International Journal of Arts and Social Science www.ijassjournal.com
ISSN: 2581-7922,
Volume 6 Issue 9, September 2023

Research on Promoting Self-regulated Learning Abilities of Preservice Early Childhood Education Teachers

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ABSTRACT: *Self-regulated learning is an active and constructive form of learning. Against the backdrop of China's historical efforts in cultivating exceptional preschool teachers, the self-regulated learning ability of preservice early childhood education teachers holds immense significance, not only for their personal growth but also for the development of preschool children and the overall quality of early childhood education. Therefore, it is essential to place emphasis on fostering self-regulated learning abilities of preservice early childhood education teachers. Various factors, including cognition, emotion, motivation, and environment, play a role in influencing the self-regulated learning process of preservice early childhood education teachers. Keeping this in mind, educators can explore the implementation of the "3W" teaching model (raising doubts, questioning, and resolving uncertainties) to augment the development of self-regulated learning abilities of preservice early childhood education teachers in both online and offline learning settings. Moreover, integrating techniques such as mind mapping and self-questioning can further enhance the effectiveness of this approach.*

KEYWORDS– *Preschool education; Normal university students, Self-regulation learning, Early childood*

I. INTRODUCTION

The document entitled "Opinions on the Implementation of the Excellent Teacher Training Plan 2.0" highlights the significance of reforming teaching methods centered around teacher trainees and enhancing their learning, practical, and innovative abilities. By 2035, this comprehensive approach is expected to significantly improve the overall quality, professional level, and innovative capacity of teacher trainees. This, in turn, will lay a solid foundation for the training of millions of exemplary teachers, hundreds of thousands of outstanding teachers, and tens of thousands of education-oriented teachers. Additionally, the document entitled “Action Plan for the Revitalization of Teacher Education (2018-2022)” emphasizes the importance of innovating teacher education models. Key areas of focus include cooperative education, foundational teaching skills, practical teaching experiences, and the integration of information technology. These efforts aim to cultivate exceptional kindergarten teachers for the future. As the cradle of talent development, the preschool education training model in normal colleges continuously faces challenges. To address this, we will comprehensively launch the "Excellent Preschool Teachers" training program, enhance the quality of pre-service early childhood education teacher training, and promote reforms in the preschool teacher education mechanisms within colleges and universities.

Currently, with the establishment of a learning society that embraces the principles of "learning for all, anytime, anywhere," there have been significant transformations in traditional learning methods and ideologies. Given the historical emphasis on knowledge acquisition in traditional teaching, many college students lack

essential learning abilities, particularly self-regulated learning. Consequently, the issue of learning to learn has gained substantial attention (Abril-Lopez et al., 2021; Lansdell & Kording, 2019; Zydziunaite et al., 2022).

II. FOCUSON The SELF-REGULATED LEARNING ABILITY

Self-regulated learning serves as the foundational conceptual framework for comprehending the cognitive, motivational, and emotional facets of the learning process (Boekaerts, 1997; Panadero, 2017). It should be noted that self-regulation is not merely a mental capacity or an academic performance skill, but rather a self-directed process through which learners transform their mental abilities into academic skills (Zimmerman, 2002). As active and responsible learners, individuals who engage in self-regulated learning tend to purposefully acquire knowledge and attain their academic objectives by utilizing various learning strategies, such as metacognitive strategies (Donker et al., 2014).

For preservice early childhood education teachers, acquiring the ability to self-regulate learning becomes imperative in order to effectively navigate the dynamic educational landscape and address the diverse learning needs of children (see Figure 1).To begin with, the educational needs encountered within preschool education exhibit an increasingly diversified nature due to ongoing societal development and changes. As future kindergarten teachers, it is crucial for them to grasp the distinctive characteristics and requirements of individual children, thereby offering personalized educational services. The cultivation of self-regulated learning empowers these educators to flexibly adapt to distinct teaching scenarios and tailor instructional programs accordingly.

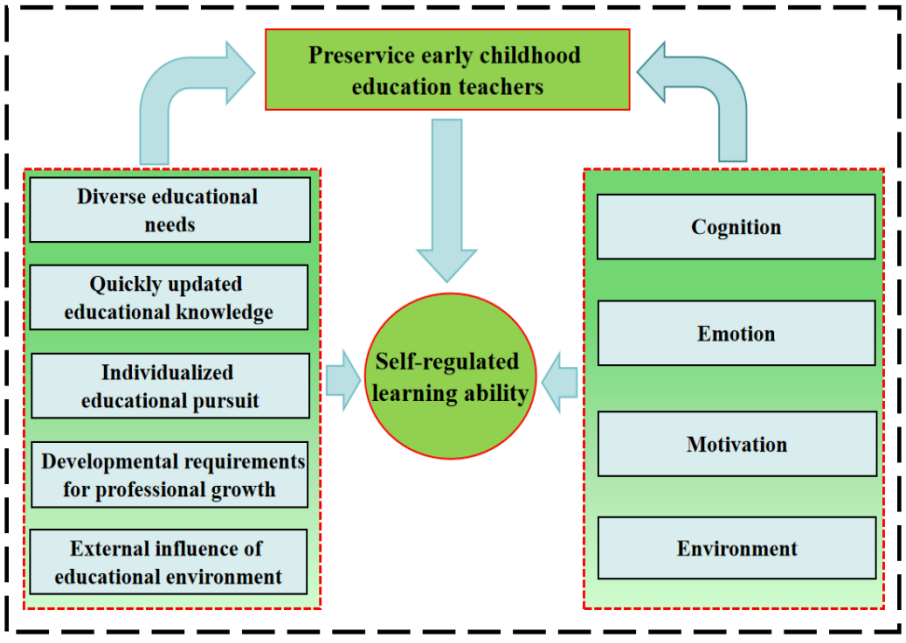

Figure 1. *Factors related to self-regulated learning ability*

Moreover, the realm of educational knowledge undergoes rapid updates in the current digital era. Within the field of education, new teaching philosophies, methodologies, and techniques constantly emerge. Preservice early childhood education teachers must continuously acquire and assimilate these latest educational insights and skills to enhance their teaching prowess and professional competence. The possession of self-regulatory learning abilities motivates them to actively access and integrate educational resources, engage in educational research and practice, and consistently refine their pedagogical acumen.

Furthermore, personalized educational pursuits encompass a vital objective within preschool education, namely nurturing children's unique strengths and abilities. As preservice early childhood education teachers develop their self-regulatory learning abilities, they are empowered to gain a deeper understanding of themselves, identify their strengths, and maximize their personal potential. With these capabilities, future educators can adeptly cater to the individual learning needs of children, thereby facilitating effective education in light of diverse aptitudes.

Additionally, professional growth necessitates continuous development for preservice early childhood education teachers. They are required to continuously refine their teaching skills and educational philosophies. The ability to self-regulate learning enables them to proactively establish learning goals, develop structured learning plans, and engage in reflective practices to enhance their teaching strategies. By undergoing this iterative process, educators can continuously elevate their professional expertise, ultimately becoming exemplary specialists in the field of preschool education.

Lastly, it is important to acknowledge the external influence of the educational environment. With the swift advancement of information technology and the widespread use of intelligent educational tools, the landscape of preschool education is undergoing significant transformation. Teachers are no longer confined to traditional roles as knowledge imparters; instead, they assume the roles of facilitators, collaborators, and partners. This is particularly evident in the context of online learning, wherein learners' capacity to self-regulate their online learning experiences must be emphasized (Carter Jr et al., 2020; Wong et al., 2019).

III. FACTORS AFFECTING SELF-REGULATED LEARNING

Self-regulated learning is influenced by multiple factors (Albelbisi & Yusop, 2019; Bidjerano & Dai, 2007; Ben-Eliyahu & Bernacki, 2015). This study aims to examine the factors that affect self-regulated learning among preservice early childhood education teachers from four perspectives: Cognition, emotion, motivation, and environment (see Figure 1).

Firstly, cognitive factors play a crucial role. Cognition is closely associated with learning performance (Riding & Sadler-Smith, 1992). In the learning process, preservice early childhood education teachers must effectively perceive learning tasks, resources, and objectives. They also need to accurately understand the learning environment and requirements so as to initiate and regulate the self-regulated learning process. If learners perceive a learning task as lacking value, they are less likely to engage actively in the learning process.

Secondly, emotional factors have a direct impact on individuals' learning behavior and outcomes (Arsenio & Loria, 2014). Preservice early childhood education teachers require positive emotional states and strong emotional regulation skills to cope with various challenges and difficulties. For instance, when facing obstacles or failures, individuals who maintain positive emotions and employ effective emotional regulation strategies, such as seeking help and self-motivation, are better equipped to regulate their learning process and experience growth and progress in the face of difficulties. Among various emotional factors, self-efficacy is closely related to self-regulated learning (Pajares, 2002). On one hand, self-efficacy influences individuals' optimistic attitudes and positive engagement in learning. On the other hand, self-efficacy affects individuals' persistence and effort when encountering learning difficulties.

Thirdly, motivational factors contribute significantly to self-regulated learning. Motivation refers to the reasons behind individuals' behaviors (Borah, 2021). Learning motivation serves as the internal driving force and positive emotional state for individuals engaged in learning, while learning goals represent specific and clear learning tasks and outcomes set by individuals. Therefore, preservice early childhood education teachers need to activate their proactive efforts by clarifying learning goals and stimulating learning motivation, thus promoting the development of self-regulated learning abilities.

Lastly, environmental factors are essential. Environmental factors encompass the learning environment, educational system, teacher support, and peer interaction. Preservice early childhood education teachers often engage in team-based learning and rely on interaction and collaboration with others to solve problems and achieve learning goals. By providing opportunities and environments for cooperative learning, preservice early childhood education teachers can develop teamwork skills, communication abilities, and problem-solving

capabilities, thereby fostering the development of their self-regulated learning abilities. Among the various environmental factors, special attention should be given to the influence of the learning environment on learners' learning behaviors and outcomes (Villardon-Gallego et al., 2018). The learning environment includes the classroom teaching environment, school culture, and family background. A conducive learning environment can provide students with learning opportunities and resources, as well as stimulate their interest and motivation to learn. Conversely, a negative learning environment may hinder the learning outcomes and attitudes of preservice early childhood education teachers. Hence, educators should strive to create a positive learning environment that fosters the development of self-regulated learning abilities among preservice early childhood education teachers.

IV. PROMMOTE THE DEVELOPMENT OF SELF-REGULATED LEARNING ABILITY

4.1 "3W" teaching mode

The "3W" teaching mode, comprised of setting up doubts, analysing doubts, and resolving doubts, is a problem-oriented pedagogical approach. The essence of this teaching mode lies in nurturing students' inquisitive spirit and problem-solving abilities. By guiding students to ask questions and think critically, they transition from passive recipients of knowledge to active builders and creators.

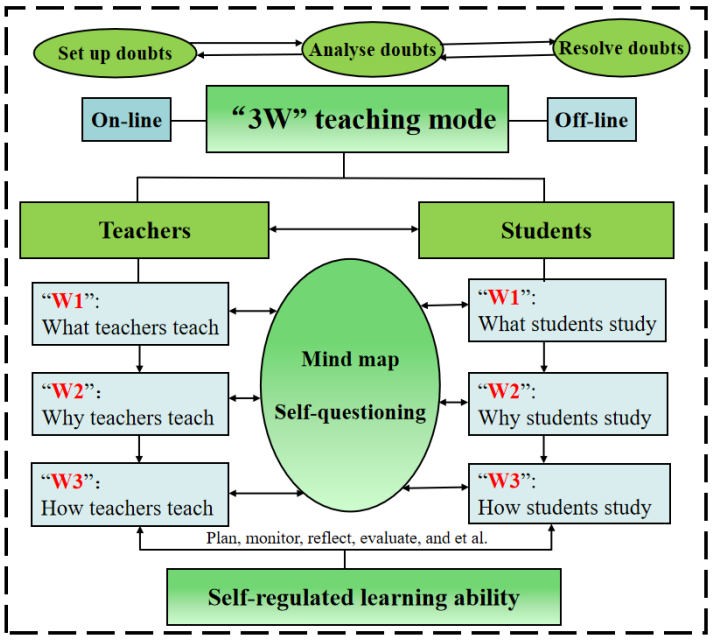

Figure 2. *The internal relationship of "3W" teaching mode*

4.1.1 Setting up doubts

Setting up doubts serves as the initial step in the "3W" teaching mode. Teachers should raise questions to stimulate learners' interest and motivation, fostering their curiosity for knowledge. At this stage, the questions can be open-ended, devoid of predetermined answers, thus igniting learners' inclination to think and explore. "Setting up doubts" underscores the proactive generation and establishment of uncertainties throughout the learning process.

Several approaches can be employed to set up doubts. First, reinforce teacher guidance. Educators can pose challenging questions in class, encouraging students to formulate their own inquiries. Additionally, aid students in defining their learning objectives. The quality of the teacher-student relationship impacts student development (Agyekum, 2019). Establishing a positive teacher-student relationship and encouraging regular communication allows teachers to provide targeted guidance based on individual characteristics and learning needs—thus assisting students in better planning their learning objectives and resolving difficulties. Second,

guide students in collaboration. Cooperative learning entails students working together to achieve common goals or complete group tasks—goals and tasks that would be unattainable individually (Gillies, 2016). Accordingly, teachers ought to encourage students to engage in in-depth discussions during cooperative group-learning sessions, promoting the generation of problems and the establishment of goals. Third, prioritize continuous learning. Adequate review and extension of content should be provided, arousing students' curiosity and thirst for knowledge, while cultivating interests and habits related to self-regulated learning. By engaging in extracurricular reading and educational practices, learners' enthusiasm for self-regulated learning can be stimulated, gradually fostering the habit of autonomous learning.

4.1.2 Analysing doubts

Analyzing doubts constitutes the second step in the "3W" teaching mode. After setting up doubts, teachers should guide students in raising reasonable and in-depth inquiries, probing into the changes and underlying causes. Questioning encourages divergent thinking among learners and activates their cognitive abilities.

The analysis of doubts can be achieved through various means. First, encourage deep thinking. Learners should be prompted to examine problems from multiple perspectives, explore the essence of the problems, and stimulate their critical thinking. Second, foster reflection and discussion. Organize reflective discussions in class, encouraging students to engage in more profound problem analysis. Foster collaboration and knowledge sharing among students. Through group learning, team projects, and similar approaches, collaborative learning can be promoted, thereby enhancing the overall learning outcomes. Third, embrace inquiry-based learning. Provide open-ended learning resources to motivate learners to explore and discover answers by themselves. Encourage them to employ diverse learning strategies and cultivate various learning styles. By guiding learners in setting reasonable learning goals, formulating learning plans, effectively utilizing learning resources, and actively participating in learning activities, their ability for self-regulated learning can be continually enhanced.

4.1.3 Resolving doubts

Resolving doubts represents the final stage of the "3W" teaching model. When students have progressed through setting up doubts and analysing doubts, they possess a certain level of understanding regarding the problem. At this point, teachers should guide them in independently resolving the problem through self-directed learning. Resolving doubts emphasizes problem-solving and taking actionable steps.

There are several ways to facilitate the resolution of doubts. First, personalize learning. Personalizing learning necessitates that the learning environment—whether face-to-face or digital, human-driven or automated—take into account the learner's prior knowledge, motivations, goals, beliefs, interests, skills, experiences, and culture (and likely other factors). The instructional experience should be responsive to these features, thus promoting superior engagement in and performance on learning tasks (Bernacki et al., 2021). Therefore, teachers should pay attention to the specific learning needs of each student and provide tailored guidance and support. Prior to educational practices, lectures on learning psychology can be organized to comprehensively guide students in understanding the concept and essence of independent learning, cementing the pivotal role of independent learning in future educational endeavors. Second, encourage active learning. Teachers ought to prompt learners to independently seek learning resources and problem-solving approaches, while guiding them in developing effective time management skills. Relevant time management training can be arranged, teaching students how to efficiently allocate their time to complete learning tasks, enabling them to strike a balance between intensive study and internships and alleviating learning pressure. Third, provide feedback and evaluation. Regular feedback and evaluation should be provided to students, aiding them in identifying learning gaps and offering suggestions for improvement. Establishing practical and targeted self-evaluation tools and reflection mechanisms is necessary to encourage students to analyze their own learning needs, clarify personal learning goals, and identify areas for enhancement. It is paramount to establish a positive feedback and support system during the learning process, promptly providing encouragement and affirmation to

learners. Concurrently, guide students in perceiving setbacks and failures as opportunities for growth, enabling them to overcome challenges more effectively.

4.2 Mind map

A mind map is a graphical thinking tool that represents the relationships between subjects by using a central figure as the core and radial branches. It has been identified as an effective tool for self-regulated learning among preservice teachers (Tanriseven, 2014). Recent studies have shown that mind mapping learning strategies outperform concept mapping learning strategies (Redhana et al., 2021).

Preservice early childhood education teachers can utilize mind mapping to organize and visually present their knowledge structure, stimulate association and creative thinking, and enhance their understanding and retention of learning content. Firstly, mind map can assist learners in creating learning plans. By breaking down their learning goals into specific sub-goals and connecting them with relevant knowledge points and skills through mind maps, learners can better plan their learning activities and resources, ensuring an organized and systematic learning process.Secondly, mind mapping is useful for monitoring the learning process. Learners can use mind maps to record important information during their learning journey, such as the topics they have covered, the learning resources they have utilized, and the challenges they have encountered. By regularly updating their mind maps, learners can track their learning progress and make timely adjustments to their learning strategies. Additionally, mind mapping helps learners manage their study time effectively by scheduling each study task accordingly.Thirdly, mind map promotes self-reflection among learners. Self-reflection is vital for facilitating learning and can serve as an assessment tool (Golumbic et al., 2022). Through the use of mind maps, learners can identify their strengths and areas for improvement. They can organize and document the difficulties, successes, and mistakes they have experienced during the learning process, enabling valuable learning from these experiences. Moreover, mind mapping aids learners in conducting self-evaluation, identifying problems encountered in their learning process, and formulating improvement plans.Finally, mind map can be utilized to evaluate learning outcomes. Learners can summarize the content and skills they have acquired through mind maps and compare them with their initial learning goals. By benchmarking their learning outcomes against their intended goals, learners can assess their own progress and identify areas for further improvement. Additionally, mind maps can be utilized to create learning reports or presentations, enabling learners to effectively communicate the knowledge and growth they have achieved throughout the learning process.

4.3 Self-questioning

Self-questioning is a recognized learning strategy (King, 1992) that involves the active process of posing and resolving questions (Al-Swelmyeen & Sakarneh, 2020; Mastnak et al., 2023; Taylor et al., 2002). Through self-questioning, learners engage in critical thinking, synthesis, and consolidation of acquired knowledge, thereby fostering the development of self-regulated learning abilities.

To begin with, learners can leverage self-questioning to formulate a comprehensive study plan. By asking questions such as "What specific knowledge and skills must I acquire to enhance my learning abilities?" or "When and where should I allocate time for these study tasks?" learners can delineate their learning objectives and effectively organize their study schedule and resources, facilitating a more targeted and structured learning process.Furthermore, self-questioning enables learners to monitor their own learning progress. For instance, learners may inquire, "What prior knowledge do I possess?" or "What aspects require further attention?" By engaging in questioning, learners can promptly assess their advancement, ascertain whether they have attained their expected milestones, and make adjustments to their learning strategies if necessary.In addition, self-questioning fosters introspection and self-reflection. Learners can pose questions such as "Have I grasped the content effectively?" or "Can I apply this knowledge in practical educational contexts?" By critically reflecting and posing questions, learners evaluate the quality of their learning experiences, pinpoint areas for improvement, and refine their learning methodologies accordingly.Lastly, self-questioning serves as an evaluative tool for assessing learning outcomes. Learners can interrogate themselves,

asking, "Have I achieved my learning objectives?" or "Did my learning outcomes align with initial expectations?" By employing this approach, learners can evaluate their own progress, identify areas necessitating further enhancement, and utilize the insights gained to devise future learning plans aimed at continual improvement of their learning abilities.

Additionally, it is imperative to emphasize that in the era of the internet and information, educators should not solely focus on students' offline self-regulated learning abilities but also address their online self-regulated learning capacities. Individuals who are self-regulated in their learning appear to achieve more positive academic outcomes than individuals who do not exhibit self-regulated learning behaviors (Barnard-Brak et al., 2010). As Broadbent and Poon (2015) highlight, with the growing enrollment in online courses, understanding how students can effectively employ self-regulated learning strategies in the online environment is crucial for achieving academic success. Online learners can leverage self-regulated learning strategies (Adam et al., 2017). To support and accommodate these strategies, it is vital to consider relevant human factors and foster an environment conducive to self-regulated learning (Wong et al., 2019). In light of this, teachers should establish a comprehensive and diverse online learning resource repository tailored to different courses and individual variances. This ensures that the learning requirements of prospective early childhood education teachers at various levels are met. Simultaneously, leveraging the benefits of information technology, the limitations of time and space can be transcended, allowing for ubiquitous online learning opportunities. Furthermore, interactive platforms for learning communities can be established to facilitate communication and interaction among prospective early childhood education teachers. These platforms may include areas for study discussions, question-and-answer platforms, among others, where students can share their learning experiences, resolve difficulties, and provide encouragement and assistance to one another. This process of interactive communication not only enhances individuals' motivation for learning but also broadens their academic horizons.

FUNDING

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the research projects on teaching reform of ordinary higher education institutions in Hunan Prvince, China (Fund Number: HNJG-2022-1287).

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