Lecturers' Pedagogical Strategies and Pre-service Teachers' Teaching Self-Efficacy at Kyambogo University

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Abstract

This research analysed how lecturers' pedagogical strategies influence pre-service teachers' teaching self-efficacy at Kyambogo University under the new lower secondary curriculum. The pedagogical strategies used by lecturers, examined in relation to teaching efficacy, were student-centred, namely support, collaboration, self-regulation, personalisation, and authentic teaching. Anchored in the positivist paradigm, a correlational research design was adopted, with a sample of 368 final-year pre-service teachers who had completed their initial school practice. Data was collected through a structured questionnaire. Partial Least Squares Structural Equation Modelling (PLS-SEM) in SmartPLS was used to analyse the data. The analysis indicated that collaborative and self-regulated teaching strategies had a positive and significant influence on the criterion variable, whereas authentic teaching had a positive but insignificant influence. However, support teaching and personalised learning had a negative negligible influence. The conclusion was that collaborative and self-regulated learning, which positions learners as active agents through peer interaction, autonomous goal-setting, and reflective engagement, plays a particularly vital role in helping pre-service teachers internalise confidence in their teaching abilities. However, superficial and inconsistent use of supportive, personalised, and authentic learning strategies hinders their teaching efficacy.

The study recommends that lecturers should actively employ collaborative and self-regulated teaching strategies. The study also recommends re-evaluating the use of supportive teaching and personalised learning in relation to pre-service teachers' self-efficacy.

Keywords: *Authentic; Collaborative; Pedagogical strategies; Self-efficacy; Self-regulated; Supportive.*

Introduction

Teacher self-efficacy is the conviction that the instructional strategies a teacher uses enable learners to attain high grades (Johnson, 2023). Teacher self-efficacy is about teachers' conviction in their capabilities to handle specific teaching tasks at the anticipated level of quality within a given context (Yang & Du, 2024). Thus, it is the confidence teachers have in their ability to effectively promote student enthusiasm and learning outcomes (Shu, 2022). Self-efficacy may strongly influence teachers' behaviours, with teachers being more willing to engage in activities they anticipate succeeding in. This suggests that teachers put in more effort and spend more time on their work when they are confident that their tasks can be successfully completed. Teachers with strong self-efficacy are more likely to get involved, exert greater effort, remain persistent, and show higher enthusiasm for teaching, learning, and leadership activities compared to those who are unsure of their capabilities. Teachers with high self-efficacy are more likely to perform a given task, whereas low self-efficacy may be a significant factor in teachers' lower engagement in their work (Malmström & Öqvist, 2025).

Teacher self-efficacy is characterised by the ability to persevere through challenges and maintain effective teaching and learning (Porta & Todd, 2024). Teachers with high self-efficacy address instructional dilemmas and employ innovative strategies to help students master complex content (Chan et al., 2024). Such efficacy allows teachers to adapt to changes like the new lower secondary curriculum, acquire essential skills, and adopt new practices. Confident teachers take responsibility for student learning and actively experiment with improved teaching strategies, making self-efficacy closely linked to the use of instructional

methods that improve learning quality (Tiguryera et al., 2024). Its importance lies in enhancing teachers' capacity to deliver high-quality lessons, overcome instructional barriers, create supportive learning environments, and promote student engagement and intrinsic motivation (Rwothumio et al., 2023).

Self-efficacy is linked to a broad range of instructional, behavioural, and well-being outcomes, affecting students' motivation, commitment, success, and ability, as well as teachers' job satisfaction, engagement, effectiveness, and pedagogical practices (Mok & Moore, 2019). Teachers with higher self-efficacy tend to employ effective instructional strategies, foster stimulating learning environments, and encourage learner participation and motivation (Rwothumio et al., 2023). Larsen and James (2022) further highlight that high teacher self-efficacy is crucial for educational institutions, as it maintains teachers' motivation and supports sound decision-making that enhances performance and student achievement. Teachers' willingness to embrace new instructional practices or reforms is also influenced by their self-efficacy beliefs (Seneviratne et al., 2019), underscoring its significance during curriculum reform. However, these studies provide limited insights into how pedagogical strategies impact teaching self-efficacy in low-resource teacher education contexts such as Uganda, where reforms have altered expectations for lecturers and pre-service teachers. Emerging Ugandan evidence indicates that lecturers often struggle to adapt pedagogy to diverse learners and competence-based expectations (Kaweesi et al., 2023).

While Seneviratne et al. (2019) argue that teacher efficacy is crucial for implementing new instructional practices and reforms, the preparedness of pre-service teachers trained in Ugandan universities to apply the pedagogical strategies of the new lower secondary curriculum remains uncertain. When the curriculum was introduced in 2020, the Ministry of Education and Sports (MoES) and the National Curriculum Development Centre (NCDC) organised training workshops for in-service teachers and school administrators to strengthen their competence-based implementation capacity (Ampereza et al., 2023), including the effective use of teaching resources (Tumuheise et al., 2023). However, university lecturers, who play a central role in developing future

teachers, received little or no comparable support, raising concerns about pre-service teachers' readiness. Against this background, the present study examined how lecturers' teaching approaches influence pre-service teachers' teaching self-efficacy within the new lower secondary school curriculum framework. Conducted among Kyambogo University pre-service teachers after their initial school practice and grounded in Constructivist Learning Theory, which emphasises student-centred strategies in competence-based curricula (An & Mindrila, 2020), the study analysed the effects of supportive, personalised, authentic, collaborative, and self-regulated learning on teaching self-efficacy and tested the following hypotheses:

H1: Supportive teaching has a significant influence on teaching self-efficacy of pre-service teachers using the new lower secondary curriculum.

H2: Personalised learning experiences have a significant influence on teaching self-efficacy of pre-service teachers using the new lower secondary curriculum.

H3: Authentic learning experiences have a significant influence on teaching self-efficacy of pre-service teachers using the new lower secondary curriculum.

H4: Collaborative learning significantly influences the teaching self-efficacy of pre-service teachers using the new lower secondary curriculum.

H5: Self-regulated learning significantly influences the teaching self-efficacy of pre-service teachers using the new lower secondary curriculum.

Literature Review

Theoretical review

This research draws on Bandura's Self-Efficacy Theory and Constructivist Learning Theory to examine the impact of lecturers' pedagogical strategies on pre-service teachers' teaching self-efficacy. Bandura (1977) defined teacher self-efficacy as the belief in one's ability to perform

specific teaching tasks successfully, reflecting confidence in delivering effective instruction. It involves self-evaluation of abilities, which affects whether teachers choose to engage in or avoid specific tasks (Barni et al., 2019). These self-efficacy beliefs are shaped by four main mechanisms: mastery experiences from completing tasks; vicarious experiences from observing skilled models; verbal persuasion through encouragement and constructive feedback; and emotional or physiological states, such as confidence or anxiety, influenced by the learning environment (Bandura, 1997). In teacher training, these mechanisms are engaged when pre-service teachers practise teaching, observe lecturers demonstrating effective techniques, receive feedback, and learn in supportive classroom settings.

The Constructivist Learning Theory, based on Piaget's (1936) constructivist learning and Vygotsky's (1978) social constructivism, complements Bandura's Self-Efficacy Theory by emphasising that learners develop knowledge through self-constructing and reconciling prior understanding with new experiences (Chand, 2022). In this approach, teachers function as facilitators who design activities that foster deep understanding, curiosity, and creative thinking (Mugizi & Nagasha, 2023). Constructivist pedagogies are characterised by student-centred experiences, supportive, personalised, authentic, collaborative, and self-directed learning (An & Mindrila, 2020). However, evidence from Ugandan universities shows that although faculty recognise the value of constructivist and culturally responsive teaching, their implementation of these approaches is inconsistent (Kaweesi et al., 2023), limiting pre-service teachers' exposure to constructivist practices. Since student-centred strategies also activate psychological processes that enhance self-efficacy, it is expected that lecturers' utilisation of such approaches influences pre-service teachers' teaching self-efficacy within Uganda's competence-based curriculum reforms. Together, Constructivist Learning Theory and Self-Efficacy Theory form the foundation for the study's hypotheses, guiding the investigation of how constructivist teaching methods impact trainee teachers' teaching self-efficacy in a competence-based curriculum context.

Review of related literature

Lecturers' use of student-centred pedagogical strategies is seen as suitable for competence-based curricula because such approaches encourage adaptable and synergistic learning (Byrne et al., 2013). These curricula emphasise supportive, personalised, authentic, collaborative, and self-regulated teaching methods (An & Mindrila, 2020). Supportive instruction, which attends to learners' emotional needs through clear expectations, guidance, praise, encouragement, and positive feedback, has been shown to improve academic and psychological outcomes (Haakma et al., 2017; An & Mindrila, 2020). Evidence from China indicates that encouragement, constructive feedback, and autonomy support boost students' academic emotions, motivation, and self-efficacy (Duan et al., 2024; Liu et al., 2021; Ren et al., 2022), while Huang and Wang (2023) report similar benefits in online university environments. However, since these studies are mostly based in East Asian contexts and mainly focus on secondary school learners, their relevance to African higher education, and particularly to Ugandan pre-service teachers, is uncertain. Therefore, whether supportive teaching by university lecturers can significantly improve teaching self-efficacy within Uganda's competence-based curriculum reforms remains unclear.

Personalised learning is an approach that emphasises tailoring educational experiences to the unique needs, preferences, and developmental paths of individual learners (Li & Wong, 2023; Shemshack, 2020). Evidence from Western contexts, such as Hall and Trespalacios (2019), Makhambetova et al. (2021), Mötteli et al. (2023), and Shemshack (2020), consistently shows a strong positive link between personalised learning and learners' self-efficacy. However, these studies are mainly based in high-resource settings, with hardly any empirical work from the Global South, including Uganda. This lack of local evidence creates uncertainty about whether personalised learning can similarly boost teaching self-efficacy among Ugandan pre-service teachers. Additionally, available Ugandan research indicates that lecturers' ability to personalise learning or effectively respond to learner diversity is often limited by a lack of multicultural pedagogical training (Kaweesi et al., 2023), which further complicates assumptions about its potential effectiveness. These contextual gaps highlight the importance of the present study in Uganda.

Authentic learning allows learners to explore, discuss, and relate concepts to real-world problems (Aynas & Aslan, 2021). It involves them in tasks that resemble professional or field-based situations (Nachtigall & Wirth, 2024). Through activities such as field trips, guest speakers, problem-solving, and community projects, teachers blend classroom learning with real-life contexts, enabling students to connect knowledge and skills to actual situations (Aynas & Aslan, 2021). Research consistently demonstrates a strong causal link between authentic learning and learner self-efficacy (Aynas & Aslan, 2021; Banas, 2014; Nur & Butarbutar, 2022; Uzunboylu et al., 2020; Yildiz, 2023; Yonai et al., 2024). However, none of these studies examined pre-service teachers or the competence-based curriculum, raising questions about whether authentic learning by university lecturers can improve teaching self-efficacy among Ugandan pre-service teachers within the revised competence-based curriculum, an issue that motivated this study.

Collaborative learning involves students working together in small teams (Van Leeuwen & Janssen, 2019), emphasising shared responsibility, joint decision-making, and collective effort (Herrera-Pavo, 2021). Through organised teamwork, clear role allocation, team-building activities, and regular group interactions, the approach aims to develop self-directed learners (Mugizi et al., 2021), thereby enhancing self-efficacy. Evidence of its effectiveness, however, is mixed. Studies from Nigeria and Indonesia reported significant gains in learner self-efficacy (Adene & Umeano, 2020; Nur & Butarbutar, 2022), suggesting benefits in collectivist or resource-limited contexts, whereas research from Hong Kong found only modest effects (Law et al., 2017), likely due to differing instructional cultures. These contextual variations highlight the need to examine collaborative learning within Ugandan teacher-training institutions, which motivated the present study.

Self-regulated learning enables students to set their own learning goals and actively monitor and manage their thoughts, emotions, motivation, actions, and learning environments to achieve those goals (Yu, 2023). By taking an active role in the learning process, students transform cognitive abilities into practical academic skills and gain greater control over their understanding and performance (An et al., 2021). Research consistently shows that self-regulated learning strengthens learners'

self-efficacy, with studies by An et al. (2021), Blackmore et al. (2021), Chen (2022), ElAdl and Polpol (2020), and Fernandez-Rio et al. (2017) demonstrating its positive influence on self-efficacy in teaching. However, gaps remain: Chen (2022) conducted a meta-analysis and Blackmore et al. (2021) a review, highlighting the need for primary research in specific contexts, and prior studies broadly examined academic rather than teaching efficacy – gaps that justified the present study.

Methodology

Research approach and design

The research utilised a quantitative method, relying on a survey questionnaire. This approach facilitated the collection of data, which was subsequently analysed using statistical methods, enabling the generalisation of findings. A cross-sectional design was used, allowing the collection of data from a selected portion of the population at a single point in time, providing a snapshot of the phenomenon under investigation. This design facilitated the acquisition of relevant data in a relatively brief period. The research adhered to rigorous ethical guidelines, prioritising participant autonomy through informed consent, safeguarding confidentiality and anonymity, and protecting students' personal information.

Study participants

The study targeted 3,600 third-year Bachelor of Education students at Kyambogo University. Using Krejcie and Morgan's (1970) sample size table, 368 participants were selected through simple random sampling based on an Excel-generated sampling frame. This technique ensured every student had an equal chance of selection, minimising bias and enhancing the reliability and generalisability of the findings (Ahmed, 2024). A 100% response rate was achieved by administering questionnaires during lectures, with support from lecturers and class coordinators, who distributed, collected, and followed up with absent students. This controlled administration process effectively prevented non-response.

Instrument

A self-administered questionnaire (SAQ) with three sections was used to collect data. Part A captured demographic information, Part B measured teaching self-efficacy using indicators adapted from Seneviratne et al. (2019), and Part C assessed pedagogical strategies, including supportive, personalised, authentic, collaborative, and self-regulated learning, based on An and Mindrila (2020), Fernandez-Rio et al. (2022), and Turan et al. (2009). Responses were based on a five-point Likert scale. Instrument validity was established through confirmatory factor analysis, with AVE indicating convergent validity and HTMT confirming discriminant validity, while items with loadings below 0.40 were removed. Reliability was further supported by Cronbach's alpha and composite reliability values of 0.70 and above (Hair Jr et al., 2021). These procedures confirmed that the instrument produced valid and reliable data.

Data management

The data was processed before it was analysed. Data processing involved coding the responses and entering them into SPSS. The dataset was then summarised using frequency tables and screened to identify missing values and detect any outliers. No questionnaire had more than 5% missing data; therefore, all data was retained (Hair Jr. et al., 2021). Little's MCAR Test indicated that the data was Missing Completely at Random (MCAR). Consequently, the missing values were replaced using series mean imputation, which assumes that the variable's mean provides an acceptable estimate for cases with missing values (Austin et al., 2021). For data analysis, PLS-SEM was conducted using SmartPLS 4, focusing on measurement model specification, structural model development, and path coefficient estimation. PLS-SEM was employed because it can successfully handle complex models, including those with many constructs and indicators, reflective measurement models, higher-order constructs, and non-linear relationships (Magno et al., 2024). The measurement models evaluated the psychometric properties of the variables. In contrast, the structural models tested the hypothesised relationships between variables, with path coefficients indicating the magnitude and significance of these relationships. By applying PLS-SEM, the study explored the causal relationships between pedagogical

strategies and teaching self-efficacy, offering a detailed perspective on how these elements interact.

Results

Demographic characteristics of students

The demographic analysis of pre-service teachers, summarised in Table 1, explored the variables of gender, age, and academic discipline, revealing the participant group's diversity. This contextual information was the basis for categorising the study participants.

Table 1: *Participants' demographic profiles*

Variable	Category	Frequency	Per cent
Sex	Male	148	40.2
	Female	220	59.8
	Total	**368**	**100.0**
Age groups	Below 20 years	12	3.3
	20–25 years	332	90.2
	Above 25 years	24	6.5
	Total	**368**	**100.0**
Discipline	Arts subjects	268	72.8
	Sciences	44	12.0
	Vocational	56	15.2
	Total	**368**	**100.0**

Table 1 shows that females constituted the majority at 59.8%, while the males made up 40.2%. Despite the larger proportion of females, the 19.6% difference between genders indicates that the male perspective was still adequately represented in the study. In terms of age, 90.2% were in the 20–25 age bracket, which aligns with the typical age range of university students. The smaller percentage, 6.5%, was above 25 years, and 3.3% was below 20 years, indicating that the study effectively targeted its intended demographic. The results on academic disciplines indicated that 72.8% of participants were enrolled in arts programmes, 15.2% in vocational studies, and 12.0% in science-related fields. The higher proportion of

arts students reflects the university's enrolment patterns, where arts programmes attract more students pursuing bachelor's degrees. Hence, the sample was representative of the broader student population, capturing insights across different fields of study for students pursuing a Bachelor's of Education degree.

Measurement models

A rigorous evaluation protocol was implemented to validate the dataset's suitability for structural equation modelling, wherein measurement models (Tables 2 and 3) were constructed and subjected to diagnostic tests, encompassing assessments of convergent validity via Average Variance Extracted (AVE), discriminant validity via heterotrait-monotrait (HTMT) ratios, and reliability evaluations utilising Cronbach's alpha (α) and composite reliability (CR). Furthermore, a Variance Inflation Factor (VIF) analysis was conducted to detect and rectify potential multicollinearity issues, thereby ensuring the dataset's conformity to the requisite assumptions of structural equation modelling.

Table 2: *AVE and heterotrait-monotrait (HTMT) ratio correlations variables*

Measures	Means	AVE	TE	CM	IS	SE		
TE	4.19							
CM	4.15	0.543	0.457					
IS	4.16	0.575	0.656	0.611				
SE	4.26	0.544	0.819	0.841	0.868			
Measures	Means	AVE	LPS	ALE	CL	PLE	SRL	ST
LPS	3.91							
ALE	3.59	0.540	0.648					
CL	4.39	0.503	0.869	0.789				
PLE	3.99	0.633	0.628	0.406	0.787			
SRL	3.92	0.511	0.677	0.644	0.865	0.611		
ST	3.65	0.537	0.600	0.361	0.828	0.703	0.581	

ALE = Authentic Learning Experiences, CL = Collaborative Learning, CM = Classroom Management, IS = Instructional Strategies, LPS = Lecturers Pedagogical Strategies, PLE = Personalised Learning Experiences, SE=

Student Engagement, TE = Teaching Self-Efficacy, SRL = Self-regulated Learning, T = Supportive Teaching

According to Table 2, pre-service teachers reported high teaching self-efficacy (mean = 4.19), with a mean score of approximately 4, which corresponds to "agree". This suggests that pre-service teachers generally felt confident in their teaching abilities. The mean scores for the various aspects of teaching self-efficacy were also high: classroom management (mean = 4.15), instructional strategies (mean = 4.16), and student engagement (mean = 4.26). Also, lecturers' pedagogical approaches (mean = 3.91) were rated positively because the mean was high. Of the pedagogical strategies assessed, collaborative learning received the highest mean score (mean = 4.39), followed by personalised learning experiences (3.99), self-regulated learning (3.92), supportive teaching (3.65), and authentic learning experiences (3.59). The constructs demonstrated convergent validity, with AVE values above 0.5, indicating that the indicators effectively captured their respective constructs. Further, discriminant validity was confirmed through HTMT ratios, which were all below 0.90 (Hair Jr. et al., 2021), affirming the distinctness of the constructs and the specificity of the indicators. These results supported the use of the data for structural modelling.

Table 3: *Reliabilities and Value Inflation Factor for study constructs*

Measures	α	CR	VIF
Classroom Management	0.719	0.825	1.339
Instructional Strategies	0.638	0.802	1.280
Student Engagement	0.721	0.826	1.482
Authentic	0.575	0.778	1.514
Collaborative	0.889	0.910	1.598
Personal	0.693	0.835	1.516
Self-regulated	0.840	0.880	1.852
Supportive	0.710	0.822	1.484

As shown in Table 3, the reliability results were robust, with Cronbach's alpha (α) values for most constructs exceeding the standard 0.70 cut-off, suggesting high reliability. Only three measures, namely

instructional strategies (α = 0.638), authentic learning experiences (α = 0.575), and personalised learning experiences (α = 0.693), had lower values. Moreover, the composite reliability (CR) values for all constructs surpassed the 0.70 benchmark, confirming their reliability. This dual approach to reliability testing was necessary because Cronbach's alpha can sometimes underestimate reliability by assuming uniform traits across populations. Composite reliability is a more flexible metric that accounts for outer loadings, ensuring indicator reliability. Furthermore, Variance Inflation Factor (VIF) scores, all below 5, confirmed the absence of significant multicollinearity issues between constructs (Hair Jr. et al., 2021). The high reliability values and low multicollinearity levels suggested that the various measures were appropriate, and dependable results were obtained.

Teaching self-efficacy of pre-service teachers structural model

To assess the indicators of the three dimensions of teaching self-efficacy of pre-service teachers, which are instructional strategies, classroom management, and student engagement, a structural model was constructed. The indicators for these measures are illustrated in Figure 1.

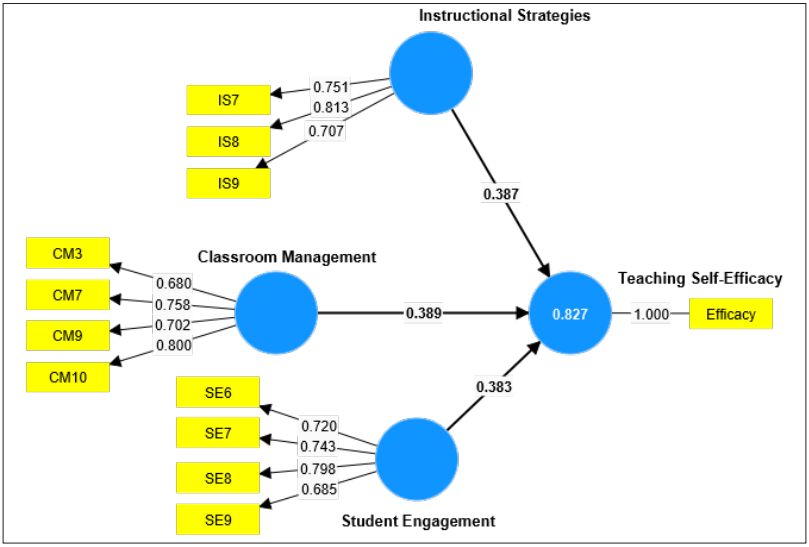

Figure 1: Pre-service teachers' teaching self-efficacy structural model

The structure model (Figure 1) shows that the three constructs of teaching self-efficacy, namely instructional strategies, classroom management, and student engagement, were retained, confirming their accuracy as appropriate measures of the variable. Nevertheless, the model revealed that, among instructional strategies, only three of 10 indicators (IS7-IS9) were retained, with seven indicators discarded. Similarly, for classroom management, four indicators (CM3, CM7, CM9, and CM10) were retained from a total of 10, while six were dropped. For student engagement, four out of nine indicators (SE6-SE9) were retained, with five dropped. Following Hair Jr. et al.'s (2021) guideline, indicators with loadings ≥ 0.40 were retained as valid measures of teaching self-efficacy, while those with lower loadings were removed from the model.

Structural equation model for teacher support and teaching self-efficacy of pre-service teachers

A structural equation model was constructed to investigate the relationship between lecturers' pedagogical strategies and pre-service teachers' teaching self-efficacy. The strategies considered included collaborative learning, personalised learning experiences, self-regulated learning, supportive teaching, and authentic learning experiences (see Appendix A). Based on the five pedagogical strategies, five hypotheses were tested. These hypotheses posited that collaborative learning (H1), personalised learning experiences (H2), self-regulated learning (H3), supportive teaching (H4), and authentic learning experiences (H5) significantly influence pre-service teachers' teaching self-efficacy. The results of the structural model are presented in Figure 2, with path estimates shown in Table 4.

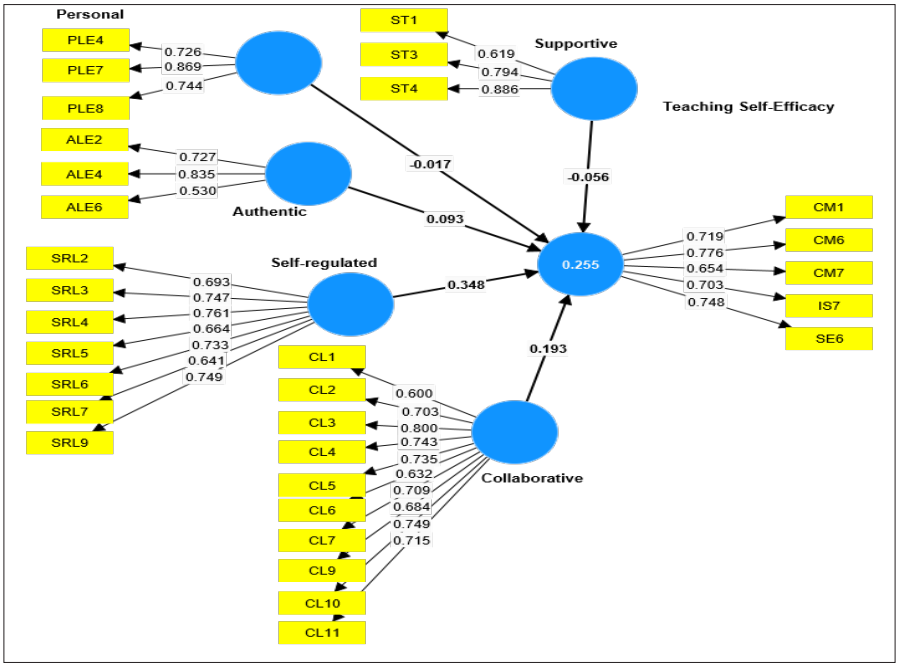

Figure 2: Structural model for pedagogical strategies and teaching self-efficacy

Figure 2 illustrates that the five pedagogies, namely collaborative learning, personalised learning experiences, self-regulated learning, supportive teaching, and authentic learning experiences, were retained, confirming their accuracy as appropriate measures of the variable. Nevertheless, the model revealed that, for collaborative learning, all the 11 indicators (CL1-CL11) were retained. For personalised learning experiences, three indicators (PLE3, PLE7, and PLE8) were retained from a total of eight, while five were dropped. For self-regulated learning, seven out of 10 indicators (SRL2-SRL9) were retained, with two dropped. With respect to supportive teaching, three indicators (ST1, ST3 and ST4) out of nine were retained, with six dropped. Regarding authentic learning experiences, three indicators (ALE2, ALE4 and ALE5) out of six were retained, with three dropped. The retained indicators were considered valid measures of lecturers' pedagogical strategies.

Table 4: *Structural equation model prediction for lecturers' pedagogical strategies and teaching self-efficacy path estimates*

	β	T	P
Supportive —> Teaching Self-Efficacy	-0.056	1.127	0.260
Personalised —> Teaching Self-Efficacy	-0.017	0.318	0.750
Authentic —> Teaching Self-Efficacy	0.093	1.430	0.153
Collaborative —> Teaching Self-Efficacy	0.193	2.800	0.005
Self-regulated —> Teaching Self-Efficacy	0.348	5.003	0.000
R2 = 0.255			
R2 Adjusted = 0.245			

The findings in Table 4 show that collaborative learning (β = 0.135, p = 0.005) and self-regulated learning (β = 0.348, p = 0.000) significantly predicted teaching self-efficacy in pre-service teachers, with self-regulated learning having a stronger impact. Conversely, authentic learning experiences had an insignificant positive effect (β = 0.093, p = 0.153), while supportive teaching and personalised learning experiences had insignificant negative effects (β = -0.056, p = 0.260 and β = -0.017, p = 0.750, respectively). The pedagogical strategies collectively explained 25.5% of the variance in teaching self-efficacy, with the significant strategies (collaborative and self-regulated learning) accounting for 24.5% of the variance. Notably, self-regulated learning emerged as a stronger predictor of teaching self-efficacy than collaborative learning. The results supported hypotheses H4 and H5, but not H1–H3.

Discussion

The findings of the study demonstrated a strong, positive link between the use of collaborative and self-regulated learning strategies and pre-service teachers' teaching self-efficacy. The results align with the propositions of the Self-Efficacy and Constructivist theories. Bandura's (1977) Self-Efficacy Theory indicates that self-efficacy beliefs, such as teaching efficacy, are formed through mastery experiences from successfully completing tasks and vicarious experiences through observing skilled

models (Bandura, 1997), such as lecturers using collaborative learning and self-regulated learning strategies. Therefore, when pre-service teachers practise teaching and observe lecturers employing collaborative and self-regulated learning strategies, their teaching efficacy is enhanced. The findings are also consistent with constructivist theory, which emphasises active student involvement, aligning with the idea that mastery experiences enhance self-efficacy. When teachers act as facilitators who create learning environments that foster collaboration and independent learning during task completion (Mugizi et al., 2021; An & Mindrila, 2020), learners' efficacy, such as teaching efficacy, is enhanced.

The findings above also align with previous research (Adene & Umeano, 2020; Law et al., 2017; Nur & Butarbutar, 2022; Saunders-Wyndham & Smith, 2020; Zheng et al., 2020) that agrees that collaborative learning has a significant influence on students' self-efficacy. Furthermore, the results are consistent with studies (An et al., 2020; Blackmore et al., 2021; Chen, 2022; ElAdl & Polpol, 2020; Fernandez-Rio et al., 2017) demonstrating the benefits of self-regulated learning in enhancing learners' self-efficacy. Overall, our study emphasises the need for a balanced learning environment that incorporates both collaborative learning and self-regulation to boost pre-service teachers' teaching self-efficacy. This is because when learners engage in practice experiences, such as working with fellow learners in groups and directing their learning, their efficacy is enhanced.

The finding that authentic learning experiences had a positive but insignificant effect on teaching self-efficacy contradicts the Constructivist Learning Theory. The Constructivist Learning Theory argues that learners' efficacy is enhanced when teachers assume a facilitative role and enable them to construct their own knowledge through activities like authentic learning activities (Mugizi & Nagasha, 2023). The finding also contradicts prior research (Aynas & Aslan, 2021; Banas, 2014; Nur & Butarbutar, 2022; Uzunboylu et al., 2020; Yildiz, 2023; Yonai et al., 2024) that reported a significant causal link between authentic learning and learner efficacy. The contradiction stemmed from the fact that lecturers' use of authentic learning strategies was much lower than the level of teaching self-efficacy that learners perceived. Therefore, the limited use

of authentic learning experiences hinders learners' efficacy. Therefore, lecturers' effective implementation of authentic learning activities enhances pre-service teachers' teaching efficacy.

The study found that supportive teaching and personalised learning had a negative but statistically insignificant impact on self-efficacy. This result contradicts the expectations of Bandura's Self-Efficacy Theory, which highlights the importance of encouragement and constructive feedback in strengthening efficacy beliefs (Bandura, 1997), and Constructivist Learning Theory, which considers facilitated, personalised, and learner-centred experiences as central to enhancing efficacy (Mugizi & Nagasha, 2023). This discrepancy also conflicts with prior research demonstrating positive effects of teacher support (Duan et al., 2024; Huang & Wang, 2023; Liu, 2021; Ren et al., 2022) and personalised learning (Hall & Trespalacios, 2019; Makhambetova et al., 2021; Mötteli et al., 2023) on learners' self-efficacy. The inconsistency might be related to contextual differences since many earlier studies were conducted in non-African or non-higher-education settings and did not specifically focus on pre-service teachers. Moreover, evidence from Uganda indicates that lecturers often struggle to implement culturally responsive and personalised pedagogies effectively due to limited training and challenges in meeting the needs of diverse learners (Kaweesi et al., 2023). These contextual limitations may help explain why supportive and personalised strategies did not significantly predict teaching self-efficacy in this study.

Conclusions

The study concluded that the development of pre-service teachers' teaching self-efficacy is influenced less by the mere availability of diverse pedagogical strategies and more by the depth of learner involvement that those strategies enable. The strong and consistent impact of collaborative and self-regulated learning indicates that pedagogies which position learners as active agents, through peer interaction, autonomous goal-setting, and reflective engagement, play a particularly vital role in helping pre-service teachers internalise confidence in their teaching abilities. Conversely, the limited contribution of supportive, personalised,

and authentic learning suggests that, although these approaches are theoretically aligned with the competence-based curriculum, their superficial and inconsistent use within the current university context hinders their ability to enhance the teaching efficacy of pre-service teachers.

Recommendations

Lecturers should actively employ collaborative learning and self-regulated learning. To facilitate collaborative learning, lecturers should encourage students to participate in group discussions and activities, sharing knowledge and experiences. By doing so, pre-service teachers should be given the autonomy to express their thoughts and opinions, while lecturers facilitate peer-to-peer interactions that promote mutual learning and growth. Lecturers should also design activities that require students to present and defend their individual perspectives, share resources, and engage in meaningful debates. To support self-regulated learning, lecturers should empower students to define their learning targets, monitor their advancement, and conduct regular self-reflection and assessment, enabling them to take charge of their own development and learning outcomes. Lecturers should empower students to take ownership of their learning by providing opportunities for autonomous exploration and discovery, while also equipping them with effective problem-solving strategies that promote deeper understanding and critical thinking skills.

Further, lecturers should integrate more authentic learning experiences into their teaching. This should be achieved by engaging pre-service teachers in debates during lectures, in practical activities such as writing research reports, and in researching specific course units. Researching specific course units might impede the development of teaching self-efficacy. However, lecturers should re-evaluate the use of supportive teaching and personalised learning. With supportive teaching, there should be a re-evaluation of how praise is given for successful performance, how feedback is provided even when performance is not very good, and the extent to which lecturers are freely available to help pre-service teachers. Further, lecturers should re-evaluate how they

personalise learning experiences by providing pre-service teachers with course content and lecture notes to read ahead, having one-to-one talk sessions, and providing individualised feedback after assessment. This approach will guarantee that the authentic learning experiences and instructional support provided to pre-service teachers are tailored to enhance their confidence and competence, ultimately fostering their self-efficacy.

Limitations of the Study

The results of this study highlight the importance of lecturers' teaching methods in shaping pre-service teachers' instructional efficacy, although several limitations should be recognised. For example, the results for hypotheses one through three contradicted both the original assumptions and previous research findings. Therefore, further research should investigate the influence of authentic learning experiences, supportive teaching, and personalised learning on pre-service teachers' self-efficacy. Furthermore, since this study was confined to a single university, future studies could expand the scope to include multiple universities across Uganda. Also, as this research relied solely on a quantitative approach, which limits detailed analysis, future research should consider qualitative or mixed-methods approaches to gain more comprehensive insights into the impact of lecturers' teaching strategies on pre-service teachers' teaching efficacy.

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