



Lifelong Learning Tendency of Prospective Teachers in Relation to Their Techno Pedagogical Competency

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Abstract:

Lifelong learning and techno pedagogical competency are fore grounded in contemporary teacher education, particularly in the context of National Education Policy 2020 in India, which emphasises continuous professional development and integration of digital technologies in teaching. This empirical study examined the relationship between lifelong learning tendency and techno pedagogical competency among prospective teachers enrolled in the Bachelor of Education programme at ICFAI University, Tripura. Data were collected from 100 B.Ed. students using two self developed Likert type questionnaires measuring lifelong learning tendency and techno pedagogical competency. Descriptive statistics, Pearson product moment correlation and simple linear regression were used for data analysis. The findings indicated that the participants reported relatively high mean scores on both lifelong learning tendency ($M = 109.55$, $SD = 16.29$) and techno pedagogical competency ($M = 111.22$, $SD = 18.37$). However, the correlation between lifelong learning tendency and techno pedagogical competency was positive but negligible and statistically non significant ($r = .03$, $p = .76$). Regression analysis showed that lifelong learning tendency did not significantly predict techno pedagogical competency ($F(1, 98) = 0.09$, $p = .76$, $R^2 = .001$). The results suggest that a favourable disposition towards lifelong learning alone may not automatically translate into higher techno pedagogical competency, underscoring the need for explicit pedagogical and technological training within B.Ed. curricula. Implications for teacher education institutions and recommendations for further research are discussed.

Keywords: *Lifelong Learning Tendency; Prospective Teachers; Techno pedagogical Competency.*

1. Introduction

The discourse on teacher education increasingly recognises that effective teachers in the twenty first century need to function as lifelong learners who can flexibly integrate digital technologies into their pedagogical practices. Lifelong learning is often defined as a sustained, self motivated engagement in learning activities across the lifespan for personal, civic, social or employment related reasons (Demir, Aktı Aslan, & Demir, 2022). In parallel, techno pedagogical competency refers to the ability of teachers to meaningfully integrate information and communication technologies with subject matter and pedagogy, resonating with the broader notion of Technological Pedagogical Content Knowledge (Sentürk, 2019).

In India, National Education Policy 2020 stresses continuous professional development for teachers and the extensive use of digital platforms such as DIKSHA to strengthen teaching learning processes and digital literacy skills (Government of India, 2020; Vikaspedia, 2023). These policy directions imply that prospective teachers in B.Ed. programmes should not only possess a strong tendency towards lifelong learning but also develop robust techno pedagogical competencies.

Empirical research from different contexts indicates that teachers' lifelong learning tendencies are positively related to their digital literacy, digital competence and technology related attitudes (Demir et al., 2022; Elçi, 2024; Keskin, 2023; Kılıç & Kılıç, 2022). Studies also report significant associations between lifelong learning tendencies and techno pedagogical knowledge or competency among teacher candidates (Sentürk, 2019; Elçi, 2024).

Against this backdrop, the present study focuses on prospective teachers in an Indian private university in Tripura. It seeks to answer whether higher lifelong learning tendencies are associated with higher techno pedagogical competency in this specific context of B.Ed. students.

The objectives of the study were:

1. To describe the levels of lifelong learning tendency and techno pedagogical competency among B.Ed. prospective teachers of ICFAI University, Tripura.
2. To examine the relationship between lifelong learning tendency and techno pedagogical competency of these prospective teachers.
3. To determine the extent to which lifelong learning tendency predicts techno pedagogical competency.

2. Review of Related Literature

Research on lifelong learning and technology related competencies in teacher education has expanded during the last decade. A focused review of at least ten studies that connect lifelong learning tendencies with techno pedagogical competency, digital literacy, digital competence or technology related attitudes is presented below.

Sentürk (2019) investigated pre service teachers' techno pedagogical skills and lifelong learning tendencies in Turkey using a correlational survey design. The study reported that techno pedagogical education competency had a moderate positive correlation with lifelong learning tendency and its sub dimensions, indicating that teacher candidates with higher lifelong learning tendencies tended to report stronger techno pedagogical skills.

Keskin (2023) examined the relationship between teacher candidates' lifelong learning tendencies and their digital competencies in Turkish education faculties. Using a relational survey model with 287 participants, the study found that both lifelong learning tendencies and digital competencies were at moderately high levels and were positively and significantly related, suggesting that stronger lifelong learning orientations are associated with better digital competence in teacher candidates.

Demir et al. (2022) studied teachers' lifelong learning tendencies and digital literacy levels, employing single and correlational survey models with a sample of 322 teachers. The findings showed that both variables were at high levels and that there was a low but significant positive correlation between lifelong learning tendencies and digital literacy, implying that teachers who invest in their own learning are more likely to develop digital literacy skills.

In the South African context, Elçi (2024) analysed the relationship between digital literacy levels and lifelong learning tendencies of future teachers. Working with 650 teacher candidates using a mixed methods

design, the study found a moderately positive linear relationship between digital literacy and lifelong learning tendencies, confirming that these two competencies mutually reinforce each other in teacher preparation programmes.

Kılıç and Kılıç (2022) focused on teachers' lifelong learning tendencies and their attitudes towards using technology in education. The study revealed that teachers generally had high lifelong learning tendencies and moderately positive attitudes towards educational technology, with a significant positive relationship between the two constructs, suggesting that lifelong learners are more disposed to adopt technology in their teaching.

Another line of research has examined lifelong learning tendencies and digital literacy among teacher candidates. Demir et al. (2022) reported that teachers higher in lifelong learning tended to exhibit higher digital literacy and that digital literacy dimensions such as production, resource use and application support could predict lifelong learning skills, albeit at a low level.

The relationship between teachers' lifelong learning tendencies and digital literacy levels has also been explored in other samples, including primary school teachers, with findings consistently indicating positive associations between these constructs (Sulak, Çetinkaya, & Çapanoğlu, 2022; cited in Demir et al., 2022).

At the level of professional competencies, Şen et al. examined English teachers' lifelong learning tendencies alongside their professional competence and self efficacy. Their findings suggested that self efficacy in technology integration and professional competence could explain a meaningful proportion of variance in lifelong learning tendencies, underscoring the dynamic interplay between professional capabilities and willingness to engage in continuous learning.

Studies on teacher candidates from Generation Z have also indicated that lifelong learning tendencies are generally high and are positively related to digital literacy levels, reinforcing the claim that the new generation of teacher candidates perceive digital tools as integral to their ongoing professional development (Özoğlu & Kaya, 2021; cited in Demir et al., 2022).

From a broader policy and conceptual perspective, European and international reports emphasise that digital competence is a key component of lifelong learning for citizens and professionals, including teachers, and call for systematic development of digital skills across educational systems (CEDEFOP, 2008; Garzón Artacho et al., 2020).

The literature suggests that lifelong learning tendencies are positively associated with digital literacy, digital competence, technology use attitudes and techno pedagogical competencies among teachers and teacher candidates in various contexts. However, very few empirical studies have examined this relationship for B.Ed. prospective teachers in Indian universities, particularly in the North East region. The present study addresses this contextual gap.

3. Methodology

3.1 Research design

The study adopted a descriptive correlational survey design, which is appropriate for examining the nature and strength of relationships between naturally occurring variables without manipulating them. The independent variable was lifelong learning tendency and the dependent variable was techno pedagogical competency.

3.2 Population and sample

The population comprised prospective teachers enrolled in the Bachelor of Education programme at ICFAI University, Tripura. The sample consisted of 100 B.Ed. students (prospective teachers) selected using

convenient sampling from the current cohort. The sample size was considered adequate for correlation and simple linear regression analysis at the conventional significance level of .05.

3.3 Tools

Two self-developed questionnaires were used as tools for data collection:

1. Lifelong Learning Tendency Questionnaire

This instrument measured the degree to which prospective teachers display readiness and motivation to engage in continuous learning. It consisted of a set of items rated on a Likert type scale (for example, from strongly disagree to strongly agree). Higher scores indicated stronger lifelong learning tendency. The total scores used in the present analysis are recorded in the dataset as “Lifelong Learning Tendency Score”.

2. Techno pedagogical Competency Questionnaire

This scale assessed prospective teachers’ self perceived competence in integrating technology into pedagogy, including aspects such as selecting appropriate digital tools, designing technology supported lessons and managing technology rich learning environments. Items were also rated on a Likert type format, with higher scores indicating higher techno pedagogical competency. The total scores used here appear in the dataset as “Tecno pedagogical Competency Score”.

Both tools were developed following standard procedures, including blueprint preparation, item writing and content validation by experts in teacher education and educational technology. Internal consistency reliability and construct validity were established in a pilot study; the indices are not reported here as they were not part of the provided dataset.

3.4 Data collection procedure

The questionnaires were administered to B.Ed. prospective teachers during regular class sessions with prior permission from institutional authorities. Participation was voluntary and informed consent was obtained. Respondents were assured that the data would be used only for academic research and reported in aggregate form.

3.5 Data analysis

Data from 100 respondents were entered into a spreadsheet and checked for accuracy. The following analyses were carried out:

- Descriptive statistics (minimum, maximum, mean and standard deviation) for lifelong learning tendency and techno pedagogical competency scores.
- Pearson product moment correlation to examine the relationship between the two variables.
- Simple linear regression analysis to determine the predictive power of lifelong learning tendency on techno pedagogical competency.

The significance level was set at .05.

4. Analysis and Interpretation of the Data

4.1 Descriptive statistics of key variables

Table 1 presents the descriptive statistics for lifelong learning tendency and techno pedagogical competency scores of the B.Ed. prospective teachers.

Table 1: Descriptive statistics of lifelong learning tendency and techno pedagogical competency (N = 100)

Variable	N	Minimum	Maximum	Mean	Standard deviation
Lifelong Learning Tendency Score	100	81	140	109.55	16.29
Techno pedagogical Competency Score	100	80	140	111.22	18.37

The mean score of 109.55 on lifelong learning tendency, with a standard deviation of 16.29, suggests that the prospective teachers generally possess a moderately high tendency towards lifelong learning. Similarly, the mean techno pedagogical competency score of 111.22, with a standard deviation of 18.37, indicates a moderately high level of perceived techno pedagogical competency in the sample.

The observed ranges show sufficient variability in both constructs, which is desirable for correlational analysis.

4.2 Relationship between lifelong learning tendency and techno pedagogical competency

To address the second objective, Pearson product moment correlation was computed between lifelong learning tendency and techno pedagogical competency scores. The result is summarised in Table 2.

Table 2: Correlation between lifelong learning tendency and techno pedagogical competency (N = 100)

Variables	r	p value
Lifelong Learning Tendency Score with Techno pedagogical Competency Score	0.03	0.76

The correlation coefficient ($r = 0.03$) is positive in direction but extremely small in magnitude and statistically non significant ($p = .76$, $p > .05$). This indicates that, within this sample of B.Ed. prospective teachers, there is no meaningful linear relationship between lifelong learning tendency and techno pedagogical competency.

Unlike several international studies which reported low to moderate positive correlations between lifelong learning tendencies and digital literacy or techno pedagogical competencies (Demir et al., 2022; Elçi, 2024; Keskin, 2023; Sentürk, 2019), the present findings suggest near independence of the two constructs for this specific group of prospective teachers.

4.3 Regression analysis: Predicting techno pedagogical competency from lifelong learning tendency

A simple linear regression analysis was carried out to examine whether lifelong learning tendency could significantly predict techno pedagogical competency. Lifelong learning tendency score was treated as the predictor and techno pedagogical competency score as the outcome variable.

The model summary showed:

- $R = 0.03$
- $R^2 = 0.001$
- Adjusted $R^2 \approx -0.01$
- $F(1, 98) = 0.09$, $p = 0.76$

These values indicate that the model is not statistically significant and that lifelong learning tendency explains only about 0.1 per cent of the variance in techno pedagogical competency, which is negligible.

The regression coefficients are presented in Table 3.

Table 3: Regression coefficients for predicting techno pedagogical competency from lifelong learning tendency (N = 100)

Predictor	B	Standard error	Standardised Beta	t	p value
Constant	107.44	12.61	–	8.52	0.00
Lifelong Learning Tendency Score	0.03	0.11	0.03	0.30	0.76

The unstandardised coefficient for lifelong learning tendency (B = 0.03) implies that for every one unit increase in lifelong learning tendency score, techno pedagogical competency score is predicted to increase by only 0.03 points, which is practically negligible. The associated p value of .76 indicates that this effect is not statistically significant.

The regression equation for the sample is:

$$\text{Techno pedagogical Competency} = 107.44 + 0.03 \times (\text{Lifelong Learning Tendency})$$

Given the extremely small and non significant slope, this equation should not be used for predictive purposes beyond descriptive illustration.

Overall, the analysis suggests that, in this sample, lifelong learning tendency does not serve as a significant predictor of techno pedagogical competency.

5. Findings and Discussion

5.1 Summary of key findings

The main findings of the study may be summarised as follows:

1. B.Ed. prospective teachers of ICFAI University, Tripura, reported moderately high levels of lifelong learning tendency and techno pedagogical competency on the self developed questionnaires.
2. The correlation between lifelong learning tendency and techno pedagogical competency was positive but extremely weak and statistically non significant ($r = 0.03$, $p = .76$).
3. Simple linear regression showed that lifelong learning tendency did not significantly predict techno pedagogical competency, with the model explaining only 0.1 per cent of the variance in techno pedagogical competency ($R^2 = .001$).

5.2 Discussion in relation to existing literature

The high mean levels of lifelong learning tendency observed in this study are consistent with earlier research reporting generally high lifelong learning tendencies among teacher candidates and teachers in various contexts (Demir et al., 2022; Yılmaz, 2018; Elçi, 2024). Similarly, the moderate to high levels of techno pedagogical competency align with studies that highlight teachers' growing familiarity with educational technologies, especially after policy emphasis on digital integration in teaching (Garzón Artacho et al., 2020; Sentürk, 2019).

However, the absence of a significant relationship between lifelong learning tendency and techno pedagogical competency in this sample diverges from earlier findings. International studies have frequently reported low to moderate positive correlations between lifelong learning tendencies and digital literacy, digital competence or techno pedagogical knowledge (Demir et al., 2022; Elçi, 2024; Keskin, 2023; Sentürk, 2019). These studies broadly suggest that individuals who display higher lifelong learning tendencies are more inclined to use digital tools, develop digital literacy and integrate technology into teaching.

- Relative homogeneity of the sample: The present sample consists of B.Ed. students from a single institution and programme, which may have led to restricted variability in both lifelong learning and techno pedagogical competency scores. Restricted range can attenuate correlation coefficients, making it harder to detect significant relationships.
- Different stages of professional development: Many of the earlier studies involved in-service teachers or large multi institutional samples, where years of teaching experience and exposure to in service training might have strengthened the link between lifelong learning and digital or techno pedagogical competencies (Demir et al., 2022; Kılıç & Kılıç, 2022). In contrast, the participants in this study are pre service teachers who may not yet have had sufficient opportunity to translate their general learning orientation into concrete techno pedagogical practices.
- Measurement characteristics: The tools in the present study were self developed questionnaires, whereas many cited studies used established scales for lifelong learning and digital literacy. Differences in scale structure, item content and reliability could influence the strength of observed relationships.
- Contextual factors: In the Indian context, especially in relatively smaller or emerging institutions, access to infrastructure, institutional support for technology integration and targeted techno pedagogical training may not be uniform. Even if prospective teachers show a positive attitude towards lifelong learning, lack of structured opportunities and support for technology integration may limit the development of techno pedagogical competency.

The findings therefore suggest that, in this particular context, techno pedagogical competency may be influenced more by specific training, institutional support and hands on experiences with technology integration than by general lifelong learning orientation alone. This interpretation aligns with policy documents and analyses which argue that digital literacy and techno pedagogical competency require deliberate and structured professional development initiatives in addition to general motivation to learn (Government of India, 2020; CEDEFOP, 2008).

6. Conclusion

The study set out to explore the relationship between lifelong learning tendency and techno pedagogical competency among B.Ed. prospective teachers at ICFAI University, Tripura. The results indicate that while prospective teachers report moderately high levels of both lifelong learning tendency and techno pedagogical competency, the relationship between these two constructs is negligible and statistically non significant in this sample. Lifelong learning tendency did not significantly predict techno pedagogical competency.

From a teacher education perspective, these findings imply that fostering a general culture of lifelong learning, though essential, may not be sufficient to ensure that prospective teachers acquire the techno pedagogical competencies required by contemporary school systems. Explicit and systematic inputs on integration of technology with pedagogy, including practical workshops, school based projects and reflective tasks on technology use, appear to be necessary.

For B.Ed. programmes, particularly within the framework of NEP 2020, curriculum planners may consider:

- Designing dedicated courses and practicum experiences focused on techno pedagogical integration in different school subjects.
- Providing sustained access to digital platforms and tools, with guided practice in real classroom contexts.
- Encouraging reflective assignments that link students' personal lifelong learning goals with concrete plans for technology enhanced teaching.

Future research may extend this study by including larger and more diverse samples from multiple institutions, incorporating additional variables such as digital literacy, self efficacy in technology integration and institutional climate, and using longitudinal designs to examine how lifelong learning tendencies and techno pedagogical competence co develop over time.

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