

Conference Paper

The Integration of ICT in Generation Z's Learning Culture: A Study on Indonesian Students

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Abstract

The development of information communication technology (ICT) has changed the way of life in twenty-first-century society. It also affects the lives of students who are currently known as generation Z, including their learning culture. This study aimed to find out and describe how generation Z students utilize ICT in their learning culture. One hundred and twenty-two students in the first and third year at Yogyakarta State University participated in an online survey using Google Forms. The data were collected using a five point-Likert scale questionnaire and analyzed with quantitative descriptive methods. The results showed that most generation Z students were familiar with using ICT to support their learning activities, such as using social media, online communication platforms, web browsers, and instructional videos. The average total score obtained from the questionnaire was 3.15, which was in the fair category. But, even though the students had access to adequate ICT tools, they stated that they still need face-to-face learning activities. More than 85% of students revealed that they were well-equipped with the proper electronic devices that support learning activities and had adequate abilities to utilize them.

Keywords: student learning culture, generation Z student, ICT integration

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1. Introduction

The Law of the Republic of Indonesia No. 20 of 2003 concerning the national education system states that education is a conscious and planned effort to create an atmosphere of learning and the learning process so that students actively develop their potential to have spiritual strength, smooth personality self-control, intelligence, noble character as well as the skills needed by themselves, the community, the nation, and the State. Based on the definition, it means that basically, the main goal of educational activities is to build a learning climate that can foster learning traditions or habits in learning participants. In other words, educational activities can be considered to have succeeded in achieving

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their goals if educational activities have been able to develop a learning culture in their learning participants [1].

The learning process is the core of educational activities. The learning process will achieve optimal results if the learning participants already have a good learning culture. It also applies to the level of higher education. The learning process in the environment of higher education is a long process of increasing one's intellectuality that requires persistence, tenacity, discipline, regularity, and intense learning motivation. The students that already have a good learning culture according to the developments and challenges of the times will possess those abilities. The empirical facts show that many academicians do not yet understand the actual concept of learning. These facts also happen in the education system in higher education. As one of the components in higher education, the students are not fully aware and understand the true meaning of learning. Most students still think that what they have done at the higher education level is the same as what they have done at the previous education level. Furthermore, the learning process in the era of generation Z is different from the earlier generations because this generation was born when the world was already connected globally by sophisticated technological equipment. The rapid development of digital technology and internet networks has provided extraordinary learning convenience for its users. There are many various digital resources for scientific journals, e-books, articles, and instructional videos that can easily be found by students on the internet. But on the other hand, it can also damage their learning culture as there are many online game applications and other media on the internet that has inappropriate content.

Based on the background, this study aims to examine the learning culture of generation Z students. How is the learning culture of generation Z students? Is it still the same as the learning culture of previous generations of students? How is the rapid development of digital technology affect the learning culture of generation Z students? The result of this study describes the essential findings of the learning culture of generation Z students and how the rapid development of digital technology affects their learning culture. These findings can be used as references and guidelines for decision-makers on the college providing the most appropriate course treatment. It will give a positive contribution to the planning of academic activities, especially in learning and student activities.

2. Related Works/Literature Review

Learning culture is a sequence of activities in carrying out learning tasks as a habit. It means that there is a pleasure in the activities so that learning motivation emerges from within ourselves. A learning culture should be implemented to improve learning life and learning productivity [2]. Learning culture has a relationship with achievement. A learning culture contains learning habits and learning methods adopted by the person. A good learning culture will have an impact on good achievement as well. A good learning culture encompasses determination, regularity in completing tasks and eliminating stimuli that will interfere with learning concentration so that all of them will affect their learning achievement. Learning culture is part of internal factors as well as external factors that have the potential to affect learning outcomes. The learning culture is very close to educational anthropology. Educational anthropology seeks to find patterns of community learning culture that can create social change [3].

The application of a learning culture can take the following forms: (a) A culture of learning obedience; (b) innovative culture; and (c) professional culture. A culture of learning obedience is closely related to the human aspect. It is related to the various potentials a person has, such as abilities, talents, interests, and attitudes. Therefore, a strong commitment is needed in implementing a learning culture. An innovative culture is a new change and qualitatively different from the previous condition. The purpose is to increase the ability and achieve goals. Innovative culture will have ideas, ideas, and attitudes that support these changes. Professionalism is the ability to perform services or dedication based on the ability of professionalism and a strong philosophy owned by a person [4].

Generation Z was born between 1997 onwards. Members of Generation Z are true digital natives. They have been exposed to the internet, social networks, and mobile systems from their earliest youth. Generation Z is a hypercognitive generation. They are very comfortable with collecting and cross-referencing many sources of information and integrating virtual and offline experiences [5]. Some of the characteristics of generation Z are [6]:

- **Digital Technology Natives.** As previously mentioned, the generation Z grow up with the screen and digital technology all over time. They are less focused, prefer to absorb information in short visual bursts (Snapchat or YouTube), multitasking, and learn differently from previous generations.

- **Realistic.** Generation Z is also realistic. They have opportunity to accessed many they have open access to many events so they are realistic.
- **Independence.** Generation Z members tend to be independent and entrepreneurial. They are reluctant to trust their careers only in one place.
- **Global Minded.** Their daily life integrated with the world without any geographic or political barriers. This makes it easier for them to connect with anyone in this world.
- **Change-makers.** Generation Z tend to be unique and make a distinct impression. They want to make a change that uniquely reflects their individuality.

One of the factors that influence the learning culture is the equipment and technology system. One way for humans to sustain life is by producing tools or objects that support these activities. In traditional societies, there are several kinds of physical and equipment culture systems used by nomadic groups of people or communities whose livelihoods are farming. They are productive tools, weapons, containers, tools using for lighting fires, food and drink, clothing and jewelry, shelters (houses), and transportation. In the Z generation learning culture, the intended equipment is different from the traditional communities. In this case, generation Z needs the equipment and technology for the continuity of the learning process. They are laptops, social media, devices, printed and non-printed media, and supporting applications to support the learning process [7].

3. Material & Methodology

The study was done by conducting online survey to find out and describe how generation Z students utilize ICT in their learning culture. A total of 122 students in their first and third year of Yogyakarta State University (17–22 years old) participated in the online survey during September 2020. All students who participated in the study categorized as generation Z as they were born between 1997 to present. The students completed a five point-Likert scale questionnaire using Google Form. The questionnaire consists of 18 statements related to the utilization of ICT in the generation Z student learning culture. The questionnaire outline showed in Table.1 below.

In the questionnaire, there are five scale response options used for every statement with the respective values. The following Table 2 described the scales used in the questionnaire.

The data were analyzed using quantitative descriptive methods. The average score of each statement in the questionnaire is converted into qualitative data refers to

TABLE 1: Questionnaire Outline

Variable	Topic	Statement Items
Information technology system and equipment	Electronic device	1, 13
	Printed-learning materials	2, 11, 12
	Social media	3, 4, 5, 6, 7, 14
	Online communication platform	8, 15
	Web browser	10
	Online video platform	16
	Face-to-Face Learning	9
Affecting factors	Ownership of electronic device	17
	Ability in operating electronic device	18

TABLE 2: The Scale Response Options in The Questionnaire

Strongly Agree	Agree	Slightly Diagree	Disagree	Strongly Disagree
1	2	3	4	5

the following five-scale conversion table below. The final average score from every statement was analyzed to determine the appropriate category based on the results of the questionnaire [8].

TABLE 3: Five-scale conversion table of quantitative data into qualitative data

No	Score Interval	Average Score	Category
1	$X > Mi + 1,8 Sbi$	$> 4,2$	Very good
2	$Mi + 0,6 Sbi < X \leq Mi + 1,8 Sbi$	$>3,4 - 4,2$	Good
3	$Mi - 0,6 Sbi < X \leq Mi + 0,6 Sbi$	$>2,6 - 3,4$	Fair
4	$Mi - 1,8 Sbi < X \leq Mi - 0,6 Sbi$	$>1,8 - 2,6$	Bad
5	$X \leq Mi - 1,8 Sbi$	$\leq 1,8$	Very Bad

Note:

Mi = ideal average score = $\frac{1}{2}$ (ideal highest score + ideal lowest score)

Sbi = standard deviation = $\frac{1}{6}$ (ideal highest score - ideal lowest score)

The instruments used in this study were created based on criteria derived from theoretical studies of technology integration and learning culture. The content validity of this research instrument is indicated by the suitability of the indicators measured by predetermined criteria. Meanwhile, the construct validity of the research instrument was assessed by experts based on the suitability of the editorial used in the instrument.

4. Results and Discussion

4.1. Results

Generation Z student learning culture arises due to the several things that support and create a learning culture itself. Two aspects that influence student learning culture are the social aspect and globalization aspect. One of the factors that influence student learning culture in the globalization aspect is the utilization of information technology systems and equipment in the learning activities. Other than that, generation Z student learning culture is also influenced by several factors, such as the ownership of electronic devices for learning activities and the ability of students to operate electronic devices. In this section, the result of the questionnaire is described to find out how generation Z students manage their learning culture in developing their skills and competencies.

4.1.1. Information technology system and equipment

Generation Z is familiar with using electronic devices and access to the internet in almost all aspects of their daily life. It will also influence the learning culture of generation Z. Then, what about the real condition? Are the generation Z students can take advantage of technology and electronic devices to support their learning activities? Table 4 is the data from the questionnaire regarding how generation Z students integrate ICT in their learning activities.

TABLE 4: The results of questionnaire in information technology system and equipment utilization

Indicator	Information Technology System and Equipment															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Average Score	2,87	2,16	4,16	4,35	3,66	3,83	4,15	2,21	1,8	3,39	2,81	2,77	2,9	3,1	3,4	2,9
Average Total Score	3,15															
Category	Fair															

In the questionnaire, there are 16 statements used to find out the real condition of the ICT utilization in the generation Z student learning culture. The topics used in the questionnaire were about the use of electronic devices in learning activities, comparison of the use of electronic devices and printed-learning materials, the use of social media in learning, the use of online communication platforms, web browsers, online video platforms in learning activities, and comparison of online and face-to-face learning activities. The data in Table 4 showed that the average total score from the questionnaire

result is 3,15. The category of this score is fair. Meanwhile, the highest individual score in the questionnaire is 4,35 (very good). The lowest score in the questionnaire is 1,8 (bad). A total score from 13 out of 16 statements was in the above fair category.

The results showed that technology is quite influencing the learning culture of generation Z students. The students begin to get used to using technology in their learning activities. The results also showed that most students prefer to learn using technology than learning using printed textbooks. Social media also support the learning process both face-to-face and online. However, the students state that face-to-face learning is preferable to online learning using meeting applications (zoom or google meet). The assignment explanations are also better-understood face-to-face rather than using a chat application (WhatsApp or telegram). It means that the generation Z students still need face-to-face learning activities in terms of material explanation and assignments.

4.1.2. The factors that influence the learning culture of generation Z students

Several factors influenced the learning culture of generation Z students. Regarding the utilization of ICT in learning activities, two main factors affect student learning culture are the ownership of electronic device for learning activities and the student's ability in operating the electronic device. This section will describe the results of the questionnaire responses regarding how the two factors above can influence the learning culture of generation Z students.

Ownership of electronic device for learning activities

Information technology systems and equipment are also factors in creating a learning culture. In this case, the availability of technology-based learning media/equipment is used as a supporting medium in the learning process. The result of the questionnaire is depicted in the following Figure 1.

Figure 1 showed that a total of 110 out of 122 students (90,16 %) in this study stated that they have their technology-based learning media/equipment to support the learning activities. The average total score from the questionnaire showed a similar trend. The final score is 3,98 and obtained in a good category. The result indicated that the availability of technology-based media/learning equipment of generation Z students in the Educational Faculty of Yogyakarta State University to support the learning activities is acceptable. Most students have appropriate technology-based media/learning

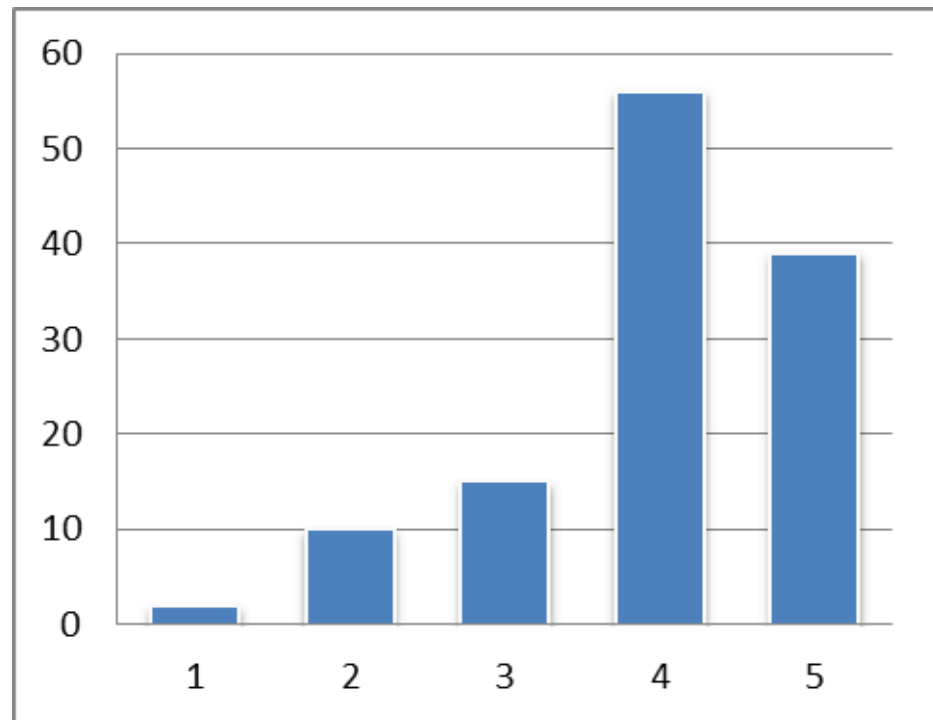


Figure 1: Ownership of electronic device for learning activities

equipment to support their learning activities. It is necessary for creating a good learning culture for generation Z students.

The student's ability in operating electronic device

The ability of students to operate electronic devices during learning activities is also an essential factor in whether generation Z students can take advantage of ICT to support their learning process. The result of the questionnaire is illustrated in Figure 2. below.

Figure 2. showed that a total of 109 out of 122 students (89,34 %) of students in this study stated they have the ability in operating ICT-based media. The average total score from the questionnaire showed a similar trend. The final score is 3,77 and obtained in a good category. The result means that the skills and proficiency of generation Z students in operating ICT-based media are acceptable. The results indicate that the utilization of ICT-based media in learning has become a habit and learning culture for students. This factor will support students in creating a good learning culture.

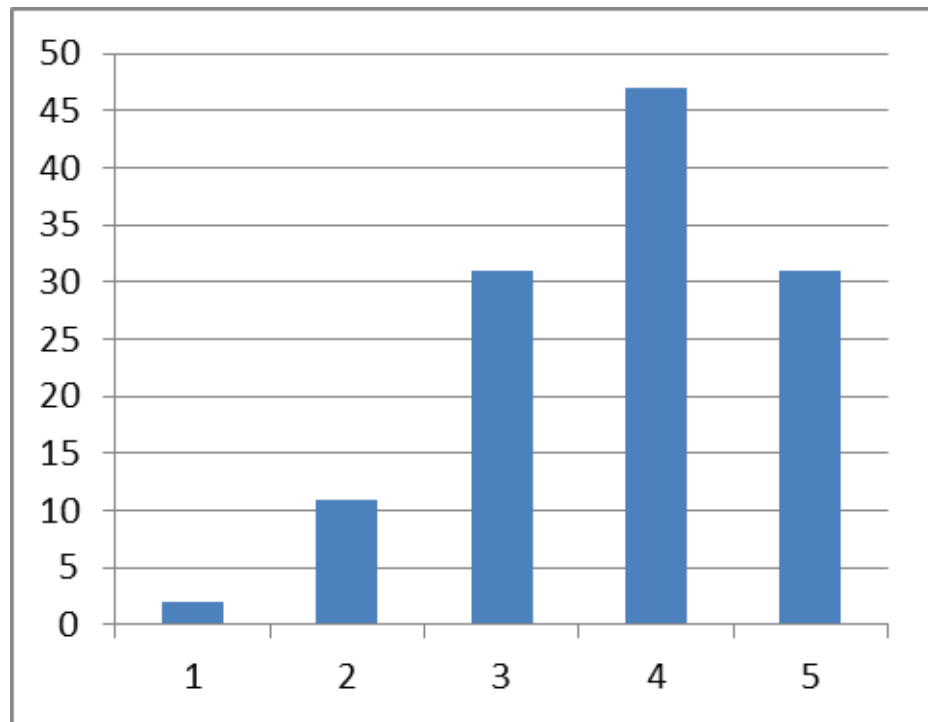


Figure 2: The student's ability in operating electronic device

4.2. Discussion

Generally, the result of the questionnaire showed that generation Z students have integrated ICT into their learning culture. A total of individual score from 13 out of 16 statements was in the above fair category. It means that the technology has influenced the generation Z student's learning process. The generation Z students have been familiar in utilizing technology and electronic devices to support their learning activities. They have begun to familiarize themselves with technology. Most students prefer to study using technology than learning using printed books. Technology, one of which is in the form of social media, is used to support the learning process, both face-to-face and online. This result is in accordance with the characteristics of generation Z which was born as a digital native. They were born when the world has been connected with sophisticated technology and equipment. The previous study also stated that the typical generation Z in the higher education environment prefers to record material learned in class using technology tools online compared to writing notes in books, more tend to raise questions online, and demand instant information and communication so that they prefer using social media instead of finding information in the textbooks [9, 10].

However, there are some points in the individual statements that need attention. Based on the students' responses in the questionnaire, the students revealed that they

prefer face-to-face learning to online learning using a meeting application (*Zoom* or *Google Meet*). The students also stated that the explanation of the assignment would be more understandable if it was directly delivered in a face-to-face meeting rather than using a chat application (*WhatsApp* or *telegram*). It means that even though students have been facilitated with adequate ICT tools, they still need face-to-face learning activities and explanation of assignments. The result is supported by the research that has been conducted on Educational Technology students at the University of Baturaja. The research conducted by Ningsih (2020) states that 93.5% of students are more interested in offline learning (face-to-face learning) compared to online learning at home. This result is supported by the research that has been conducted on Educational Technology students at the University of Baturaja. The research which was conducted by Ningsih (2020) states that 93.5% of students are more interested in offline learning (face-to-face learning) compared to online learning at home [11].

The obstacles experienced during online learning at home are as follows: 32.3% of students stated that students were wasteful with internet quotas. Then 24.2% of students revealed that the explanation of the material by the lecturers was not optimal. Then 24.2% of students stated that internet signal was limited, 16.1% of students revealed that learning interactions were limited, and 3.2% of students state that online learning media was difficult to follow [11]. The learning culture of generation Z students is also influenced by two factors, they are the ownership of electronic device for learning activities and the student's ability in operating the electronic device. The result showed that most students stated that having adequate technology-based media/learning equipment to support the learning process was considered important and had become a habit and awareness of themselves. Besides, students already possess skills and proficiency in operating ICT-based media, so it can be concluded that a learning culture using ICT-based media has been carried out and has become a habit for students.

5. Conclusion

The rapid development of digital technology and internet networks has provided extraordinary learning convenience for its users. This will certainly change the learning culture of students, who are currently known as the generation Z. The results showed that technology has influenced the generation Z student's learning process. The students have begun to familiarize themselves with technology. Most students prefer to study using technology than learning using printed books. Technology, one of which

is in the form of social media, is used to support the learning process, both face-to-face and online. But, even though students have been facilitated with adequate ICT tools, they still need face-to-face learning activities. Generation Z learning culture is also influenced by two factors, the ownership of electronic device for learning activities and the student's ability in operating the electronic device. More than 85% of students revealed that they were well-equipped with the proper electronic devices that support learning activities and have adequate abilities to utilize it. The results of this study are expected to obtain interesting findings of generation Z learning culture and the factors that influence it. It can be used as a guideline to be recommended related to providing the most appropriate course treatment for decision-makers in higher education.

Acknowledgement

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