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PROJECT-BASED OUTDOOR AND NON-FORMAL LEARNING IN INITIAL TEACHER EDUCATION: AN EXPLORATORY QUALITATIVE STUDY

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Abstract

This exploratory qualitative study examined undergraduate students' experiences of project-based learning conducted in outdoor and non-formal educational contexts within an initial teacher education programme. The participants were 74 second- and third-year students enrolled in the Primary and Preschool Education Pedagogy programme who took part in a semester-long educational intervention involving outdoor activities, community-based projects, creative workshops, and applied interdisciplinary tasks. Data were collected through reflective journals, semi-structured focus groups, direct observations, and educational products developed by the students. The data were analysed thematically through an iterative process of coding, theme development, and comparison across data sources. Limited descriptive quantification was used only to summarise selected explicitly coded responses. The analysis generated four interrelated themes: increased engagement and motivation, perceived development of transversal competencies, a broader understanding of alternative educational approaches, and reflection on the transfer of learning to future teaching practice. Participants' accounts suggest that project-based outdoor and non-formal activities were experienced as meaningful opportunities for collaboration, autonomy, creativity, reflection, and professional learning. The findings provide exploratory support for the integration of such activities into initial teacher education, while their interpretation remains limited by the single-institution context, convenience sampling, and the predominantly qualitative nature of the data.

Keywords: *project-based learning; outdoor education; non-formal learning; initial teacher education; transversal competencies; qualitative research.*

1. INTRODUCTION

Contemporary teacher education is increasingly expected to prepare students for professional contexts that extend beyond the transmission of subject knowledge. Future teachers are required to communicate effectively, collaborate with others, respond flexibly to unfamiliar situations, reflect on their own practice, and design learning experiences connected to children's everyday lives. These expectations have encouraged universities to reconsider teaching approaches that remain centred primarily on lectures and the reproduction of theoretical content. Within this broader shift, project-based learning, outdoor

education, and non-formal learning have attracted attention as approaches capable of connecting academic knowledge with authentic educational situations.

Project-based learning is commonly understood as a student-centred approach in which learning is organised around meaningful questions, practical challenges, collaborative inquiry, and the development of concrete products or solutions. Rather than receiving information in a largely passive manner, students are expected to investigate, make decisions, negotiate responsibilities, and reflect on both the process and the outcomes of their work (Thomas, 2000; Krajcik & Blumenfeld, 2006). The approach is grounded in constructivist perspectives, according to which knowledge is actively developed through interaction, experience, and participation in socially and culturally meaningful contexts (Piaget, 1972; Vygotsky, 1978).

In initial teacher education, project-based learning may be particularly relevant because it allows students to experience the type of active pedagogy that they may later be expected to use in schools. When students design educational resources, organise activities for children, collaborate with community organisations, or respond to real educational problems, they are not merely learning about teaching at a theoretical level. They are also rehearsing professional decision-making, responsibility, communication, and pedagogical creativity. Such experiences may therefore contribute to the gradual connection between university learning and the realities of future professional practice.

The integration of outdoor education adds an experiential and contextual dimension to project-based learning. Activities conducted in natural, urban, or community spaces can create opportunities for observation, movement, inquiry, cooperation, and the direct application of disciplinary knowledge. Outdoor learning may also encourage students to reconsider the boundaries of the classroom and to recognise the educational value of local environments, public spaces, and community resources (Beames et al., 2012; Waite, 2011). For future primary and preschool teachers, this perspective is especially relevant because many curricular areas, including language, mathematics, science, art, and civic education, can be approached through direct exploration and interdisciplinary tasks.

Non-formal learning further broadens these possibilities. Characterised by flexible organisation, active participation, and an emphasis on personal and social development, non-formal education can complement formal university instruction by creating spaces in which students take initiative and assume greater responsibility for their own learning. Community projects, workshops, simulations, voluntary activities, and partnerships with non-governmental organisations may support forms of learning that are difficult to reproduce through conventional classroom instruction alone. They can also expose students to diverse social contexts and encourage them to consider education as a practice connected to civic participation, inclusion, and community responsibility (European Commission, 2015).

The educational relevance of these approaches can also be considered through a psychological lens. Project-based, outdoor, and non-formal activities may create conditions that support intrinsic motivation when students perceive tasks as meaningful, experience a degree of choice, and feel that their contribution matters. From the perspective of self-determination theory, learning environments that support autonomy, competence, and relatedness are more likely to encourage sustained and self-directed engagement (Deci & Ryan, 2000). However, participation in an innovative activity does not automatically produce

motivation. Students may respond differently depending on their prior experiences, perceived competence, group relationships, and the extent to which the activity is genuinely relevant to them.

Similar caution is necessary when discussing autonomy and self-regulation. Project work often requires students to plan tasks, organise resources, monitor progress, and adjust their strategies. These processes may contribute to the development of self-regulated learning, particularly when students are encouraged to reflect on difficulties and evaluate their own decisions (Zimmerman, 2002). Yet autonomy should not be understood as the simple absence of teacher guidance. In educational projects, it is usually developed through structured support, negotiated responsibility, and opportunities to make increasingly complex decisions.

The concept of self-efficacy is also relevant to the preparation of future teachers. When students successfully design and facilitate educational activities, solve practical problems, or receive constructive feedback from peers and community partners, they may develop greater confidence in their capacity to act in professional situations (Bandura, 1997). At the same time, such confidence can remain fragile if it is based only on isolated positive experiences. It is therefore useful to examine how students themselves interpret these experiences and whether they connect them to their future roles as teachers.

Reflection represents another central dimension of experiential and project-based learning. Reflective journals, group discussions, and feedback activities may help students move beyond the description of what happened and consider why particular decisions were effective, what difficulties emerged, and how their understanding of teaching changed. This process is closely related to the formation of professional identity, which develops gradually through the interaction between personal beliefs, educational experiences, institutional expectations, and imagined future practice (Beijaard et al., 2004). In this sense, initial teacher education does not simply provide techniques. It also offers contexts in which students begin to define what kind of teachers they hope to become.

Despite the growing interest in project-based, outdoor, and non-formal education, the combination of these approaches has received comparatively limited attention in the context of initial teacher education. Much of the literature discusses their general pedagogical benefits or their application with children and school pupils. Less is known about how university students preparing for the teaching profession experience combined project-based, outdoor, and community-oriented activities, how they interpret their own learning, and which aspects they consider transferable to future classroom practice.

This gap is relevant because claims concerning engagement, autonomy, creativity, or professional development should not be based solely on the presumed value of innovative teaching methods. They need to be examined through empirical evidence and through careful attention to participants' accounts. A qualitative perspective is useful in this regard because it allows researchers to explore the meanings students assign to their experiences, the tensions they encounter, and the ways in which they connect practical activities with their developing professional identities.

The present study addresses this issue by exploring the experiences of undergraduate students enrolled in the Primary and Preschool Education Pedagogy programme who participated in a semester-long educational intervention integrating project-based learning,

outdoor activities, creative workshops, interdisciplinary investigations, and community-based projects. The study focuses on how students described their participation, what forms of personal and professional learning they associated with these experiences, and how they understood the possible transfer of such learning to their future teaching practice.

2. RESEARCH AIM AND RESEARCH QUESTIONS

The aim of this study was to explore how undergraduate students enrolled in an initial teacher education programme experienced project-based learning activities conducted in outdoor and non-formal educational contexts. More specifically, the study sought to examine the meanings students attributed to their participation in these activities, the forms of personal and professional learning they associated with the experience, and the extent to which they perceived such learning as relevant to their future teaching practice.

The study was guided by an exploratory qualitative perspective. It did not seek to test causal relationships or to determine the effectiveness of the educational intervention through standardised measures. Instead, it focused on students' subjective accounts, reflections, and interpretations of their participation in a semester-long programme that combined project-based learning, outdoor activities, interdisciplinary tasks, creative workshops, and community-based educational experiences.

The following research questions guided the study:

1. How did undergraduate students describe their experiences of participating in project-based outdoor and non-formal learning activities?
2. What forms of personal and professional learning did students associate with their participation in these activities?
3. How did students perceive the relevance and possible transfer of these experiences to their future teaching practice?

These questions were formulated to capture the experiential, reflective, and professionally oriented dimensions of the intervention. They also provided the analytical framework for examining the reflective journals, focus-group discussions, observation notes, and educational products generated during the project.

3. METHOD

3.1. Qualitative Research Design

The study employed an exploratory qualitative design to examine undergraduate students' experiences of project-based learning conducted in outdoor and non-formal educational contexts. More specifically, the research focused on a semester-long educational intervention implemented within an initial teacher education programme.

A qualitative approach was selected because the study sought to understand how students interpreted their participation in the activities, what forms of personal and professional learning they associated with these experiences, and how they perceived the relevance of such learning to their future teaching practice. The study did not aim to establish causal effects or to measure changes in competencies through standardised instruments.

The primary sources of data were students' reflective journals, semi-structured focus-group discussions, direct observation notes, and educational products developed during the intervention. Limited descriptive quantification was used only to indicate the occurrence of selected explicitly coded responses. Such numerical summaries were treated as supplementary to the qualitative analysis and not as inferential evidence of effectiveness.

3.2. Participants and Sampling

The participants were 74 second- and third-year undergraduate students enrolled in the Primary and Preschool Education Pedagogy programme at Aurel Vlaicu University of Arad, Romania. Their ages ranged approximately from 19 to 57 years. The group included 69 women and 5 men.

Participants were recruited through convenience sampling because they were enrolled in the courses within which the educational intervention was implemented. All students involved in the semester-long activities were invited to participate in the research component of the project. Of the 90 students invited, 74 agreed to participate and provided informed consent.

Participation in the educational activities formed part of the academic programme, whereas participation in the research component was voluntary. Students were informed that their decision to participate or not participate in the study would have no influence on their course grades, academic evaluation, or relationship with the teaching staff.

All 74 participants contributed data through direct observation and project products. Reflective journals were submitted by 24 participants, while 50 students took part in the focus-group discussions. Where participants contributed to only some sources of data, this was taken into account during analysis and interpretation.

The intervention was situated within the curriculum of the Primary and Preschool Education Pedagogy programme and was designed to connect theoretical coursework with experiential, interdisciplinary, and community-based learning.

3.3. Educational Intervention and Procedure

The educational intervention was conducted over one university semester, lasting approximately 14 weeks. It included approximately 11 sessions or activity blocks. The intervention combined project-based learning with outdoor education, non-formal activities, interdisciplinary investigations, creative workshops, and community-based projects.

The intervention was organised into three broad stages: planning, implementation, and evaluation-reflection. During the planning stage, students were introduced to the aims of the projects, formed working groups, selected or received thematic tasks, and developed initial activity plans. During the implementation stage, they participated in outdoor and community-based activities, designed educational resources, collaborated with local organisations, and carried out practical tasks. During the final stage, students reflected on the experience through journals, group discussions, feedback sessions, and the presentation of project products.

The main activities included outdoor reading and writing sessions, creative workshops using natural materials, interdisciplinary mathematics and science investigations, community

projects conducted in cooperation with schools and non-governmental organisations, and simulations focused on real-world educational or civic problems.

Outdoor reading and writing sessions were conducted in green spaces near the university campus. Students participated in reflective writing, creative writing inspired by natural elements, and group discussions organised outside the conventional classroom environment.

Creative workshops included activities such as wild art, shadow drawing, and the construction of thematic products using leaves, branches, stones, flowers, and other natural materials. These activities required students to work collaboratively, negotiate ideas, and produce educational resources that could later be adapted for preschool or primary school settings.

Applied mathematics and science activities included measurement tasks, compass orientation, observation of natural phenomena, and the construction of a sundial. These activities were designed to encourage students to translate abstract curricular concepts into concrete and interdisciplinary learning experiences.

Community-based projects were carried out in partnership with schools, local institutions, and non-governmental organisations. Students designed and facilitated educational games, creative workshops, and learning activities for children, including children from socially or educationally disadvantaged contexts.

Problem-solving simulations addressed issues such as the lack of green spaces, environmental pollution, traffic safety, local heritage, nutrition, and community participation. Students were asked to propose educational interventions, allocate responsibilities, design implementation plans, and present their solutions.

All students participated in a common core of activities, although some project tasks differed according to group topic, partner organisation, and selected educational context. The coordinating teaching staff facilitated the intervention, provided feedback, and observed student participation throughout the semester.

3.4. Data Collection

Data were collected from four complementary sources: reflective journals, semi-structured focus-group discussions, direct observations, and educational products. The use of multiple sources made it possible to examine students' experiences from individual, collective, behavioural, and product-oriented perspectives.

3.4.1. Reflective Journals

Students completed reflective journals following the main activity blocks. The journals were submitted digitally and included responses to guiding prompts concerning meaningful learning experiences, emotional and cognitive engagement, collaboration, difficulties encountered, perceived competency development, and possible applications in future teaching practice.

Each participant submitted approximately 7 journal entries, resulting in a corpus of 98 reflective texts. Students were encouraged to describe both positive and difficult aspects of the experience rather than provide only favourable evaluations.

For the purposes of the research, identifying information was removed from the journal entries and each participant was assigned an anonymous code.

3.4.2. Focus-Group Discussions

At the end of the intervention, 8 semi-structured focus groups were conducted, with approximately 10 to 12 participants in each group. The discussions lasted between 45 and 60 minutes and were moderated by the researcher.

The interview guide included questions about students' overall experience, perceived changes in engagement, collaboration, autonomy, confidence, professional learning, and the potential transfer of the activities to future teaching practice. Participants were also invited to discuss less successful experiences, practical constraints, and aspects they would modify.

The focus groups were audio-recorded with participants' consent and transcribed verbatim. The discussions were conducted in Romanian, and quotations selected for publication were translated into English. The translations were checked against the original wording to preserve participants' intended meaning.

3.4.3. Direct Observation

Direct observation was conducted by the coordinating teaching staff throughout the intervention. Observations were recorded using a structured grid focused on active participation, responsibility, cooperation, initiative, autonomy, communication, problem solving, and engagement with the tasks.

Observation notes were completed during or immediately after the activities. The observers also recorded contextual information, critical incidents, group dynamics, and examples of student behaviour that supported or contradicted emerging interpretations.

Because the teaching staff were involved both in facilitating and observing the activities, the dual role of teacher and researcher was considered during interpretation. Observation data were therefore used in conjunction with the other sources rather than as independent evidence of change.

3.4.4. Educational Products

The educational products analysed included portfolios, lesson scenarios, outdoor learning plans, creative materials, interdisciplinary resources, community project proposals, and presentation materials. A total of 60 individual and group products were included in the analysis.

The products were examined in relation to the research questions, particularly for evidence of interdisciplinary thinking, pedagogical creativity, collaboration, adaptation to authentic contexts, and anticipated transfer to future teaching practice. They were not evaluated as standardised measures of competency development.

3.5. Data Analysis

The data were examined using thematic analysis. The analytical process was primarily inductive, as the initial codes were generated from participants' accounts and the empirical material. However, the analysis also included a limited deductive component informed by the

research questions and by sensitising concepts such as engagement, autonomy, reflection, collaboration, self-efficacy, and professional learning.

The analysis followed several iterative stages. First, the researchers familiarised themselves with the dataset by repeatedly reading the reflective journals, focus-group transcripts, observation notes, and selected project products. Initial comments and preliminary patterns were recorded during this stage.

Second, relevant segments of the material were assigned descriptive and interpretative codes. Coding focused on how students described their participation, the meanings they attributed to the activities, the forms of learning they identified, the difficulties they encountered, and the ways in which they connected the experience to their future professional roles.

Third, related codes were compared and grouped into broader categories. These categories were then examined across the different sources of data to identify convergent, complementary, and divergent patterns. Reflective journals and focus-group transcripts constituted the primary sources for theme development, while observation notes and educational products were used to contextualise and triangulate the participants' accounts.

Fourth, preliminary themes were developed and reviewed in relation to the coded extracts and the complete dataset. Themes were retained when they represented coherent patterns relevant to the research questions and when they were supported by more than isolated statements. Attention was also given to responses that did not conform to the dominant patterns.

Fifth, the themes were refined, defined, and named. The final thematic structure included four interrelated themes: engagement and motivation, perceived development of transversal competencies, reconsideration of alternative educational approaches, and reflection on transfer to future teaching practice.

The analysis was conducted by 2 researchers. The researchers initially coded a selection of the material independently and then compared their interpretations. Differences were discussed until a shared interpretation was reached.

Limited descriptive quantification was applied only after the thematic coding had been completed. Frequencies were calculated for selected explicit responses, such as participants stated intention to use outdoor or non-formal activities in their future teaching. These counts referred to the number of participants who clearly expressed the respective idea in the analysed data and were not interpreted as statistical measures of effect.

3.6. Ethical Considerations

The study was conducted in accordance with recognised ethical principles for educational research.

Before data collection, participants received written and oral information about the aims of the study, the types of data collected, the voluntary nature of participation, and their right to withdraw without academic consequences. Written informed consent was obtained from all participants included in the research.

Students were explicitly informed that participation in the research component was separate from participation in the educational activities and that refusal to participate would not affect their grades, assessment, or academic standing. Data used for research purposes

were accessed and analysed only after the academic evaluation of the relevant activities had been completed.

Confidentiality was protected by removing names and identifying details from journals, transcripts, observation records, and project materials. Participants were assigned anonymous codes, such as RJ01 for reflective journals and FG02 for focus-group contributions. Quotations included in the manuscript were selected and presented in a manner that prevented identification.

Participants in the focus groups were also reminded that, although the researchers would protect the confidentiality of the records, complete confidentiality among group members could not be guaranteed. They were therefore asked not to disclose the content of the discussions outside the group.

All digital materials were stored in password-protected files, while any paper-based materials were kept in secure storage accessible only to the research team.

3.7. Reflexivity and Qualitative Rigor

Several procedures were used to strengthen the credibility and transparency of the analysis. First, methodological triangulation was achieved through the comparison of reflective journals, focus-group discussions, observation notes, and educational products. Convergence across sources was considered supportive of an interpretation, while discrepancies were examined rather than removed.

Second, the analytical process was documented through coding notes, theme-development tables, and records of decisions concerning the inclusion, modification, or rejection of themes. This audit trail made it possible to trace the development of the findings from the initial material to the final thematic structure.

Third, the researchers engaged in reflexive consideration of their roles in the educational intervention. Because the coordinating teaching staff were also involved in data collection and interpretation, particular attention was paid to the possibility that students might provide socially desirable responses or emphasise positive experiences. The analysis therefore included negative cases, ambivalent responses, practical difficulties, and statements that challenged favourable interpretations.

Fourth, quotations and concrete examples were retained in the Results section to demonstrate the connection between the interpretations and the original data. Themes were not treated as objective entities discovered independently of the researchers, but as interpretative patterns developed through systematic engagement with the dataset.

Finally, the study provides contextual information about the participants, institutional setting, intervention, and data-collection process so that readers can assess the potential transferability of the findings to other initial teacher education contexts.

4. RESULTS

The thematic analysis generated four interrelated themes:

- engagement and motivation through experiential participation,
- perceived development of transversal competencies,

- reconsideration of outdoor and non-formal education, and
- reflection and anticipated transfer to future teaching practice.

The themes were developed primarily from reflective journals and focus-group discussions, while observation notes and educational products were used to support and contextualise the analysis.

4.1. Engagement and Motivation Through Experiential Participation

Students frequently contrasted the intervention with more conventional university learning. Outdoor activities, creative workshops, simulations, and community projects were described as more engaging because they required direct participation, practical decision-making, and collaboration.

Participants also associated engagement with the visible purpose of the activities and the opportunity to apply theoretical knowledge in concrete situations.

Engagement was not experienced uniformly. Some students reported initial hesitation when they were required to speak publicly, coordinate peers, or facilitate activities with children.

Observation notes suggested that, over time, students became more willing to distribute responsibilities, adapt plans, and make decisions independently.

At the same time, participants mentioned difficulties related to time management, weather conditions, unclear expectations, and unequal group participation.

These responses indicate that engagement depended not only on the novelty of the activities, but also on task structure, facilitation, and group dynamics.

4.2. Perceived Development of Transversal Competencies

Students identified communication, collaboration, creativity, problem solving, responsibility, autonomy, and leadership as competencies practised during the intervention.

Communication was discussed mainly in relation to teamwork, interaction with children, and the presentation of project outcomes.

Collaboration was described as both productive and demanding. Students valued the exchange of ideas but also referred to tensions caused by uneven involvement and different levels of commitment.

Creativity and problem solving were particularly evident in tasks that required students to adapt curricular content to outdoor settings, create materials from available resources, or revise activities when initial plans did not work.

Students also associated responsibility with the awareness that their decisions affected colleagues, partner organisations, and children.

However, the findings do not demonstrate measurable increases in competencies. They indicate that participants perceived the intervention as a context in which these competencies were actively practised.

4.3. Reconsidering Outdoor and Non-Formal Education

Some participants initially associated outdoor education mainly with recreation or extracurricular activities. Following the intervention, they described outdoor spaces as possible environments for structured curricular and interdisciplinary learning.

Activities involving measurement, compass orientation, creative writing, natural materials, and community exploration helped students connect theoretical content with direct experience.

Participants also reconsidered non-formal education. Several students reported that they had previously viewed such activities as relatively spontaneous, whereas the intervention showed them that non-formal learning also requires clear objectives, planning, role distribution, and reflection.

Students nevertheless identified barriers to future implementation, including limited time, safety concerns, administrative requirements, weather conditions, and insufficient institutional support.

An explicit intention to use outdoor or non-formal activities in future teaching was identified in the accounts of 42 participants, representing approximately 56% of the sample. This value was derived from explicitly coded statements and should be interpreted as a descriptive summary rather than as a standardised measure of behavioural intention.

4.4. Reflection and Anticipated Transfer to Teaching Practice

Reflective journals showed that students became more aware of their personal strengths, limitations, and responses to responsibility. Some reported increased confidence in organising activities, communicating with children, coordinating peers, or adapting to unexpected situations.

Others used reflection to identify areas that required further development, such as giving clearer instructions, managing time, or adapting activities to children's needs.

The project included the metaphor of a personal "superpower" as a reflective prompt. Students associated this metaphor with qualities such as empathy, patience, creativity, organisation, and adaptability.

The metaphor was treated as a pedagogical tool rather than as an independent analytical category. Its relevance lay in the way it encouraged students to connect personal qualities with future professional actions.

Participants also described how they might use outdoor, non-formal, and project-based activities in their future teaching.

Some participants referred specifically to collaboration with community organisations.

These statements reflected intentions and perceived relevance rather than evidence of sustained implementation. Some students acknowledged that they would need additional experience, institutional support, and classroom management strategies before using such approaches independently.

Overall, the findings suggest that students experienced the intervention as a meaningful context for practical, collaborative, and reflective learning. At the same time, their accounts revealed uncertainty, logistical difficulties, and concerns about future implementation. The results therefore provide exploratory qualitative evidence regarding perceived learning and professional relevance, but they do not establish causal effects or measurable competency development.

5. CONCLUSIONS

This exploratory qualitative study examined how undergraduate students in an initial teacher education programme experienced project-based learning activities conducted in outdoor and non-formal contexts. The findings suggest that participants perceived these activities as meaningful opportunities for active involvement, collaboration, reflection, creativity, and professional learning.

Students' accounts indicated that the practical and experiential character of the intervention supported their engagement and encouraged them to connect theoretical knowledge with concrete educational situations. They also described the projects as contexts in which they could practise communication, teamwork, problem solving, responsibility, autonomy, and pedagogical decision-making. These findings refer to participants' perceptions and should not be interpreted as evidence of objectively measured competency development.

The study also suggests that participation in outdoor and non-formal activities broadened students' understanding of where and how learning can occur. Several participants came to view natural and community spaces as potential educational resources and recognised that non-formal activities require clear objectives, planning, adaptation, and reflection. At the same time, students identified practical constraints, including limited time, safety requirements, weather conditions, group coordination, and the need for institutional support.

Reflective activities appeared to help students identify personal strengths, recognise areas requiring further development, and connect the intervention with their emerging professional identities. Participants expressed intentions to adapt some of the experienced methods to their future teaching practice, although such intentions do not demonstrate that these approaches will be implemented consistently in professional settings.

The findings provide exploratory support for the inclusion of project-based, outdoor, and non-formal learning experiences in initial teacher education. Their educational value appears to depend on careful planning, appropriate facilitation, opportunities for reflection, and a clear connection between practical activities and professional learning objectives.

The study has several limitations. It was conducted within a single university programme and involved a convenience sample of students from the same field of study. The findings are based mainly on reflective accounts, focus-group discussions, observations, and educational products, which may have been influenced by social desirability and by the dual role of the teaching staff as facilitators and researchers. Furthermore, the study did not include standardised measures, a comparison group, or long-term follow-up. The findings should therefore be understood as context-specific and exploratory rather than generalisable evidence of effectiveness.

Future research could examine similar interventions across several universities, include more diverse student groups, and investigate how participants apply outdoor and non-formal approaches during teaching practice or after entering the profession. Further studies could also combine qualitative data with validated measures of motivation, self-efficacy, self-regulation, professional identity, or transversal competencies.

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