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TPACK-SAMR Based Lecturers' Digital Literacy Competence and Its Implementation in EFL Classroom

Afif Ikhwanul Muslimin (afif.ikhwanul.2102219@students.um.ac.id) *Corresponding author
Department of English, Faculty of Letters, Universitas Negeri Malang, Indonesia
Universitas Islam Negeri Mataram, Indonesia

Nur Mukminatien (nur.mukminatien.fs@um.ac.id)
Department of English, Faculty of Letters, Universitas Negeri Malang, Indonesia

Francisca Maria Ivone (francisca.maria.fs@um.ac.id)
Department of English, Faculty of Letters, Universitas Negeri Malang, Indonesia

Abstract

The present research aimed to scrutinize the lecturers' DLC levels, how they were implemented in English classrooms in various teaching contexts, and the compatibility between variables. Hence, a mixed approach with a descriptive multi-cases study design was applied to meet these objectives. The participants were six English lecturers actively teaching at six different universities in Indonesia, situated in six cities in East Java province, Indonesia. The instruments used were the TPACK-SAMR DLC questionnaire, observation checklist, interview guidelines, and folder for teaching scenario documentation. The statistical analysis using SPSS version 23 was conducted to find the DLC and compatibility levels. The within and cross-case analyses were implemented to scrutinize the DLC implementation and data comparisons across various settings. The results showed that the lecturers' DLC was at a 'High' level. The university status did not affect the lecturers' DLC; nevertheless, the different regions' economic growth might influence the DLC level. Then, all lecturers implemented their DLC into the 'Augmentation' level. Only a few reached 'Modification' and 'Redefinition' levels. Finally, the lecturers' DLC level showed a 'Very High' level of compatibility with its implementation. However, the majority considered themselves not tech-savvy. Henceforth, the lecturers are suggested to join the professional development programs actively.

Keywords: digital literacy competence, EFL classroom, lecturer, TPACK, SAMR

Introduction

Digital literacy is one of the essential competencies that must be mastered by lecturers, including English lecturers (Nadifa & Santoso, 2020). This idea follows the demands of the dynamics of the educational paradigm that was affected by the Industrial

Revolution 4.0 and 5.0, technological competence to face the demands of the 21st century (Ramadhan et al., 2019), and the importance of TPACK (Technological Pedagogical Content Knowledge) in teaching (Muslimin et al., 2022), lecturers are required to have digital literacy. Based on previous research, using technology in teaching English generally positively impacts students' learning outcomes (Mafulah et al., 2023), lecturers' teaching performance, and the development of students' affective domains (Hassan & Mirza, 2021; Muslimin et al., 2022; Unal et al., 2017). Therefore, it is necessary to investigate the level of digital literacy of lecturers to evaluate the level of competence of digital literacy to find out the positive impacts.

This study was designed based on the limitations of previous research, which discussed the digital literacy competence (DLC) of lecturers empirically without relating it to its implementation in the classroom. In these studies, lecturers' DLC is understood only as mastery of technology by lecturers (Lanksher & Knobel, 2015). However, in a broader concept, DLC can be described in several indicators such as ICT (Information and Communication Technology) literacy, information literacy (Cote & Milliner, 2018), ability to utilize digital technology (Faloon, 2020), ability to choose technology according to its use (Wardhani et al., 2019), and attitude in the use of digital technology (Atmazaki & Indriyani, 2019). In learning English, the lecturer's DLC investigation based on these six indicators is more appropriate because the analysis is more comprehensive. Previous research also involved only one particular group of research subjects, which needed to reflect the diversification of subjects according to the type of university and region.

The TPACK-SAMR framework combines two frameworks that promote using technology in learning English. The success of lecturers in implementing TPACK (Technological Pedagogical Content Knowledge), developed by Mishra and Koehler (2006), needs to be measured more hierarchically. However, each component, such as TK (Technological Knowledge), or knowledge of technology, PK (Pedagogical Knowledge) or pedagogical knowledge, and CK (Content Knowledge) or knowledge material, is expected to be implemented maximally. The SAMR (Substitution-Replacement, Augmentation-Addition to Use, Modification-Modification, Redefinition-Redefinition) framework assesses the hierarchic DLC level of English lecturers (Puentedura, 2014). Thus, these two frameworks can be used as the basis for analyzing the use of technology in learning English as a representation of lecturers' DLC in teaching (Cherner & Mitchell, 2020; Drugova et al., 2021).

EFL lecturers' DLC level generally reflects their teaching professionalism (Li & Yu, 2022). For teachers' professionalism, Falloon (2020) states that teachers' DLC prepares teachers for their future EFL classroom roles. It enables teachers to educate EFL students to leverage the advantages of digital resources and information in safe and sustainable ways. Jalongo (2021) strengthens the idea that teachers' DLC reflects teachers' professionalism. Sanchez-Cruzado (2021) explained that teachers would only provide good online EFL teaching during the pandemic if they had sufficient DLC. Moreover, teachers' DLC is the manifestation of teachers to enable them to create teaching scenario that leads EFL students to learn autonomously in and after class (Ting, 2015). This shows that the implementation of DLC is compatible with the lecturers' DLC. However, this can be different if experienced by lecturers in different regions or universities (Maylina et al., 2021; Yang et al., 2021). Therefore, to fill in the gaps in information from previous research results and given the lack of empirical evidence on the level of digital literacy

competence (DLC) of lecturers and their implementation in teaching English, this research aimed to answer the following research questions:

- What is the level of English lecturers' digital literacy competence (DLC)?
- How do lecturers implement digital literacy competence (DLC) in English classes?
- How is the compatibility between the lecturer's digital literacy competence (DLC) and its implementation in the English class?

Methodology

Research Design

This study employed a mixed approach with a descriptive multi-cases study design. The selection of the research design was conducted due to some reasons. First, the present research obtained quantitative data by administering lecturers' DLC-level questionnaires. In addition, through the analysis of lecturers' DLC implementation using the SAMR leveling model, the quantitative statistical calculation was operated to know the compatibility between the digital literacy competence (DLC) of the lecturer and its implementation in the English class quantitatively. Second, the researchers collected qualitative data from the implementation of a semi-structured interview with the participants to dig for data related to the lecturers' DLC levels and how they implemented their DLC. Then, the lecturers' DLC implementation was also correlated qualitatively with the lecturers' DLC levels. Third, this research discussed the research variables in various cases in different research settings. The lecturers' DLC levels and implementations were compared among different research settings where the participants were actively teaching.

Participants

The participants of this study were six English lecturers (P1-P6) who are actively teaching at six different universities in Indonesia spread across six cities in East Java province, Indonesia, namely Malang (P1), Sidoarjo (P2), Surabaya (P3), Tulungagung (P4), Kediri (P5), and Jember (P6). The six institutions consist of three public institutions and three private institutions. The selections of the research setting were based on some reasons. First, the cities are situated in East Java province, Indonesia, where the province is the second biggest province and the second largest GDP in the country. According to Fauzan et al. (2022), this situation should correlate positively to the university's lecturers' DLC due to the knowledge transfer speed in modern areas. However, these assumptions should be investigated more as they were formulated in different research contexts. Then, to maintain the research ethics, the obtained data from the participants would be presented in verbatims, and the participants' identities would be stated in symbols (P1, P2, P3, P4, P5, P6).

According to the demographic data, the participants had various English teaching experiences, as depicted in Table 1.

Table 1
Demographic of participants

Categories		Participants
Teaching Experiences	4-6 years	1
	7-9 years	1
	10-13 years	1
	More than 13 years	3
Teaching subjects	ELT	4
	ESP	1
	Linguistics	1
Universities	Private	3 (P1-P3)
	Public	3 (P4-P6)

Data Collection and Analysis

The data collection techniques of this research were administering the lecturers' TPACK-SAMR DLC level questionnaires (see Appendix 1), observing the implementation of DLC lecturers, documenting participants' teaching scenarios, and conducting semi-structured interviews regarding the lecturers' DLC levels and their implementation (see Appendix 2). The instruments used are DLC questionnaires, observation sheets, and interview guidelines. The details of data collection techniques and their implementation are presented in Table 2.

Table 2
Data collection techniques and implementation

Collected Data	Types of Data	Instruments	Data Collection Techniques	Period
Lecturers' DLC	Quantitative	TPACK-SAMR-based DLC Questionnaire	Administration of TPACK-SAMR-based DLC Questionnaire	Prior to the lecturers' teaching performance
Implementation of lecturers' DLC	Qualitative	Interview protocol on lecturers' DLC levels	Interview with the subject of the research (20-30 minutes)	After the lecturers' teaching performance
Lecturers' DLC observation	Qualitative	Observation sheet on lecturers' DLC levels	Observation of the lecturers' teaching performance	During the teaching performance
The implementation of lecturers' DLC as reflected in the lecturers' teaching scenario	Qualitative	Folder	Documentation of the lecturers' lesson plan	Prior to the lecturers' teaching performance

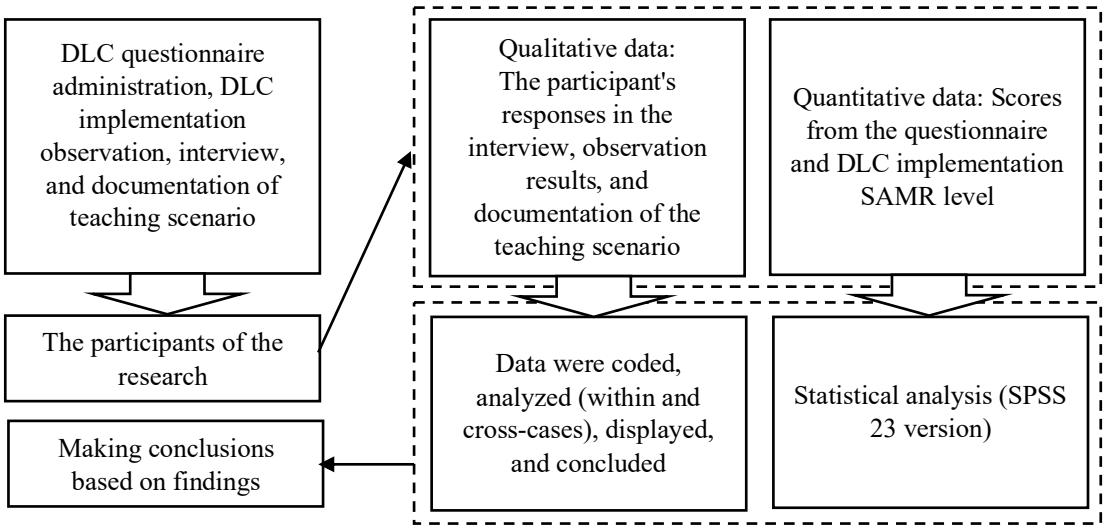
The analysis would have been conducted after the researchers got the desired data. The data analysis in this study includes two ways, namely, Within-Case Analysis and Cross-Case Analysis (Yin, 2013). Within-case analysis was conducted to investigate the lecturers' DLC level in-depth, including asking for details of each indicator in the DLC questionnaire. Furthermore, to analyze the DLC levels, the average score obtained from the DLC questionnaire was converted with the leveling as presented in Table 3.

Table 3
The DLC level categories

DLC Scores	DLC Levels
4.21-5.00	Very High
3.41-4.20	High
2.61-3.40	Moderate
1.81-2.60	Low
1.00-1.80	Very Low

Meanwhile, Cross-Case Analysis was conducted to compare cases between research subjects to find a conformity between variables (Lecturer's DLC and its implementation). The details are described in Figure 1.

Figure 1
Data collection and analysis procedures



To check the compatibility between the lecturers' DLC and its implementation in teaching the English process in the classroom. The individual DLC scores and levels of the participants were calculated. Similarly, the individual technology implementation to teach English according to SAMR levels was scored. The scores were 'Substitution' level: 1, 'Augmentation' level: 2, 'Modification' level: 3, and 'Redefinition' level: 4. Then, those scores were calculated statistically using the SPSS 23 version to find their correlation strength. The correlation strength of the scores was based on the guidelines in Table 4.

Table 4
Compatibility guideline

Correlation Scores	Levels
(+/-) 0.00 – 0.119	Very low
(+/-) 0.20 – 0.399	Low
(+/-) 0.40 – 0.599	Moderate

(+/-) 0.60 – 0.799	High
(+/-) 0.80 – 1.000	Very High

Source: Meghanathan (2016)

Findings

The present research was intended to investigate the lecturers' DLC levels, how they were implemented in English classrooms in various teaching contexts, and their compatibility. Therefore, the present research findings will be stated following these objectives.

The lecturers' TPACK-SAMR DLC levels

The first research objective was to scrutinize the lecturers' TPACK-SAMR DLC. After the administration of the lecturers' DLC questionnaire, which was developed based on the TPACK-SAMR framework, the data of the lecturers' DLC are presented in Figure 2.

Figure 2
The lecturers' TPACK-SAMR DLC

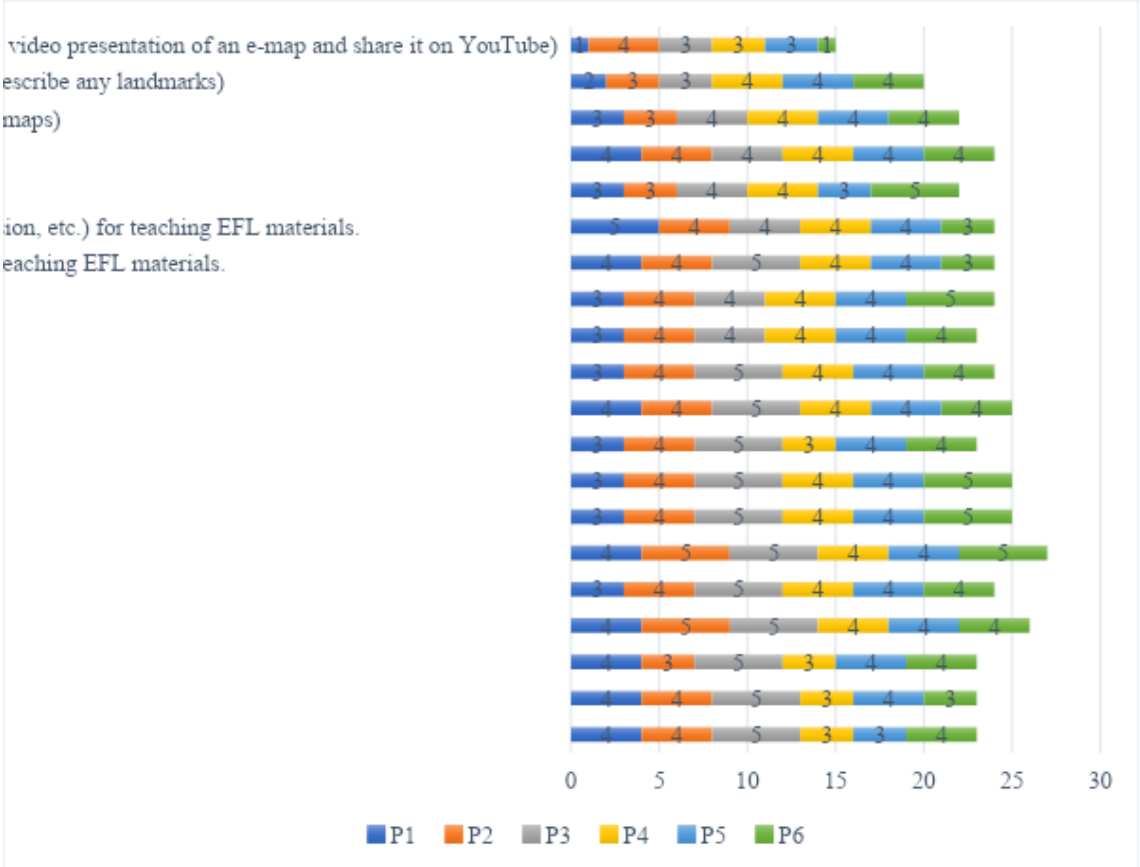


Figure 2 unveiled that the participants were very confident with their competencies related to the teaching materials mastery (content knowledge) (score of 4.33, very high) and the variations of teaching strategies to be applied in English classrooms (pedagogical knowledge) (score of 4.50, very high). This data showed that the participants needed to be more confident to confirm that they were tech-savvy. The participants' responses supported it in the interview:

> P1: “I think my technological augmentation was simply transforming from conventional content into game-based content.”
>
> P3: “I am perhaps 6-7. Some of my other colleagues can use gamification or even create their own teaching videos. Besides not being techie enough, I think I'm not so strong in my pedagogical knowledge either, so my teaching approach tends to be the usual lecture kind”.
>
> P4: “I am not sure, but I think my knowledge of technology in teaching is quite low.”
>
> P5: “It was not good at all. I only use some very basic technology. If I should measure my self-efficacy level in numbers, it is six (6). Not that sophisticated.”
>
> P6: “I think I am on 2 (from 1-5 scores scaling) because I use only common applications such as WhatsApp, Grammarly, and YouTube.”

Although the other parts of TPACK (TK, TPK, TCK, PCK) were not showing a 'Very High' Level, they still showed outstanding results with a 'High' level. Therefore, from the TPACK components, as represented by the average score of 4.03, the lecturer's TPACK DLC was at a 'High' level.

Depicting the lecturers' DLC from the SAMR framework view, Figure 2 revealed that the levels of participants' DLC went lower when they were asked to assess themselves to measure how far they had integrated technology in teaching. The participants had shown a 'High' level of integrating technology in 'Substitution' and 'Augmentation' levels. However, they stated themselves in the 'Moderate' level (score of 3.33) since they needed to figure out how to modify the technology in teaching and the 'Low' level with a score of 2.50, for they had less confidence in redefining the technology for teaching.

> P1: “I did not modify and redefine the original function of the technology tools.”
>
> P3: “Not really. I imagine if I use gamification or create my teaching videos. I will redefine the use of such tools from, for example, being something for fun like gaming into something educational.”
>
> P4: “I am not sure if I have been able to redefine the use of the tools.”
>
> P5: “Not yet; it is hard for me, even my students.”

However, the participants claimed they know the SAMR framework as a model to integrate technology in English teaching (score of 3.67, high). From these results, the lecturers' DLC, from the view of the SAMR framework, was situated in the 'High' level with an average score of 3.43, which was very close to the 'Moderate' level.

According to the participants, some said SAMR could increase their digital literacy competence, while others said it was complicated.

> P1: "I feel so since it leads me to be a creative and resourceful teacher for the students. At least this way boosts students' motivation and engagement."
>
> P2: "Yes, I think so. It helps me improve my teaching quality; the students love to use technology. They are more attracted to learn speaking integrated with the technology."
>
> P3: "Not really. I think I am not yet at the stage of being able to orchestrate technology creatively. I guess I am not the kind of teacher who thinks technological sophistication means better teaching or learning. But ultimately, I am not a techie, so that is just my excuse."
>
> P4: "I think so. With the SAMR model, I was encouraged not to use technology for its maximum functions but also to integrate it with other tools during the teaching process."
>
> P5: "It should help me; it is ideal; however, as I said before, my digital literacy is not that good, and my students' technology affordance (internet connection) holds me back from using many and various technologies. Because the teaching is offline again, the intention to use more various tools is reduced."

The findings on the lecturers' DLC from two technological integration frameworks, TPACK and SAMR, showed that participants had higher DLC from the lens of TPACK (score of 4.03) than from the view of SAMR (score of 3.43). Finally, reviewing the lecturers' DLC levels from the TPACK-SAMR framework, it was found that the participants' DLC level was in the 'High' level, as represented by the average score of 3.73.

Comparing the research findings based on each participant's teaching context, lecturers who worked in private and public universities had similar DLC levels (High level) as supported by the lecturers' DLC scores in Table 5.

Table 5
The individual lecturers' DLC and implementation scores

P	Implementation	DLC	Types of Universities	Cities
P1	2	3,4		Malang
P2	3	3,9	3,92	Sidoarjo
P3	5	4,5		Surabaya
P4	2	3,8	3,85	Tulungagung

P5	3	3,9	Kediri
P6	3	4,0	Jember
Average	3	3,9	

However, discussing the lecturers' DLC from the cities where they were teaching, a lecturer showed a 'Moderate' level of DLC (16%), four lecturers achieved a 'High' level of DLC (68%), and one showed a 'Very High' level of DLC (16%). The one who achieved a 'Very High' level of DLC was teaching English at a private university in the second biggest city in Indonesia, Surabaya. Then, a lecturer teaching at a private university in Malang City scored the lowest level of DLC. This city was situated in the 10th rank of the wealthiest cities in East Java province, Indonesia, after the other cities in this research setting (Kusnandar, 2020).

The lecturers' DLC implementation in English classrooms

The second research objective was to portray how the lecturers implemented their DLC in English classrooms. After conducting the interview, observation of the lecturers' teaching practice, and documentation of the teaching scenario, the data are presented in Table 6.

Table 6
The implementation of lecturers' DLC in English classroom

P	Teach. Focus	Technologies	SAMR				Objectives
			Substitution	Augmentation	Modification	Redefinition	
P1	Argumentative Writing	Tutorial videos for argumentative essays	Substituting conventional argumentative sample with interactive argumentative video	Asking students to learn writing through an interactive video	*null*	*null*	To motivate students
P2	Speaking	Social Media (Instagram), LMS, mobile recording applications	Substituting class with LMS	Asking students to record their speech using a mobile phone application	Using Instagram as a medium to showcase the speech recording and share peer feedback	*null*	To improve Public Speaking skill
P3	Recount and Narrative Writing	Nearpod, EduFlow, website, Gform	Substituting class into "Nearpod, Eduflow Class" as LMS; Substituting paper reflection with Gform format.	Developing quiz in Nearpod; Introducing narrative website in Nearpod	Creating an outline in Nearpod	Asking students to do peer feedback in EduFlow	To design the teaching, maintain social interaction, and increase cognitive goal
P4	Syntax	WhatsApp, YouTube integration (WhY), Zoom,	Substituting syntax explanation paper with audio and video	Directing students to learn syntax from audio and video shared in	*null*	*null*	To increase students' learning interest

		Google Meet, Google Form	explanation; Substituting offline class with a virtual class through Zoom and Google Meet; Substituting paperwork submission with e-file sent in WhatsApp	WhatsApp groups. Also, the teacher shared a YouTube link containing a Syntax explanation			
P5	Feedback in Writing	WA, LMS, GC, Screencast, website	Substituting conventional feedback with tech-based feedback, Replacing the submission box with a GC box,	Asking students to analyze the sample of feedback delivery from the teacher in GC	Creating feedback video 5-10 minutes using Screencast	*null*	To support the Academic Writing course and content course, the Curriculum Material Development course.
P6	Writing	WhatsApp, online video, Google Docs	Substituting paper quizzes with an online quiz; Substituting class with WhatsApp group;	Using videos shared on WhatsApp to make students learn the vocabulary	Asking students to make the compositions in Google Docs collaboratively	*null*	To promote students' team-based learning and boost interests.

Table 6 shows that all participants had integrated teaching technologies for specific positive reasons. The reasons became the basis for choosing the most appropriate technologies to support their English teaching in the classroom. Most considered that improving learning interests and motivation would become capital for students to keep engaging in English learning. Moreover, they integrated technology due to its suitability with the goal of the courses they taught.

> P3: "I will answer from the Community of Inquiry perspective. They are teaching design purpose, cognitive presence, and social presence."

> P6: "Technologies used for teaching were chosen based on some considerations. First, practicality reason, which means making my teaching practice easier and the students are familiar with it. Second, meeting the teaching goals."

Table 6 also shared that all the lecturers implemented technology until the 'Augmentation' level. According to the teaching scenario and observation, only one lecturer applied technology until the 'Redefinition' level. However, 67% of the participants (4 lecturers) had already achieved the 'Modification' level of technology integration, and the rest operated technology as its original functions.

The compatibility between lecturers' DLC levels and the implementation in English classrooms

The third research problem was to know the compatibility between the lecturers' DLC and its implementation in teaching English in the classroom. The findings showed that the lecturer's DLC was in the 'High' level with a score of 3.43, which was very close to the 'Moderate' level. Nevertheless, the participants admitted that they needed to be more confident applying technologies in teaching English as if they should combine it with suitable teaching strategies and materials. Also, this research found that all the participants implemented technology only reaching the 'Augmentation' level, 67% reached the 'Modification' level, and only one lecturer experienced a 'Redefinition' level of technology integration for teaching English. According to the findings above, the lecturers' or participants' TPACK-SAMR DLC level had a 'Very High' compatibility since the lecturers' DLC levels were in a 'High' level. Most participants integrate the technology for teaching English until the second highest level according to the SAMR framework.

Moreover, according to the statistical calculations of the individual lecturers' DLC and its implementation scores (see Table 5), the data were distributed normally (see Table 7), and the findings showed that the lecturers had a 'Very High' compatibility with the lecturers' DLC implementation (see Table 8).

Table 7
The data normality test (One-sample Kolmogorov-Smirnov test) result

		Implementation	**DLC**
N		7	7
Normal Parameters [a,b]	Mean	3.0000	39.1429
	Std. Deviation	1.00000	3.23669
Most Extreme Differences	Absolute	.357	.253
	Positive	.357	.253
	Negative	-.214	-.219
Test Statistic		.357	.253
Asymp. Sig. (2-tailed)		.007[c]	.197[c]

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.

Table 8
The compatibility test results through a correlational statistical test

		Implementation	**DLC**
Implementation	Pearson Correlation	1	.927**
	Sig. (2-tailed)		.003
	N	7	7
DLC	Pearson Correlation	.927**	1
	Sig. (2-tailed)	.003	
	N	7	7

**. Correlation is significant at the 0.01 level (2-tailed).

Table 8 explained that the compatibility score was 0.927, meaning there was 'Very High' compatibility between the lecturers' DLC and its implementation. This finding was valid since the significance score from the statistical calculation was lower than 0.05; it was only 0.03.

Discussions

The lecturer's Digital Literacy Competence (DLC) is understood as the ability of a lecturer to understand the technology, to equip the information provided in technology spaces, to communicate with technology, to utilize digital technology for teaching, to choose technology according to its use, and to have a positive attitude to use digital technology (Atmazaki & Indriyani, 2019; Cote & Milliner, 2018; Faloon, 2020; Lanksher & Knobel, 2015; Wardhani et al., 2019). These DLC characteristics had been depicted through teaching English experience by the participants in the present research. First, most participants admitted they knew some digital technologies to support their teaching. They had practiced using the technologies for their classes. However, some still considered themselves in 'Low' and 'Moderate' DLC levels (P3, P5, P6) since they found many digital technologies that they still needed to comprehend (Unal et al., 2017). Second, the participants' teaching practices showed that digital technology provided them and their students with vast amounts of information that could be selected as teaching and learning sources. Then, the participants showed positive use of digital information to guide students to learn during the pre-, whilst, and post-teaching (Miftah & Cahyono, 2022). Third, all participants stated that digital technologies such as Nearpod, University LMS, Google Suits, WhatsApp Group, and Edu Flow could maintain their communication process both to other English lecturers and to their students (Muslimin et al., 2022). Fourth, according to the investigation of DLC implementation, it was clear that all participants had utilized technology for teaching. Nevertheless, only some had achieved the maximum level of technology implementation. Fifth, P2, P3, and P5 had shown teaching practices by employing digital technologies to meet the specific focus of teaching. For example, Nearpod with narrative material was used by P3 to guide students in learning narrative text. P5 applied Screencast to trigger students' bravery to provide feedback orally to other students' writing compositions (Mafulah et al., 2023). Finally, all lecturers stated that they got many benefits from implementing digital technology for teaching English. P6 stated that digital technology speeded up his teaching preparation, mediated his online interaction with the students, and motivated his students to learn (Afrilyasanti & Cahyono, 2022). Similarly, P3 mentioned that digital technology aided her in maintaining students' cognitive learning engagement, sustaining students' social interaction, and designing meaningful teaching.

The attainment of all characteristics of DLC by participants in this research had been reflected by their achievement of the 'High' level category of TPACK-SAMR DLC. The participants mostly admitted that they could master the teaching materials prior to their teaching performance (Content Knowledge) and possessed various teaching strategies knowledge to manage their future classes (Pedagogical Knowledge). Slightly different when the findings discussed the participants' 'Technological Knowledge or TK.' As the lowest average score item, some said that they knew some digital technologies to aid their teaching. Nevertheless, their TK was only applicable to augment the technology for teaching English. Some said that their TK needed to be more sufficient to help them modify or even redefine the technology they utilize for teaching English in their classroom. The previous studies strengthened these findings for some points. First, many senior lecturers were dominant for CK and PK but less in TK than juniors (Haviz et al., 2020). This idea could be relevant to the participants' demographic data that 50% of participants taught English for more than 13 years. Second, the lecturers could possess

TK. However, most of them found it hard to marry their TK with their PK and CK to establish meaningful teaching (Muslimin et al., 2022). Third, in some developing countries, like Indonesia, some lecturers' TK has grown slower than their PK and CK. It is due to the spreading of inequality in information and technology (Rodriguez-Segura, 2020).

By comparing the participants' universities' teaching status, the findings showed that the different statuses (private or public) of the universities where the participants were teaching did not produce different lecturers' DLC levels. Both private and public university lecturers in East Java, Indonesia, achieved a 'High' level of DLC. Nevertheless, private university lecturers obtained 0.07 DLC scores higher than public university lecturers. The finding confirmed that the development of lecturers' DLC is affected more by each lecturer's self-determination than external factors such as the institution's status (Adu, 2014; Muslimin & Basthomi, 2022). This finding would be interesting to be validated with more research participants and a broader context in future investigations.

Another interesting finding was revealed since this research compared the lecturers' DLC according to the participants' cities (regions). The lecturers who were teaching in more wealthy cities showed better DLC levels. P3 proved it from Surabaya (the wealthiest city in East Java province, Indonesia), who became the only lecturer with a 'Very High' level of DLC. Then, P1, teaching in Malang, East Java, Indonesia, achieved a 'Moderate' level of DLC only. Similarly, the lecturers' DLC implementation (see Table 6) supported that P3 outperformed P1 since P3 reached the 'Redefinition' level while P1 reached the 'Augmentation' level. This finding may suggest that the growth of economics in an area can contribute to the digital literacy competence transfer to the lecturers. The wealthier the regions, the faster the ICT transfer processes happen (Ivone et al., 2022; Jamison & Jansen, 2001). This situation also deals with more and better professional development (PD) programs that the lecturers can join and are available in the institutions in the cities where the economy is growing positively (Apostu et al., 2022). However, this finding should be more comprehensively investigated and confirmed by employing more participants in various research settings.

The lecturers' DLC seen from the TPACK-SAMR frameworks depicted 'Very High' compatibility between its level and implementation, as was proven by a 0.927 Pearson correlation score (sig. score of 0.03). This finding unveils information that by possessing sufficient technological knowledge, including some knowledge such as the characteristics and features of digital technologies, the function of technologies, the possibility of function improvement of the technologies, the knowledge to solve the teaching problems with the used technologies, and the personal openness to the development of technologies, the lecturers can elevate their ability to manage their teaching (pedagogy) (Ammade et al., 2020; Aslan & Zhu, 2016). Also, it can be the catalyst for gaining better material comprehension, according to P6's interview response. This finding was supported by Aziz et al. (2020) and Mirfan et al. (2018), stating that lecturers with good competence would show good teaching performance. The DLC, which was internalized into lecturers' cognition, affection, and kinesthetic, would produce positive teaching English performance by implementing the DLC (Nyakundi & Orodho, 2020), which was relevant to the level that the lecturers achieved. Finally, the present study proposed further investigation on a similar topic with the enhancement of the participants and research settings for further findings confirmation.

Conclusion

The present research aimed to scrutinize the lecturers' TPACK-SAMR DLC and its implementation and find their compatibility. By reflecting on the research results, some conclusions were drawn. First, the lecturers' DLC was in the 'High' level, and this result remained similar when the DLC levels were compared based on the university status. Nevertheless, different cities' economic conditions or wealth might affect each lecturer's DLC level. Second, scrutinizing the implementation of lecturers' DLC through the SAMR framework, most lecturers should actively join professional development (PD) programs to escalate their ability to integrate technology for teaching English. Third, the compatibility between lecturers' DLC level and its implementation was at the 'Very High' level. It portrayed that the lecturers' DLC was not only situated as knowledge but also implemented into practice.

This research provided theoretical implications by enriching the existing discussions and theories in Digital Literacy Competence (DLC) and practical implications by allowing other researchers to adapt the research procedure and instruments. Moreover, the English teachers or lecturers can adopt the practical procedures of DLC implementations displayed in the findings. However, this research employed limited participants in various research settings (universities and regions). Hence, a similar research model and topic with broader research participants and context would confirm the result of this research.

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Appendix 1

Lecturers' TPACK-SAMR DLC questionnaire

No	Items	Score				
		1	2	3	4	5
TPACK Self-Assessment						
1	I know various technologies to support EFL teaching.					
2	I can apply various technologies to support EFL teaching.					
3	I can operate various technology tools to support EFL teaching.					
4	I know various teaching strategies for teaching EFL.					
5	I can apply the teaching strategies to equip my EFL teaching.					
6	I comprehend the materials before teaching.					
7	I can be a good model for my students to exemplify the teaching materials.					
8	I can select appropriate technology applications to support my teaching strategy.					
9	I can apply appropriate technology tools to aid my teaching plan.					
10	I can select the appropriate technology for teaching specific EFL teaching focus.					
11	I can apply suitable technology tools to enhance students' understanding of EFL materials.					
12	I know how to collaborate my knowledge comprehension and teaching plan.					
13	I can implement teaching plans that are relevant to the teaching materials.					
14	I know technology applications (Mentimeter, Google Classroom, Wattpad, Kahoot, etc.) and convenient tools to support a teaching strategy (jigsaw, discussion, etc.) for teaching EFL materials.					
15	I can operate technology applications (Mentimeter, Google Classroom, Wattpad, Kahoot, etc.) and tools that are convenient to support a teaching strategy (jigsaw, discussion, etc.) for teaching EFL materials.					
SAMR Self-Assessment						
16	I know SAMR (substitution, augmentation, modification, and redefinition) technology integration in the teaching framework.					
17	I substitute the conventional teaching materials with more digital/technology-based teaching materials					

	(e.g., changing paper maps with e-maps or mobile phone maps)					
18	I augment the technology used in teaching for more functional teaching practice in class (e.g., asking students to learn vocabulary from things in e-maps or mobile phone maps)					
19	I modify the original function of digital tools or technologies into something or some practices that support my teaching (e.g., asking students to explain the e-map or to describe any landmarks)					
20	I redefine the use of tools or technologies into more advanced functions and elaborate them with another means of technology or software (e.g., asking students to make a video presentation of an e-map and share it on YouTube)					

Appendix 2

The lecturers' DLC levels and their implementation interview guideline

Description:
This instrument is used as a guideline for an interview for gathering data for research entitled "Lecturers' TPACK-SAMR Digital Literacy Competence and the Implementations in EFL Classroom."

The interview questions list:

1. What subject do you teach?
2. Do you need to use technology for teaching the subject?
3. How do you integrate technology into your teaching?
4. How do you incorporate technology with the content and teaching method you will use in your class?
5. What do you think is your TPACK self-efficacy level? How do you measure it?
6. Do you substitute conventional teaching materials with more digital/technology-based teaching materials? How?
7. Do you augment the technology used in teaching for more functional teaching practice in class? How?
8. Do you modify the original function of digital tools or technologies into something or some practices that support my teaching? Please explain!
9. Do you redefine using tools or technologies into more advanced functions and elaborate them with another technology or software? Please explain!
10. Does the SAMR technology integration model help you improve your teaching quality?