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Article

Evaluating the use of technology and student independence in online learning: a comparative study of fashion, culinary, and tourism programs

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ABSTRACT

This study investigates students' responses to online learning and their independence in completing online assignments and compares the level of independence among students in Fashion, Culinary, and Tourism study programs. Additionally, the research identifies challenges faced by students in the online learning process and their strategies for overcoming these difficulties. This quantitative descriptive study conducted at SMK N 4 Yogyakarta found that most students demonstrated a moderate response to online learning and a high level of independence in completing assignments. Notably, students in the Fashion and Culinary study programs observed significant differences in independence. In contrast, no differences were found between the Culinary and Tourism and Fashion and Tourism study programs. Furthermore, students reported moderate difficulties completing online assignments but exhibited high effort in overcoming these challenges.

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Introduction

Education plays a vital role in advancing the nation and state (Allam, 2020; Crossley & Sprague, 2014). Education is expected to provide provisions for all students to be able to develop themselves. In accordance with Article 1 paragraph 1 of the Republic of Indonesia Law No. 20 of 2003, education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious, spiritual strength, self-control, personality, intelligence, noble character, as well as the skills needed by himself, the nation's community, and the state.

However, since the COVID-19 outbreak, which was first identified at the end of 2019 (Erawan et al., 2021; Pratondo & Zaid, 2021), it has caused a health crisis that has also had an impact on education worldwide (AlQashouti et al., 2024; Dvorsky et al., 2023). It is included in Indonesia (Pradana & Syarifuddin, 2021). It forces the use of online learning to prevent the spread of the virus (Chandrasiri & Weerakoon, 2022; Shirish et al., 2021; Singh et al., 2021). Online learning is increasingly supported by advances in educational technology 4.0 (Akimov et al., 2023; Haderer & Ciolacu, 2022; Miranda et al., 2021). The Indonesian Minister of Education and Culture issued circular No. 4 of 2020, regulating the implementation of education policies in pandemic emergencies. The circular stipulates the

learning-from-home process, which includes online/distance learning, a focus on life skills education related to COVID-19, various activities and assignments tailored to students' interests and conditions, and qualitative feedback from teachers without giving quantitative grades.

In the context of vocational education, such as at SMK N 4 Yogyakarta, student independence in learning is critical due to the practical nature of their studies. Learning in these conditions calls for technological innovation to support the learning process (Bouranta & Psomas, 2024; Stecuła & Wolniak, 2022). However, Andrianto Pangondian (2019) revealed that several factors determine the success of online learning, namely the technology or media used, as well as the character of the teacher and students. First, there is the teacher's teaching style. The teacher's teaching style in online learning is believed to affect student learning independence significantly (Khunaini, 2019). Second, appropriate learning models used in online learning are also believed to increase student learning motivation (Siagian, 2021). In this context, self-directed learning theory becomes increasingly relevant, emphasizing the student's ability to take initiative and responsibility in managing their learning process (Loeng, 2020). In addition, the Community of Inquiry (CoI) model highlights the importance of cognitive presence in fostering self-directed learning within online environments (Edumadze & Govender, 2024).

Also, a suitable learning model will show student independence in online learning (Widodo 2021). The third is theoretical learning for students believed to have a high level of independent learning (Handayani 2020) and (Koroh, 2020). Understanding how students from different study programs, such as Fashion, Culinary, and Tourism, exhibit independence in online learning is important for tailoring educational approaches that fit their unique needs. To maximize these efforts, teachers and students must interact online in learning (Blaine, 2019). Online learning uses platforms like applications, websites, and others (Manjeese, 2022). The teacher's online learning system must ensure that learning activities continue despite being far from supervision (Aldhafeeri & Alotaibi, 2023). The online learning system is implemented via computer devices and connected to the internet network. The learning media used are WhatsApp, the Zoom application, and various other media. Students must also be ready to interact online (Aldhafeeri & Alotaibi, 2023).

Online learning utilizes electronic technology services (Haleem et al., 2022). The teaching and learning process utilizes electronic devices, especially the internet, to convey learning or assignments (Ghashim & Arshad, 2023; Haleem et al., 2022). Online learning requires students to learn independently in carrying out assignments and have high learning motivation (Annauval & Ghofur, 2021). The ability to learn independently is especially crucial in online settings where students must manage their time and tasks without direct supervision. Learning outcomes can be influenced by independent learning. The willingness to learn independently is one of the factors that must be considered in the learning process because it dramatically influences student achievement (Swastika & Lukita, 2020). Online learning is the only medium for delivering learning material between teachers and students during the COVID-19 pandemic (Oliveira et al., 2021). The learning media used during online learning are not presented realistically due to distance limitations. Teachers deliver learning material through videos, pictures, and documentation (Gilbert & Bowden, 2017; Malysheva et al., 2022). Students can reread This learning material as a learning resource to develop knowledge.

Online learning provides more space for students to collect and manage information or assignments without time constraints (Tong et al., 2022). Because online learning frees students to access information wherever they are. Communication between parents and students is one of the things that must be considered to realize student independence during COVID-19. There are various benefits of online learning, but there are obstacles faced by students, namely the varying conditions of the areas where students live, causing not all areas to have access to the internet (Prasetyanto et al., 2022).

Based on the results of observations carried out at Vocational High School (SMK) N 4 Yogyakarta, it was found that many students struggle with independent learning in an online setting. Many problems occur when taking part in or doing learning assignments, namely feeling lazy about doing assignments so that when doing assignments, students carelessly do the assignments submitted by

the teacher, postponing assignments until the deadline for submitting assignments, and copying classmate assignment answers. In online learning, students cannot control themselves when studying because they are carried away by learning schedules that often change, are far from teacher supervision, and lack parental supervision when doing online learning assignments. When using mobile phones, students use too much social media to play. As a result, they become tired of studying and too lazy to study because social media is more interesting. Students assume that the school is on holiday during online learning because online learning is carried out from home. They take advantage of this by spending a lot of time playing, which causes students to miss lessons often and forget to do their assignments.

Another problem that often occurs when learning online is students do not have an internet quota to access learning. Some students do not have cellphones or computers to participate in the online learning process; students are sometimes too busy doing other activities at home, students do not have the self-awareness to do learning assignments, students have difficulty solving their problems in online learning, the internet signal is unstable because the students live in rural areas, the lights often turn off suddenly so that students do not have cellphone or laptop batteries to study online and the learning environment is less supportive, such as there are celebration activities near where they live and loud vehicles.

Given these challenges, it is crucial to explore the level of student independence and compare it across different study programs at SMK N 4 Yogyakarta. Observations of teaching obstacles in online learning include online learning material that has not been delivered well because not all teachers can operate computers well, learning hours do not matching the schedule, learning media is still monotonous, making students feel bored and tired, supervision teachers are minimal, causing students to tend to be less interested in online learning activities, and students are less responsive in learning the online learning process. Problems resulting from observations must be evaluated to obtain better learning. Based on the statement above, researchers are interested in examining the learning independence of students in the fashion, culinary, and tourism study program using online learning at SMK N 4 Yogyakarta.

Therefore, this study aims to investigate students' responses to online learning and their independence in completing online assignments and compares the level of independence among students in Fashion, Culinary, and Tourism study programs at SMK N 4 Yogyakarta.

Method

This research adopts the type of research considered the most commonly used, namely quantitative descriptive because it allows for the systematic collection and analysis of data to describe phenomena as they naturally occur (Zhang et al., 2018). The descriptive quantitative method was chosen because it is effective in quantifying the characteristics and trends of variables, particularly in a structured educational setting like a vocational school. This method enables the researchers to analyze the extent of student independence in online learning, the challenges faced, and the differences across study programs, thereby providing a comprehensive overview that aligns with the research objectives. The research was conducted in the Special Region of Yogyakarta, specifically at SMK N 4 Yogyakarta, with a population of 260 students across five classes. From this population, a sample of 160 students was selected using cluster sampling, chosen to ensure each study program was adequately represented. Clusters were determined based on study programs (Fashion, Catering, and Tourism), and proportional representation was used to enhance the generalizability of findings.

The respondents were given a questionnaire developed from a comprehensive literature review, ensuring theoretical grounding and alignment with the research objectives. The instrument measured variables like online learning independence, with 2 indicators for online responses, 5 for independence in different study programs, and 3 for learning difficulties. The questionnaire underwent expert validation for content validity, and a pilot study was conducted to assess reliability,

achieving a Cronbach's alpha of 0.85. The Likert scale model (4-point scale: Very Suitable (VS)=4, Suitable (S)=3, Less Suitable (LS)=2, Not Suitable (NS)=1) was used to capture nuanced responses, encouraging more definitive answers by excluding a neutral option. Data collection was conducted electronically over 2 weeks and 4 days, ensuring broad participation with measures to maintain data integrity, such as anonymity and clear instructions to reduce bias. The data analysis was performed using SPSS software, beginning with standard deviations and percentages for a descriptive overview. ANOVA was employed to compare independence levels across study programs, and t-tests were used to examine differences in online learning difficulties. These statistical tests were selected based on the nature of the data and the research objectives, ensuring rigorous analysis and valid conclusions.

Results and Discussion

Students' Independent Response to Carrying Out Online Learning Assignments

The results of the descriptive analysis of students' independent responses in carrying out online learning assignments were divided into categories, namely high, medium, and low, using the following calculations.

Table 1. Response Score Category: Independence in Carrying Out Online Learning Assignments.

Norm Range	Categories	Score	f	%
X ≥ Mi + 1 SD	High	>18 – 24	46	28,75%
Mi – 1 SD ≤ X < Mi + 1 SD	Medium	12 - 18	114	71,25%
X < Mi – 1 SD	Low	< 6 – 12	0	0%
Total			160	100%

Table 1 above shows the distribution of student responses to independence in completing online assignments among students from the Fashion Design, Catering, and Tourism study programs at SMK N 4 Yogyakarta. The results indicate that 28.75% (46 students) fall into the "high" category, 71.25% (114 students) into the "medium" category, and 0% (0 students) into the "low" category. These findings suggest that a majority of the students demonstrate a moderate level of independence in online learning, with a significant portion still not achieving high independence.

The level of student independence in doing online learning assignments

The results of the descriptive analysis of students' independent responses in carrying out online learning assignments were divided into categories, namely high, medium, and low, using the following calculations.

Table 2. Frequency Distribution of Data on Independence in Carrying Out Online Learning Assignments

Norm Range	Categories	Score	f	%
X ≥ Mi + 1 SD	High	< 57	125	78,13 %
Mi – 1 SD ≤ X < Mi + 1 SD	Medium	38 - 57	35	21,87%
X < Mi – 1 SD	Low	>38	0	0%
Total			160	100%

Table 2 above indicates that the level of student independence in carrying out online learning assignments among students in the Fashion, Culinary, and Tourism study programs at SMK N 4 Yogyakarta is predominantly in the "high" category, with 78.13% (125 students). The "medium" category includes 21.87% (35 students), while no students fell into the "low" category (0%). These results suggest a strong inclination towards independent learning among the majority of students, particularly in the vocational education context.

The Differences in the Level of Learning Independence of Fashion and Catering Students at SMK N 4 Yogyakarta

The results of data analysis obtained an average comparison of independence for Fashion Design students of 63.26, Food Design of 59.29, and Tourism obtained a value of 62.00. It can be seen more clearly from Table 3 as follows:

Table 3. The Calculation Results of Average Differences in Learning Independence.

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	99	63.2626	7.87995	.79196	61.6910	64.8343	47.00	112.00
2	34	59.2941	5.46908	.93794	57.3859	61.2024	51.00	72.00
3	27	60.8148	6.21436	1.19595	58.3565	63.2731	51.00	72.00
Total	160	62.0062	7.32060	.57874	60.8632	63.1493	47.00	112.00

Data analysis shows that the average independence of students in carrying out online learning tasks varies between three different study programs. Students in the Fashion Design study program have an average independence of 63.26, students in the Food Design study program have an average score of 59.29, and students in the Tourism study program get an average score of 62.00. These findings indicate that although there are variations between study programs, students generally show a relatively good level of independence. Table 3 above shows a more detailed comparison of the results, with minimum and maximum scores providing an overview of students' independence distribution.

Afterward, a hypothesis test was carried out on the learning independence of students in Fashion, Catering, and Tourism at SMK N 4 Yogyakarta using the ANOVA formula presented in Table 4 as follows:

Table 4. ANOVA Test Results.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	444.689	2	222.345	4.322	.015
Within Groups	8076.305	157	51.441		
Total	8520.994	159			

The previous ANOVA test results showed that there was a significant difference, with an F value of 4.32 and a significance value of 0.015. This indicates that at least one study program is significantly different from the others in terms of student independence. While low significance (p = 0.015) indicates that this difference did not occur by chance, but rather, certain factors caused this variation. To explore these differences further, a Least Significant Difference (LSD) test was carried out to determine whether there were significant differences between pairs of treatment groups. Detailed LSD test results can be found in Table 5 which is presented below:

Table 5. ANOVA Test Results

(J) Faktor	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
				Lower Bound	Upper Bound
2	3.96851*	1.42569	.006	1.1525	6.7845
3	2.44781	1.55719	.118	-.6279	5.5236
1	-3.96851*	1.42569	.006	-6.7845	-1.1525
3	-1.52070	1.84884	.412	-5.1725	2.1311
1	-2.44781	1.55719	.118	-5.5236	.6279
2	1.52070	1.84884	.412	-2.1311	5.1725

*. The mean difference is significant at the 0.05 level.
**. 1 = Fashion; 2 = Catering; 3 = Tourism

Comparison of the learning independence of students in the Fashion, Culinary, and Tourism Study Programs can be concluded that: (1) There is a difference in the level of independence in carrying out online learning assignments between students of the Fashion Design and Catering Study Program. This is visible in Table 5 above. The significance of Fashion and Food Design is 0.006 > 0.05. (2) There is no difference between the level of independence in carrying out online learning assignments for students in the Culinary and Tourism study program. (3) There is no difference between the level of independence in carrying out online learning assignments for Fashion Design and Tourism study program students.

The Difficulties Faced by Students When Participating in The Online Learning Process and Doing Learning Assignments

When displayed in norm form, it is difficult to complete online learning assignments for students of the Fashion, Culinary, and Tourism study program at SMK N 4 Yogyakarta in Table 6 are as follows:

Table 6. The Frequency Distribution of Data on Difficulty Doing Online Learning Assignments

X ≥ Mi + 1 SD	Categories	Score	f	%
Mi – 1 SD ≤ X < Mi + 1 SD	High	< 42	58	36,25%
X < Mi – 1 SD	Medium	28 - 42	102	63,75%
X ≥ Mi + 1 SD	Low	>28	0	0%
Total			160	100%

Table 6 above shows that students' difficulties in carrying out learning assignments for students in the Fashion, Culinary, and Tourism study program at SMK N 4 Yogyakarta are in the "high" category at 36.25% (58 students), "medium" of 63.75% (102 students), and "low" of 0% (0 students). These results highlight that most students face moderate difficulties in online learning assignments, indicating that additional support might be needed to help students overcome these challenges. The absence of students in the "low" category suggests that difficulties are prevalent among all students, emphasizing the need for targeted interventions to improve online learning experiences. The findings demonstrate the moderate category as the dominant difficulty level, reflecting students' challenges in adapting to online learning environments.

The Efforts to Find Solutions are Carried Out by Students when They Experience Difficulties Following The Online Learning Process

To evaluate the efforts made by students in finding solutions when facing difficulties in online learning, a questionnaire consisting of 14 questions was used. Each question in the questionnaire is equipped with an answer scale that includes the options Strongly Agree, Agree, Disagree, and Strongly Disagree, with a score ranging from 4 to 1. The results of data analysis include the average of each question regarding students' efforts to find solutions when faced with difficulties in doing online assignments, which can be explained in more detail in Table 7, which is presented below:

Table 7. The Frequency Distribution of Data on Difficulty Doing Online Learning Assignments

X ≥ Mi + 1 SD	Categories	Score	f	%
Mi − 1 SD ≤ X < Mi + 1 SD	High	< 42	159	99,37%
X < Mi − 1 SD	Medium	28 - 42	1	0,63%
X ≥ Mi + 1 SD	Low	>28	0	0%
Total			160	100%

Table 7 above shows that efforts to find solutions to students' difficulties in carrying out learning assignments for students in the Fashion, Catering, and Tourism study program at SMK N 4 Yogyakarta are predominantly in the "high" category at 99.37% (159 students). Only a small fraction of students, 0.63% (1 student), fall into the "medium" category, while none are in the "low" category. This highlights a significant challenge faced by the majority of students in completing online learning assignments. The overwhelmingly high percentage in the "high" category indicates that most students are struggling considerably, suggesting an urgent need for interventions to address these difficulties. The findings emphasize that the predominant challenge is at a critical level, reflecting the pressing need for effective strategies to support students in adapting to online learning environments.

Conclusion

Based on the research results, it can be concluded that students in the Fashion, Catering, and Tourism study programs at SMK N 4 Yogyakarta generally exhibit a high level of independence in online learning assignments, with 78.13% of students categorized in the "high" category. However, a significant difference in the level of independence was observed between students in the Fashion and Catering study programs (p = 0.006). In contrast, no significant differences were found between the other pairs of study programs. The findings also indicate that difficulties in online learning assignments were moderate, with 63.75% of students experiencing medium-level difficulties. Efforts to overcome these difficulties were notably high, with 99.37% of students actively seeking solutions. These results highlight that while overall independence is high, there are variances between different study programs that warrant further investigation. The study's limitations include a lack of exploration into the specific factors contributing to the differences in independence and difficulties among the programs. Future research should address these gaps by examining contextual factors and providing practical implications for improving online learning experiences. Connecting the findings with existing literature could enhance the understanding of how program-specific factors impact online learning, offering more precise insights for educators and policymakers.

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