

Preparing Future-ready Learners: 21st Century Skills in an Open and Distance Learning Education in Malaysia

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Abstract *The 21st century requires a dynamic, flexible and highly skilled workforce to ensure that the sustainability of economic growth remains viable in a period of volatility, uncertainty, complexity and ambiguity. Furthermore, digitalization which is a driving force for economic growth in the 21st century has also changed the way of practice in every aspect of life and its rising significance could not be taken lightly. Education is no exception and has undergone significant changes over the years, such as the introduction of online learning compared to brick-and-mortar education, and the emergence and adoption of new technologies. Graduates produced by the education system must be globally competent and competitive for the 21st century. A transformative educational approach is needed to nurture an adaptive, inquisitive person with strong skills and values to meet the demands of the 21st century and beyond. It is vital to be future-ready in education moving away from the conventional teaching method. This paper aims to study the significance of 21st century skills in preparing future-ready learners in an open and distance learning (ODL) institution in Malaysia. The results of this paper could provide insights to the various stakeholders to formulate appropriate teaching and learning processes, to develop and nurture 21st century skills among graduates in ODL institutions while sustaining the economic growth in Malaysia.*

Keywords 21st century skills, open and distance learning, future-ready education

INTRODUCTION

The educational sector is undergoing rapid transformations to adequately address the various possibilities and challenges the 21st century presents. Higher education institutions have the challenging task of ensuring that their graduates have the skills necessary to meet future needs. Due to the growing influence of technological breakthroughs, globalisation, and expanding employment markets, the idea of "future-ready education" has gained prominence. The Fourth Industrial Revolution (IR4.0) noticed the maturation of mobile and cloud technology, the rise of computing power and big data, the emergence of new energy sources, the exponential growth of the Internet of Things (IoT), the growth of the sharing economy and peer-to-peer business models, the adoption of advanced robotics and autonomous vehicles, and the improvement of machine learning and artificial intelligence (AI) also boost the impacts to the future-ready education. The advent of IR4.0 had an enormous impact on the realm of higher education, which plays a crucial role in fostering the development of skilled individuals, leading scientific innovations, facilitating the dissemination of knowledge, and preparing a future-ready workforce (Li, 2022). Education systems worldwide must be updated and reformed to meet industry demands to adapt to the industrial revolution (Shafie et al., 2021).

The Organisation for Economic Co-operation and Development (OECD) introduced the Future of Education and Skills 2030 framework in 2018, assisting education systems in identifying the information, skills, attitudes, and values that are necessary for learners to succeed in the 21st century. The framework identifies the competencies that learners require including cognitive and meta-cognitive skills like critical and creative thinking, adaptability in learning, and self-regulation, equally important social and emotional skills like empathy, self-efficacy, and collaborative prowess, as well as practical and physical skills such as proficient use of evolving information and communication technologies (OECD, 2018). The government of Malaysia created the Higher Education 4.0 Framework to guide future educational initiatives. The primary objective is to produce ethically and morally upright citizens who are spiritually grounded to

cope with the challenges of IR4.0 which consists of a future-ready curriculum, agile governance, research and innovation, and talent planning (MOHE, 2018).

Future-ready curriculum is a framework that emphasises, within a curriculum's elements, 21st-century challenges. As knowledge expands exponentially and new jobs that do not presently exist will be created in the future, the curriculum framework, particularly in terms of its structure and content, must be fluid and organic, rather than rigid and fixed. A future-ready curriculum promotes transformative 21st century learning and teaching delivery by redesigning the learning spaces, leveraging the most advanced IR4.0 technologies, and promoting immersive learning towards the achievement of learning objectives (MOHE, 2018). According to Sinnema and Stoll (2020), "a future-focused curriculum presents ambitious goals for reach impacts and the kinds of learning that would indicate success". Learning should be collaborative as well as collective, with new paths for knowledge advancement ((Andrews-Larson et al., 203 C.E.); (Cheng et al., 2015)).

In line with future-ready education, the current educational system incorporates 21st century skills into the pedagogical and learning processes. The incorporation of 21st century skills holds significance in Malaysia's adoption and adjustment to education. The Ministry of Education of Malaysia places considerable emphasis on the concept of 21st century learning, locally known as "Pembelajaran Abad ke-21" (PAK21). This framework delineates the essential knowledge, competencies, and attributes that students need to possess in order to effectively engage with the demands of the 21st century and to navigate the dynamic challenges it presents. The PAK21 framework revolves around a student-centred approach to learning, guided by five core elements: communication, collaboration, critical thinking, creativity, as well as values and ethics. These elements are often referred to as the 4C1V framework (Communication, Collaboration, Critical Thinking, Creativity, Values and Ethics) (Habhajan Singh, 2019). This student-centric methodology is designed to empower students with the necessary skills and attributes that are relevant to today's highly competitive environment and enable them to effectively address the uncertainties and complexities of the 21st century.

The National Education Blueprint 2013-2025 has been put into action by the Ministry of Education Malaysia (MOE) to bring about a revolution in the educational system of the nation and cultivate a workforce that is capable of addressing the global challenges that will be faced in the 21st century (MOE, 2015). Nine competencies that companies find critical are deeper learning, critical thinking, analytical reasoning, effective communication, handling complexity, group projects, self-directed learning, cultural sensitivity, and creativity (Akdere et al., 2019). For graduates to be prepared for the workforce, they need to possess several critical skills, including the ability to work well with others, to be self-motivated, to communicate verbally, to solve problems, and to take initiative (Mcgunagle & Zizka, 2020). Learners who are enrolled in tertiary education and who are not adequately equipped for careers that are oriented toward the future are likely to have a tough time breaking into the job market of the future (Rahmat et al., 2019).

The skills needed for education and the workplace in the current economy have been considered 21st century skills (van Laar et al., 2020). The skills associated with the 21st century have been denoted as cross-disciplinary skills, soft skills, or employability skills (Marbach-Ad et al., 2019). The ability to anticipate forthcoming trends and demands adaptable skills and knowledge become ever more essential in the dynamic and changing workplace environment (Low et al., 2021). The characteristics commonly referred to as 21st century skills namely creativity, critical thinking, collaboration, communication, socio-emotional skills, and lifelong learning abilities such as positive self-concept, adaptivity, and resilience (Tan et al., 2017). Graduates need 21st century skills such as problem-solving and analytics, decision-making, organisation and time management, risk-taking and communication (Kenayathulla et al., 2019). The framework for comprehending 21st century learning in the context of higher education's e-learning landscape involves electronically facilitated interactions, both asynchronous and synchronous, with the goal of creating and verifying knowledge (Garrison, 2011). The proficiencies requisite in a digital era encompass effective communication, self-directed learning, ethical consciousness, adaptability and teamwork, critical thinking, digital literacy, and adeptness in managing knowledge (Bates, 2019).

Hence, higher education institutions including open and distance learning (ODL) education must adequately equip their learners for the rapidly evolving industries of the 21st century. For the 21st century, graduates generated by the education system need to be capable of competing on a worldwide scale and possessing global competence. It poses a challenge to higher education providers to provide their graduates with the capacity and disposition to embrace and act on global issues. A future-ready education system gives priority to the cultivation of innovative individuals with creativity, critical thinking, and cognitive abilities. By instilling a robust educational framework rooted in 21st century skills, these institutions can graduate individuals possessing a harmonious blend of ethical principles and knowledge. This preparation enhances their employability in today's global economy and empowers them to navigate the intricate challenges and novel complexities that arise in this era. Learners must attain a global competency as it forms the fundamental ability required for this era. While preparing learners for the multifaceted demands of the 21st century – encompassing work, citizenship, and daily life – is undoubtedly intricate and demanding, it is an imperative task. Learners must possess both the capacity and the inclination to comprehend and take action on matters of worldwide significance. However, limited knowledge exists regarding the empirical role of the university curriculum, learning ecosystem, and learning experience as perceived by university students in fostering the development of 21st century skills (Ab Jalil et al., 2022).

Open University Malaysia (OUM) has introduced a course titled "Learning Skills for the 21st Century." to align with the viewpoint of preparing future-ready learners. This course, designed for first-year learners in their initial semester, aims to familiarise them with the critical skills they require. The inaugural offering of this course took place in May 2019. The course modules encompass a comprehensive range of topics pertinent to 21st century skills, such as learning strategies, numeracy, digital literacy, critical and creative thinking, communication, collaborative proficiencies, as well as essential life skills. The introduction of the course aims to educate and enhance learners' skills relevant to the 21st century.

Thus, the primary goal of this study is to assess the influence of the Learning Skills for the 21st century course on learners' skills in preparing for future-ready education in ODL. The study strives to achieve the following specific research objectives, subsequently addressing the ensuing research inquiries:

Research Objective 1: To ascertain the significance of each learning skill set among learners upon completion of the 21st century skills course.

Research Objective 2: To determine the significance of 21st century skills in preparing future-ready learners upon completion of the course.

Research Question 1: Does each of the learning skills hold significance among learners upon completion of the 21st century skills course?

Research Question 2: Is the 21st century learning skills course significant in preparing future-ready learners?

The research hypotheses for this study are as follows:

H₁: Each of the learning skills is significant among learners upon completion of the 21st century learning course.

H₂: The 21st century skills are significant in preparing future-ready learners.

METHOD

This study utilised an online survey conducted through the Google Form on the OUM learning platform, MyInspire. Given the substantial diversity of learners engaged in different programs at OUM, this digital medium was selected as the avenue for survey dissemination. The Centre of Learner Affairs Department facilitated the distribution of the survey to all learners enrolled in the course during the May 2021 semester. The research approach chosen involves employing a survey design by administering questionnaires. The quantitative methodology is well-suited for obtaining a comprehensive understanding of participants' viewpoints regarding the influence of studying 21st century skills. The skills covered in each of the module's topics are presented in Table 1.

Table 1. Skills covered in the course Learning Skills for the
 21st Century

Topic Skills	
Topic	Skills
Topic 1	Being a 21st Century Learner
Topic 2	Study Skills
Topic 3	Numeracy Skills
Topic 4	Digital Literacy
Topic 5	Creativity and Innovation
Topic 6	Critical Thinking and Reasoning Skills
Topic 7	Communication Skills
Topic 8	Collaborative Skills
Topic 9	Career and life skills
Topic 10	The Environment and Us

The selection of this particular subject emerged from a range of available options, driven by the subsequent rationales:

- It serves as the foundational course for adult learners embarking on diploma and bachelor’s degree programs at OUM during their first semester.
- It holds the status of a mandatory course for all OUM learners, with no provisions for exemptions or credit transfers.
- The subject experiences consistently high enrolment figures each semester, with a substantial total of 2380 learners registered for the May 2021 term.
- The course is supported by a substantial contingent of tutors, with a total of 19 tutors designated for the May 2021 semester.

A survey instrument was crafted using a 5-point Likert scale, spanning from 1 (strongly disagree) to 5 (strongly agree), with 3 representing a neutral stance. A comprehensive array of 40 questions was meticulously fashioned for this research.

Data collection transpired from late August 2021 to mid-September 2021, following the submission of assignments for the course, accumulating insights from 368 participants via the Google Form platform. As there was no final examination, this period was chosen to ensure that participants had ample

opportunities to apply the learned skills in their day-to-day lives. The survey featured 40 items with the overall 21st-century learning skills in each topic. Respondents, who were learners registered for the course in the May 2021 semester, rated each topic based on their experiences. To ensure clarity and comprehension among respondents, two languages were employed in the questionnaire.

The study employs a simple regression analysis to examine the relationship between various 21st-century skills and learner preparedness. The skills under consideration include study skills, numerical, digital, creative and innovative, critical thinking, communication, collaboration, career and life skills, environmental, and the overarching skills required for the 21st century. The analysis is conducted with a significance level of 1%.

RESULT & DISCUSSION

The study collected responses from a total of 368 participants. Table 2 provides an overview of the demographics of the respondents who are participants in the course. The data reveals that a majority of the respondents in this study are females, are within the age range of 26 to 35 years, are employed in the private sector and are currently engaged in pursuing a bachelor's degree program at OUM. The details of the outcomes regarding the participants' demographics are shown in Table 2.

Table 2. Respondents' demographic

		Frequency	Percent
Gender	Female	253	68.8
	Male	115	31.3
Age category	25 years and below	138	37.5
	26-35 years	146	39.7
	36-45 years	66	17.9
	46-55 years	18	4.9
Type of employment sector	Public	100	27.2
	Private	188	51.1
	NGOs	7	1.9
	Others	73	19.8
Level of studies	Diploma	89	24.2

Bachelor Degree	271	73.6
Others	8	2.2
Total	368	100.0

As indicated in Table 2 above, approximately 68.8% of the respondents were female, while 31.3% were male. In terms of age distribution, a significant portion of the respondents, namely 37.5%, falls under the age category of 25 years or below. A similar percentage of 39.7% is represented by respondents aged between 26 and 35 years. The age group of 36-45 years old constitutes 17.9% of the respondents. The majority of the participants in this study are employed in the private sector, with 51.1%, while 27.2% work in the public sector. Regarding their educational pursuit, most respondents, accounting for 73.6%, are enrolled in bachelor's degree programs with OUM. A smaller percentage, 24.2%, is enrolled on the Diploma program offered by OUM.

Table 3. Simple Regression for 21st Century Skills

	B	Adjusted R Square
Study Skills	0.61*	0.67
Numerical	0.60*	0.65
Digital	0.66*	0.66
Creative and Innovative	0.76*	0.81
Critical thinking	0.71*	0.77
Communication	0.78*	0.64
Collaborative	0.80*	0.77
Career and life skills	0.77*	0.72
Environmental	0.78*	0.64
Overall	0.75*	0.68

*Significant at 1%

Results in Table 3 reveal a consistently positive relationship between all considered 21st-century skills and learner preparedness in ODL. Notably, the Adjusted R Square values indicate a high level of explanatory power in the relationship between these skills and preparedness. These findings underscore the significance of these skills in enhancing the quality and effectiveness of ODL education in Malaysia.

Study skills as indicated by a regression coefficient of 0.61 ($p < 0.01$), significantly contribute to learners' readiness for the future, supported by an Adjusted R Square of 0.67. Proficiency in study skills empowers learners to engage with educational content effectively. Numerical skills represented by a regression coefficient of 0.60 ($p < 0.01$), contribute significantly to learners' readiness for the future. These skills are essential for data-driven decision-making and problem-solving, as indicated by the Adjusted R Square of 0.65. Digital literacy represented by a regression coefficient of 0.66 ($p < 0.01$), significantly contributes to learners' readiness for the future, supported by an Adjusted R Square of 0.66. Proficiency in digital skills is indispensable in a technology-driven society. The positive and highly significant regression coefficient ($B = 0.76$, $p < 0.01$) associated with creative and innovative skills underscores their substantial contribution (Adjusted R Square = 0.81) to learners' readiness for the future in ODL settings. These skills encourage adaptability and problem-solving, which are pivotal in navigating the evolving educational landscape. Critical thinking skills exhibit a robust positive relationship ($B = 0.71$, $p < 0.01$) with learners' readiness for the future, as indicated by the high Adjusted R Square of 0.77. These skills foster analytical thinking, enabling learners to address complex challenges. Communication skills show a strong positive relationship ($B = 0.78$, $p < 0.01$) with learners' readiness for the future, as reflected in the Adjusted R Square of 0.64. Effective communication is a cornerstone of success in the interconnected world of ODL. Collaboration skills exhibit a strong positive relationship with learners' readiness for the future, with a notable regression coefficient ($B = 0.80$, $p < 0.01$) and a high Adjusted R Square of 0.77. Collaborative skills prepare learners for teamwork and collective problem-solving, aligning with contemporary workplace demands. Career and life skills exhibit a substantial positive relationship ($B = 0.77$, $p < 0.01$) with learners' readiness for the future, as reflected in the Adjusted R Square of 0.72. These skills encompass adaptability, resilience, and effective goal-setting, crucial for success in an evolving society. Environmental consciousness demonstrates a positive and significant relationship ($B = 0.78$, $p < 0.01$) with learners' readiness for the future, as indicated by an Adjusted R Square of 0.64. This finding underscores the importance of sustainability and environmental responsibility in contemporary education. The overall, as denoted by a regression coefficient of 0.75 ($p < 0.01$), significantly enhances readiness for the future, supported by an Adjusted R Square of 0.68.

In summary, the significant Adjusted R Square values indicate that these skills have a considerable impact on learner preparedness and align with the

evolving demands of the 21st-century workforce. Skills such as creativity, collaboration, critical thinking, and digital literacy are increasingly sought after by employers and are essential for success in a globally interconnected world. The high adjusted R-squared values suggest that these skills play a substantial role in shaping learner preparedness, indicating the need for their integration into ODL curriculum design and pedagogical approaches.

CONCLUSION

Since the working environment continues to undergo fast change, it is becoming increasingly important to possess the capacity to anticipate future employment trends and to possess the information and skills necessary to facilitate adaptation. ODL education institutions should be a future-ready education that provides relevant skills for the future workforce.

There are several key aspects that underscore the significance of education in preparing future-ready learners with the relevant skills such as critical thinking and problem-solving skills are vital in navigating the uncertainties of the 21st century landscape. Apart from that, technological literacy is a must-have skill as the rapid advancement of technology and innovation is reshaping industries and job requirements. The modern workplace requires learners to be able to have good collaboration and communication skills and education should cultivate interpersonal skills, working in a team, as well as able to impart and convey messages clearly.

The 21st century is a volatile, uncertain, complex and ambiguous (VUCA) world characterised by constant change. Hence, lifelong learning spirit has to be in the learners, which involves cultivating curiosity, resilience, and a willingness to acquire new knowledge and skills continuously. Education should foster entrepreneurship and innovation, which promotes creativity, risk-taking, and the ability to seize opportunities. A resilience worker requires high emotional intelligence by developing self-awareness, empathy, and social skills because these are the elements in building strong interpersonal relationships, both personally and professionally.

In summary, education in the 21st century needs to go beyond traditional academic subjects, in fact, it should empower learners with a holistic set of skills, attitudes and values that enable them to navigate a dynamic and

interconnected world, fostering a generation of individuals who are not only academically competent but also adaptable, innovative, and socially responsible. Further examination of this study should be performed over an extended duration, encompassing multiple semesters, in order to assess the course's effectiveness. Furthermore, broadening the range of participants to include a more diverse demographic sample would result in a more comprehensive understanding of the subject matter. Future investigations could delve into a thorough examination of each skill, along with a detailed analysis of the course's content and scope.

As a conclusion, this study demonstrates the paramount importance of 21st-century skills in preparing future-ready learners in the context of open and distance learning education in Malaysia. The positive relationship between these skills and learner preparedness emphasises the need for educational institutions, policymakers, and educators to prioritise the development and integration of these skills into the ODL curriculum. By doing so, Malaysia can better equip its learners to thrive in the dynamic and complex landscape of the 21st century.

DECLARATION OF CONFLICTING INTERESTS

The authors state that there is no conflict of interest in the publication of this article.

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