper format, like physically. You need to know how to navigate a website and like communicate through the Internet like that.
- vii. Student 2: I think it is very critical. It's a need for us to have a proper understanding because as I mentioned just now, most of the students, they are using digital device, which means if we want to blend in with our social circles, we will also need have a proper understanding. Usually, we will have group assignments. Let's say our assignment group mat don't have proper understanding of basic digital tools, I think you also foster some trouble somewhat in completing the assignment. So, there is a need for us to understand.
- viii. Student 3: I would say it's actually very important, because, as I mentioned just now, when it comes to uni level, we have to do a lot of assignments, especially after COVID. I mean, even before COVID We had to use a lot of online tools to complete our assignments. But now after COVID especially, a lot of lectures are opting for online submissions, and online tools for us to do our assignments. I feel like it's very important for students to have proper understanding of basic digital tools like especially PowerPoint and Microsoft. I feel like nowadays a lot of lectures also like to use Excel sheets and Google Docs and all that. And a lot of us still do not have proper understanding of the basics of

this. I feel like it's very important for students to be equipped with all this before we go into uni instead of just trying to get all this knowledge when we are in uni.

- ix. Student 4: Like I mentioned earlier, because tertiary level of students, let's use UTAR students as an example, we aren't taught on how to use PowerPoint slides. Canva and Padlet also, all these other learning websites, we aren't taught about all of these so we need to learn it on our own. But in the process of self-learning, we also gradually understand how it is being performed and what is the function of it. If we do not understand it properly, we cannot extend their functions to its furthest. So, I believe that it's quite crucial. Basically, it is important because if we don't have the skill, we cannot make full use of technology to aid in higher level education
  - x. Student 5: Absolutely essential! I've heard horror stories of assignment groupmates being in tertiary education, but not knowing that you have to save your files before you send them! Things as basic as what keywords to use when Googling information, how to best utilise Microsoft word and various shortcut key binds, that sort of things is very important. At the very least, you at least need to operate the software at the most rudimentary level, at the bare minimum! Even then you will have a pretty difficult time when compared to others.
- b. (Cognitive) How well versed are your students / you in this aspect?
- i. Lecturer 1: I feel like their understanding is, not to say bad, but if you were to rank it from 1 to 10, 1 is the worst, 10 is "I know everything", I guess our students are around 5, 6. Because they feel like "I'm still in

this Utar bubble as a student and I don't really think much about it". I feel like they are at that stage and perhaps that's why, as I said earlier, they don't really see in the bigger picture. They only see that, "Okay, I just use chat GPT, this AI thingy for me and I'm done with it", and nothing else much more about it.

- ii. Lecturer 2: I would say they're pretty apt. Their usage in terms of technical aspects, it's quick, its efficient, they produce output very quickly, they are self-reliant when it comes to producing output. It's just the going in and sourcing for information that they need lots of help with. And sometimes it's the better students that kind of either guide the weaker ones or just completely dominate and take over and just do it for the weaker ones.
- iii. Lecturer 3: They are more familiar with these digital tools. And I believe they are good in using them. For example, chat GPT and everything. So, they are very clever and amusing. But there are certain things that I need to highlight, they need to be reminded that they can't be over reliant to the technology. If not, it would affect their integrity, as well as their personality. Some of them I've observed, like I mentioned, they even ask ChatGPT where to eat. Even with that kind of question, they rely on technology. So, it would affect their ability to make decisions. If I would comment about integration to education, if you are being overly reliant on technology, it would affect your intelligibility. Let's take writing an email to writing to answer questions for example, ChatGPT, or Google or whatever, it's not original, it's not coming from you, as a learner. Like, in my class, I teach theory based subjects and most of the theory explains

most of the question. I asked them to relate that theory with their personal experience. So, if they were to use ChatGPT, to answer that question, the experience or the answers will not be authentic. It's not their real personal experience. It affects the answer. This is the main reason why I love to ask, reflective questions, it's because ChatGPT will not give you a reflective answer.

- iv. Lecturer 4: My students? Well, I don't have a particular idea on how well-versed they are, but they definitely are very good at using all these apps, because this is their era, where they are exposed to these digital concepts way earlier than what we were doing when we were young. So I think they should be experts or they should have at least more than basic knowledge.
- v. Lecturer 5: As I've mentioned, I think they are quite okay. Right. So basic digital tools, they know how to operate them and all that, but not specifically related to academic purposes.
- vi. Student 1: I think I'm well versed enough. Maybe a bit more, but like, a scale from one to five, I guess like a 4. I would say my peers are around three instead.
- vii. Student 2: I think for the for the bare minimum needed, we still fulfill, because we can use the iPad to record out notes. I think basically, we already know, we know how to use the three basic Microsoft software, which are Microsoft words, PowerPoint, and also Excel. So, I believe not just me, but UTAR students in general, we have a basic level of proper understanding, at least we know how to use the most important software for academics.

- viii. Student 3: For me and my peers, I would say, we understand it moderately, in a sense that, we understand the things that we need to use just enough so we can complete our assignments or our given works. After coming to uni, especially, like I said, we only know about PowerPoint and Word, but some of our lecturers, they have more knowledge than us when it comes to digital tools. And I feel like we've learned a lot from them in the sense of using tools such as Mentimeter, Padlets, and all these things that we can in the future apply it when we become teachers. I feel like in a sense of this, it really helps us to increase our knowledge on basic digital tools.
- ix. Student 4: I believe it would be an 8 out of 10. I'm applying it as a general rating for all lecturers and students in my tertiary education institution, because for lecturers and educators wise, they are trying to implement more digital literacies in their classroom so that it would make the lesson more interesting. Lecturers know that nowadays, students like us will not be paying attention in traditional classroom. So, they are also implementing self-learning in order to get a hold of what is digital literacy. And as for students, they are trying to make their assignments and presentations more interesting in order to get higher marks.
- x. Student 5: I'd like to imagine I'm very well versed, but the honest answer, maybe its 6 or 7 out of 10? There's a lot of things on Microsoft Word for example that I know, but some I don't. I know how to format and customize indent sizes, and whatnot, but I only this year learned that pressing control and enter at the same time formats your file to the next



page! There are still things I can learn, but regardless, I still think that I'm able to navigate these tools relatively effectively.

c. (Cultural) Is the knowledge of “netiquette” and how to generally behave online impactful to a student’s success in tertiary education?

i. Lecturer 1: I feel that when it comes to netiquette, that’s more relevant at a personal level. I separate it like my social medias. TikTok, Instagram, and everything else, that's my personal space, and university relevant social media, like ResearchGate, Google Scholar, so on, those are for my professional side. I treat the same my students with the same expectation. They can follow me on any social media platform, it's okay, but if we were to interact on one of the professional platforms, then it's a bit different. This is meaning to say that the netiquette, we're not like bound to just teacher-student relationships, but rather just like, “oh, you are my follower, following me, commenting on my video”. So, that's how it is. As long as there is a sense of respect towards one another, I guess that would be okay because that's like our personal space, you know, but if you were to interact on the professional side, then I wouldn't say we need to have this kind of teacher-student relationship kind of communication, but rather the way we interact, it's a bit more based on mutual respect. So, I guess that's how it is when it comes to netiquette, it's a bit more personal to me. But to determine their success at a student level, I don't think its necessarily crucial as in university, we don't really take netiquette into consideration. Everything is based on marking rubrics instead. But if you were to work later, at companies, they will ask for your social media and perhaps that's a different story. Success at

workplace, that's a different thing, but for now, I guess its not really the case, but rather it may be perceived differently by your peers, that's what I think it is. Like, let's say you saw me interacting with another student on my TikTok and you feel like “oh, this is how they interact”. But that’s just how netiquette is presenting at a personal level, and it isn’t relevant to the university at all. The student is talking to me as a person and not my student, so it’s not really relevant, I think. If you respect me professionally, and are respectful personally, that is enough as a student.

- ii. Lecturer 2: Well, if we include, in netiquette, the need to put things in one's own words, the need to process information and not regurgitate or not plagiarise, then I think it is extremely necessary. It is pivotal in a way. The second thing that I would like to talk about is the plagiarising and the taking of other students’ ideas. Senior students’ assignments that have been put and shared online, through lots of websites, I won't name them, students taking them and then rehashing them, I think it breaches all kinds of netiquette law. But of course, on a more everyday level, the way they communicate, the tone they use, the kinds of words they use to ask for what they want, to contribute in group discussions, very, very crucial, because I’ve seen it completely destroy group dynamics. I've seen it cause assignment groups to come and see me and say that they want to split to two groups, simply because they've been offended by repeated rude ways of answering on Discord, or on internet platforms, which they use to check for the assignment. Also, the ways of communicating with the lecturers, sometimes when students do reach out, and they seek help, or they get consultation from lecturers, what

lecturers need is a certain amount of “meeting us quarter or half way”, with a little bit of effort on your own. Take me for example, I view effort as the initiative that they take when they've asked for something or when they're looking at an answer that I'm providing, and to actually tell me what they think and ask me a further question if they can, or to tell me if it doesn't mean much, or if they need more information. But a lot of the time, it's so fixed, it's almost as if they've got one or two things to ask and whatever answer you provide, and the next thing it will be is just “tq”. The conversation is very one sided. And in terms of netiquette, it's a lonely, awkward place to be.

- iii. Lecturer 3: Yes, I strongly agree with this statement. Netiquette, how to generally behave online? Yeah, right now we see a lot of situations whereby the way, especially social media users behave on their sites, it's not good. We are free to say anything, we are free to comment, we are free to predict, we are free to do everything online. And it's not good. Because it would affect a lot of other people. When it comes to social media, if I were to talk about education, among the biggest challenges that education industry is facing right now is the etiquette of students. It's easier for you to just copy, paste. I've received a lot of students' assignments, or students' homework, they just copy paste from Google and ChatGPT. But then they assume that we don't know. But indirectly we do know, we are going to know whether you copy past or if it's your original thoughts. We are going to know. That's the risk and the bad side of application of technology and the advancement of technology in education. Students need to know to what extent they can refer to online

sources objectively, and then when they need to think on their own and when they need to answer the questions on their own. They need to know that, then only it will be helpful.

- iv. Lecturer 4: Yeah, definitely. I mean, like the way they carry themselves is definitely going to determine their success. Because if you ask me, my opinion, a success in tertiary education means not just the knowledge itself, but how you're applying it and for what purpose we are applying it. So, the students, they have to have a behaviour, a set of morals of doing things, I think that will cause the rate of success to be higher.
- v. Lecturer 5: Yes, it is important, but to relate it to students' success in tertiary education, I cannot see how they are connected. I do think that the internet users on the internet should behave properly. Which is not the case. In the comment section and whatnot. But I do not necessarily see the connection between having good netiquette and their success in tertiary education. I think people who do not behave well online, it doesn't mean that they do not behave well in physical environments as well. They kind of have a different persona than they are online, right. Just like in Malaysia, when we are driving, we have a different persona when we are behind the wheels. So similarly, when they are behaving online, in a improper manner, it doesn't mean that they do not have good success in the future.
- vi. Student 1: Yeah, just like in real life, you also have to have manners when interacting with people through online means. Such as not disturbing others or spamming messages to get a lecturer's attention, just

wait and then follow up if they haven't. Only follow up after it's been a while.

- vii. Student 2: I think it's very important. We are using the Internet, we have freedom to type anything in the internet. But then, most of the time, we don't know that if what we are typing will cause some negative impact to the receiver or not. So, I believe that this knowledge particularly, it is important for us to actually apply when we are using the internet to communicate with someone, or even with someone that we don't know. So how to generally behave online, it is impactful towards students' success. I think we should always be humble when using the Internet, even though we can use fake personal information when we are creating internet accounts. But then I think it's so important for us to be humble and always type something that's good. Because in the real world, we are always reminded that we should say something good, then I believe in the digital world, and we should always type something good. We reduce the negative impact of our message to the receiver because we wouldn't know how the receiver will interpret our message.
- viii. Student 3: I would say yes, because in anything that we do, right, we need to have a certain etiquette or discipline as I would say. So, if we don't behave properly online, this not only impacts us but other users of the internet. And I feel like it also comes back to the effects of plagiarism because uni students rely a lot on the internet. In education, what happens is we use the internet a lot and with or without the intent to plagiarise, because some people, we take it as references and we do give the necessary credit to the authors of certain articles. But what a lot of

people fail to abide by is the fact of the etiquette of giving credit. Some people just copy and paste and this shows how little etiquette they have and they do not know how to behave when they're using online resources. For me, that's what I would think.

- ix. Student 4: I believe that this knowledge is necessary because they're using a virtual platform. It's also quite similar to reality. Basically, if they are using this online platform, they also need to behave like a real person a lot because online platforms, they touch bigger groups of people outside of the universities as well. I also believe that, if they are behaving badly in the online platform, it also might affect their future as online communications is usually all recorded. If someone isn't behaving properly, they might suffer consequences.
- x. Student 5: I think it really depends. I mean, if you're texting a lecturer or university official, of course that's important. Don't use emojis unnecessary or send them memes or what not. I think netiquette as a concept is far too broad to give you a specific answer. There's the aspect of netiquette that says "don't ask or give out personal information", "don't steal and copy other people's content posted online without credit" or "don't use caps lock when you type". The severity of it varies so wildly, and some are relevant to students, while others aren't. I'd say netiquette is both relevant, and irrelevant, depending on which set of rules you look at. But generally, one should be following these rules the best they can anyway. I wouldn't say it's crucial to success, but rather that it's just morally right to do.

- d. (Cultural) How well versed are your students / you in this aspect?
- i. Lecturer 1: Not quite. Not really.
  - ii. Lecturer 2: They need lots of improvement. I think, to rate them on a scale, I think a three.
  - iii. Lecturer 3: I think it depends on the individual, but in general, I think things are getting better right now. During the early days of, for example, ChatGPT, students will straight away copy past. But now they know that their lecturers know that they are plagiarizing online. Now that they know the reality, then they start to be a bit careful. And they start to rephrase, they start to do other things, other than just copy paste. So I think we could see the development of the ethics as soon, they are getting better in using the technology correctly, not using wrongly. So yeah, things are getting better now.
  - iv. Lecturer 4: This is this is the part where we can't really analyse it. With everything previously, it's clear that there is a lot of advantage. But then when it comes to analysing, and having assessments on students, it is kind of hard because they rarely speak about it, the knowledge is just kept to themselves, they don't really expose themselves whatsoever. So, it's kind of very hard for me to actually rate on these particular behaviours of the students.
  - v. Lecturer 5: In my context, at least, I would say they still behave well, because it is in tertiary education contexts. Only in the context where they are not known, where people have anonymity, they will, be bad at it, like when you see on social media, usually the profiles not their actual

identity when they when comment nasty things. That's not the case in the UTAR context, so I would say they are quite well behaved.

- vi. Student 1: I think it's the same as the previous question, like 4 out of 5. Same with my peers.
- vii. Student 2: I believe we still have enough netiquette, because so far I don't see any cyber bullying cases happening in UTAR. Because I think at least we still have the basic awareness level of like, we know what things we are supposed to say and what things we are supposed not to say. I believe we still we have the basic awareness level that when something bad is going to happen, we know how to react to it to ensure everything turns out ok.
- viii. Student 3: Personally, in my case, me and my friends, the close ones I know, I would say we are quite well versed in netiquette because we personally try to avoid plagiarism as much as possible. We do things like citations or paraphrasing. This way it reduces our plagiarism count. And we also give the necessary citations to the sources that we take from in a sense because if you want me to put it very bluntly, my friends and I want to avoid high plagiarism. But I think uni students in UTAR itself, I have seen cases where students are not well versed with netiquette, so they just copy and paste elements from the internet, which leads to high plagiarism percentages.
- ix. Student 4: If I were to rate that it would be like a 7 out of 10. I like to think that we are more less responsible for our actions, but there also many cases where, maybe the students got too excited because they are using a new platform, and they react quite rudely. So, I'm not saying that



our behaviour and manners online is always negative, but there are cases where we may cross the line. I'm giving it a 7 out of 10. The reason for this is because the frequency of crossing the line isn't that frequent, however, sometimes our actions or maybe the things that we say, they might be very harmful to others.

- x. Student 5: Honestly, I think this will be the only category where I can give you a confident 9 out of 10. I've been using the internet, practically daily since I was 8. I would post so often back then, chatting with strangers and making international friends. I still do. Netiquette at this points is second nature. It's to the point that my friends and family say I know more netiquette than I do real etiquette. As for my peers, I'd say it's a little less but not far off. Definitely 8 out of 10. There's a general sense of politeness.
- e. (Constructive) Is the ability to reuse and readapt online content, especially in accordance with plagiarism and copyright laws, crucial to tertiary students?
  - i. Lecturer 1: Oh, yeah, 100%. It is very important for them to actually know how to do this, because if you were to work in the academic line or not, when you work later, you have to do a lot of referencing and paraphrasing. When you present your proposal, people want to know where you get this data, right? So, you have to do proper citation and proper everything else. So, it is very important for you to know how to do this referencing. Another thing is how you look for the right paper, because nowadays you have so many platforms, and you can utilise AI to do that, but how can you make sure you get to the right paper? It is very important that you know how to do so. When I worked on IA

visitation at students' interning companies, I got some feedback in terms of our students, that they know how to, in terms of getting the data, they know where to get the information, citation or whatever. So, it is something that I am proud to hear. I am happy to know that at least our students know how to do this. So, yeah, it is very important for them to know, not only for assignment's sake, FYP, but also for their careers. I know you do not have to memorise all the formats, like how to cite every type of source, because you have the internet to do that for you. You have apps to do that, but you yourself need to have the knowledge so that when somebody comes to you, you can just say, "Oh, this is wrong, why is it wrong, and this is the actual arrangement. So, I feel like, yeah, it is important.

- ii. Lecturer 2: It's extremely crucial. As I mentioned before, without it, they not only lose their creativity more than anything, but they also lose the chance to even develop any amount of creativity, they lose their sense of independent thinking. There is hardly any need for them to take a self-reflective approach to knowledge gaining.
- iii. Lecturer 3: It's kind of a skill that students need to have. Technology, and education and our lifetime now, there is no way to go back to the old days, technology will be here. So, students need to know when you can use it, and then not just use it. They do need to also produce citations. Give credit to the original author. I think now they have been more familiar with those things. And they should be able to use it wisely. Not just copy, paste, and respect the copyright of the original author, and ordinance. Those things are very important. And that's why I always

highlight in my class, don't copy paste. If you want to take the idea, make sure you produce citation. If not, it's not just about etiquette, but it's about your personality. Especially since it will lead to a negative implication towards your personal image. It's not a good thing to have. So that's why students need to know this. The risk of plagiarising this copy that, they need to know, very crucial.

- iv. Lecturer 4: Yeah, of course, it is going to be very crucial because the ideology of someone, and the work that other peoples do, can be easily accessible to anyone. With students, the idea is to gather their proper understanding of any particular subject matter, and also the ideology that they are going to present. With the exposure of technologies nowadays, with all these apps, it's very easy for them to get any information at the tip of their finger. So, if you ask, is it crucial? Definitely, because we as educators, we need to determine whether it is legit or not, we need to find out what is this idea that they are presenting. Is it something that it is original? Or is this something that which has been adapted, or reused or restructured appropriately? How it is going to contribute? How is it going to be effective? Is it going to be somewhat contributing to the degree that they are going to receive later on? How is it going to impact their working life? So, I think it's a very important and crucial part.
- v. Lecturer 5: Extremely. Like what I mentioned earlier. It's not just about knowing how to use Microsoft Word, but you have to know where to get the right resources. Not only are we using, readapting, but you need to find identify the right sources. So as mentioned, students might not have the knowledge to differentiate the resources, whether it's

academically appropriate or not enough to be used and adapted. So those are the knowledge that make up digital literacy.

- vi. Student 1: Yes, because if you don't paraphrase, or you don't cite your sources, you get a zero in your research paper. If you plan on doing research, it's common practice. It's also kind of like, it's other people's work. You should be able to construct and give credit when it's due. It's like the bare minimum.
- vii. Student 2: Yeah, I think it's very important because when we are using real data online, we need to do proper citation and I believe when we are doing these citations or when we are doing references, this is actually not just with the purpose to score. Of course, we don't plagiarise to score a good grade and not be penalized, but I think this is also important for us to really acknowledge the online content created by someone else. That's because without that online content, then our work won't turn out as well. I believe it's important for us to have the ability to know how to reuse and readapt online content properly not only to achieve the requirements of our assignments, but to also acknowledge the things or the works that have been done by someone else that we needed. We should be respectful of them and give credit as necessary.
- viii. Student 3: I think it's important because if we are not taught this ethic, this behaviour, to give necessary citations or credit to the authors or to the online content that we have taken, then later in the future when we go on into the real world or the working world, I feel like this behaviour will continue into our working life, which can also negatively impact us.

I feel like, we have to be able to learn this while we are in uni, so that we do not implement this behaviour later on in life.

- ix. Student 4: I believe that it is quite crucial because when we are reusing and adapting online content, we are basically sort of like tracing our tracks back out. So, maybe like when we are doing repetitive reading or scanning, especially in the accordance of plagiarism and copyright, we have to be smart in re-adapting this kind of content. Let's say we were to use some specific content from a certain website and then put it in our assignments. I believe that we need to check if the result of our adaptation is considered plagiarism.
  - x. Student 5: Oh, definitely! I would even say why bother using the Internet at all if you don't plan on practicing this skill? The internet is such a rich archive of human knowledge, as such that information should be used appropriately, and respectfully. It is important to know how to properly synthesize material, the internet was practically made for it all those decades ago, not for simply copy pasting everything you see. Its about synthesis, knowing how to take A and B, and turning into C, or the entire rest of the alphabet for that matter. So yeah, I'd say its unbelievably crucial to student success. There's a lot to be gained from doing it correctly.
- f. (Constructive) How well versed are your students / you in this aspect?
- i. Lecturer 1: From my experience of looking how they are, from 1 to 10, I would say, like 6, 7. Even for academic writing, even though they are in my class, for assignment, I still see a lot of error. The same group of students that I taught for academic writing, continue to do the same

mistake in other classes. It is something that, not to say it bothers me, but rather, made me realize that “Okay, they may not really pay full attention, but it is just here and there”. So, I feel that in terms of how well-versed they are, I think it is 6, 7. They need to really make an effort. I would not say to make this as a priority, but at least try to make sure that they can get the interpretation correctly, the referencing correctly, and paraphrasing. If you were able to do that, it reflects your maturity in writing, and in presenting yourself to the public. So, yeah, I guess it is one of it.

- ii. Lecturer 2: Very minimally actually. Sadly, at this stage, they've been very very, very minimally well versed, some students, they are aware of plagiarism checking software, but you know, there are loopholes around every one of these things. And the fact that they go out looking for these loopholes, or the fact that they find ways around plagiarism software speaks for itself. It really shows that their abilities very basic. It's very much just “Whatever I see is what I'm going to regurgitate and put on paper”.
- iii. Lecturer 3: It depends on the students. Some of them, it's very good. Some of them, they don't know. Based on my experience, and based on my observation, Malaysian students are better in using technology. International students, for example, we could see that they are just copy pasting straight away. They did not produce any references or citation. Maybe it's my personal observation, but I can see on my experience, local students, okay, no problem. International, there are a lot of things

that need to be done. Maybe the reason for that is language barrier. They are not familiar with the language. So they rely on technology.

- iv. Lecturer 4: Oh, well, very well. Definitely. Yeah. I mean, they are able to find content, they're able to modify the information, they are able to reuse it, definitely. They have better exposure than, if we compared to 50 years before. Those days to find and reconstruct information, it was different than what it is nowadays. So, I would say the students are very much different, they are really good in using it.
- v. Lecturer 5: Yeah, I think so. It's important that they have that, yeah.
- vi. Student 1: So reusing and readapting? 4 out of 5. My peers maybe a bit less. I'd say like, 3 or 2.
- vii. Student 2: I will say so far, we are only reusing and readapting based on our academic requirement. We are only doing citations and references properly because the assignment wants us to do it, the assignment format forces us to do it. We are not actually acknowledging the effort of those who created the content that helped us, we only do it because of the assignment guidelines saying that we must the APA 7<sup>th</sup> edition citation format. So, I think for this, there is still room to improve in my opinion.
- viii. Student 3: I would say very skilled because we have a lot of online tools nowadays. Even if they're lazy to do it themselves, they will use different tools online, we will use different tools. We have quill-bot, Chat GPT we tend to use the help of these tools to paraphrase things for us. Then, if we feel like the sentences still don't sound right, what we do is we use Google or online dictionaries to find synonyms and we adapt it or we

paraphrase it so that we are not plagiarising the content. So, I would say we are very good at doing adapting.

- ix. Student 4: I would say a five. This is not considering my batch of English education peers, I'm giving a five mainly considering the entirety UTAR students because there are students who are really good at reconstructing, and this particularly this particular group of students is very good in reusing and readapting online content without plagiarising. However, there are a group of students who will simply just copy the content and they put it into an AI website, where the website will ultimately adjust it. This group of students, they are lazy, but smart, as they also fulfil the criteria of technically not plagiarising online content. However, there is also a group of students that will knowingly use content unrelated to the assignment and not paraphrase at all and tell themselves that they won't get caught. So, these particular students, I would refer to them as not being smart. And then they are also lazy. So, there are a lot of students from my experience, who really think that they could get away with it.
- x. Student 5: I'd say, maybe 5 or 6 out of 10? I mean I definitely have experienced, sure, but reconstructing and readapting the things you see isn't as easy as it sounds. To do it properly, a lot of research needs to go into it, and a lot of tools are involved. I don't think I have it completely down pat, you know?
- g. (Communication) How beneficial is it for tertiary students to be familiar with communication norms and expectations online?



- i. Lecturer 1: It depends on what you are planning to do with your future, because let's say you are planning to be in academic line, our online presence is not really that important unless you want to make yourself important. For example, like those lecturers sharing about postgraduate journey whatsoever, then the presence is a bit different. But if you are planning to be just like me, who's using technology, TikTok, Instagram for stupid things or for fun, then our online presence is not that important. So, for me, I don't really see the benefit to me really of figuring out how I can communicate with these online people effectively and whatnot because I feel like they are just there to view my video and nothing much other than that. But if you are planning to perhaps become a social media manager or content creator, you really need to know about this because your knowledge in terms of communicating physically and online, they are different. Because personally for me, when we are interacting face-to-face, I put my phone away and I turn it over so I don't see the screen, so that when I communicate with you, it's just you and me. That's me. But then when it comes to online conversation, okay, we have a different kind of approach and set of communication skill. So, I feel like those are the kind of things that you really need to think and consider. Consider what is it that you want to do and make an effort towards that direction. Because for me I don't really value the importance of an online presence. To me, I'm just being there. If you want to like my photo, like my photo. If not, hey, it's okay. But for some people, it's important. So, you really need to know how to communicate

online and have understanding and expectations. So, the benefit is very much depending on your situation and based on what you plan to do.

- ii. Lecturer 2: It's necessary simply because the clarity of communication varies across different online platforms, the clarity of what they want changes, the clarity of providing information that is required, also is dependent upon whatever platform they choose.
- iii. Lecturer 3: It will give a lot of benefits to students. And actually, it's not just about benefit, they need to have it to be able to survive. Yeah, because technology, in this era, we cannot run away from understanding communication, even for older generations, like me, seniors, we need to be familiar with these things, because it's here now. And we need to follow the development of communities as well. Students, they need to be able to use it, and be very familiar because they agree to use it. And people we rely on them because they are in this generation. My generation would rely on younger generation to teach us or to educate us on how to communicate through these new development of technology. So very important for students to this kind of skill.
- iv. Lecturer 4: Definitely. Nowadays, communication is not just meeting face to face and talking, it's all about how we are sending the information. It is going to be very beneficial for them to actually get the idea on how to behave in certain situations. Like for example, if you're going to write an email to a company, definitely you need to know the tone. If you're going to let's say, email a complaint letter to vendor or shop, you need to use a particular tone, MAKE IT professional. You can be simply just saying whatever that you feel like saying but then at the

end of the day, we need to be firm, so definitely the tone sets the rhythm, so it is very beneficial for them to academically know how to communicate.

- v. Lecturer 5: It is very important, and it's also very beneficial for them to recognise what platform they are on, and then how they should behave, and how they should choose to communicate in that particular platform. For instance, like communicating via email, for example, with your superior, then obviously, the student need to recognise that and then have to communicate properly. However, when they are chatting, they should recognise that as well as being a little bit more informal, and then the way of communication can be a little bit more at ease in a way rather than being formal. it's very important for them to recognise that.
- vi. Student 1: I think its beneficial. Its like real life, like not using slang or calling your lecturers “bro”, that sort of thing. Same applies to online communication.
- vii. Student 2: I mean, it will be really beneficial because if you have enough knowledge of these communication norms and expectations online, I believe it will be easier for us to fit in to the to the real world when we graduate from university, because once we're out of university and we are kickstarting our careers, we need to reply to e-mails. And knowing how to communicate even before entering the workforce, I think it is crucial. Messages in different platforms will have different outcomes. If we are familiar enough on this communication aspect of digital literacy, obviously, we will know which message style is better to used for email,

which is better to be written in WhatsApp, and so on. It will be easier for us to have better conversation outcomes with someone else.

- viii. Student 3: I would say it's very beneficial. As mentioned, Microsoft Teams and emails, especially, I think a lot of us nowadays, we do not have the ability to construct emails properly, because I've also heard from my lecturers how some students are very rude. When you're writing an email, you need to follow a certain structure, and you need to be familiar with who you're talking to and how to start the email, how to end it. And a lot of students are not familiar with it. I feel like later on in life, especially when you're applying for jobs, you need to be familiar with how to write emails or communicate professionally. And I feel that it will be beneficial for students to know the proper techniques to communicate online through different platforms be it emails, or Microsoft teams because it can help them sound more professional in a way, depending on the situation.
- ix. Student 4: I believe is that is very beneficial for UTAR students to be familiar with all of these things. Because nowadays, when we talk about these online communication platforms, it is a must in our society, not just in our tertiary education. It applies to society and the workplace as well. If they are familiar with how to communicate appropriately here in tertiary education, they would also know how to do it in the future once they start their careers. This would improve their overall impression with those they talk to digitally. And not only that, it is beneficial for UTAR students because they can also bond with others or

make good relationships with others, not just in school but also with others outside of the school as well.

x. Student 5: I think its pretty important, especially in academics. Everyone will have to speak to university staff, or lecturers definitely at some point. Some will give out their WhatsApp, some you through Microsoft Teams, and some only give out their email. Knowing how to speak when. I think, it is a crucial part of navigating tertiary educational life. Without this knowledge you'll end up offending a lot of people you really shouldn't.

h. (Communication) How well versed are your students / you in this aspect?

i. Lecturer 1: I'm not quite sure about this one because I don't really interact much with them online. With the few of them that I do have the interaction with, I feel like they are good. Meaning to say that, as I said earlier, I don't really see much when it comes to this social media presence or online presence. Just respect me in the way that I'm your lecturer, and you're my student, you know. But mostly when I interact with them, that's not really the case. They're just like, "Hey, this is funny. Hey, so you should do this". So, I feel like they still see that but in a more chill, relaxed kind of way. I just play along with it. So, I think in terms of how well-versed they are, I would say, yeah, they're good. They're up there like maybe 8, 9? But other than that, I'm not sure because my interaction with them on social media is very minimal, not that much.

ii. Lecturer 2: Well, I think they are midway here as well. They're learning, and frankly are getting better. If I think back to the pandemic disaster, it

was very much “I have a question, I will take every possible platform and put the question there, and I will get an answer for it in whatever kind of language that I want to use”. I suppose there's a way to understand all that. Because at that period of time, there was an urgency in everyone. And everyone was just grappling with all the platforms that there were. But I think, and I think this is a good thing, with the years that have passed since then, my students at least have become a lot more selective over the platforms that they choose, they have appeared to make wiser choices in the platforms that they use to reach out for different contexts. And I think, while it's a definite sign of growth, it can definitely be boosted, it can definitely be improved a lot more with I think, with practice. But more than anything with individuals, interlocutors, they can make their communicative expectations explicitly clear. For example, if a lecturer is going to reach out to a student and tell the student that look, next week, class is postponed at this time, the student and the lecturer should have a clear understanding as to what kind of platform would facilitate that best, what's appropriate and what's not. And in that sense, the lecturer has to be ready to hear it from the student themselves. “Sir, this is how you should reach me. Can you reach me on teams? Do not send me an email”, or “Can you reach me on teams? Do not send me a WhatsApp message, even though you have me on the WhatsApp group.” So I think when that happens, when individuals make their boundaries and expectations clear, it can improve a lot more in future and I think we're getting there. But right now, if it's a scale, maybe 5 to 6.

- iii. Lecturer 3: Very good. They know how to operate those things. Yeah. But talking from the perspective of an educator, especially linguistics, they need to differentiate the kind of language that they use online. For example, if you're writing you're posting Facebook or Instagram or Twitter posts, that kind of thing, which would be different. If you're writing an email, the kind of language would be different if you're writing texts on WhatsApp. The kind of language will be different. I've received a lot of email from students that looks like WhatsApp text. Language wise, you've got choice of sentence structure, the choice of words format, everything is there maybe. They seem to be a bit confused. Communication is like similar, but different medium of communication requires different set of system. So yeah, they need to know that.
- iv. Lecturer 4: Since I'm teaching that particular subject, when it comes to communication, I think technology is taking a toll on everyone, especially students, because I'm very sure you have noticed that in online classes people will not be really responding because it's kind of awkward for them to talk to the screen sometimes. Because we are like, no, we normally talk face to face. Rpecially when it comes to writing, as with this exposure of technologies, I think students are very relaxed. They don't know what to write for content, how to write, what's the proper tone, what's the structure in writing certain content, and so on. In that way, I would say the students are kind of lacking. Yeah, it's kind of bad nowadays, because majority students that I taught, they are not really good at writing, which was a normal thing for us to do back in primary.

I think, with the exposure of technology, students nowadays are not really into it into the old traditional method of writing, and it's not really processing in their mind. I guess that's a bad thing. That's my perception on the students writing, they're not really up to the standard, of course, technology wise, they have the knowledge. But when it comes to critical thinking and content creation, how they communicate, I think they are lacking there.

- v. Lecturer 5: At times, I still see like a gap. In situations where I expect students to respond in a more formal manner, but I'm not given that. I'm not speaking from only my classes. Like this semester, there was a practical exercise that we did, where students have to go and identify articles for them to analyse and follow up with the exercise itself. A student found the article and you're asked to put it into a shared folder. You will see many different names to the file alright, but they renamed the file in not so appropriate manner. In in that context, they should recognise that this is a formal context, this is a proper educational activity that they are doing and they should follow the norms and law by naming the File properly. At times, I would see things like that. Even online classes, occasionally you will see students joining the class and then commenting things that are not very proper in the comment section.
- vi. Student 1: I think for both me and my peers, its again, 4 out of 5.
- vii. Student 2: I think before going to IA (internships), most students, including me, we are not so good because to be honest, most of the time, we are mostly using only Microsoft Teams, and we seldom use e-mail or other platforms to communicate. This is actually one important thing



I learned from my IA. I think students, after their internship, they will return to university with more awareness and knowledge thanks to working in these companies. They would be then better in typing proper emails to ask or inquire something from lecturers in a more proper and formal way, in a way that's appropriate.

- viii. Student 3: So personally, for myself, I would say, because we do not use emails as much, I would say I still have a lot to learn. I'll put myself on the lower category whereby I'm not as well versed, but my peers, a lot of them are on the average scale, whereby some of them know how to read and some of them don't have the skills to do so. So, I think it's divided 50/50.
- ix. Student 4: I will rate it 7 out of 10. Because most of UTAR students, regardless of what faculty they are, they can write well. However, there is a portion of URAR students, they will just write in the same casual tone they would use with their friends with lecturers or educators and so on. Its rude. I rate this 7 out of 10 then.
- x. Student 5: I think I'm alright. I struggle with knowing how to exactly conduct myself through e-mail, and often are unsure if I'm being formal enough at all. I'd give it maybe, a 6 out of 10 I think? I would say I'm personally lacking in this regard.
- i. (Critical) How much does a student benefit academically if they know how to identify the credibility and reliability of online information?
  - i. Lecturer 1: Yeah, I think it's very, very beneficial for them because in the academic world we have predatory journals and high-ranking journals. If you have the ability to differentiate between a credible

journal and the one that is just there for the sake of money, it's going to be very good for you because these predatory journals, it's everywhere. You just pay money, and you get published. But the quality is not good. For example, I myself have a paper published on Scopus, that I am not quite proud of. I had handed the paper to my supervisor to make amendments, but while that was happening, and before it was amended, I received a notification that my paper was already published on Scopus! So, she was confused, and we were thinking to ourselves, “we’re not even done!”. When I read what was published, it was not very good. So that paper, though being on Scopus, is not up to par at all. Thus, as a student, I feel like it's very important for you to know because this skill is going to be useful not only for now when you are doing your FYP, but when you go to work later. You'll be dealing with a whole lot of scenarios, a lot of situations where sometimes people just come to you and ask, “Do you think this is reliable?” Your manager, your boss, could just ask you to look for something, especially if you were to become like a writer, lecturer, et cetera. So, I think it is very important and it's very beneficial for the students because when it comes to digital literacy, this is one of the skills that I feel like you need to know. I think this can fall under ethics. So, if you were able to correctly identify credible sources and only use those, it will be very beneficial for you in the long run.

- ii. Lecturer 2: They benefit in a very significant way academically. And I say this, because with the absolute overload of information everywhere, and at all angles coming from so many platforms, pretty much screaming them at us, not knowing how to filter out what's not credible, not

knowing what voices to give weight to puts them in a position where everything goes. And while that can seem like an enjoyable thing where “I’ll just take whatever I want”, it’s exhausting, because at the end of the day, when they submit their assessment or their assignments to us and assessment process is going on, we’re going to meet with them, we’re going to talk to them and tell them everything that’s not okay with it. And they’re going to have to go back to the drawing board. And that’s when it’s tedious. We have to either show them how credibility is distinguished from non-credibility or they’re going to have to learn it from some workshop, or learned through years of experience of their own. But the end goal of it is for them to be able to come up with information that has been selected very carefully based on not just trust or what’s trending and what seems to be popular but instead actual reputable research, factual knowledge.

- iii. Lecturer 3: This one is a very important question. Because you can see now students are relying on online sources, articles, journals, publications, online publications, we can access millions of articles, millions of references online, but that’s why they need to know which one are reliable sources and credible sources. And based on my experience, they need to produce a report and they need to have citations and references. I could see that some of the students are just using random websites to give explanation and examples. They use it as sources in academic work. The source itself is not that reliable and credible. Students should know how to find credible and reliable sources. It’s a skill. We used to have books, we go to the library to search

for the solid, reliable, and credible source. Now, students, I'm not saying not everyone, but most students do not go to the library. They just search online, even for me now, I'm also googling when it's easier, right? But then students need to know how to search, how to look for a credible and reliable source. And they need to know the difference between reliable, credible, and relevant source.

- iv. Lecturer 4: They are going to be really exposed to these real knowledge on how things are supposed to be done correctly. You see, rather than saying how much they should be benefiting, I would say that they should be doing it regardless. But, it also depends on the student again. It depends on the way the student is going to take the tech and use for themselves. But definitely on a general basis level view, it is something that is not an argument, something which is not negotiable, the student should be able decide what is a credible source of information. And of course, the reliability of it should be legit. In terms of digital literacy, it depends though. It is something they must do, its not negotiable, they don't only need that skill digitally.
- v. Lecturer 5: I think this is the most important part out of everything we just discussed. Digital literacy is very broad, but if you want to tie it to academic context, this would be the most crucial part or the most crucial skill that students should acquire. Your academic work, be it your assignment, you're final year project, if you were to go to your postgraduate studies, doing thesis or whatnot, all the information that you put into your work has to be credible, and it has to be reliable. And the most important thing is for you to have the knowledge to go and find

it from a reliable source from a credible source. And obviously, following the plagiarism rules and whatnot, for you to use the information that you have read online, and not to claim it as your own, but to also cite it properly, yeah, obviously, you have to add on your own thoughts as well. So, coming back to the question, yes, I think it is very, very important for students to be able to acquire this skill when they are doing their studies.

- vi. Student 1: Quite a lot, because if they fail to identify what is not a reliable source, or what is incorrect data, and then proceed to not research about it further, it would change the outcome of their research, because what they were basing it on was wrong.
- vii. Student 2: I think if we know how to identify the credibility and reliability of the information, it will aid us in the progress of completing our assignment and make it more academic and more professional. Most of the time we are doing our assignments based on our own thoughts, our own opinion, but when we have the awareness to identify the credibility, and then we can reuse the information correctly. We can use it in our assignment and make it more professional. When the lecturers are assessing our assignment that they can see that “oh, we didn't know how cross references for the correct information”. Any assignment we do, we will for sure be looking for information online. So, I believe that being able to identify the relevant and accurate information, it will make our assignment and course work far better. Assignments would be completed correctly. So, I believe this is the importance and benefit.

- viii. Student 3: We will benefit a lot because when we go into uni, a lot of us don't know how to differentiate credible and reliable sources from sources that are not credible. I had the difficulty personally, I had difficulty when identifying whether the source is credible or reliable. And so, I had the tendency to go and ask my lectures. And later on, slowly, I managed to learn from my friends that there are certain websites where you can know whether the sources are credible and reliable or not. And for students, if we are able to differentiate this, it will really help us in avoiding plagiarism and avoiding using information that is not credited or information that has not been looked upon in detail. In a sense, when a student uses information that is credible and reliable in their assignments, it will not only lead to them getting higher scores it will also give the lecturers who are marking a sense that the student has done their reading and that they know what they're putting in their assignments.
- ix. Student 4: I believe students a little academically, when it comes to identifying credibility and reliability of online information. Most of us just tend to skim through it without maybe absorbing the knowledge. Let's say for journal articles, I believe every UTAR students more or less needs to do scanning to retrieve the correct information from all these journal articles and so on. So, we will not tend to assume that it is our job to just get something out of this content and then not read thoroughly and thus not know what the author is trying to tell us. Students, they will benefit from getting this online information in their assignments, they but they will not benefit academically as they like, they will know how

to write better or they would they would absorb the knowledge from it and so on.

- x. Student 5: Oh, extremely! Without it you'd write a paper that's completely false, full of narratives created by people who will most definitely not have the best intentions. I think it goes without saying, critical thinking matters so much, not only academically. So many people on this earth want to take advantage of the trust and naivety of others. If you don't have this aspect of digital literacy, you are leaving yourself extremely vulnerable to harmful ideas. At a basic level, you become misinformed. At worst, you begin believing and promoting conspiracy theories, racial stereotypes, the list is endless. It's a no brainer. It's a must have.
  
- j. (Critical) How well versed are your students / you in this aspect?
  - i. Lecturer 1: I think it's easily a ranking of 4, 5, because I feel like they don't see the importance of this yet. Rather, there is just "Look for papers for citation" and that's it. If I can cite, it's in my paper, it's relevant to whatever that I'm doing, I'm good. So, I feel like it's 4 and 5, they don't really bother much about it. As long as I have it, I'm good. I mean from time to time, I try to tell the students about this, especially the year one and year two students. But again, it's hard because I can't be there to monitor them all the time. Even with the assignments, I can't check the citations one by one because some students use like what, 10 citations in total. To check one by one, it takes a whole lot of time. So, all I can do and all I can wish for is that they know how to do it and then they are able to distinguish between this and that.

ii. Lecturer 2: I think they're quite well versed. Simply because the mechanisms we used to filter out, or to identify things which aren't reliable and credible, are quite easy to look at. I mean, we show them what Google Scholar is. And when they go into Google Scholar, there's a ton of things that they look at. And we tell them that not everything that you look at necessarily is credible also. And then, of course, we tell them exactly what to look for. So, there are certain key standout elements in each article, in each social media posts, in each blog that they see, which we tell them to use as guidelines to then decide whether or not it's credible. And these things are not hard to detect. For example, as I mentioned earlier, a person's reputation is very often traced back to their position. It's sometimes also traced back to their employment background, academic background as well, sometimes even the academic title or their professional title. And then, of course, when it comes to resources, like journals, or when it comes to websites, there are also very easy to recognise signs, where we can look at Scopus journals, and we know that the credibility is insured in a sense, we can look at certain tier journals. These are things that we can guide the students on. And we have been guiding them on how to look at and how to rank these journals and how to rank these publications. And in that sense, we're actually, without being so explicit, showing them how to weigh credibility. And I think they've been quite prudent in following these instructions, they have learned quite quickly. So yeah, this one I think I'm quite positive about. But how well versed they are, four, five.



- iii. Lecturer 3: At the most basic level, I think they would know the template, how an article should look like, title and abstract. And then the key words and introduction, at least they should know that. But it depends on the students. Some of my classes, yeah, very familiar. But for some, they don't have any idea, especially for fresh students, as they do not have the experience yet to know which are credible and reliable. So that's why in my class, I'm quite open. I would always consider their experience, if they are experienced students, they should know. If they are new students, it's okay, we can train them.
- iv. Lecturer 4: They're very good in finding information, but when it comes to credible, reliable and information, that's the part which has always been questionable. The thing is, nowadays, anyone can post anything on the internet, it can be spread around, and students, they need to be taught on what information is needed exactly. Some of the information which they find, is legit, but then they don't know which are legit. The authenticity and connection between the content and the information, proper tracking is needed there. If you asked me how good they are in finding information, they are very good, but how good they are in finding credible and reliable information? In my record its only at a slight moderate level, they are not really good. They're not really bad. It depends, but generally its at a slightly moderate. Most of the students nowadays, they're just taking things for granted, that everything on the internet is legit. Of course, this is not everyone. Regardless of academic achievement, everyone is different, but generally it isn't that good.

- v. Lecture 5: I think it's hit or miss. Yes. I cannot be giving a response. generalising all the students that we have, because obviously, there are very, very good students, where they are able to arrange the sources that they have found, and then cited properly. Even before that, they go to the extent to check maybe with their teacher, their supervisor, whether sources that they have found are credible, reliable, right. There are students like that. And there are also students that plainly copy and pasting work from the internet without properly citing, and when asked, they are not able to demonstrate how they found the information in the first place. So yeah, a lot of question marks in that sense. If you were to ask me how UTAR students perform in this particular area? Yeah, it's a hit or miss.
- vi. Student 1: I think like, 2 or 3 for me. Same with my peers. This one's a bit lower I'd say.
- vii. Student 2: I think 6 out of 10. I think me and my UTAR peers we really know how to find relevant online information, but there is still room to improve because I believe not all the time that the online information that we found is really accurate to what we have written in our assignment. I believe this is the room that we can improve on.
- viii. Student 3: For me, I will say now, after three years, I would say we are on the scale of about 8 out of 10. We are doing quite well but not quite the best yet. We are able to differentiate sources that are credible and reliable, and sources that are not. So, I would say we are at about 70 to 80% there.

- ix. Student 4: I believe I'm giving it a 3 (out of 10) for this because students do not benefit too much in the aspect of academic terms. That is my overall explanation for you.
- x. Student 5: I went out of my way to practice this skill, sometime during secondary school. I got very paranoid at how important it is at one point, and pulled out all the stops to make sure I can identify what's real, what's a complete lie, and what's a half truth designed to manipulate others. I'd say its my only 10 out of 10. In terms of UTAR students though, I'm pretty sure I'm one of the rarer exceptions to this. I know most of my peers definitely started out struggling, especially without the head-start I had. Now, they're doing a lot better. So in general, I think UTAR students are overall, 6.5, maybe 7.5 out of 10.

### 3. Closing Thoughts

- a. Do you have any additional insights regarding digital literacy in relation to tertiary education?
  - i. Lecturer 1: Yeah, I feel like now with what we have in today's world, I feel like tertiary students really need to make effort to learn digital literacy. Whatever area you are in, it's very important for you to have this knowledge because for example in ED, you need to figure out how to use AI for your teaching. In EL, if want to become a writer, you need to know how AI can make your life easier to write something. So, before this, you need to spend like 30 minutes just for brainstorming. Now, you can just go chat with GPT, “give me ideas”, you already get the outline of the story and you can just go from there and work on it. It's very important for everybody to have this digital literacy and understand that. And another side of digital literacy is how to use it ethically, right? Because it's very easy to just use it in daily life and trash talk people online. Because you feel, “Oh, I know how to do this and it's just to trash talk people”. So, you really need to know how to do it in a way that is very much respectful because once you post anything, you may delete it but others may have downloaded and kept it. And so, that's a dangerous territory for you to really play in. Especially for youngsters nowadays, you have a lot of things to do and sometimes, I think it's another thing about social media presence, people go, “If I hate you, I'm going to expose you, I'm going to spill the tea on you and that's going to be difficult for you to find a career later”. They might just email your HR, telling them “they did this, they did that”. So, you need to be more

ethical when it comes to this. That's another side of digital literacy that everybody needs to know, how to use it ethically, how to not use it for bad reasons because AI is a good thing but just don't use it for ill intentions. I've always emphasized to students to use AI to form their assignment but not to write the assignment. There's differences there. So, with digital literacy, I feel like students really need to make effort to understand that better. It's not something that we can have, we can set one program or one course, let's learn the technology, because it's something that comes to you from time to time, the maturity of understanding it.

- ii. Lecturer 2: Yeah. As I mentioned, I think for me, primarily, the consent would be right now. For students to appreciate that every one of them brings an individual angle to the information gleaned online. And five of them could look at the same article, but five of them could actually produce varying responses to the article. And these responses don't necessarily have to be personal opinions, they can be entirely a report on what the writer of the article has said. But the angle as to how the report is presented will then depend on a little bit of self-reflexivity, on the insights that they bring to it based on their own life experience. And in that sense, I call it of prime importance, because I think when we reach that stage, so that when students are able to do that, when they're able to bring the self into whatever it is that they are trying to regurgitate, we're going to look at an academic environment where there's so much more fulfilment on the part of the student, because they're stuck there, whatever they learn is going to mean a lot more to them, because it's

going to correlate with their narratives with their own sense of self. It is also going to allow lectures to evaluate the students in a way that would distinguish between one student and the next, which is so hard to do right now. When students do not learn to not plagiarise, when students plagiarise, too much when students depend entirely on a IRA, chat GPT and things like that, every answer is the same. And how do you distinguish between one and another? Because pretty much the only thing that there is to be frank is their grammar. And that's a set case, if you're going to evaluate something, if it's a language class, then it's fine. But if it's a research class, or if it's a class that, you know, that's focusing on certain theories, and if five of them bring you the exact same output, I mean, the content is exactly generated by GPT. But of course, they try their best to put them in their own words, then the only thing that you're going to see different is a little bit of grammar change or sentence structure. And we don't think we want that in academia. So yeah, I think that's one of the most important things I would really really appreciate seeing.

- iii. Lecturer 3: So, incorporating digital technologies in our education system, I think that the most important thing is that our facilities needs to be up to a certain level, you know, the internet connection, the facilities in the classroom, everything should be in tip top condition. If not, it's hard for us to incorporate technology. For example. In our classroom, the devices, technology, and facilities are not yet an acceptable level. It's hard for us to incorporate this kind of teaching in our classroom. If they don't have the experience of using the latest

software or latest technology during the lectures, once they are out of the university, they graduate, they enter their working life, then they would face some kind of culture shock, suddenly given high tech devices, they are going to face a lot of problems. I think that is one of the biggest challenge but one of the most important things to do. Then, students need to be open because technology is changing. Its dynamic. Every day there will be something new going on. They need to be open with the advancement, they need to follow the tempo of this whole thing. Take phones for example, every few months there's always a new update. We need to be open to keep up with this tempo of technology. I think that's important.

- iv. Lecturer 4: I would say we can't get rid of digital devices, or anything to do with digital education nowadays, because it is a part and parcel of the era. I think that what I would say is that regardless, if you're an educator or student, we need to be a little aware not to let go of the traditional methods as well because the traditional methods are there for a reason. Even in UTAR, we are still manually writing our exams, because we want to know if the knowledge is being applied. I would say be aware. We have to always be careful. Don't take things for granted. And we need to tackle the lack of understanding that led to the devices being used badly. Dependency on it is also bad so we always have to maintain the levels.
- v. Lecturer 5: Yeah, so I think this will tie up to the beginning of our discussion, where digital literacy is not developed in tertiary education, it's too late. By the time they come into tertiary education, they are

expected to be digitally literate in a way. I think this will sound very irresponsible, but I think this responsibility, should start very early on. Not to give pressure to the parents, but the parents should play a part before their children go to school. They should be taught the proper way to use digital tools. It is best that they can be guided to use the digital tools in ways that will benefit them for academic purposes. Things as simple as word processing, if they can be exposed to it earlier, when they go to primary education, it would be ideal. I'm sure now, even as early as preschool, they're trying to integrate technology into the curriculum. I'm sure there are bits of this technological element being added into the curriculum. If we could prepare them earlier, so when they get into primary education, they have the basics, and then they can start building from that, six years in primary education, plus another five, six years in secondary education, they will have a strong digital background when they come into the higher education. Yeah, sounds irresponsible because I'm in tertiary education, but I think it has to start earlier. With a strong foundation, then when they come into tertiary education, where they are heavily relying on digital tools to perform basic tasks, like downloading your notes before you go to class. And then it's getting more and more task based as well for assignments where students are expected to provide more information. You need to know where to find the right resources and whatnot, compared to the past where students might be spoon fed, where the teacher provide the article to the students and students only need to analyse it, but now, students are more hands on so it's very, very crucial for them to build this skill at a very young age.



- vi. Student 1: I didn't grow up in Malaysia, but in the United Arab Emirates. There they really drilled in plagiarism as an aspect when we did our research papers, like how plagiarism is not citing our sources. Over here I feel like its less common, but that's a country specific thing so maybe it doesn't apply to everyone. I just found that here, they are less used to it. Essentially, comparing to where I grew up, Malaysia doesn't really drill much in terms of plagiarism and credit and citation. Maybe they didn't teach it during high school like they did where I from.
- vii. Student 2: Yeah, I think in terms of digital currency I believe our government can do more in helping improve it in all universities, regardless of it being a public or private universities. I believe there is still room to improve for them and for our student. Most of us we have the basic awareness needed for now. But there is still room to improve, especially in how we look for online information. For now, everything students do at the end of the day it is just for assignments. It does not cover properly there.
- viii. Student 3: I feel like for digital literacy, I feel like in all courses, universities have to make a bit of an effort in trying to give their students the basics of using digital technology, because a lot of us come in without knowing how to use most of the applications used for online education, and a lot of us feel lost. And we have the tendency not to ask, so when we don't ask we try to do it ourselves, but sometimes it doesn't meet the condition. So, I feel like it would be nice if they could implement maybe just one course, maybe not even like a whole course

for the whole semester. Just a workshop where students can go and learn more about how to get how to use digital epic applications. Yeah.

- ix. Student 4: I think that digital literacy nowadays is really a must for tertiary education. We're not just talking about how students need to master the skill and use various types of know how to use various types of digital literacies in their assignments, rather, lecturers and educators, they should also master how to use this in order to keep up with their students.
- x. Student 5: Digital literacy is such a broad concept; I think it will be very hard to train it in any meaningful way. It covers so many ideas, that I don't think a blanket solution that covers digital literacy as a whole could ever actually work. I think its better if we focused on the individual aspects that matter most, because at that focused level, I think we'd see actual progress. Of course, the government could do something about this, parents could too, but regardless, we should target students plagiarising work, target students submitting false information, so on so forth. A list of priorities should be set for each individual university's policy, and worrying or critical aspects of digital literacy should be targeted accordingly.