

DOI Link: <https://doi.org/10.61586/ioZAz>
Vol. 65, Issue.11, Part.1, Nov 2025, PP. 26-38

Evaluating TVET Students' Readiness for Web 3.0 Technologies: A Case Study in Universiti Teknikal Malaysia Melaka

Mohamad Tahkim Salahudin¹, Wirda Syaheera Mohd Sulaiman^{2*}, Nik Rahila Wan Ibrahim³, Nurhayati Kamarudin⁴ and Anis Marjan Azmimurad⁵

^{1,2,3} Pusat Pembelajaran Bahasa, Universiti Teknikal Malaysia Melaka (UTeM), 76100 Durian Tunggal, Melaka, MALAYSIA

⁴ Fakulti Pengurusan Teknologi dan Teknousahawan, Universiti Teknikal Malaysia Melaka (UTeM), 76100 Durian Tunggal, Melaka, MALAYSIA

⁵ Kolej Vokasional Dungun, 23000 Dungun, Terengganu, MALAYSIA

*Corresponding author: wirdasyaheera@utem.edu.com

Received Feb 2025 Accepted Oct 2025 Published Nov 2025

Abstract

English plays a pivotal role in advancing global sustainability by facilitating communication and trade among nations without a shared language. The emergence of Web 2.0 tools has created vast opportunities for education, particularly in language learning. Since the early 2020s, the development of Web 3.0 has gained momentum as artificial intelligence innovations increasingly support a more decentralized and user-driven online experience. This study investigates the use of Web 2.0 applications among Technical and Vocational Education and Training (TVET) university students in learning English and assesses their readiness to adopt Web 3.0 technologies for language learning. A quantitative research design was employed, and a structured questionnaire was administered to first-year bachelor's degree participants (n = 80) at Universiti Teknikal Malaysia Melaka. Data were analysed using SPSS 20.0 through descriptive statistics, frequencies, and percentages. The findings indicate that participants hold positive perceptions toward the use of the web and Web 2.0 tools, suggesting strong potential acceptance of Web 3.0 technologies in the future. The results further highlight participants' familiarity with digital environments and their confidence in integrating emerging technologies into their educational practices.

Keywords: Communication, English, Technology, Web 2.0, Web 3.0

Introduction

The Malaysian government has recognised the English language as the next most significant language in Malaysia, after Malay, since they have become conscious of the crucial role the English language has for Malaysians. According to Leyi (2020), English is used worldwide and by individuals with various native languages for effective communication in a variety of situations. Malaysia, as a multiracial country, essentially has all citizens bilingual, with English serving as a lingua franca, and its citizens code-switch consistently within their communities. English, as Malaysia's official second language (L2), is essential for navigating today's educational and economic challenges. The reason is English has been consistently one of the most important spoken languages in top professions since the nineteenth century, and proficiency in the language is often key to obtaining well-paying jobs (Abdi & Makiabadi, 2019).

In recent years, the use of English in schools has been a hotly debated topic. Gaudart (2000) observed that Malaysian society is frequently entertained by claims of 'falling' English standards, but those claims rarely describe which aspects are declining. The noticeable decline in English competency among schoolchildren and young adults has raised concerns in a variety of sectors. This issue has reached to higher educational institutions, where university students' proficiency in English have been questioned by employers once they enter the workforce.

Despite the fact that English is widely spoken in Malaysia, proficiency levels have declined significantly according to an EF English Proficiency Index survey (Aziz, 2018). The decline can be because of several factors such as the education system, inconsistent language policy and globalisation. To address the matter at hand, educators have used a variety of techniques and tools to tailor lessons to the needs of their students.

Web 2.0 techniques have had a significant impact on instructional settings for English in Malaysia by introducing new methods of teaching and learning. Online discussion boards, forums, blogs, Facebook, Flickr, YouTube, Instagram, and Twitter are all recognised as having the ability to transform the educational process (Alexander & Levine, 2008; Halim & Hashim, 2019). Web 2.0 is regarded as a catalytic tool due to its engaging technology, which fosters greater independence, autonomy, as well as cooperation among learners throughout the process of education (Franklin & Van Harmelen, 2007).

Researchers and practitioners have promoted the advantages of embedding Web 2.0 tools in English teaching (Gonzalez 2015; Hartshorne & Ajjan 2009; Soomro et al., 2015). According to An and Williams (2010) and Al-Ma'aitah (2020), there are a lot of key benefits of using web 2.0 in education including enhanced students' engagement, active knowledge creation, improved technology and writing skills, flexibility and accessibility, ease of use and reduction of barriers between teachers and students.

Majority of institutions have now integrated social networking sites (SNS), including data distribution, group activities and instant communication. SNS has been drawn to people and organizations by rising prevalence. Saudi Arabia has a large number of online networks from which government departments, agencies, and private sector companies operate. In addition to their learning management

systems, universities also have their social networks to broaden their learning environment through rapid, interactive and collaborative learning tools (Alsaif, 2019).

Web 2.0 has significantly impacted the teaching and learning process, particularly in terms of interaction, collaboration, and learner-centred learning opportunities. Sonmez and Cakir (2021) stated that Web 2.0 tools allowed learners to be more productive and engaging. Tools such as blogs and social media forums motivate learners to express themselves and talk about a wide range of topics without fear of being judged or anxious because students can remain anonymous all through the interaction while avoiding criticism. In other words, Bugawa and Mirzal (2018) argue that the use of Web 2.0 tools has shifted the teaching and learning process to place students as active producers of information rather than passive consumers.

Purpose

The aim of this article is to compare and contrast the respective technological and conceptual structures of Web 2.0 and Web 3.0. As education and technology evolves, a thorough investigation of trends, patterns, and improvements to the tools used in classrooms is required to establish a strategy to assess and exploiting technologies for classroom use. This paper intends to present a comprehension of both internet evolutions, emphasising their benefits, distinguishing features, key technological advancements, and broader implications for users, particularly in terms of language classroom use.

More specifically, the paper is intended to investigate the relevant impact and importance of these internet-based technologies for Technical and Vocational Education and Training (TVET) students. Investigating how these learners collaborate with and use Web 2.0 for language learning, whether speaking, writing, listening, or reading, will shed light on the potential of web 3.0 technologies to improve educational outcomes and prepare learners for tomorrow's workforce. Given that web 3.0 will rely primarily on artificial intelligence, students' readiness to adopt advanced technology must be assessed for a variety of reasons, including creating a future educational institution, optimising learning outcomes, coordinating with industry trends, and encouraging lifelong learning.

Objectives

- a. To define and characterize web 2.0 and web 3.0
- b. To compare and contrast web 2.0 and web 3.0 technologies
- c. To explore TVET students' use of web technologies
- d. To assess students' readiness in adopting web 3.0 technologies in classroom
- e. To identify challenges and considerations in adopting web 3.0 technologies

Materials and Methods

The researchers adopted a quantitative approach to collect and analyse the data. Quantitative analysis is formal, objective, and organised hence it is an ideal method for obtaining information through the use of numerical data. This approach enables the researchers to acquire the precise data and information required. Generally, the researchers tailored the questionnaire and adapt the questions from previous

studies. The study's sample size consists of 80 first-year Bachelor Degree students at Technical University Malaysia Melaka. The samples for this research are technical university students of 2nd semester. In order to accomplish the research aims, students are randomly selected to respond to the items in the survey that was provided.

Web 2.0 VS Web 3.0: Definition and Differences in Technology Evolution.

The term "web" typically implies the World Wide Web (WWW), an online database that allows users to browse and exchange documents linked via hypertext. Emphasising on content created by users, Web 2.0 represents the second generation of the World Wide Web, enabling its users to collaborate and interact with each other extensively. This phase marked a significant transition from the previous fixed web (Web 1.0) to an increasingly dynamic and collaborative online environment. Web 1.0 was the earliest version of the internet and was primarily used as a read-only platform which included little to no interaction or content generation among users. Hence, the use of Web 1.0 was passive since users had little ways to contribute or engaged (Terra, 2023).

When web 2.0 became popular, it indicated a paradigm shift, highlighting the two-way exchange of Web 2.0 as opposed to the previous version. Web 2.0 is considered as the Interactive Revolution going from the static Web 1.0 to the interactive Web 2.0. Some of the evolutions Web 2.0 brought were user-generated content, collaboration and sharing, interactivity and accessibility and ease of use. Web 2.0 refers to the advancement of the Web into a simpler interface (users do not need technical knowledge or a computer) and interactivity.

Researchers such as Nordin and Klobas (2010), Ahmad and Daud (2010) and Annamalai (2017; 2019) are some of the researchers that studied the use web 2.0 in educational context in Malaysia. Web 2.0 has provided a lot of advantages in regards to involving learners by offering a variety of familiar materials to learners, delivering an array of contextualised visual information that can support ESL classroom, assisting learners during brainstorming sessions and fostering more peer-to-peer communication (Yunus et al. 2012; Sadaf et al. 2012; Al-Ali 2014).

Researchers have long studied the use technologies of web 2.0 to prove tools such as blogs, wikis, social networking sites, online forums, collaborative tools, and language learning apps improve language learning through being more interactive and collaborative for learners and instructors (Mitchell 2016; Combe & Codreanu 2016; Lin et al. 2017; Vásquez & Arciniegas 2017). If used efficiently with the appropriate teaching approach, technology can provide a more holistic picture of students' language development. According to Annamalai (2019), integrating task-based learning Web 2.0 tools into learning practices at the same time will increase creativity in improving English skills.

Web 3.0 is a revolving concept that began to attract attention in the early 2000s (Lassila & Hendler 2007; Hendler 2009). By late 2010s, web 3.0 gained traction by people by various sectors such as tech enthusiasts and specific industries as broader adoption and understanding of the web technologies are applied. People started to use artificial intelligence (AI), blockchain and decentralised networks in finance and non-fungible tokens (NFTs) thus spreading the recognition of the term web 3.0

worldwide (Sheldon, 2021; Sutikno & Aisyahrani, 2023). Web 3.0, often referred to as “Decentralised Web”, relies heavily on AI because the goal is to avoid having a single organisation control the data and apps available. Artificial intelligence refers to self-learning algorithms that can develop habits of their own, such as monitoring user activities and providing search results based on their preferences (Saleh, 2019).

Education in the context of Web 3.0 will use a variety of platforms that incorporate cutting-edge technologies like blockchain, AI, machine learning, and decentralised networks. Educators will be able to use AI to personalise learning paths for each learner, have access to global resources as a result of decentralised educational resources, and use fully immersive educational experiences such as virtual reality (VR), augmented reality (AR), and The Metaverse to enhance peer-to-peer learning and collaboration. According to Zhang et al. (2022), Four potential metaverse applications in education are described with reasons and instances such as blended instruction, foreign language learning, competency-based education, and inclusive education.

Results and Discussions

TVET Learners’ use of Web 2.0 Technologies

The raw data gathered is analysed and interpreted using the descriptive and inferential statistic methods of the Statistical Package for the Social Sciences (SPSS version 15.0). Raw data is organised, simplified, and presented in an understandable format. The raw data from the questionnaire, as well as the pre- and post-tests, is analysed by formulating the total number of respondents and the corresponding percentage of responses associated with every Likert scale options. This section will gather and discuss data on the usage of Web 2.0 in respondents’ learning process to enable the researchers to analyse respondents’ attitudes towards the use of Web 2.0 in enhancing their level of communicative ability in English. Table 1 demonstrates the total amount of respondents who participated in the study by gender. There are 32 men (40%), and 48 women (60%).

Table 1: Respondents and gender.

		Frequency	Percentage
Valid	Male	32	40.0
	Female	48	60.0
	Total	80	100.0

Table 2 shows the number of respondent on the statement of ‘I use the web to download music files and listen to podcast / online broadcast’, about 31 respondents (38.8%) answered seldom, 44 respondents (55.0%) answered often and 5 respondents (6.3%) answered daily. The first item shows respondents’ positive

attitudes towards the use of Web 2.0 with 61.3% of respondents answered Often and Daily. If a learner wants to further develop their English language skills but is reluctant to look at any additional textbooks, the solution is to search for English podcasts. Podcasts are believed to be comprehensive for English language learners at the beginner, intermediate, and upper intermediate levels. In the field of English learning, numerous applications have been established that emphasise oral, receptive, and all basic language skills.

The variety of podcasting programs with their transcriptions and word lists from most popular, sophisticated and popular radio stations could be very effective (Abdi & Makiabadi, 2019). Podcasting has long been drawn to many learners and educators by the emphasis on listening and speaking skills (Hasan & Hoon, 2013; Yeh, 2017). English-speaking podcasts are a great way to improve your English efficiently. Students can listen to them at their desks or on the move anytime and anywhere. English podcasts will help student to develop their listening skills and level quickly with minimum efforts needed. Another advantage of listening to podcasts is the written transcripts of the audio or the closed captions. Students are able to listen while reading the displayed transcription at the same time if they are not sure of the words spoken. Research has shown that listening is the main skill needed for effective communication and should be given more emphasis than other skills, because listening play a central role in improving other skills in language (Masalimova et al., 2016; Rost, 2005; Vandergrift, 2007).

Table 2: Download music files and listen to podcast / online Broadcast.

		Frequency	Percentage
Valid	Seldom	31	38.8
	Often	44	55.0
	Daily	5	6.3
	Total	80	100.0

Table 3 shows the number of respondents on the statement of 'I use the computer to watch video clips / download video clips', about 6 respondents (7.5%) answered seldom, 58 respondents (72.5.0%) answered often and 16 respondents (20.0%) answered daily. It shows respondents' positive attitudes towards the use of Web 2.0 as 92.5 % of respondents answered Often and Daily. The result shows that respondents are keen to the use of technology and have experience in handling the tools as they watch video or download video clips from websites such as YouTube. YouTube was initially created as a medium for video-sharing for ordinary people but has since drawn educators' interests. YouTube launched YouTube EDU in 2009, a platform developed in collaboration with universities and schools. Within its first year, it grew to include materials from 30 higher education institutions,

totalling over 65,000 videos. Videos on YouTube, in particular, have been shown to improve student engagement, understanding, and overall satisfaction. Including YouTube into learning environments improves students' comprehension and participation. YouTube also promotes digital learning and increases student engagement, particularly among fully online learners. These benefits have important implications for education. When deciding whether to use online videos or video-sharing platforms, the mode of distribution must be considered (Roodt et al., 2014).

Table 3: Watching and download video (e.g Youtube)

		Frequency	Percentage
Valid	Seldom	6	7.5
	Often	58	72.5
	Daily	16	20.0
	Total	80	100.0

Table 4 shows the number of respondents on the usage of Social Networking Sites. Only 1 respondent (1.3%) seldomly used it, 32 respondents (40.0%) use it often and 47 respondents (58.8%) use it on daily-basis. About 98.8% of respondents shows positive attitudes towards the use of Web 2.0 tools.

Table 4: Social Networking Sites (e.g. Facebook, Twitter)

		Frequency	Percentage
Valid	Seldom	1	1.3
	Often	32	40.0
	Daily	47	58.8
	Total	80	100.0

Facebook Messenger is a popular tool in education, with students and lecturers using it for both private and group messaging. FB Messenger provides a variety of resources, which includes HD calls, snapshots, short videos, voice recordings, group chats, and stickers, enabling both synchronous and asynchronous communication. Rohani and Yazdani (2012) found that social networking sites

(SNS), as Web 2.0 tools, facilitate online learning by allowing collaboration via desktops and smartphones that access educational content. An experiment revealed that students' motivation to learn increased as they engaged actively in Facebook groups. They communicated effectively with one another and with the lecturer by using Web 2.0 tools like text web chats, emoticons, and emojis (Alsaif, 2019).

Readiness in Adopting Web 3.0 Technologies

Based on the findings, considering the positive attitudes and regular use of Web 2.0 tools for enhancing language proficiency, the fundamental readiness to incorporate Web 3.0 technologies into learners' educational methods appears favourable. Web 3.0 has the potential to enhance English language and communication learning by catering to learners' individual needs significantly since the evolution of the technological tools will be driven by the use of AI.

As previously stated, the next generation of the web (Web 3.0) is expected to be used to decentralise and personalise users' internet experiences through recognising their preferences and incorporating VR and AR. This new era of the web aims to change the way people engage with the internet by addressing some of the current web's limitations (Web 2.0) and including new experiences.

Decentralisation: Users/learners will be able to control their own data and personal identities in the digital realm. This is critical because no organisation will be capable of able to regulate data or dominate user applications. Blockchain and peer-to-peer networks will be widely used, resulting in a more effective peer-to-peer learning platform that eliminates the need for intermediaries. Blockchain technology enables better and more efficient open access educational resources, resulting in a free and collaborative global educational community to share and improve educational resources.

Personalisation: With advanced AI and machine learning algorithms, Web 3.0 tools are expected to be able to better understand and target the preferences of users/learners. Content, services, and interactions will be suited to individual needs and interests. Learners will be more eager to learn in adaptive learning environments with dynamic curriculum designs. Web 3.0 will enable real-time analytics, interest-based learning, and asynchronous and synchronous alternatives for self-directed or instructed learning.

Challenges and Considerations in Adopting Web 3.0 Technologies

While learners appear to be prepared to utilise Web 3.0 in regards to engagement with digital tools, more study and preparation might be necessary to guarantee that they can effectively leverage its capabilities, such as comprehending and employing decentralised technologies, interacting with AI-driven learning platforms, and controlling their own data and privacy.

Some of the factors to consider when implementing Web 3.0 technologies in educational institutions:

- a) Technical complexity
- b) Security risks

- c) Compliance with educational standards
- d) Implementation costs
- e) Maintenance
- f) Impact on teaching roles
- g) Quality assurance

Conclusion

Educators are urged to adopt contemporary teaching techniques to effectively engage today's digital learners. However, during this research, not all Web 2.0 tools could be utilized in Malaysian classrooms; therefore, the researchers selected the most suitable tools for implementation. Limitations such as time constraints, students' attitudes, and varying levels of motivation also influenced the scope of the study.

The findings reveal that students hold positive attitudes toward the use of Web 2.0 tools in enhancing their communicative abilities. They demonstrate awareness of these tools in their daily lives and express a preference for integrating them into language learning. For instance, students effectively used Facebook features such as live chat, voice calls, and video calls which provide both synchronous and asynchronous modes of interaction, allowing them to connect and communicate more effectively (Alsaif, 2019; Yunus et al., 2012). In addition, students were able to leverage these technologies for entertainment, socialization, and academic purposes.

The integration of Social Networking Sites (SNSs) and blogs further encouraged meaningful interaction and collaboration among learners. Activities such as downloading and contributing videos or learning materials promoted active learning beyond the classroom setting (Junco, 2012; Kabilan et al., 2010). The students' prior knowledge and familiarity with Web 2.0 tools appear to foster positive attitudes toward their use in improving communicative competence.

Overall, the favourable perceptions and acceptance of Web 2.0 tools for language learning indicate that the transition to Web 3.0 technologies may also be positively received. These results align with previous studies highlighting the importance of digital literacy and interactive learning in promoting lifelong learning and improving educational outcomes for both instructors and students (Redecker et al., 2011; Wang & Vasquez, 2012).

FUTURE SCOPE

The recommendations for future studies are closely related to the limitations highlighted in this study. Addressing these limitations and developing approaches to overcome them can improve future research. More research is needed to better understand and improve the pedagogical practices for Web 3.0 tools. Furthermore, studies should investigate the viability of Web 3.0 resources for language acquisition in Malaysian setting.

Availability of Data

The datasets analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The author declares no competing interests.

Funding

The authors would like to express their gratitude to Pusat Pembelajaran Bahasa, Universiti Teknikal Malaysia Melaka (UTeM) for the unwavering support towards the publication of this research via PJP Perspektif grant (Code: PJP/2024/PPB/PERINTIS/SA0052).

Authors' contributions

Mohamad Tahkim Salahudin contributed to the conceptual framework, methodology design, and supervision of the research process. Wirda Syaheera Mohd Sulaiman led the literature review, data analysis, and manuscript writing. Nik Rahila Wan Ibrahim and Nurhayati Kamarudin assisted in instrument development, data collection, and initial drafting. Anis Marjan Azmimurad supported in data interpretation, editing, and final manuscript revision. All authors read and approved the final manuscript.

Acknowledgements

The author would like to thank Universiti Teknikal Malaysia Melaka (UTeM) for its institutional support in the completion of this research.

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