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Conceptual And Structural Model Of Developing Professional Competence Of Preservice Teachers Through Self-Directed Learning

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ABSTRACT

Modern teacher education is progressively tasked with equipping graduates to manage their own learning and maintain professional development throughout their careers. Simultaneously, numerous programs continue to be governed by transmissive models that regard preservice teachers as passive recipients of knowledge rather than independent agents. This article delineates a conceptual and structural framework for enhancing the professional competence of preservice teachers via self-directed learning (SDL). The research is founded on a theoretical examination of SDL and frameworks for teacher professional competence, involving conceptual modelling, expert validation, and a constrained pilot study within a university-level teacher education program. The model combines four main parts of professional competence: subject-pedagogical, didactic-methodical, communicative-collaborative, and reflective-autonomous. It also includes preservice teachers' readiness for self-directed learning, the cyclical processes of self-directed learning, and institutional support systems. An expert review verified the model's internal coherence, comprehensiveness, and practical applicability, while qualitative data from the pilot implementation demonstrated favourable changes in preservice teachers' goal-setting, utilisation of learning resources, reflection on practicum experiences, and ownership of professional development. The article contends that integrating self-directed learning (SDL) as a foundational principle in teacher education enhances the coherence among university coursework, classroom practice, and continuous professional development. The implications for curriculum design, mentoring, and assessment in teacher education are examined, along with the limitations of the existing modelling efforts and suggestions for additional empirical validation.

Keywords: Self-directed learning, preservice teachers, professional competence, conceptual model, structural model, teacher education, lifelong learning.

INTRODUCTION

As educational needs change quickly, teachers are expected to not only know the current curriculum but also keep learning, come up with new ways to teach, and be able to adapt to different types of students. These expectations cannot be fulfilled exclusively through externally organised professional development; they necessitate that teachers evolve into self-directed learners capable of diagnosing their learning needs, establishing goals, selecting suitable strategies, and assessing learning outcomes throughout their careers. One of the most important things that initial teacher education does is help teachers develop the attitudes and skills they need to grow professionally and form their own identities.

The professional competence of preservice teachers is now broadly recognised as an integrative construct that encompasses subject knowledge, pedagogical content knowledge, didactic-methodical skills, communication and collaboration with learners and colleagues, along with ethical, reflective, and value-oriented dimensions. Structural models of teacher competence underscore the

interconnection of these components, asserting that effective performance relies on the dynamic interplay of knowledge, skills, attitudes, and identity within particular educational contexts. Nevertheless, the pathways through which such competence develops during the preservice phase are frequently articulated only in broad terms, lacking a definitive mechanism that links curriculum structures, learning activities, and the independent initiatives of preservice teachers themselves.

The idea of self-directed learning is a strong way to look at these pathways in a new way. According to traditional adult education theory, SDL is a process in which people are in charge of planning, carrying out, and judging their own learning, with or without help from others. Recent models conceptualise SDL as a multidimensional construct that includes personal characteristics such as motivation and self-efficacy, metacognitive processes involving planning, monitoring, and evaluation, as well as the impact of learning contexts and resources. In the context of teacher education, SDL suggests that preservice teachers ought not to be regarded merely as participants in externally devised courses, but as proactive designers, managers, and evaluators of their own professional learning pathways.

Empirical studies involving preservice teachers indicate that preparedness for self-directed learning is significantly associated with lifelong learning inclinations, modern educational paradigms, and receptiveness to novel pedagogical approaches. But many teacher education programs still set up learning in ways that limit freedom, break up theory and practice, and encourage strategic compliance instead of thoughtful engagement. Models are required that explicitly incorporate SDL principles into teacher education design and demonstrate how self-directed learning processes enhance the development of particular aspects of professional competence.

The aim of this article is to propose and theoretically substantiate a conceptual and structural model for enhancing the professional competence of preservice teachers through self-directed learning. The model seeks to: a) delineate the interconnections among SDL readiness, SDL processes, contextual support, and fundamental elements of professional competence; b) establish a framework for the development of course units, practicum experiences, and assessment tasks that promote self-directed professional learning; and c) provide a foundation for empirical assessment of the efficacy of SDL-based interventions in teacher education.

The research utilised a methodological design characteristic of didactic modelling in teacher education. It integrated theoretical literature analysis, conceptual modelling, expert assessment, and constrained piloting within an authentic teacher education setting. The overarching methodology employed was sequential exploratory inquiry: initially, pertinent constructs were elucidated and systematically organised; subsequently, these constructs were amalgamated into a cohesive model; thereafter, the model underwent rigorous evaluation by experts; and ultimately, specific components were tested with preservice teachers to assess their viability and perceived influence.

During the theoretical phase, analyses were conducted on publications regarding self-directed learning in higher education and teacher training, frameworks of teacher professional competence, and research on self-regulation and lifelong learning. We put together key ideas from classic SDL theory, multidimensional SDL frameworks, and recent work on SDL readiness and teacher competence models to find common categories and relationships that are important for preservice teacher education.ncolr.org+1 This synthesis helped us come up with the definitions of the main ideas that make up the conceptual and structural model.

The second stage involved building the first model. The authors employed structural–functional and system modelling techniques to delineate the principal subsystems (preservice teacher SDL readiness, SDL processes, institutional support, components of professional competence) and proposed hypotheses regarding the interrelations among them. The model was shown in a graph and had detailed descriptions of each part and its indicators. Special care was taken to make sure that the model could be used in real-life educational settings, like learning contracts, project-based coursework, digital portfolios, and reflective practicum tasks.

To get expert feedback, the draft model and its explanatory text were sent to a group of eighteen experts in pedagogy and teacher education. These experts included university professors, methodologists, and school-based mentors. The experts were asked to look at how clear the definitions were, how complete the components were, how logical the relationships were, and how useful the model would be for training new teachers. We got their feedback through written comments and follow-up online discussions. Qualitative analysis of expert responses facilitated the

refinement of terminology, the reclassification of specific indicators, and the elucidation of the role of institutional factors.

Lastly, parts of the model were tested in a bachelor-level teacher education program over the course of one academic year. A group of preservice teachers used self-directed learning plans to plan out their work in a methods course and a school practicum. We got the data from their learning plans, reflective journals, digital portfolios, and semi-structured interviews at the end of the course. While the pilot was small and not meant to be used for statistical purposes, it gave us useful information about how preservice teachers understand and use SDL-based professional development and how the proposed model fits with their own experiences of learning to teach.

The conceptual model posits that the advancement of professional competence among preservice teachers constitutes a dynamic system of interactions involving the learner's self-directed learning readiness, the cyclical processes of self-directed learning, and the institutional context of teacher education. SDL readiness is defined as a relatively stable collection of personal characteristics—such as motivation for learning, beliefs regarding responsibility for learning, self-efficacy, and fundamental metacognitive skills—that preservice teachers possess upon entering the program. These characteristics determine the degree to which students are prepared and capable of participating in intricate, relatively unstructured learning activities and assuming responsibility for their professional development.

The SDL process itself is the second main part of the model. It is an ongoing cycle of figuring out what professional learning needs are, setting goals, planning learning activities, choosing and using resources, keeping track of progress, and judging results. These processes are not envisioned as isolated individual actions but as socially mediated and contextually situated activities that occur through interactions with peers, university instructors, school mentors, and digital learning environments. In this model, SDL processes are intentionally linked to genuine professional activities, such as lesson planning and instruction, analysing students' learning challenges, engaging in school initiatives, and executing minor classroom investigations. Through these tasks, preservice teachers turn the requirements of the curriculum into personalised learning paths.

The third part is the institutional support system, which can either help or hurt self-directed professional learning. The model presumes that teacher education programs can foster supportive environments for self-directed learning by offering adaptable curricula, facilitating access to a variety of learning resources, incorporating reflective tasks into assessment frameworks, and cultivating mentoring relationships that balance guidance with respect for learner autonomy. This support is not seen as outside control, but as scaffolding that helps preservice teachers take on more responsibility for their own learning while still meeting the standards of the program and the school.

In this conceptual framework, the professional competence of preservice teachers is structurally depicted as a multidimensional construct comprising four interrelated components. The subject-pedagogical component encompasses the mastery of content and the comprehension of its didactic adaptation into educational material for school settings. The didactic-methodical component includes the ability to plan, carry out, and change learning activities, use different teaching methods, and run classroom processes. The communicative-collaborative part includes working with students, parents, and other teachers, as well as being a part of professional groups. Lastly, the reflective-autonomous part shows how well someone can critically look at their own teaching, figure out what they're good at and what they're not so good at, and plan how to improve their skills.

The structural model asserts that SDL readiness and SDL processes have both direct and mediated effects on these facets of professional competence. For example, preservice teachers who are more ready to learn on their own are more likely to read deeply about the subject and teaching methods, try out new ways of doing things during their practicum, and think critically about feedback. This, in turn, makes them better at subject-pedagogical and didactic-methodical skills. In the same way, regularly going through SDL cycles, especially the parts where students set goals and think about them, helps them become more reflective and independent and improves their ability to communicate and work with others as they learn to negotiate goals and get feedback from mentors and peers.

Expert assessment validated the model's overall architecture. Reviewers praised its thoroughness, pointing

out that it brings together the psychological aspects of learner autonomy, the pedagogical structuring of learning environments, and the normative descriptions of teacher competence into one framework. They also stressed that explicitly including institutional support mechanisms stops SDL from being seen as an individualistic concept and puts the onus on teacher education providers to create the right conditions. Experts also said that the transition from externally supported to more independent self-directed learning should be made clearer over the course of the study and that model components should be made clear in terms of observable behaviours and assessment criteria.

The qualitative outcomes from the pilot implementation revealed that preservice teachers engaged with self-directed learning plans and portfolios progressively transitioned from concentrating on meeting assignment criteria to expressing individual professional objectives, such as enhancing questioning strategies, overseeing group dynamics, or tailoring instruction. A lot of students said that having to set individual goals for each practicum cycle, plan specific actions, and think about how well they did made their learning more meaningful and helped them connect what they learnt in college to what they did in the classroom. Interviews, however, showed that not all students were equally ready for this level of independence. Some had trouble setting clear goals or realistically judging their progress. This shows how important it is to systematically build SDL readiness throughout the program.

The proposed model enhances current discussions regarding the conceptualisation and facilitation of professional competence development in preservice teachers by prioritising self-directed learning within this framework. Numerous existing frameworks delineate aspects of teacher competence regarding knowledge and skills; however, they often fail to elucidate how novices acquire these components in a manner that facilitates flexible and context-sensitive implementation. By connecting competence development to recursive SDL cycles integrated into genuine professional tasks, the model elucidates the processes through which preservice teachers convert external curricular requirements into internalised professional assets.

The model systematically applies established theories of self-directed learning to the field of teacher education. Earlier SDL frameworks differentiated among personal attributes, learning processes, and contextual conditions. The current model expands upon this triadic framework by delineating the interactions among these dimensions within the specific context of preservice teacher preparation, where institutional curricula, accreditation standards, and school practices significantly influence learning opportunities. In doing so, it addresses criticisms that SDL theory has frequently been overly generic and inadequately focused on professional particularity.

The model proposes multiple avenues for the reconfiguration of teacher education programs from a pragmatic standpoint. Learning contracts or project tasks can be used to structure courses for preservice teachers. In these tasks, the preservice teachers work together to set goals, choose resources, and plan actions that are related to their growing professional interests. Digital portfolios and reflective journals can serve not only as assessment instruments but also as tools for organising self-directed learning cycles, documenting evidence of competence development, and planning subsequent learning endeavours. Mentors and university instructors can transition from being primary sources of knowledge to facilitators who assist students in analysing their learning needs, identifying strategies, and interpreting experiences. When these kinds of practices are used consistently throughout the program, SDL stops being a minor addition and becomes a guiding principle of professional training.

The study also points out some big problems. Not all preservice teachers initially have the metacognitive and motivational tools they need for advanced self-directed learning. Research indicates that SDL readiness exhibits significant variability and constitutes a developmental outcome of educational experiences. As a result, the model assumes that there will be incremental scaffolding, especially in the early years of study, when more structured guidance is given along with more freedom. Another problem is that institutional assessment systems often put standardised tests and completing assignments ahead of personalised professional growth. To make sure that assessments are in line with SDL-oriented competence development, you need to carefully design criteria, rubrics, and feedback practices that take into account each person's unique path while still upholding common standards.

It is important to recognise the limitations of the current work. The model is mainly an idea that comes from combining theories, expert opinions, and small amounts of qualitative evidence rather than large amounts of empirical testing. The pilot implementation, while promising,

included a small number of participants in a single institutional setting, limiting the applicability of the results. Moreover, the model currently lacks adequate differentiation among subject specialisations; the methods by which SDL facilitates competence development may differ, for instance, among prospective mathematics, language, or primary school educators. These constraints create opportunities for forthcoming research focused on the operationalisation and statistical validation of the structural model, as well as its adaptation to particular disciplines and national contexts.

The article has put forth a conceptual and structural model that combines self-directed learning with the enhancement of professional competence in preservice teachers. The model provides a coherent framework for understanding how teacher education can cultivate graduates capable of managing their own professional learning by situating SDL readiness, SDL processes, and institutional support in relation to four core components of professional competence: subject-pedagogical, didactic-methodical, communicative-collaborative, and reflective-autonomous. Expert validation and preliminary qualitative evidence indicate that the model is conceptually sound, practically significant, and attuned to contemporary requirements for lifelong learning and professional autonomy in education.

More work needs to be done to improve the model and prove it with real-world data. Subsequent research ought to concentrate on the creation of dependable instruments for assessing the proposed components, utilising longitudinal designs and structural equation modelling to evaluate hypothesised relationships, and investigating the impact of various configurations of institutional support on the efficacy of SDL-based interventions. Cross-cultural studies could investigate how contextual elements, including national standards, school cultures, and digital infrastructures, influence the implementation of the model. Despite these unresolved enquiries, the current study emphasises that integrating self-directed learning as a foundational principle in preservice teacher education can substantially improve the development of professional competence and more effectively equip future educators for the intricate and dynamic challenges of modern education.

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