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Readiness of graduate school educational support staff for digital-based distance education

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ABSTRACT

Digital transformation and the implementation of distance education require the readiness of educational support staff as key enablers of technology-based academic services, particularly in the context of vocational and applied higher education. This study aims to analyze the readiness of educational support staff in supporting digital-based distance education in terms of digital literacy, understanding of distance education policies, and the capacity to manage online learning systems. The study employed a descriptive sequential explanatory mixed-methods design. Quantitative data were collected through a Likert-scale questionnaire administered to educational support staff, while qualitative data were obtained through semi-structured interviews. The results indicate that 65% of educational support staff demonstrated moderate to good levels of digital literacy, 60% showed a moderate level of understanding of distance education policies, and only approximately 55% exhibited optimal readiness in managing online learning systems. Qualitative findings reveal that limited access to continuous professional training, diverse educational backgrounds, and uneven institutional support constitute the main barriers to staff readiness. This study concludes that the readiness of educational support staff needs to be systematically strengthened to ensure the effectiveness and sustainability of digital academic services and distance education. The contribution of this study lies in providing empirical evidence to support capacity-building strategies and institutional policies aimed at strengthening human resource readiness for digital transformation in vocational and applied higher education.

INTRODUCTION

Digital transformation in education and the development of Distance Education Programs (DEP) have become strategic priorities in higher education management in the era of the Industrial Revolution 4.0 and Society 5.0. Higher education institutions are required to adapt rapidly, not only in teaching and learning processes but also in academic administration systems, student services, and institution-wide governance supported by digital technologies (Khumalo, 2018; Rotar, 2022). In this context, the readiness of human resources plays a crucial role in ensuring the effectiveness and sustainability of distance education implementation.

Educational support staff are key actors in maintaining the continuity of academic services, managing information systems, and facilitating technology-based learning. Their roles extend beyond administrative functions to include technical support for learning management systems, digital academic services, and communication facilitation between lecturers and students (Mgeni et al., 2019; Wong-Fajardo et al., 2023). Previous studies indicate that the success of digital learning initiatives is strongly influenced by educational support staff competencies in digital literacy,

understanding of institutional policies, and operational capacity in managing online learning platforms (Altunoglu, 2017; Mohammadi et al., 2021).

Digital literacy is widely recognized as a foundational competence that enables educational support staff to operate digital tools, manage academic data, and adapt to continuously evolving technological systems (Arandas et al., 2024; Yustika & Iswati, 2020). At the same time, adequate understanding of distance education policies plays an essential role in ensuring alignment between institutional regulations and everyday academic service practices (González et al., 2025; Nkambule et al., 2023; Yuliani et al., 2025). Learning management systems function as the backbone of distance education implementation by supporting administration, documentation, and learning interactions, and their effective utilization is highly dependent on managerial support, technical training, and the availability of adequate infrastructure (Bervell et al., 2020; Isaeva, 2021).

In Indonesia, the implementation of distance education has shifted from an emergency response during the COVID-19 pandemic to a long-term strategic policy supported by national regulatory and accreditation frameworks. This shift requires higher education institutions to strengthen institutional readiness, including the capacity of educational support staff to support digital-based academic governance and services (Martha et al., 2021). Although studies on lecturers' and students' readiness for online learning have grown substantially, research that specifically focuses on the readiness of educational support staff remains limited, particularly within the context of postgraduate education.

Preliminary observations at the Graduate School of Universitas Negeri Yogyakarta indicate that the readiness of educational support staff in supporting digital transformation and distance education implementation has not yet reached an optimal level. Several challenges persist, including variations in digital literacy levels, limited mastery of learning management system administration, and insufficient understanding of technical regulations governing distance education. These conditions may lead to over-reliance on a small number of staff with higher digital competencies and potentially hinder the sustainability of digital academic services (Mgeni et al., 2019).

This study is relevant to vocational education as it positions educational support staff readiness as an integral component of strengthening work-related competencies and technology-based academic services. Vocational and applied higher education require efficient, adaptive, and digitally driven service systems to support distance learning and academic management. The findings of this study provide empirical evidence on digital literacy, policy understanding, and learning management system management as key competencies of educational support staff, which can be replicated across vocational education contexts, polytechnics, and other applied higher education institutions.

However, despite the strategic role of educational support staff, empirical evidence regarding their readiness to support digital-based distance education remains limited. This study addresses the following problem: to what extent are educational support staff ready to support digital-based distance education in terms of digital literacy, policy understanding, and learning management system management? Therefore, this study is directed at examining the readiness of educational support staff in supporting digital transformation and the implementation of Distance Education Programs through an analysis of three main dimensions: digital literacy, understanding of distance education policies, and the capacity to manage learning management systems. This study positions educational support staff as strategic supporting human resources in the provision of technology-based academic services that demand efficiency, accuracy, and work adaptability, which are key characteristics of vocational and applied higher education. The main contribution of this study lies in providing empirical evidence on indicators of educational support staff work readiness in the context of digital transformation, mapping competency gaps based on digital academic services, and formulating strategic recommendations for capacity development that can be adapted to the management of vocational and applied higher education.

METHOD

This study employed a descriptive design with a sequential explanatory mixed-methods approach, in which quantitative data collection and analysis were followed by qualitative data

exploration (Creswell & Clark, 2018; Ivankova et al., 2006). The descriptive approach was used to present a factual and systematic overview of the readiness of educational support staff in supporting digital transformation and the implementation of Distance Education Programs (Sugiyono, 2021). The sequential explanatory model was selected because it allows measurable quantitative findings to be further explained through qualitative data, thereby producing more comprehensive interpretations (Creswell & Hirose, 2019).

The research participants consisted of all educational support staff at the Graduate School of Universitas Negeri Yogyakarta. This study was conducted between March and May 2025. A census (total sampling) technique was applied due to the relatively small population size, so that all members of the population were included as potential respondents (Sugiyono, 2021). The inclusion criteria were: (1) active employment status as educational support staff, (2) a minimum of six months of work experience, and (3) involvement in academic services and/or distance education support. In total, 20 educational support staff participated in this study. In total, 24 educational support staff participated in the quantitative phase of this study.

Quantitative data were collected using a closed-ended questionnaire based on a 4-point Likert scale designed to measure educational support staff readiness across three main dimensions: digital literacy, understanding of distance education policies, and learning management system (LMS) management capacity. The questionnaire was administered online via Google Forms with informed consent obtained from all participants (Creswell et al., 2003). To enrich the survey results, qualitative data were collected through semi-structured interviews with selected informants representing different readiness levels (high, moderate, and low). In addition, documentation such as distance education guidelines/standard operating procedures and supporting LMS usage data was used as secondary data for triangulation purposes (Sugiyono, 2021).

Instrument content validity was examined through expert judgment using Aiken's V coefficient (Aiken, 1985), with a value of ≥ 0.80 applied as the acceptability criterion (Azwar, 2013). Internal reliability of the questionnaire was tested using Cronbach's Alpha, where $\alpha \geq 0.70$ indicated adequate internal consistency (Maulana, 2022; Nunnally & Bernstein, 1994). The interview guidelines were qualitatively validated by experts to ensure clarity and relevance of the questions to the research objectives.

Quantitative data were analyzed using descriptive statistics, including mean scores and percentage distributions across readiness categories (low, moderate, and high). Categorization criteria followed score intervals of low (1.00–1.99), moderate (2.00–2.99), and high (3.00–4.00) (Azwar, 2013). To examine relationships among readiness indicators, nonparametric Spearman's rho correlation analysis was conducted at a significance level of 0.05. Qualitative data were analyzed using thematic analysis through coding, category development, and theme formulation (Braun & Clarke, 2006; Miles & Huberman, 1994). Data credibility was enhanced through brief confirmation with informants (member checking) (Patton, 2014). The qualitative findings were used to explain and reinforce the quantitative results, resulting in a comprehensive and contextualized understanding of educational support staff readiness in supporting digital academic services and distance education.

RESULTS AND DISCUSSION

Results

Item Validity Analysis

Item validity testing was conducted to ensure that each statement in the instrument accurately measured the intended research constructs through two stages: content validity and empirical validity. Content validity was assessed through expert judgment involving three experts in educational research and evaluation, educational technology, and higher education management using Aiken's V coefficient, with all items obtaining V values ≥ 0.75 and thus deemed appropriate for further testing. Empirical validity was subsequently examined using Pearson Product–Moment correlation (corrected item–total correlation), applying the criteria of Sig. (2-tailed) < 0.05 or r-calculated > r-table at a 95% confidence level (Azwar, 2013). The results of testing 45 items across

three variables—digital literacy, understanding of distance education policies, and LMS usage/management—indicated that most items were valid, while several items that did not meet the validity criteria were identified and removed from further analysis to maintain construct consistency and result accuracy; the lack of validity was presumed to be influenced by ambiguous wording or variations in respondents' interpretations.

Table 1. Summary of Instrument Item Validity Results

Variable	Number of Items Tested	Number of Valid Items	Number of Invalid Items	Remarks
Digital Literacy	15	14	1	Item no. 8 was found invalid
Understanding of Distance Education Policy	15	14	1	Item no. 18 was found invalid
LMS Use/Management	15	13	2	Items no. 39 and 43 were found invalid
Total	45	41	4	Used for further analysis

Instrument Reliability Testing

After valid items were identified, the reliability of the instrument was examined to ensure internal consistency among items within each research variable using Cronbach's Alpha coefficient, with $\alpha \geq 0.70$ as the minimum acceptable reliability threshold (Nunnally & Bernstein, 1994). The reliability analysis yielded a Cronbach's Alpha value of 0.948, indicating very high reliability and strong internal consistency among the questionnaire items, as well as consistent responses across participants. Therefore, the research instrument was deemed reliable and appropriate for measuring the readiness of educational support staff in facing digital education transformation and the implementation of Distance Education Programs at the Graduate School of Universitas Negeri Yogyakarta, and it was subsequently used in the descriptive analysis stage to depict the readiness profile based on questionnaire responses.

Table 2. Results of Instrument Reliability Testing

Research Variable	Number of Valid Items	Cronbach's Alpha	Reliability Criteria
Literasi Digital	14	0,934	Very High
Pemahaman Kebijakan PJJ	14	0,927	Very High
Penggunaan/Pengelolaan LMS	13	0,918	Very High
Keseluruhan Instrumen	41	0,948	Very High

The Level of Educational Support Staff Readiness in Digital Literacy, Understanding of Distance Education Policy, and LMS Management

The descriptive analysis results indicate that the readiness of educational support staff at SPs UNY across the three main variables—digital literacy, understanding of distance education (PJJ) policy, and LMS use/management—was predominantly in the moderate category. For digital literacy, most respondents were classified in the moderate category (74%), followed by the high category (17%) and the low category (9%) (M = 47; SD = 6). A similar pattern was observed for understanding of PJJ policy, with 74% of respondents in the moderate category, 22% in the high category, and 4% in the low category (M = 46; SD = 5). Meanwhile, for LMS use/management, 65% of respondents were in the moderate category, 22% in the high category, and 13% in the low category (M = 35; SD = 9). These findings indicate that, overall, educational support staff possess adequate basic readiness to support digital transformation and the implementation of the PJJ program, although advanced levels of mastery have not yet been evenly distributed.

The dominance of the moderate category across all three variables suggests that educational support staff at SPs UNY are generally capable of operating digital devices and applications,

understanding PJJ policy procedures, and using LMS platforms to support academic and administrative services. However, competency gaps remain, particularly in advanced technological adaptation, technical problem-solving, and the innovative and integrated use of LMS features within daily work processes. The presence of respondents in the high category indicates internal potential to serve as drivers of digital transformation, while those in the low category highlight the need for targeted interventions through advanced technical training and sustained mentoring. Therefore, these results underscore the importance of tiered and context-sensitive capacity development strategies to ensure that all educational support staff can optimally contribute to digital academic services and the sustainability of the PJJ program.

Table 3. Distribution of Educational Support Staff Digital Literacy Readiness at SPs UNY

Category	Score Interval	Frequency	Percentage
Low	$x < 41$	2	9%
Moderate	$41 \leq x < 53$	17	74%
High	$x \geq 53$	4	17%
Total		23	100%

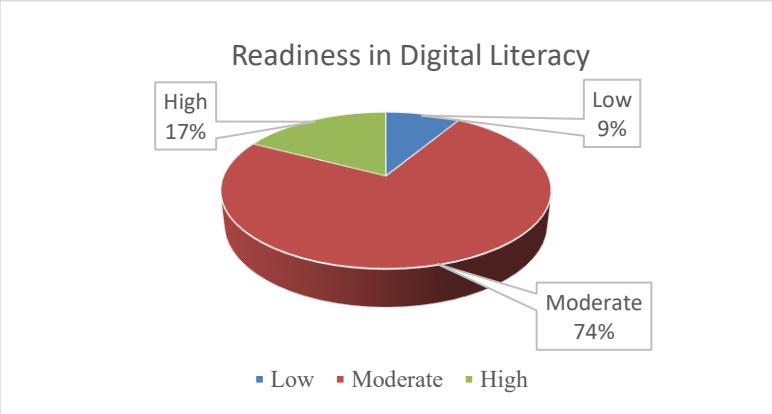

Figure 1. Distribution Diagram of Digital Literacy Readiness Levels of Educational Support Staff at SPs UNY

Table 4. Distribution of Distance Learning Policy Understanding Levels of Educational Support Staff at at SPs UNY

Category	Score Interval	Frequency	Percentage
Low	$x < 41$	1	4%
Moderate	$41 \leq x < 51$	17	74%
High	$x \geq 51$	5	22%
Total		23	100%

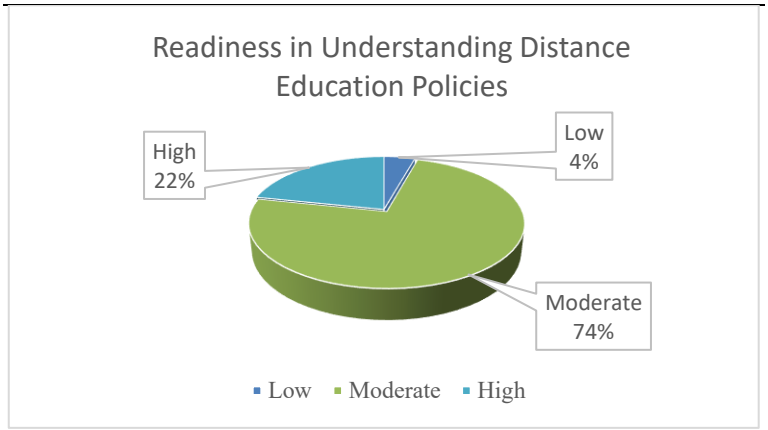

Figure 2. Distribution of Educational Staff Readiness in Understanding Distance Education Policies

Table 5. Distribution of Educational Staff Readiness in the Use/Management of the Learning Management System at SPs UNY

Category	Score Interval	Frequency	Percentage
Low	$x < 26$	3	13%
Moderate	$26 \leq x < 43$	15	65%
High	$x \geq 43$	5	22%
Total		23	100%

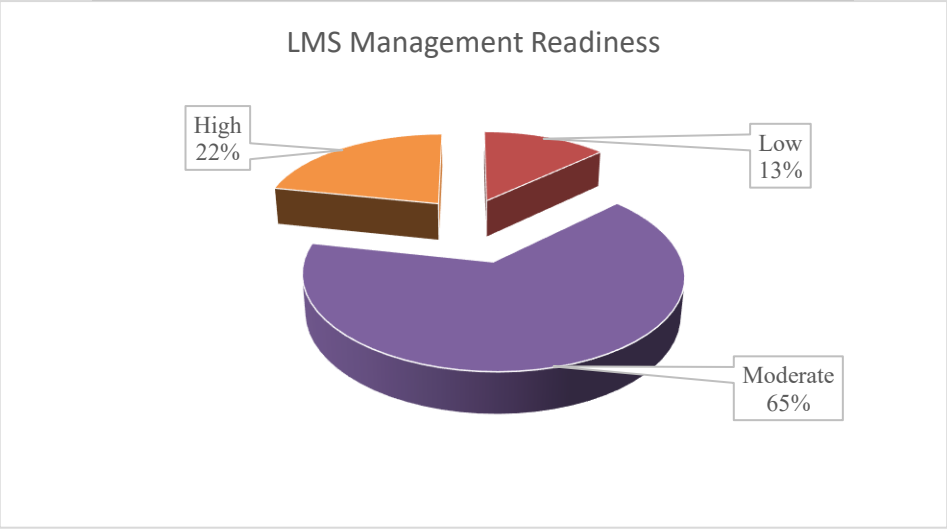

Figure 3. Distribution of Readiness Levels in LMS Use and Management among Educational Support Staff at SPs UNY

Interrelationships Between Dimensions of Educational Workforce Readiness

The results of the Spearman's rho correlation analysis shown in Figure 4 indicate a significant and positive relationship between digital literacy and understanding of distance education (PJJ) policies (r = 0.677; p = 0.000). This finding suggests that higher levels of digital literacy among educational support staff are associated with better understanding of PJJ policies and implementation mechanisms. In contrast, the relationship between digital literacy and LMS use and management (Figure 5) does not demonstrate a statistically significant correlation (r = 0.307; p = 0.155), nor does the relationship between LMS management and understanding of PJJ policies (r = 0.348; p = 0.104), as presented in Figure 6. Both of the latter relationships are weak and statistically non-significant, although they exhibit positive correlation directions.

Correlations

			Literasi Digital	Pemahaman Kebijakan PJJ
Spearman's rho	Literasi Digital	Correlation Coefficient	1.000	.677**
		Sig. (2-tailed)	.	.000
		N	23	23
	Pemahaman Kebijakan PJJ	Correlation Coefficient	.677**	1.000
		Sig. (2-tailed)	.000	.
		N	23	23

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

Figure 4. Results of the Spearman's Correlation Analysis between Digital Literacy and Understanding of Distance Education Policies

Correlations

			Literasi Digital	Pengelolaan LMS
Spearman's rho	Literasi Digital	Correlation Coefficient	1.000	.307
		Sig. (2-tailed)	.	.155
		N	23	23
	Pengelolaan LMS	Correlation Coefficient	.307	1.000
		Sig. (2-tailed)	.155	.
		N	23	23

Figure 5. Results of the Spearman's Correlation Analysis between Digital Literacy and LMS Management

Correlations

			Pengelolaan LMS	Pemahaman Kebijakan PJJ
Spearman's rho	Pengelolaan LMS	Correlation Coefficient	1.000	.348
		Sig. (2-tailed)	.	.104
		N	23	23
	Pemahaman Kebijakan PJJ	Correlation Coefficient	.348	1.000
		Sig. (2-tailed)	.104	.
		N	23	23

Figure 6. Results of the Spearman's Correlation Analysis between LMS Management and Understanding of Distance Education Policies

These findings indicate that digital literacy plays an important role in strengthening educational support staff's understanding of PJJ policies, particularly in terms of accessing, interpreting, and implementing digitally based regulations. However, the ability to manage an LMS does not automatically align with general digital literacy levels or policy understanding, as LMS management requires more specific technical competencies, hands-on experience, and sustained training support. Therefore, the correlation results highlight the presence of gaps among readiness dimensions, suggesting that improvements in digital literacy and policy understanding should be accompanied by targeted strengthening of technical LMS management capacities to ensure the effective and sustainable implementation of distance education programs.

Qualitative Analysis Results

Qualitative data analysis in this study was conducted to deepen and explain the quantitative findings regarding the readiness of educational support staff at SPs UNY in responding to digital education transformation and the implementation of the Distance Education Program. Qualitative data were obtained through in-depth interviews with three educational support staff members selected purposively to represent three levels of digital readiness: low, moderate, and high. A descriptive thematic approach was employed to capture participants' subjective experiences, perceptions, and adaptation dynamics toward digital systems, particularly the learning management system and PJJ policies. Accordingly, the qualitative analysis functioned as complementary data that provided contextual explanations for the general patterns identified in the quantitative results.

An in-depth examination of the interview transcripts revealed variations in experiences and attitudes toward digital transformation among educational support staff. Staff with low readiness demonstrated limited basic digital literacy, anxiety about making technical errors, and a high level of dependence on colleagues when operating the LMS. Expressions such as "afraid of clicking the wrong button" and "usually ask colleagues for help" reflect low digital confidence and limited experience in independent exploration. Meanwhile, staff with moderate readiness exhibited relatively good adaptability in using general digital applications but still required adjustment time when system updates or new features were introduced. In contrast, staff with high readiness displayed well-developed digital literacy, a proactive attitude toward experimenting with new features, and a social role as a source of support for colleagues, indicating the emergence of informal leadership in the digital transformation process.

Table 6. Brief Profile of Interview Informants

Informant Code	Readiness Category	Key Characteristics
I-01	Low	Still uncomfortable using the LMS and not yet accustomed to independently utilizing digital features.
I-02	Moderate	Familiar with basic digital applications but still relies on colleagues to resolve technical issues.
I-03	High	Able to adapt quickly to new technologies, assist colleagues, and demonstrate a good understanding of distance education policies.

Table 7. Initial Reading Results of Interview Transcripts

Informant Code	Readiness Category	Representative Quotations	Initial Interpretation
I-01	Low	1. "I still often feel confused when asked to upload documents to the LMS, so I usually ask colleagues who are more familiar with it." 2. "I'm afraid of clicking the wrong button and losing data, so it's better to ask before trying." 3. "I sometimes forget the steps because the system is rarely used." 4. "When there are system notifications, I often don't understand them and wait for colleagues to explain." 5. "I haven't attended any digital training since I first started working, so I only know the basics." 6. "We know the PJJ procedures, but we don't really understand the reasons and objectives behind them."	Indicates limited basic digital literacy and a high level of dependence on colleagues. The informant lacks confidence in operating the LMS and other digital tools. Digital skills are reactive (used only when necessary) and not systematically developed due to limited training and infrequent use. The informant also tends to delay independent exploration because of fear of making mistakes and minimal exposure to system updates.
I-03	Moderate	1. "I now frequently use Zoom and Google Meet, but when the system changes, it takes time to adjust." 2. "When there are minor issues, I usually ask colleagues first to avoid making mistakes." 3. "I once attended training, which was helpful, but if it's not practiced regularly, I tend to forget."	Demonstrates fairly good but unstable adaptability. The informant has experience using various digital work applications but still relies on social support in the workplace. This reflects a moderate level of readiness with a need for repeated training and routine practice to maintain digital competence.
I-03	High	1. "When there is a new feature in the LMS, I usually try it right away and help colleagues so everything can run smoothly." 2. "I like to make small notes so it's easier to remember." 3. "In my opinion, technology is very helpful, as long as we are willing to learn little by little."	Reflects high digital literacy, strong self-confidence, and strong intrinsic motivation. The informant is not only capable of using technology independently but also actively shares knowledge with colleagues. This informant recognizes the benefits of technology and demonstrates informal leadership in supporting digital transformation at SPs UNY.

Through open coding and axial coding processes, the digital readiness of educational support staff at SPs UNY was found to be influenced by a combination of technical, psychological, social, and institutional factors. Five main categories were identified: (1) variations in digital literacy levels

among educational support staff, (2) lack of self-confidence in exploring advanced technology and LMS features, (3) dependence on colleagues in resolving technical problems, (4) understanding of distance education policies that remains focused on technical aspects, and (5) digital training programs that have not yet fully addressed advanced competency needs. These findings indicate that digital readiness is not merely a matter of technological operational skills, but is closely related to learning experiences, workplace culture, and the availability of institutional support.

Table 8. Results of Category Grouping (Axial Coding)

Initial Codes	Inter-Code Category / Connecting Meaning	Main Category / Thematic Direction
Anxiety about technical errors (I-01) Difficulty adapting to new systems (I-02) Independent learning strategies (I-03)	Differences in the ability to operate the LMS and adapt to new features	Differences in the level of digital literacy among educational staff
Anxiety about technical errors (I-01) Lack of confidence in using advanced LMS features	Doubt and concern when dealing with new features in digital systems	Lack of confidence in exploring advanced technology/LMS features
Dependence on colleagues (I-01, I-02) Peer support (I-02)	Informal assistance becomes the main support in addressing technical problems due to uneven technological competence	Dependence on colleagues in resolving technical issues
Limited understanding of PJJ workflows and technical aspects	Policy understanding remains oriented toward operational procedures rather than strategic substance	Understanding of PJJ policy remains focused on technical aspects
Lack of continuous training (I-01) Limited development of advanced competencies	Training is still focused on basic skills and has not yet reached exploration of advanced features	Training has not fully addressed advanced-level needs

At the selective coding stage, the five categories were synthesized into five main themes that comprehensively represent the dynamics of educational staff readiness. These themes underscore that digital transformation within SPs UNY is a multidimensional process that requires individual readiness, policy clarity, and sustainable capacity development strategies. Low levels of self-confidence and dependence on colleagues indicate the need for more systematic mentoring approaches, while limited policy understanding and the lack of advanced training highlight the importance of strengthening policy literacy and designing tiered training programs. Overall, these qualitative findings enrich the quantitative results by providing an in-depth understanding of the challenges and opportunities in enhancing the readiness of educational staff at SPs UNY toward sustainable digital education transformation and the implementation of distance education programs.

Table 9. Results of Main Theme Identification (Selective Coding)

Main Category (Axial Coding)	Main Theme (Selective Coding)
Differences in ability and adaptation to digital technology	Differences in Digital Literacy Levels among Educational Staff
Lack of confidence in operating advanced LMS features	Lack of Confidence in Exploring Advanced Technology/LMS Features
Dependence on peer assistance in resolving technical problems	Dependence on Colleagues in Resolving Technical Problems
Understanding of distance education policies limited to procedural aspects	Understanding of Distance Education Policies Focused on Technical Aspects
Digital training and professional development remain basic	Training Has Not Fully Addressed Advanced-Level Needs

Discussion

The findings of this study indicate that, overall, educational support staff at the Graduate School of Universitas Negeri Yogyakarta (SPs UNY) demonstrate a relatively good level of readiness in supporting digital education transformation and the implementation of Distance Education Programs. These findings address the research objective, which focused on mapping staff readiness in terms of digital literacy, understanding of distance education policies, and the ability to manage learning management systems. Quantitatively, most respondents were classified within the moderate to high categories across all three variables, suggesting that digital work systems have become an integral part of daily academic and administrative service practices at SPs UNY.

In terms of digital literacy, the results show that the majority of educational support staff have mastered basic technological skills, including the use of online communication applications, digital document management, and web-based academic administrative systems. This condition indicates that digital transformation at SPs UNY has progressed at the operational level and contributes to the efficiency of academic services. However, qualitative findings reveal variations in staff capacity related to adapting to new technologies, technical problem-solving, and reflective use of digital tools. Some staff members continue to rely on colleagues when encountering technical issues, indicating that digital literacy development has not yet been evenly distributed.

This phenomenon aligns with the perspective of Spante et al. (2018), who argue that digital literacy encompasses not only technical skills but also critical thinking, ethical awareness, and responsibility in technology use. In the context of vocational education and applied higher education, reflective digital literacy is particularly important because academic services demand speed, accuracy, and performance-oriented outcomes. The present findings also reinforce previous studies by Mardiana (2024) and Bravo-Jaico et al. (2025), which emphasize that the digital literacy of support staff directly influences work efficiency and the success of digital transformation in higher education institutions.

Beyond digital literacy, the study found that educational support staff's understanding of distance education policies was generally at a moderate level. Most respondents demonstrated adequate knowledge of operational procedures and technical mechanisms for implementing distance education, such as managing online courses, archiving digital documents, and reporting academic activities. This suggests that PJJ policies at SPs UNY have been structurally disseminated. Nevertheless, interview results indicate that policy understanding remains largely administrative in nature and has not been fully internalized as part of a long-term institutional strategy for digital transformation in higher education.

These findings are consistent with Nguyen-Anh et al. (2023), who highlight that the success of digital transformation depends heavily on shared understanding between policy makers and operational-level implementers. Similarly, Quy et al. (2023) emphasize that digital policy implementation is more effective when accompanied by shared ownership among institutional actors. Within vocational education contexts, conceptual and applied policy understanding is crucial, as policies must bridge workforce demands, learning systems, and adaptive academic services.

Regarding LMS use and management, the results indicate that most educational support staff fall within the moderate readiness category. Staff members generally possess the ability to use basic LMS features to support administration and distance education services, such as uploading documents, recording attendance, and managing course data. This finding suggests that LMS platforms have been integrated into routine academic activities. However, the use of advanced LMS features remains limited. Consequently, LMS platforms are still primarily positioned as administrative tools rather than as strategic systems for academic decision support.

These results are in line with studies by Balkaya and Akkucuk (2021) and Bonilla-Priego et al. (2024), which assert that successful LMS adoption depends significantly on user competence and sustained user experience. In vocational education settings, optimizing LMS use through data-driven approaches is essential for monitoring competency achievement, evaluating learning outcomes, and continuously improving the quality of academic services.

Correlation analysis revealed a significant positive relationship between digital literacy and understanding of distance education policies, while the relationships between digital literacy and LMS management, as well as between LMS management and policy understanding, were not statistically significant. These findings suggest that improved digital literacy contributes to better

policy understanding but does not automatically enhance LMS management skills. Qualitative evidence further clarifies that LMS mastery is more strongly influenced by hands-on experience, targeted technical training, and institutional support rather than by general digital literacy alone. This reinforces the arguments of Chounta et al. (2024) and Sobhani et al. (2025) that digital readiness is a multidimensional construct that cannot be developed through a single approach.

Overall, the integration of quantitative and qualitative findings indicates that educational support staff readiness at SPs UNY in supporting digital transformation and distance education is relatively strong, yet still requires reinforcement in several strategic areas. These include the development of reflective digital literacy, deeper conceptual internalization of distance education policies, and optimization of data-driven LMS utilization. These interrelated aspects collectively shape an adaptive, collaborative, and sustainable digital academic service ecosystem. The findings underscore that, within vocational education and applied higher education contexts, human resource readiness is a critical factor in ensuring the quality and sustainability of distance education implementation in the era of digital transformation.

From a practical perspective, these findings imply that higher education institutions, particularly in vocational and applied higher education, need to design systematic and tiered capacity-building programs for educational support staff. Such programs should not only focus on improving basic digital literacy, but also on strengthening reflective digital competence, policy literacy, and advanced learning management system utilization to support data-driven academic services. At the policy level, the results highlight the importance of aligning distance education regulations with operational practices through continuous training and institutional support mechanisms.

Despite these contributions, this study has several limitations. First, the relatively small number of participants and the focus on a single institutional context limit the generalizability of the findings. Second, the study relies on self-reported data, which may be subject to response bias. Future research is therefore encouraged to involve a larger and more diverse sample across multiple vocational and applied higher education institutions, as well as to employ longitudinal or comparative designs to capture changes in educational support staff readiness over time.

CONCLUSION

This study concludes that the readiness of educational support staff at the Graduate School of Universitas Negeri Yogyakarta in supporting digital education transformation and the implementation of Distance Education Programs is generally at a good level, although it has not yet reached an optimal state. The main findings indicate that most educational support staff possess adequate digital literacy to support technology-based academic services, understand the technical procedures of distance education policies, and are capable of utilizing learning management systems at a basic level. This condition suggests that digital transformation within SPs UNY has progressed functionally and has been integrated into everyday work practices. Nevertheless, this study identifies several readiness gaps in more strategic aspects. Digital literacy among educational support staff remains predominantly technical and has not yet developed in a reflective and critical manner; understanding of distance education policies tends to be limited to operational procedures and has not been fully internalized as part of an institutional vision; and LMS utilization is still largely administrative and has not been optimized as a data-driven decision-support system. Qualitative findings further reinforce these results by revealing variations in digital readiness profiles, ranging from high dependence on colleagues to digital autonomy and informal leadership in supporting technological adaptation.

Overall, this study emphasizes that the success of digital education transformation and distance education implementation is not solely determined by the availability of infrastructure and regulations, but is highly dependent on the readiness of supporting human resources. Reflective digital literacy, participatory policy understanding, and adaptive, data-driven LMS management constitute key prerequisites for effective, efficient, and sustainable digital academic services—particularly within the context of vocational education and applied higher education, which demand service performance that is responsive to the needs of distance learning. This study also opens

avenues for future research to explore other factors influencing the digital readiness of educational support staff, such as digital leadership, organizational culture, and the effectiveness of long-term competency development programs. By expanding research contexts and employing longitudinal approaches, future studies are expected to provide a more comprehensive understanding of human resource readiness dynamics in the management of digitally oriented vocational education.

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