A STUDY OF DIGITAL COMPETENCE OF B.ED STUDENT-TEACHERS IN RESPECT OF THEIR SELF-MONITORING

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ABSTRACT

The rapid integration of technology into the field of education has made digital competence a crucial skill for prospective teachers. In modern classrooms, student-teachers are expected not only to utilize digital tools but also to regulate their learning behaviors effectively. Among the various components of meta cognition, self-monitoring plays a vital role in enabling individuals to evaluate and adapt their actions, which in turn enhances the meaningful use of technology for teaching and learning. The present study aims to assess the level of digital competence among B.Ed student-teachers and to examine its relationship with their self-monitoring ability. A sample of 200 B.Ed 2nd year student-teachers, consisting of 100 males and 100 females, was selected through stratified random sampling from teacher education institutions. The descriptive survey method was employed for data collection. Standardized scales measuring self-monitoring and digital competence were administered to the participants.

The results indicated that B.Ed student-teachers demonstrated a moderate level of digital competence. Gender-based comparisons revealed no significant difference in both digital competence and self-monitoring scores between male and female student-teachers, suggesting similar preparedness across genders. A positive significant relationship was found between digital competence and self-monitoring, implying that individuals with higher self-regulation skills tend to make more efficient use of digital learning environments.

The study emphasizes the importance of incorporating digital pedagogy, self-regulated learning strategies, and reflective teaching practices into the B.Ed curriculum to strengthen teacher preparedness and professional competence in the digital era.

*Keywords***:** *Digital competence, Self-monitoring, B.Ed student-teachers, Teacher education, Meta cognition, ICT Skills*

THE STUDY'S INTRODUCTION AND BACKGROUND

The 21st century education system demands digitally skilled teachers capable of integrating technology for instructional purposes, assessment, classroom engagement, and professional growth. Teacher education programs, such as Bachelor of Education (B.Ed), play a vital role in preparing pre-service teachers to become technologically confident future educators. In this context, digital competence has emerged as a key requirement.

Digital competence refers to the ability to use digital technology effectively, responsibly, critically, and creatively for learning and communication. According to European Commission (2020)[1], it includes information literacy, digital communication, digital content creation, problem-solving, and digital safety. For student-teachers, digital competence is essential not only for instructional practices but also for managing administrative tasks, accessing online resources, and adapting to modern pedagogical models such as flipped classroom, blended learning, and virtual learning environments. (Siddiq et al., 2016)[20]Self-

monitoring is another crucial element influencing learning outcomes. It refers to an individual's ability to evaluate and regulate their behaviour, thoughts, and performance based on goals or standards. In the context of teacher training, self-monitoring helps student-teachers reflect on their digital usage habits, identify gaps, and improve upon them. It encourages responsible technology use and supports continuous professional development.(Schraw & Dennison, 1994)[211, The National Education Policy (NEP) 2020[2] emphasizes digital integration in teacher education, recommending the development of techno-pedagogical skills and metacognitive strategies among pre-service teachers. Hence, understanding the level of digital competence among B.Ed student-teachers and its association with self-monitoring is not only relevant but essential.

STATEMENT OF THE PROBLEM

In the present digital era, digital competence has become an essential professional requirement for prospective teachers. B.Ed. student-teachers are expected to effectively integrate digital tools into teaching and learning processes. Self-monitoring plays a crucial role in regulating learning behavior, reflection, and adaptive teaching practices. However, limited research has examined the relationship between digital competence and self-monitoring among B.Ed. student-teachers. Understanding this relationship is important for strengthening teacher education programmes. Therefore, the present study focuses on examining the digital competence of B.Ed. student-teachers in relation to their self-monitoring.

REVIEW OF RELATED LITERATURE:

Research on self-monitoring consistently highlights its multifaceted role in learning, teaching, and behavior regulation across educational contexts. Foundational work by **Snyder (1974)[12]**conceptualized self-monitoring as an individual's capacity to regulate behavior and self-presentation in response to social cues, establishing distinctions between high and low self-monitors that remain influential in educational psychology. Subsequent empirical studies extended this construct to classroom settings, demonstrating that self-monitoring interventions significantly enhance on-task behavior and reduce disruptive actions among students with learning difficulties and behavioral challenges (**Amato-Zech, Hoff and Doepke (2006)**[11]; **Crutchfield et al. (2015)**[7], as well as improve academic outcomes when combined with peer tutoring for students with emotional or behavioral disorders (**Hott, Evmenova, and Brigham (2014)[8]**). In higher education and technology-enhanced learning environments, self-monitoring has been positively associated with academic achievement and effective use of digital tools, emphasizing its role as a core metacognitive regulation skill rather than a function of technology alone (**Wong et al. (2019)**[10]. However, findings by Graham et al. (2025)**[3]** suggest that while self-monitoring increases cognitive engagement and time-on-task, it does not automatically translate into improved performance under varying task complexities, indicating the need for structured guidance to support accurate self-judgment. Within the teaching profession, systematic reviews and empirical studies report largely positive effects of self-monitoring on teachers' professional performance, efficacy, and continuous behavioral improvement **Layden, Crowson, and Hayden (2023)[4]**; **Suknaisith(2021)[5]**, although concerns remain regarding its potential emotional costs depending on how teachers interpret work demands (**Huang and Yin (2020)[6]**). Beyond instructional contexts, self-monitoring has also been linked to social motivation and influence, with high self-monitors more likely to engage in opinion leadership and seeking behaviors (**Kim (2011)[9]**). Collectively, the literature indicates that self-monitoring is a powerful mechanism for enhancing engagement, self-regulation, and professional functioning across educational levels, yet its effectiveness depends on contextual support, task

complexity, and individual interpretation, underscoring the need for more rigorous and integrative research designs.

OBJECTIVES OF THE STUDY:

1.To assess the digital competence of male and female B.Ed. student-teachers with high self-monitoring levels.

2.To evaluate the digital competence of male and female B.Ed. student-teachers with low self-monitoring levels.

3.To examine the relationship between self-monitoring and digital competence.

HYPOTHESES OF THE STUDY

The present study is based on the following hypotheses:

1. There is no significant difference in the digital competence of male and female B.Ed. student-teachers who exhibit a high level of self-monitoring.

2. There is no significant difference in the digital competence of male and female B.Ed. student-teachers who exhibit a low level of self-monitoring.

3. There is no significant relationship between self-monitoring and digital competence among B.Ed. student-teachers.

METHODOLOGY:

In the present study, the investigator employed the survey method to achieve the research objectives effectively. The study was comparative in nature and involved prospective teachers pursuing the second year of the Bachelor of Education (B.Ed.) programme. The participants were selected from colleges of education affiliated with CCS University, Meerut, Uttar Pradesh. The major purpose of the investigation was to assess the self-monitoring abilities of these prospective teachers and compare their levels to identify possible variations or patterns. By examining differences in self-monitoring skills among the participants, the study aimed to understand their capacity for behavioural regulation. The findings are expected to provide meaningful insights into the self-regulatory practices of future educators in the region and contribute to enhancing teacher preparation.

POPULATION AND SAMPLE OF THE STUDY:

The population for the present study consisted of the prospective teachers studying in the B.Ed. programme in Government, Government-Aided and Self Finance Colleges affiliated by CCS University Meerut UP. From the population, the investigator selected 200 student teachers of second year B.Ed. programme by applying stratified random sampling technique

RESEARCH INSTRUMENTS USED IN THE STUDY:

Research Instrument	Instrument /Scale	Type
Digital Competence Assessment Questionnaire	Shipra Srivastava and Kiran Lata Dangwal	Cluster scoring method
Self-Monitoring scale	Amit Abraham and Priyanka Neeta	Standardized

In the present study, self-monitoring was assessed using the *Samvaidna's Self-Monitoring Scale* standardized by Amit Abraham and Priyanka Neeta (2013). The scale consists of 22

statements aimed at measuring self-monitoring behaviour among individuals. The first 11 statements assess high self-monitoring, reflecting an individual's ability to regulate and adapt behaviour according to social cues, while the remaining 11 statements measure low self-monitoring, indicating a tendency to maintain consistent behaviour regardless of external situations. This standardized tool provides a balanced and comprehensive evaluation of self-monitoring traits and ensures reliable measurement of participants' behavioural regulation ability.

For assessing digital competence, the *Digital Competence Assessment Questionnaire* developed by Shipra Srivastava and Kiran Lata Dangwal was used. The questionnaire follows the cluster scoring method and evaluates multiple dimensions of digital competence, enabling a systematic assessment of the participants' skills and confidence in using digital tools for educational purposes. The use of these two validated instruments ensured accuracy, reliability, and objectivity in data collection for the study.

RELIABILITY OF THE INSTRUMENT

The reliability of the tools used in the present study was established using standard methods. The Digital Competence Questionnaire showed high reliability with a coefficient of 0.90 using the test–retest method. The Self-Monitoring Scale also demonstrated satisfactory reliability, with a coefficient of 0.84 obtained through the split-half method.

VALIDITY OF THE INSTRUMENT

The validity of the tools was determined through the reliability index. The Digital Competence Questionnaire yielded a validity coefficient of 0.89, while the Self-Monitoring Scale showed a high validity coefficient of 0.92. These results confirm that both tools are valid for the present study.

STATISTICAL TECHINIQUE USED IN THE STUDY :

- Mean and Standard Deviation
- t-test
- Pearson Correlation

❖ The t-test was used to examine the differences in digital competence between male and female B.Ed. student-teachers with high and low levels of self-monitoring.

❖ The correlation test was applied to determine the relationship between self-monitoring and digital competence among male and female B.Ed. second-year student-teachers..

DELIMITATION OF THE STUDY:

To ensure smooth execution of the research within the available time, energy, and resources, the study has been delimited in the following ways:

- The study is restricted to colleges affiliated with Chaudhary Charan Singh University, Meerut.
- Only B.Ed. second-year students have been included as participants.
- The sample size has been limited to 200 participants

DATA COLLECTION PROCEDURE

The required data were collected by administering the standardized tools to the selected sample of B.Ed. student-teachers. Clear instructions were given to the respondents, and the collected data were carefully checked for completeness before analysis.

DATA ANALYSIS PROCEDURE:

After the collection of data, the responses were carefully coded and organized for analysis. Appropriate statistical techniques were selected in accordance with the objectives of the study. The data were analyzed using both descriptive and inferential statistics. The results were systematically interpreted to draw meaningful conclusions related to the research problem.

HYPOTHESIS 1:

There is no significant difference between the digital competence of male and female B.Ed student- teachers with high self- monitoring level.

Table 1

Showing the high levels of Self- monitoring ofmale andfemaleB.Ed student- teachers

DIGITAL COMPETENCE							
HIGH SELF-MONITORING	GENDER	N	M	SD	T-RATIO	TABLE VALUE	LEVEL OF SIGNIFICANCE (0.05)
	MALE	50	53.3	4.8	3.84	1.96	STATISTICALLY SIGNIFICANT.
	FEMALE	50	56.5	3.4			

Null hypothesis is rejected

The graph represents the results related to high levels of Self- monitoring of male and female B.Ed student- teachers
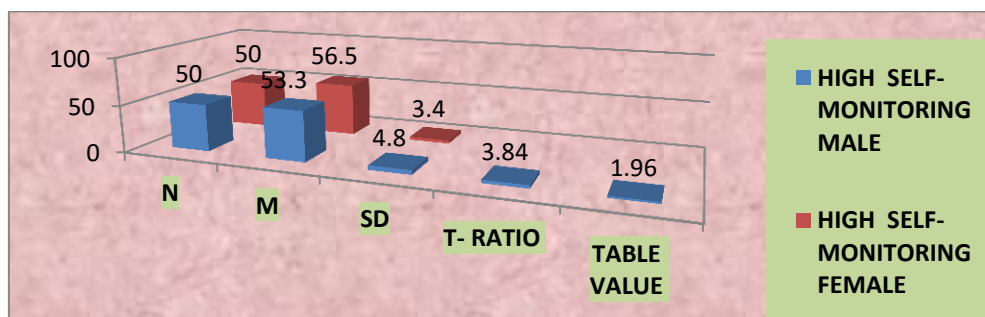

Figure :1

INTERPRETATION:

The mean score of digital competence among high self-monitoring male student-teachers is **53.3** with a standard deviation of **4.8**, whereas the mean score for high self-monitoring female student-teachers is **56.5** with a standard deviation of **3.4**. The obtained **t-ratio of 3.84is** greater than the **table value of 1.96** at the **0.05 level of significance**. Therefore, the difference between the digital competence scores of male and female student-teachers with high self-monitoring is **statistically significant**.

This result indicates that **female student-teachers with high self-monitoring possess higher digital competence than their male counterparts**. It suggests that female prospective teachers may be more effective in utilizing digital tools and technologies in learning environments when they demonstrate strong self-regulation skills. The finding highlights the

importance of supporting and enhancing digital competence among male student-teachers, particularly those with high self-monitoring traits.

HYPOTHESIS 2:

There is no significant difference between the digital competence of male and female B.Ed students with low self- monitoring level.

Table 2

Showing the low level of self- monitoring of male and female B.Ed student- teachers

DIGITAL COMPETENCE							
LOW SELF-MONITORING	GENDER	N	M	SD	T-RATIO	TABLE VALUE	LEVEL OF SIGNIFICANCE (0.05)
	MALE	50	36	3.3	1.26	1.96	There is no statistically significant
	FEMALE	50	37	4.5			

Null hypothesis is accepted.

The graph represents the results related to low levels of Self- monitoring of male and female B.Ed student- teachers
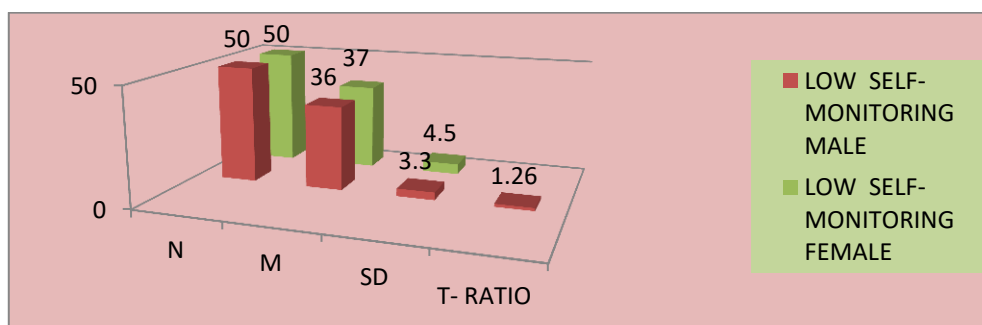

Figure :2

INTERPRETATION:

The mean score of digital competence among low self-monitoring male student-teachers is **36** with a standard deviation of **3**.3, while the mean score for low self-monitoring female student-teachers is **37** with a standard deviation of **4.5** The obtained **t-ratio of** 1.26 is lower than the **table value of 1.96** at the **0.05 level of significance**. Therefore, the difference between the digital competence scores of male and female student-teachers with low self-monitoring is **not statistically significant**.

This result indicates that **male and female student-teachers with low self-monitoring have nearly similar levels of digital competence**. In other words, when self-monitoring ability is low, gender does not appear to play a meaningful role in determining digital competence. This finding suggests that irrespective of gender, students with low behavioural regulation tend to demonstrate similar digital competence levels, emphasizing the importance of strengthening self-monitoring skills to enhance digital preparedness among prospective teachers.

HYPOTHESIS 3 : There is no significant difference between the self- monitoring and Digital   Competence ..

Table 3

Showing the relationship between Self- Monitoring and Digital Competence

RELATIONSHIP BETWEEN SELF- MONITORING AND DIGITAL COMPETENCE				
VARIABLE	N	R	TABLE VALUE	SIGNIFICANCE LEVEL - 0.05
DIGITAL COMPETENCE SELF- MONITORING	200	0.141	0.138	SIGNIFICANT

--Null Hypothesis is rejected.

The graph represents the results related to relationship between Self- Monitoring and Digital Competence
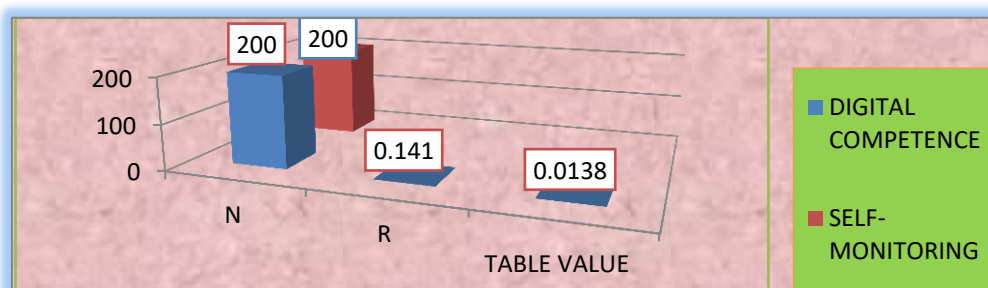

Figure :3

INTERPRETATION:

The relationship between self-monitoring and digital competence among 200 participants is presented in the table. The calculated correlation coefficient (r = 0.141) indicates a **positive association** between the two variables. This suggests that as self-monitoring increases, digital competence also tends to increase. The obtained correlation value is higher than the table value of **0.138** at the **0.05 level of significance**, confirming that the correlation is **statistically significant**. Therefore, the findings establish that student-teachers with stronger self-monitoring abilities are more likely to demonstrate higher levels of digital competence. This highlights the importance of self-regulatory behaviour in enhancing the effective use of digital tools and technologies.

MAJOR FINDINGS OF THE STUDY :

The following major finding of the present investigation:.

- Female with high self-monitoring levels have exhibited **significantly higher digital competence** than Male.

- The study highlights that gender differences existd in digital competence among B.Ed. student-teachers with low self-monitoring levels, with female showing a marginal advantage.

- These findings highlight the need for **targeted interventions** to address gender differences and enhance digital competence, particularly for male, in the context of self-monitoring level.

- These findings underscore the need to address gender disparities in digital competence and to develop strategies to enhance digital literacy among B.Ed. student-teachers, especially for male with low self-monitoring levels.

DISSCUSSION OF THE RESULT:

Discussion Related to Hypothesis 1

Hypothesis 1 stated that there is no significant difference between the digital competence of male and female B.Ed. student-teachers with high self-monitoring level.The findings of the present study reveal that female student-teachers with high self-monitoring possess significantly higher digital competence than their male counterparts. Hence, the null hypothesis is rejected.

This result is consistent with the findings of **Hatlevik** and **Christophersen (2013)**[13]who reported that female learners with stronger self-regulatory and self-monitoring skills demonstrated higher digital competence. Similarly, **Krumsvik (2011)**[14]found that teacher trainees with high self-monitoring, particularly females, showed better proficiency and confidence in using digital tools for educational purposes. These studies suggest that reflective learning behaviour, self-evaluation, and goal-oriented monitoring contribute significantly to the development of digital competence. The present study supports these views and highlights the importance of self-monitoring in enhancing digital competence among female student-teachers.

Discussion Related to Hypothesis 2

Hypothesis 2 proposed that there is no significant difference between the digital competence of male and female B.Ed. student-teachers with low self-monitoring level.The results indicate that male and female student-teachers with low self-monitoring have nearly similar levels of digital competence. Therefore, the null hypothesis is accepted.

This finding is in line with the study conducted by **Ng** (**2012**)[15] who observed that when learners exhibit low self-regulatory and self-monitoring abilities, gender differences in digital competence tend to diminish. Likewise, **Siddiq**, **Gochyyev, and Wilson (2017)**[16]reported that limited metacognitive awareness and low self-monitoring restrict the development of digital skills, resulting in comparable digital competence among male and female learners. The present study confirms that inadequate self-monitoring neutralizes gender-based differences in digital competence.

Discussion Related to Hypothesis 3

Hypothesis 3 stated that there is no significant relationship between self-monitoring and digital competence.

Contrary to this assumption, the findings show that the correlation between self-monitoring and digital competence is statistically significant. Hence, the null hypothesis is rejected.

This result is strongly supported by earlier research. **Zimmerman (2000)**[17]emphasized that self-monitoring is a core component of self-regulated learning and plays a vital role in managing complex learning tasks, including the effective use of digital technologies. Further, Schraw, **Crippen, and Hartley (2006)**[18]found that learners who actively monitor and evaluate their learning processes demonstrate better technological and digital skills. In addition, **Hatlevik et al. (2015)**[19] reported a positive and significant relationship between self-monitoring and digital competence among students, particularly in teacher education contexts. The present study aligns with these findings, establishing self-monitoring as a significant predictor of digital competence among B.Ed. student-teachers.

EDUCATIONAL IMPLICATIONS:

Self-monitoring by B.Ed. students on their digital competency has important pedagogical ramifications because digital competency is a necessary ability for contemporary teachers. In the context of B.Ed. students, self-monitoring aids in the development, evaluation, and enhancement of their usage of digital tools and resources for instruction.

- Students are encouraged to evaluate their own skills with digital tools, software, and platforms through self-monitoring, which helps them find areas for progress.

- Self-monitoring cultivates an attitude of perpetual learning, which is necessary to keep abreast of developments in educational technologies.

- Encourages people to take part in online courses, webinars, or workshops on digital teaching abilities.

- Through self-monitoring, B.Ed. students can evaluate the effectiveness of their digital teaching strategies and improve them.

- Encourages the integration of technology into lesson plans, enhancing student engagement.

SUGGESTIONS FOR FURTHER STUDY

The following suggestions are proposed for future research:

- The present study was conducted on students from 16 education colleges affiliated with CCS University, Meerut. Future investigations may include a larger sample from education institutions across various districts of Uttar Pradesh to enhance the generaliz ability of the findings.

- Only second-year student-teachers were considered for the current study. Future studies may include first-year student-teachers as well to understand digital competence and self-monitoring across different stages of teacher education.

- The scope of the study may be extended to students from other academic disciplines such as medical sciences, engineering, law, arts, and pure sciences to determine whether the relationship varies across professional streams.

- Further research may include in-service teachers to examine whether self-monitoring and digital competence progress or vary with classroom experience and professional training.

- A comparative study between rural and urban students or between different socio-economic backgrounds may be conducted to understand how social factors influence digital competence and self-monitoring.

- Longitudinal studies may be undertaken to track changes in digital competence and self-monitoring over time rather than at a single point.

- Future studies may explore the impact of ICT-based training programmes, digital literacy workshops, or self-regulation interventions on improving digital competence among student-teachers.

CONCLUSION

- Self-monitoring is a powerful and essential skill that plays a significant role in shaping and improving an individual's behaviour. It encourages individuals to take responsibility for their actions by fostering a sense of personal accountability. As an

effective and versatile strategy, self-monitoring has a positive influence on academic performance, behavioural adjustment, and social development.

- For student-teachers in particular, self-monitoring proves to be highly valuable in strengthening their self-management abilities—which are vital for both professional and personal growth. It is a low-maintenance yet highly impactful preventive approach that enables individuals to regulate their behaviour without requiring constant external supervision.

- When student-teachers learn to critically reflect on their actions, they gain a deeper awareness of their behaviour and its suitability in various contexts. This reflective process empowers them to make meaningful adjustments, thereby encouraging independence and responsibility. Through continuous evaluation of their behaviour against predetermined standards, student-teachers gradually align with professional values and societal expectations.

- Moreover, self-monitoring facilitates the development of discipline, concentration, and adaptability—traits that are foundational for success in the teaching profession. By mastering self-monitoring, student-teachers not only enhance their own personal and professional effectiveness but also become positive role models for their future learners. Ultimately, this skill contributes to the cultivation of competent, responsible, and reflective educators who are well-prepared to meet the dynamic demands of modern education.

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