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THE RELATIONSHIP BETWEEN DIGITAL COMPETENCIES AND 21ST CENTURY SKILLS OF TECHNOLOGY STUDENTS' CONSTRUCTION OF VOCATIONAL COLLEGES

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Abstract:

Now digitalization-based learning is needed because it is in line with the Malaysian Education Development Plan 2013-2025 which is to utilize ICT to improve the quality of education in Malaysia. Therefore, the development of technology must be in line with 21st century learning because it is interdependent and has elements that are closely related to each other. However, the acceptance of students the change in the education system has become one of the constraints for the development of technology today. In fact, the probability of constraints in terms of applications or technological devices the less sophisticated ones used by students also restrict the skills of the 21st century and digital competencies among students are well developed. Therefore, the purpose of this study is to find out the relationship between digital competencies and 21st century skills based on the elements that have been provided This study utilizes an online survey and face to face, which is distributed to the students to investigate their relationship between digital skills and 21st century skills. In this study uses a quantitative method, involving use level of certificate in questionnaires to obtain data. Overall, the results of the study show a Mean of Competency digital m= 3.85, 21st century skills m= 3.95. While the mean for relationship is m=4.20. The findings of this study there is a good relationship between the digital element of competence and 21st century skills towards students.

Keywords:

Digital Competency; 21st Century Skills

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Introduction

As is known in the current era of digitalization-based learning is needed because it is in line with the Malaysian Education Development Plan 2013-2025, which utilizes ICT to improve the quality of education in Malaysia. However, according to Amran & Rosli, the development of technology has led to changes in education and even the acceptance of students in the teaching and learning process has also changed. However, the development of technology must be in line with 21st century learning because it is interdependent and has elements that are closely related to each other. Therefore, according to Rusdin & Ali, the four skill elements (4C) that students should master in 21st century learning are communication, critical thinking, collaborative and creativity. These four elements are important elements in producing a generation of high quality in line with technological advances today.

In fact, according to Saleh & Rosli, cognitive and thinking are strengths for a person to be competent. In the context of 21st century learning, today's students are strongly encouraged to improve their thinking power in line with the challenges and needs of the current field of knowledge. This is because there are various constraints and polemic issues in the world that require critical and critical thinking power. In addition, 21st century skills also emphasize the element of collaboration among students so that students share ideas or views from their perspective in solving things. It is supported by Tx Yu *et. Al.*, the application of collaborative elements during learning activities helps students develop their ideas more effectively compared to studying alone.

Besides, according to Puspitasari, communication elements and collaboration is a collaborative element where students collaborate with each other, and they need communication to discuss a given task. This clearly shows that the elements of collaboration and communication in the 21st century skills need to be studied to obtain data on the extent to which the application of elements collaboration and communication with students. In addition, the element of creativity is also emphasized as one of the necessary elements in helping individuals to become a person of flexibility and adapt in challenging situations was also conducted by B Thornhill - Miller *et. al.*,. This shows that the element of creativity introduced in 21st century skills is important to help students adapt to the world of a real job where this element is needed even more so when they need creative ideas to solve problems that arise.

However, the elements found in digital competency are also a contributor to the birth of an it-savvy generation and the advancement of the education system in Malaysia. This is because students are introduced to an increasingly sophisticated world of technology. Therefore, digital competency for students is important for improving their academic performance was conducted by Mehrvarz *et.al.*,. Based on Zhu's [8] study, the transmission of the covid-19 virus has led to the existence of an educational digital divide between urban and rural students in China. The lack of technological equipment caused almost half of the students outside the city to not participate in online pupils. Therefore, there are constraints on the part of the students where they do not have the devices or in other words adequate facilities for developing potential and the nature of the competencies found in them. This has hampered their academic performance due to very limited.

Objective

The objective of this paper is to identify the level of digital competencies among Vocational College students with a view to ensuring that the digital competencies of Vocational College

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students are tracked from the outset and authorities can better shape the existing competencies and identify the dominant 21st century skill levels to ensure that 21st century skills can contribute to improving digital skills. In addition, the relationship between digital competencies and 21st century skills is also the main objective of this study to ensure their interdependence towards the world of digitization.

Literature Review

In the pursuit of technological progress, the education system throughout the country needs to be updated according to the passage of time so that it can help the progress of a country. However, in the pursuit of progress there must be constraints in terms of issues and challenges. Based on a previous study by Ola & Joke, the main issue faced by the whole world is when there is a rapid social transformation while the education system includes curriculum development is still at a slow pace. This results in the findings of Sapudin & Othman, it turns out that the level of mastery of 21st century skills among students has not yet reached the skill standards required by the industry. In addition, based on a study by Mazarul, Zakaria & Kama, the inadequate facilities of devices such as computers in institutions have provided challenges to the implementation of 21st century learning during teaching and learning sessions. This is because generally devices such as computers are considered a symbol of progress and development for a country. In fact, according to Abdullah et al., apart from issues and challenges in terms of time constraints, among the issues related to 21st century learning is the readiness of teaching staff, infrastructure facilities, access to teaching aids (BBM) and additional reference resources, the use of materials from electronic devices and the ability of students to surf the internet. This clearly shows that the need to provide facilities to ensure that 21st century learning runs smoothly is important so that students can learn practically rather than just theory. Furthermore, according to Hassan, the role of teaching staff is also important for the implementation of 21st century skills. This is because how to increase the potential and identity of mastery and application of 21st century skills depend on the role of the teaching staff. This statement is supported by Mohamad & Mohd, in mastering the knowledge of 21st century pedagogy, as a teacher or teaching staff must have the willingness to use information technology and media in learning and teaching sessions and apply and effective 21st century learning techniques. Many teachers and educators who have a degree of readiness high to implement 21st century learning where the mean value obtained from the results of the study is 3.80 – 4.05 in a very satisfactory range.

According to Le Yee & Mohamed, teaching and facilitating methods *(PdPc)* with computers have been introduced since a few years ago. In the early 1980s, computers began to be used in schools and were proposed to play an important role in education for the younger generation in the future. In addition, according to Mahalingam & Khairul, online learning, teaching and facilitation *(PdPc)* is one of the learning activities through the application of digital technology and the internet which is now used as teaching and learning at home *(PdPR)* since the country has experienced the transmission of the covid-19 virus. From here it is clear that the competence of students in the digital world began to be applied in stages to meet the needs of today. In fact, develop each element of competence it is updated from time to time to ensure that it is always updated.

As stated by Almenara et al., it is common to know that in recent decades, Information and communication technologies (ICT), in this digital world, have revolutionized all sectors of society, from the way we communicate and work to the field of Education. Thus, it can be

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concluded that the skills of the 21st century are influenced by growing technology, and it also causes digital competence in the students are getting better. In fact, according to Mohd & Mohamad, quoted from a source from the Ministry of Education Malaysia, the purpose of the 21st Century Learning was introduced to produce a generation high productive, proficient in communication, have high-level thinking skills as well as proficient in the use of information and Communication Technology (ICT).

Fig. 1. Demonstrate The Framework For Digital Competence (Digcomp) Produced By Vuorikari Et.Al (2022).

In addition, in the pursuit of technological revolution there are also constraints and challenges to be pursued. There are several challenges that have led to the creation of many demands on the part of schools related to the development of strategies to digitally support the competencies required in providing high quality teaching and learning (Pettersson). This shows that to ensure that students have good competence in the field of digital constraints must be overcome not only at the school but also at the ministry so that it can produce students who have a good competence. In fact, based on Vuorikari et. al., the digital competency framework (Fig.1) includes 5 elements namely information and data literacy, communication and collaborative, digital content creation, security and problem solving. Therefore, all these elements can be used as a reference to educational institutions in improving the syllabus-based curriculum development in accordance with current needs. It is hoped that this literature review can be utilized as a guide for future studies.

Methodology

For this study, the use of survey design with quantitative approach through questionnaires as a research instrument. According to Rahim, the quantitative study design is divided into three parts, namely descriptive, explanatory and exploratory. For this study, more emphasis is placed on descriptive and explanatory study design where the data obtained is assessed whether there is a relationship between digital competencies and 21st century skills. In fact, the method used for this study also uses the survey method where according to Mohamed et al., the survey method is a process of observation in detail on a matter. The purpose of using the survey method is to obtain primary data by effective. Therefore, the survey study used in this study of the entire population is because the data can be collected in a short period of time in accordance with a predetermined period and includes the process of observing the entire population and the studies carried out.

The study involved 6 vocational colleges around the state of Johor. A total of 251 students from the field of construction technology participated in the survey. A set of questionnaires with 78 items were distributed using online and face-to-face platforms to obtain information on

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participants 'demographics, as well as students' level of mastery of digital competencies, and 21st century skills. This question is divided into three parts. Sections contain questions about background information such as gender, age and years of study. The questionnaire consisted of items measured on a 5-point Likert scale, with 5 indicating "strongly agree" and 1 indicating "strongly disagree.''.

Result

A total of N=251 responses were received from students at 6 vocational colleges institutions. The findings are illustrated in tables 1 and 2.

The results of the study showed that the level of digital competence of students with 21st century skills is closely interrelated today. Although there are still constraints in terms of technological progress, teaching methods should be more focused on the world of digitization to help students become more skilled and sensitive to technology. 21st century skills need to be integrated into the delivery of digital content. In general, this strategy can promote digital learning among students in Malaysia which can directly strengthen the relationship between digital competencies and 21st century skills. The study on the relationship of digital competencies with 21st century skills was found to be related to each other due to applying the elements contained in digital competencies in 21st century skills. The results of the study on the level of digital competence show that each of the elements of information and data literacy, communication skills, digital content creation skills, and problem-solving skills are at a moderate level.

Table 1 The Level of Digital Competence Among Students

No.	Dimension		Mean	St. Deviation
1	Competency Digital		3.95	.535
	i. Information knowledge and data literacy		4.28	.577
	a.	I can understand the importance of ICT in the classroom.	4.21	.833
	b.	I can scan, search and filter information.	4.21	.996
	c.	I can identify digital interactive tools that available.	3.23	.811
	d.	I have multiple digital accounts, networks and social media.	3.46	1.202
	e.	I have a good understanding of when technology can support the process and when it is not support.	3.79	.633
	f.	I am very proactive in finding and collecting information from internet sources.	4.62	.486
	g.	I have been following the development of technology from year to year based on my needs.	4.21	.996
	h.	I have an in-depth knowledge of how social media can shape community groups and democracy	4.38	.743
	ii. Communication Skills		4.36	.732
	a.	I always carefully consider where and how digital content is stored.	4.03	.902
	b.	I have a thorough understanding of the impact of communication through different types of media.	4.00	.889

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	c.	I have a deep knowledge of the way social media shapes communities and democracies.	3.46	1.202
	d.	I use different digital channels to communicate with instructors and colleague's classmates.	4.21	.996
	e.	I enjoy sharing my thoughts and ideas through social media.	4.33	.818
	f.	I have developed a good strategy for handling other people's inappropriate behavior	4.38	.744
	g.	I always carefully use the most tones appropriate when communicating with others.	4.49	1.069
	h.	I'm good at making choices in terms of the type of media suitable as text, photos, videos, animations and others to achieve the desired result.	4.28	.826
	i.	I have always been interested in working with people using digital tools such as WhatsApp, telegram and so on.	4.72	.873
	j.	I'm always looking for my teacher to ask questions about your work using the digital channels provided.	4.00	.775
	iii. Digital Content Creation Skills		4.23	.875
	a.	I can develop content in different formats i.e., video, visual, animation and so on with use a variety of digital tools.	4.64	.600
	b.	I can choose the most suitable media type such as text, photo, video, animation and so on to achieve the desired result.	4.33	.818
	c.	I can choose the most suitable format for saving data.	3.79	.633
	d.	I can produce digital content by making changes to existing content.	2.97	.510
	e.	I can change the ready-to-use templates in programming and correct existing errors as example when developing a website.	2.60	.315
	f.	I am proficient in using applications to create multimedia related.	4.41	1.030
	g.	I can use an efficient database to store large amounts of data.	3.64	.601
	h.	I am active in developing my digital competencies during the project presentation.	3.97	.815
	i.	I customize existing digital resources and share the resource with friends through the platform content distribution.	4.41	.978
	j.	I can easily edit the settings on the device digital, online services and applications available.	4.10	.889
	iv. Problem Solving Skills		4.28	.578
	a.	I can do a step-by-step analysis towards achieving the desired digital solution.	4.39	.745
	b.	I'm always keeping track of my progress digital technology over time and has efficient problem-solving skills.	3.23	.811

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	c.	I have a good understanding of the appropriate technology to support technical requirements.	3.97	.815
	d.	I can use related tools as help to create digital solutions.	3.23	.938
	e.	I love exploring new digital devices and apps.	4.69	1.190
	f.	I understand the design process of digital solutions.	3.36	1.248
	g.	I have a complete understanding of computer systems and how they are connected different devices.	4.72	.875
	h.	I can install and update the tool related to application development.	3.64	.601

Table 2 Dominant 21st Century Skill Level.

No.	Dimension		Mean	St. Deviation
1	21st century Skill Level		3.85	.540
	i. Creativity and innovation		4.20	.870
	a.	I present the results of the work given by use an interesting power point.	4.69	1.185
	b.	I have completed the task given by the teacher by trying a new method.	4.40	.975
	c.	As the class progressed, I had given my opinions and ideas to the teacher to share with friends.	4.34	.819
	d.	When the teacher asked the students to give ideas related to design, I volunteered to contribute ideas.	3.80	.631
	e.	I prepared my study notes in the form of a map concept to make it easier for me to understand.	3.96	.770
	f.	I can manage and solve problems effectively and efficiently for achieve the goal.	3.40	1.252
	g.	I can produce high quality and technological applications for use people out there.	4.44	.982
	h.	I like to do things related to creating products from used materials.	3.69	.757
	i.	Every time a class takes place, I expect the teacher I want to be able to share my creative ideas while I work ongoing.	4.67	.615
	j.	I would love to participate in any games that it is a way of expressing my creative ideas there is.	4.15	.891
	ii. Critical Thinking		4.30	.620
	a.	I'm always thinking of different methods and perspectives in solving problems.	4.52	.821
	b.	I often must make comparisons between different sources before I complete a task.	4.00	.775
	c.	I prefer to draw conclusions based on the correct analysis of information.	3.64	.601
	d.	I prefer to make my own summary based on what the teacher has read and taught.	4.72	.875
	e.	I prefer to find a solution to a problem by having a discussion	3.42	.821

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	f.	I'm one of those people who likes to build searching through various sources.	4.69	1.190
	g.	I am always ready to take on the task challenging in solving problems.	3.97	.815
	h.	I have a desire to know more against something.	4.33	.818
	i.	If I wanted to be sure of something I'd rather do is research detail to get the right answer.	4.64	.612
	j.	I prefer to be alone and manage my time well.	2.60	.316
	iii. Communication skills		4.40	.889
	a.	I can read, manage emotions of myself and others during social interactions	4.62	.492
	b.	I prefer to interact with a group of friends when it comes to group activities.	3.80	.654
	c.	I can resolve conflicts that arise between members a team with a good communication.	4.00	.780
	d.	I prefer to hear the opinions of the members of the group during the discussion session.	4.28	.678
	e.	I like to do presentations of projects or assignments in front of the audience to improve their skills my communication.	4.42	1.102
	f.	I like to share my ideas and opinions in class or out of class with friends.	4.64	.615
	g.	I have been entrusted by the lead a team for a specific task.	3.82	.782
	h.	I used to represent the school in competitions public speaking to improve my communication skills.	4.33	.821
	i.	I am often asked by my teachers to help me with homework assignments.	3.64	.610
	j.	If given the choice to represent any my competition is always ahead to be wrong a representative to represent the school.	4.15	.895
	iv. Collaboration Skills		3.62	.602
	a.	I like to work in pairs or in groups to complete the tasks assigned by the teacher.	3.79	.653
	b.	I like to have a group discussion through digital applications such as WhatsApp, Facebook and so on.	4.23	.875
	c.	I worked closely with the team members during the discussion.	4.41	.978
	d.	I received good feedback from members group during the discussion.	4.62	.521
	e.	I am actively involved in the team idea to complete the task.	3.82	.651
	f.	I have always been a good person and help my team when needed.	4.72	.875
	g.	I am a good leader and often listen to problems faced by members of the group.	4.49	1.069

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	h.	As a member of the team, I often solutions to problems faced by members groups.	4.49	1.120

Conclusions

The future of the education system will be developed through digital transformation in Information Communication Technology (ICT). Therefore, it is important to apply digital competencies among students through 21st century skills which can help produce a generation of IT literates to keep up with the times in the advancement of the education system and technology. In conclusion, the relationship between digital competencies and 21st century skills are important because of the lack of research done on digital competencies among students and cannot identify the correlation or interdependence with 21st century skills. This study provides information on the relationship between digital competencies and 21st century skills to the education sector in the country. The contribution of this study provides an overview as well as responding to the government's call in the national education plan, namely the use of ICT to improve the quality of education in Malaysia. It is hoped that this study can be used as a comprehensive guideline in improving the quality of education in the country.

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