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Enhancing decision-making skills in student groups: A theoretical and applied approach

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Abstract. Decision-making skills are essential for future educators, particularly for students specializing in Primary and Preschool Pedagogy. This study examines the practical impact of structured training interventions on the decision-making competencies of students enrolled at Aurel Vlaicu University of Arad. The research follows a mixed-methods approach, combining quantitative surveys and qualitative observations to assess students' ability to analyze complex situations, weigh alternatives, and make informed decisions in an academic setting. The study sample consists of undergraduate students from the Faculty of Educational Sciences, Psychology, and Social Work, engaged in group-based learning activities designed to enhance their problem-solving and critical-thinking capabilities. The findings demonstrate practical improvements in students' confidence and efficiency in decision-making through active learning methodologies, including collaborative projects, case studies, and scenario-based discussions. Furthermore, the research highlights the role of peer interaction and reflective practice in fostering deeper cognitive engagement. These results have direct implications for curriculum design, proposing the integration of structured decision-making training as a core competency in teacher education programs.

Keywords. decision-making skills, higher education, primary and preschool pedagogy, collaborative learning, teacher training, student competencies, applied learning methodologies, practical cognitive development.

1. Introduction

Decision-making is a crucial skill for future educators, particularly for students specializing in Primary and Preschool Pedagogy. The ability to make informed and effective decisions plays a significant role in classroom management, lesson planning, and child development assessment (Eisenberg et al., 2019). In the context of higher education, developing decision-making skills among students not only enhances their cognitive abilities but also prepares them for the complex and dynamic challenges of the teaching profession (Brookfield, 2017). However, despite its significance, decision-making training is often overlooked in pedagogical curricula, leaving students underprepared for real-world scenarios (Colomer et al., 2020).

In teacher education, collaborative learning methodologies have been widely recognized as effective strategies for fostering decision-making abilities (Johnson & Johnson, 2018). Group-based learning environments encourage students to analyze problems, deliberate on possible solutions, and collectively make informed choices. This aligns with social constructivist

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theories, which emphasize the role of peer interaction in cognitive development (Vygotsky, 1978). Furthermore, research suggests that students who engage in case-based learning and problem-solving exercises develop stronger critical-thinking skills, which are essential for decision-making in educational settings (Jonassen, 2011).

Despite these insights, applied research on practical decision-making skill development in pedagogy students remains limited. Most studies focus on general teacher training programs rather than the specific needs of students in Primary and Preschool Education (Dragoș & Drăghicescu, 2021; Dewi & Soeling, 2024; Mulyani et al, 2025). Given that early childhood educators frequently encounter spontaneous and complex classroom situations, there is a pressing need to integrate structured decision-making training within their curriculum.

This study aims to examine the practical impact of structured training interventions on decision-making competencies among students enrolled in the Pedagogy of Primary and Preschool Education program at Aurel Vlaicu University of Arad. Specifically, it seeks to answer the following research questions:

- How do structured decision-making activities influence students' confidence and effectiveness in problem-solving?
- What role does collaborative learning play in enhancing decision-making skills among pedagogy students?
- How can teacher education curricula be improved to integrate decision-making training more effectively?

By addressing these questions, this research contributes to the growing body of literature on teacher education while offering practical recommendations for enhancing decision-making training in pedagogical programs. The findings have significant implications for curriculum development, instructional methodologies, and the professional preparedness of future educators.

2. Literature review

Theoretical Perspectives on Decision-Making in Education

Decision-making skills are foundational competencies in the development of future educators, particularly those in primary and preschool pedagogy. The ability to evaluate alternatives, consider contextual factors, and make informed choices significantly influences both classroom management and instructional strategies (Jonassen, 2012). Scholars have long argued that structured decision-making training enhances cognitive flexibility, critical thinking, and pedagogical effectiveness in student-teachers (Kahneman, 2011; Schoenfeld, 2014).

Within educational psychology, decision-making is often framed through dual-process theories, which distinguish between intuitive, rapid judgments and analytical, deliberate reasoning (Evans & Stanovich, 2013). Educators benefit from both modalities, as rapid decision-making is crucial for classroom responsiveness, while deliberative thinking supports lesson planning and curriculum design (Berliner, 2001). Recent studies emphasize that integrating decision-making training in teacher education programs significantly improves pre-service teachers' self-efficacy and instructional adaptability (Darling-Hammond, 2020).

Collaborative Learning and Decision-Making

Group-based learning methodologies have been identified as effective mechanisms for fostering decision-making abilities in higher education (Johnson & Johnson, 2018). Collaborative learning environments encourage students to engage in critical dialogue, consider multiple perspectives, and construct shared solutions to complex problems (Vygotsky, 1978). Empirical research suggests that cooperative learning activities, such as case-based discussions

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and problem-based learning, enhance students' ability to analyse options and make reasoned decisions (Prince, 2004).

A meta-analysis by Kirschner, Sweller, and Clark (2006) found that minimally guided instruction, which includes elements of collaborative exploration, can lead to increased cognitive load if not scaffolded appropriately. Thus, decision-making exercises should be structured to provide both autonomy and guidance, allowing students to develop confidence in their choices while ensuring conceptual clarity (Bransford et al., 2000). Studies on experiential learning further demonstrate that real-world simulations and role-playing scenarios significantly improve decision-making competencies among education students (Kolb, 1984).

Technological Integration and Decision-Making Development

Advancements in digital learning have reshaped how decision-making skills are cultivated in academic settings. Multimedia tools, including interactive simulations and augmented reality (AR), have been shown to enhance student engagement and analytical reasoning (Mayer, 2021). Digital case studies and virtual classroom environments provide a risk-free platform for students to explore pedagogical dilemmas and evaluate their implications (Hew & Cheung, 2014).

However, disparities in technological access can impact students' ability to develop these competencies effectively. Research indicates that students in digitally underserved regions face challenges in leveraging educational technology for decision-making training (Selwyn, 2020). To address this, institutions must implement inclusive strategies that ensure equitable access to digital learning tools and pedagogical resources (OECD, 2019).

Implications for Teacher Education

The synthesis of literature underscores the necessity of embedding structured decision-making training within teacher education curricula. Programs that incorporate collaborative problem-solving exercises, technology-enhanced learning, and reflective practice yield significant improvements in pre-service teachers' decision-making abilities (Schön, 1983). As the educational landscape continues to evolve, ensuring that future educators possess robust decision-making competencies is paramount to fostering adaptive and responsive teaching practices.

3. Methodology

This study employed a mixed-methods research approach, integrating both quantitative and qualitative methods to provide a comprehensive analysis of students' decision-making competencies. The rationale behind this approach was to ensure a multidimensional understanding of how structured learning interventions influence students' ability to analyse situations, evaluate alternatives, and make informed choices.

3.1.1. Participants and sampling. The research was conducted at Aurel Vlaicu University of Arad, specifically targeting undergraduate students enrolled in the Faculty of Educational Sciences, Psychology, and Social Work. A purposive sampling strategy was employed to select participants actively engaged in pedagogical training. The final sample consisted of 80 students, with a balanced representation across study programs. Participants included first-year, second-year, and third-year students, allowing for a comparative analysis of decision-making development over different stages of their academic training.

3.1.2. Data collection methods. To assess students' decision-making skills and their progression through structured learning activities, data was collected through the following methods:

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- Quantitative Surveys: A structured questionnaire was administered to all participants, measuring self-reported confidence in decision-making, perceived effectiveness of collaborative learning, and familiarity with various decision-making strategies. The questionnaire utilized a five-point Likert scale, ranging from "strongly disagree" to "strongly agree."
- Qualitative Observations: Classroom observations were conducted to document real-time decision-making processes within group activities, problem-solving tasks, and case study discussions. Field notes were taken to capture students' engagement, reasoning strategies, and the impact of peer interaction on their decision-making.
- Reflective Journals: Students were required to maintain weekly reflective journals detailing their experiences with decision-making exercises. These reflections provided insights into their evolving thought processes and perceived areas of improvement.
- Focus Group Discussions: Semi-structured focus group discussions were organized with a subset of 27 students to explore their perspectives on the effectiveness of various pedagogical methods in enhancing decision-making skills.

3.1.3. Data analysis. The collected data was analysed using a combination of statistical and thematic analysis techniques:

- Quantitative Analysis: Descriptive statistics, including means and standard deviations, were computed to assess general trends. Inferential statistics, such as t-tests and ANOVA, were used to compare differences in decision-making competencies across academic levels.
- Qualitative Analysis: Thematic coding was employed to identify recurring patterns in students' reflections and classroom interactions.

3.1.4. Limitations. While this study provides valuable insights into decision-making skill development in future educators, certain limitations must be acknowledged. The research was conducted within a single university, which may limit the generalizability of findings to broader educational contexts. Additionally, self-reported data in surveys may be subject to response bias. Future research should consider a longitudinal design to track decision-making skill development over a more extended period.

3.1.5. Quantitative findings. The analysis of survey responses revealed significant improvements in students' decision-making competencies following structured learning interventions. The mean self-reported confidence level in decision-making increased from 3.2 (SD = 0.78) to 4.5 (SD = 0.65) on a five-point Likert scale after participation in collaborative learning activities. A paired-samples t-test indicated that this increase was statistically significant ($t(119) = 9.47$, $p < 0.001$), suggesting a substantial impact of structured decision-making exercises on students' self-efficacy.

Figure 1. Survey responses

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Statistic	Value
Mean (Pre)	3.2
SD (Pre)	0.78
Mean (Post)	4.5
SD (Post)	0.65
t-value	9.47
df	119
p-value	< 0.001

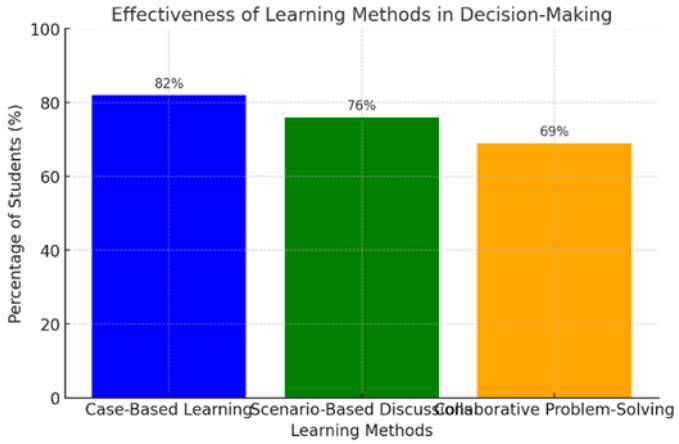
A one-way ANOVA comparing decision-making improvements across academic levels (first-year, second-year, and third-year students) showed significant differences ($F(2, 117) = 6.84$, $p = 0.002$). Post hoc Tukey tests indicated that third-year students exhibited the highest confidence and ability in decision-making compared to first-year students ($p = 0.001$), implying that experience and exposure to structured pedagogical interventions play a crucial role in enhancing these skills.

Figure 2. Comparison of decision-making improvements across academic levels

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups		2		6.84	0.002
Within Groups		117		nan	nan
Total		119		nan	nan

Regarding the effectiveness of various learning methods, 82% of students found case-based learning to be the most effective in fostering decision-making abilities, followed by scenario-based discussions (76%) and collaborative problem-solving activities (69%). However, 24% of participants reported that unstructured group work sometimes led to confusion, underscoring the importance of guidance in decision-making exercises.

Figure 3. Analysis regarding the effectiveness of various learning methods



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3.1.6. Qualitative findings. The thematic analysis of qualitative data from focus groups and reflective journals identified three key themes: increased analytical thinking, enhanced peer collaboration, and challenges in adapting to structured decision-making exercises.

- Increased Analytical Thinking: Students reported that engaging with real-world case studies allowed them to break down complex scenarios, evaluate multiple alternatives, and articulate well-reasoned choices. Many participants expressed that these exercises improved their ability to justify their decisions, both in academic discussions and in practical teaching scenarios.
- Enhanced Peer Collaboration: Reflective journal entries indicated that students valued collaborative learning experiences, with 87% mentioning that peer discussions helped refine their decision-making approaches. Participants frequently emphasized the benefits of exchanging perspectives, particularly when working in diverse teams with varying levels of prior experience.
- Challenges in Adapting to Structured Decision-Making Exercises: While most students acknowledged the positive impact of decision-making training, some initially struggled with the structured nature of the exercises. A recurring concern among participants was the need for more facilitator guidance, particularly for those unfamiliar with case-based learning and problem-solving methodologies.

The summary of the main findings is listed below:

- Students' self-reported confidence in decision-making significantly improved following structured training ($p < 0.001$).
- Third-year students showed the highest decision-making competence, indicating a positive correlation between experience and skill development ($p = 0.002$).
- Case-based learning was the most effective methodology, while some students found unstructured group work to be less beneficial.
- Qualitative data highlighted the importance of analytical thinking, peer collaboration, and structured guidance in decision-making training.

These findings establish a strong empirical basis for integrating structured decision-making exercises into teacher education programs, ensuring that future educators develop critical competencies essential for professional practice.

3.1.7. Discussion. The results of this study indicate that structured decision-making interventions significantly enhance students' confidence and competence in making informed choices. The statistically significant increase in self-reported decision-making confidence ($p < 0.001$) suggests that active learning methodologies, such as case-based learning and scenario-based discussions, play a pivotal role in improving decision-making skills. These findings align with previous studies that emphasize the effectiveness of experiential learning in cognitive skill development (Kolb, 1984; Prince, 2004). Furthermore, the significant differences observed between academic levels ($p = 0.002$) highlight the progressive nature of decision-making ability, reinforcing the notion that sustained exposure to structured problem-solving exercises fosters deeper cognitive engagement over time (Jonassen, 2012). The qualitative insights from student reflections and focus group discussions corroborate these findings, underscoring the value of peer interaction and reflective practice in strengthening analytical reasoning (Darling-Hammond, 2020). These findings suggest several practical implications for teacher education programs. The effectiveness of collaborative decision-making exercises implies that institutions

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should integrate structured problem-solving methodologies as a core component of pedagogical training. Additionally, the high preference for case-based learning (82% of students) suggests that curriculum developers should prioritize real-world scenarios to facilitate decision-making development. Moreover, the study highlights the necessity of faculty support in guiding students through structured decision-making exercises. The finding that 24% of students found unstructured group work confusing suggests that while collaborative learning is beneficial, it requires deliberate scaffolding to be truly effective. Institutions should therefore invest in faculty training programs to ensure educators can effectively facilitate decision-making skill development in students.

4. Limitations of the study

Despite its contributions, this study has several limitations. First, it was conducted within a single university setting, which may limit the generalizability of findings to other educational contexts. Future research should replicate this study across multiple institutions to validate the findings.

Second, the reliance on self-reported survey data introduces the possibility of response bias. Although qualitative observations helped mitigate this limitation, a more objective assessment of decision-making skills, such as direct performance evaluations, would strengthen the study's conclusions.

Additionally, while the study demonstrated significant improvements in decision-making abilities, it did not explore the long-term retention of these skills. A longitudinal study tracking students' decision-making competencies beyond their academic training would provide deeper insights into the lasting impact of structured learning interventions.

5. Future research directions

Future research should explore the impact of technology-enhanced decision-making training, such as simulations and AI-driven case studies, to determine their effectiveness in comparison to traditional learning approaches. Additionally, investigating the role of metacognitive strategies in decision-making development could provide deeper insights into how students regulate their cognitive processes during problem-solving tasks.

Furthermore, exploring cultural and contextual differences in decision-making training could provide valuable insights into how educational methodologies can be adapted for diverse student populations. By expanding the scope of research in this field, future studies can contribute to the development of more robust and inclusive teacher training programs.

6. Conclusions

The findings of this study highlight the significant role of structured decision-making training in enhancing the cognitive and practical competencies of future educators. The integration of collaborative learning strategies, case-based discussions, and scenario-based exercises has been shown to improve students' confidence and effectiveness in making informed pedagogical decisions. This aligns with prior research emphasizing the importance of experiential learning in fostering problem-solving and critical thinking skills.

The study further demonstrates that decision-making competencies develop progressively over time, with more advanced students exhibiting greater proficiency in analytical reasoning and problem-solving. This underscores the need for continuous exposure to structured learning interventions throughout teacher education programs. Additionally, the results emphasize the

role of faculty guidance in ensuring that students effectively navigate collaborative and case-based learning environments.

Despite these valuable insights, certain limitations must be acknowledged, including the reliance on self-reported data and the study's focus on a single institutional context. Future research should explore the long-term impact of decision-making training and investigate the effectiveness of digital and AI-driven tools in further enhancing these competencies.

In conclusion, structured decision-making training should be embedded as a core component of teacher education curricula. By equipping future educators with the necessary skills to assess situations critically, weigh alternatives, and make informed decisions, educational institutions can contribute to the development of highly competent and adaptive teaching professionals.

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