

FOSTERING SOFT SKILLS CURRICULUM THROUGH COLLABORATIVE MUSIC PROJECTS IN THE INITIAL EDUCATION STAGE OF PRIMARY TEACHERS

By

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Abstract

Considering the growing significance of non-technical skills such as communication, teamwork, and adaptability for 21st-century educators, this research explores the effectiveness of project-based learning (PBL) in fostering these competencies. This study examines the development of soft skills in pre-service primary education would-be teachers through a project-based learning (PBL) intervention using the emerging technology (artificial intelligence AI) tools within a Music in Primary Education course. A qualitative exploratory approach was adopted to collect data from 49 participants and data analysis was performed using ATLAS.ti7. Four researchers independently coded the data and then consolidated their code maps to achieve a 97 % consensus. Both inductive and deductive analysis were applied to analyze the experiences of 49 students over two sessions. The findings highlight PBL's transformative potential in developing essential soft skills, shifting students from passive recipients to active content creators. Notably, autonomy, self-confidence, commitment, resilience, empathy, and problem-solving abilities were significantly enhanced through collaborative tasks and reflective practices. Students reported increased motivation, improved teamwork, and a deeper understanding of the interplay between hard and soft skills. This research advocates for a holistic competency framework in teacher training that integrates technical proficiency with socio-emotional intelligence, aligning with frameworks such as UNESCO's Education 2030. It emphasizes the need for teaching models that harness digital tools to promote innovation, collaboration, and critical thinking, preparing future educators for increasingly dynamic and digital classrooms.

Introduction

There is a strong and growing feeling in higher education that, while cognitive knowledge and psychomotor skills remain important aspects of courses, much more could and should be done to foster and develop, broader-based objectives related to the skills required by a graduate in later life-skills which are much sought after by employers when recruiting new staff. Examples of such 'broader' skills include decision making, communication, problem

solving, creative thinking, and interpersonal skills. In a complex and rapidly changing society, students are not likely to succeed for long in the outside world purely on the basis of cognitive attainment at college. The 'Education for Capability' movement argues along these lines when stressing the importance of process rather than content in learning. Indeed, if the description of education as 'what is left after the facts have been forgotten' is accepted as having value, then the argument for formulating objectives related to the 'broader skills' area, together with careful consideration of approaches and methods likely to foster their development, becomes very powerful.

In his introduction to the value of soft skills in popular music education, Wang (2021) explains that in an increasingly complex and interconnected world, the skills required for personal and professional success are undergoing a profound transformation. While technical expertise remains a cornerstone of career advancement, the growing emphasis on soft skills such as communication, teamwork, adaptability, creativity, and emotional intelligence essential for 21st-century personal, social, and professional growth has led to a more holistic approach towards competency development.

Recognising the limitations of traditional teaching methods in fostering these competencies, researchers have explored innovative approaches such as game-based learning (GBL) (McGowan, Lopez-Serrano, & Burgos, 2023) and project-based learning (PBL), which enhance motivation and facilitate active knowledge acquisition (Modn 2022). Identifying the skills required by the labour market is also crucial for ensuring graduate success. Consequently, higher education institutions are increasingly integrating these competencies into curricula to align with the demands of a rapidly evolving global society. This has led to innovative methodological interventions, such as introduction of core curriculum and minimum academic standard (CCMAS) for the Nigerian university system, aimed at fostering holistic human development by providing non-traditional soft skills learning experiences (NUC, 2022).

Historically, university education has prioritised hard skills due to their measurability and direct correlation with academic and professional performance. However, the rise of automation, globalisation, and complex societal challenges have underlined the need for soft skills (Kolade & Owoseni, 2022). Employers now place increasing value on competencies such as communication and teamwork (Robles 2012), which significantly enhance employability, career progression, and job satisfaction.

To structure the understanding and development of these skills, this study draws on the CASEL (Collaborative for Academic, Social, and Emotional Learning) framework, which identifies five core competencies: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. Teacher perspectives on social-

emotional learning (SEL) are also critical (Hamer, Ross & Holland, 2024), reinforcing the need to consider their role in integrating these skills into education.

The growing recognition of soft skills reflects a broader educational shift towards constructivist and socio-constructivist approaches (Vygotsky, 1978) rooted in humanistic theories (Rogers, 1961) and the increasing emphasis on critical thinking (Ennis, 1987). Emotional intelligence, encompassing self-awareness, empathy, and social skills, is now seen as a key driver of success (Goleman, 1998). The conceptualisation of 21st-century skills (Roegiers, 2016) has reinforced the importance of integrating and assessing these competencies within education.

Policy instruments such as “Education 2022: NUC Strategic Plan”, whose content of the document reaffirms government's commitment to strengthening institutional structures and establishing innovative approaches that would quickly revamp the education sector and UNESCO's Education 2030 Framework for Action (2016) highlight the need to embed soft skills in teacher training, advocating curricular redesign, innovative assessment methods, and a cultural shift towards empathy and inclusion. However, the key challenge remains that of how to effectively measure soft skills. Unlike hard skills, which are easily quantifiable, soft skills are subjective, context-sensitive, and influenced by individual and cultural factors (Wang, 2021).

Current assessment strategies integrate soft skills with academic content through collaborative and experiential learning. This strategy is particularly evident in music education, where skills such as empathy, creativity, and collaboration are closely linked to social and emotional intelligence. However, the lack of standardised assessment tools complicates evaluation. Systematic reviews highlight scarcity of research on integrating soft skills through PBL in music education (Bussu & Mangiarulo, 2024; Concina, 2023), thereby highlighting the need for further investigation.

Additionally, the use of ICT tools enhances communication, collaboration, and personalised learning, fostering autonomy and adaptability particularly in teacher training (Snape, 2017). An increasing number of studies have found that PBL has emerged as a transformative pedagogical approach, promoting motivation, critical thinking, and problem-solving while also addressing educational equity. By shifting students from being passive recipients to active co-creators of knowledge, PBL fosters leadership, resilience, and teamwork (Bovill, 2020).

In teacher training, Melser (2019) highlights that soft skills are essential for navigating diverse classroom dynamics and fostering inclusive learning environments. This need is exemplified in the Music in Primary Education (MPE) course, a core course taught in the first

and second semester of the second year of the Primary Education degree at the Faculty of Education, University of Jos. The course integrates soft skills meaningfully into the curriculum.

The MPE course is meant to facilitate procedural and conceptual knowledge in music with sound pedagogical skills for the effective and efficient teaching and learning of the subject in schools. It equips teachers with contemporary skills and competency required for proper approach for teaching and learning in schools in an ICT compliant manner. This is in line with the Nigerian education goal to provide quality and trained competent teachers who can adequately train persons with special music skills and talent. NUC CCMAS puts the objectives of Primary education programme thus:

The main objectives of the B.A Ed primary education programme are to produce teachers who have basic understanding of teaching and learning processes in primary schools; train out teachers who have high level competence in using evaluative techniques and materials in such ways as to encourage the children with whom they work and to enhance their growth in meaningful ways; produce teachers who with knowledge, skills and sensitivity to interact with young children their parents guidance community and organisation whose action affect children positively; train teachers who have acquired competence in interpreting and implementing policies on primary education in the light of national philosophy and global expectation of education; and turn out teachers who are able to implement and proffer solution to curriculum issues including innovations in primary education. (NUC 2022, pp. 845).

This study aims to enhance would-be teachers interpersonal and cognitive skills, preparing them for professional challenges through a PBL environment centred on developing an interactive book. Activities such as auditory analysis, instrumental exploration, vocal training, and musical creation engage students in reflective and collaborative learning, fostering adaptability, creativity, and emotional intelligence (Barrett & Veblen, 2018).

To bridge hard and soft skills, an interdisciplinary intervention was designed using the ICT tool Book Creator, a platform that supports creativity, collaboration, and problem-solving. Its user-friendly interface, fast learning curve, and integration with resources such as Moodle make it an effective alternative to generic open-source software.

In this project, pre-service teachers initially associated musical instruments with their respective families and sounds, later linking them to specific compositions. This interdisciplinary approach promotes contextualised learning, as demonstrated in similar studies (Carvilhe et al., 2024; Esteve-Faubel et al., 2024). Prior research highlights the effectiveness of such projects in fostering both musical knowledge and interpersonal skills (Curtis & Fallin, 2014). Adapting teaching strategies to contemporary learning contexts is crucial for fostering students' interpersonal and professional skills, ultimately enhancing their employability.

Given previous studies demonstrating the effectiveness of PBL in developing musical knowledge, this research seeks to identify the specific soft skills cultivated through this academic project. Key competencies such as collaboration, communication, adaptability, and creative problem-solving highlighted in earlier studies (Melser 2019; Macqual et al 2020) are examined to assess their impact on pre-service teachers' professional preparedness.

Specifically, it seeks to explore whether these skills contribute to the enhancement of critical thinking, the optimisation of creative problem- solving, the cultivation of personal autonomy, or the improvement of communication and collaboration, among other examples. Accordingly, the following objectives are proposed:

Objectives of the study

1. To identify the key soft skills involved in the professional development of Primary Education pre-service teachers through the subject of Music.
2. To examine the role of the level of competency in the soft skills acquired as a determining factor for their development as future teachers.

Research questions

1. What are the key soft skills involved in the professional development of Primary Education pre-service teachers through the subject of Music?
2. What is the role of the level of competency in the soft skills acquired as a determining factor for their development as future teachers?

By addressing these objectives, the research seeks to contribute to the ongoing discourse on the integration of soft skills into university education. Furthermore, it aims to provide actionable insights for the design and implementation of effective teaching strategies, with a particular focus on the role of music education as a catalyst for holistic student development.

Methodology

This is a qualitative, exploratory, and descriptive study utilising semi-structured interviews through the focus group technique. This approach is justified as it aims to analyse and interpret participants' understanding of their conceptions regarding the subject matter within a specific social context.

Participants

The research sample comprised a total of 49 (30 female 19 male) students enrolled in the Degree in Primary Education Teacher Training, corresponding to the academic year 2024–2025 (n = 49)). Each participant participated in the intervention during the second semester of their second year of the degree programme. Informed consent was obtained from all participants prior to the study. They were made aware that their data and recordings would be made anonymous, used solely for research purposes,

Intervention procedure (project-based learning: interactive book on soft skills)

Before the intervention began with the students, the research team undertook several preparatory steps such as selection of key soft skills relevant to teaching profession from works of (Kechiagas 2014; Melser 2019; Macqual et al 2020). And a conceptual framework of the selected skills conducted, students were introduced to the concepts of soft skills through active learning activities and discussions.

The intervention spanned the entire 15-week duration of the second semester. The course involved 30 learning hours of in-class with some touch of out-class activities as the case may warrant. To see to the smooth conduct of the intervention, the investigator provided technical and resources support at each of the following phases in during intervention. In phase one, Cooperative workgroups of 6–7 members were established, ensuring heterogeneity based on the researchers' prior categorisation strategy. In the second phase, groups brainstormed and developed the theme, characters, storyline, and script for their interactive book, integrating the selected soft skills into the narrative. The third phase saw groups produced audio recordings and created/ selected visual elements for their book, utilising resources such as Canva, image banks, and recording equipment. At the fourth phase, using the Book Creator platform, groups designed the interface and integrated all content into a cohesive interactive book. And then at the fifth phase, groups finalised, reviewed, and prepared their interactive books for submission. Finally, students participated in a final discussion and feedback session, completed individual and group reflections and submitted their final group portfolios.

Analysis strategies

The focus group discussions and portfolio data were analysed using ATLAS.ti7. Four researchers independently coded the data and then consolidated their code maps to achieve a 97 % consensus. Both inductive and deductive analysis were applied.

Results**Demographics of respondents.****Table 1**

Socio-Demographic and musical training distribution.

Year	Female	Male	Total	Low Music (%)	Elementary (%)
2024–2025	30	19	49	55.77	44.23
Total	30	19	49	55.77	44.23

Students (aged 21–22) were 75.00 % female and 25.00 % male. Most had low (55.77 %) or elementary (44.23 %) musical training, while all possessed basic ICT and soft skills (see Table 1).

Research question one

What are the key soft skills involved in the professional development of Primary Education pre-service teachers through the subject of Music? Table 2 shows the Soft skills, classification and extent of development.

*Fostering Soft Skills Curriculum Through Collaborative Music Projects in The Initial Education
Stage of Primary Teachers*

Table 2

Soft skills: classification and development.

Exemplar Quotes						
Metacodes	Personal	Codes	Autonomy			
				— Those of us who knew more helped the others by telling them things to improve their work, even classmates in other groups, and we didn't mind! I'm happy. — I knew the least of everyone. First, I listened to what the other members of the group said and then I decided what to do or how to do things. I put my ideas forward and they accepted them.	95.7	4.3
			Self-confidence	— I didn't dare comment or say 'no' to anything that was proposed, and when we had to do it in class it was worse. But in the end, I saw that I was able to contribute, even in class, and that it didn't matter if I was wrong. It was fantastic. — I'm satisfied with what my group has achieved. The work turned out really well and the work of the rest of the class as well. There was a bit of everything, but all of them had something useful to offer. I suggest doing a mix of everything presented.	96.4	3.6
			Commitment	— In other jobs we always used to leave things to the end and just split it up. I liked this way of working on a daily basis, and I also liked the idea of sharing, not hiding our work so that the others wouldn't copy it for the sake of the grades, and the fact that we participated in everyone's evaluation, which I thought was great. — When I saw the group you'd put me in I said to myself: Oh no! However, I have to say that this is the first time in my entire degree that I have physically met up with my classmates after class to work on it more and more. We wanted to do it really well. Up until now, we would always simply divide up the parts of the work and that was it. I'm satisfied with the result.	100	—
			Curiosity	— I was really curious to learn how to work with or understand these things that I had no idea even existed. The same thing happened with all of us and later we commented to each other what we had discovered. — You can't imagine the number of tutorials I've watched on the internet. I've spent hours. I won't ever forgive you for that [smiles and looks at one of the researchers] but I think I now have a better handle on the demands of the task assigned to us.	97.7	2.3
			Resilience	— There were some horrible moments. We didn't know what to do next, but with the support of the whole group and, where necessary, by asking for help from those who were further ahead, we managed to reach the end. — The worst thing was when we lost part of the work we'd done when we closed the computer without saving it. We all gave it everything we had and managed to get it done in time.	98.8	1.2
	Social		Collaboration/ teamwork	— When you told me who I was going to work with, I just wanted the ground to swallow me up. I was terrified. But I was delighted in the end, and I didn't even get on well with my colleagues. What's more, I was in charge. — We don't know how you did it, but you forced us to work as a team. It really wasn't just another cut and paste of each person's work. I know that wouldn't have worked to do the task you asked us to do, but anyway we all worked on everything and in a coordinated manner. We're happy with the result. It was worth it.	100	—
			Empathy	— I liked the portfolio and being able to explain our doubts and how the project was taking shape in class. Resolving the queries of classmates, encouraging them or getting them to help me when we had a problem. — I've learned to listen first and then speak my mind. We always managed to reach an agreement, but it's not easy when we're so different.	98.2	1.8
			Leadership	— I managed to organise the group [female] and encourage them to do a good job of the tasks assigned. In reality, we were all leaders. — I never would have thought that A. [one of the girls in the group] would be so positive and organise us as well as she did. Always with a smile and getting the most out of everyone.	86.2	13.8
			Opening up	— We've learned to take each other's ideas into consideration and learn from each other by sharing tasks and opinions. — I realised that each person was good at something and we were all able to learn from each other.	96.8	3.2
			Problem solving	— When something didn't work out and we didn't know how to solve it, we stopped, talked about it and looked for a solution. L. [female] always said, let's ask whoever we need to, and she would pick up her phone or go off through the corridors of the Faculty chasing down whomever and wherever, but in the end we found a solution. — From asking our classmates right through to 'Google', we tried everything. We don't need to tell you as you know perfectly well [smiles] but we did it and we're proud of it.	98.1	1.9

Analysis of student portfolios and focus group discussions drew attention to the interconnection between hard and soft skills. As students engaged in collaborative tasks, their motivation and commitment increased, demonstrating how structured teamwork enhances both technical and interpersonal competencies. Table 2 presents the study's findings, showing a positive shift in students' perceptions of soft skills following task completion. To illustrate this, a pair of exemplary quotes has been selected for each skill, along with the percentage of participants who expressed agreement (+) or indifference (–) towards the statement.

The students' progression highlighted key competencies essential to their professional growth, including autonomy, self-confidence, problem-solving, and leadership. While autonomy (95.7 %) and self-confidence (96.4 %) showed substantial improvement, reflecting increased self-regulation and willingness to engage actively in group dynamics, commitment (100 %) and curiosity (97.7 %) demonstrated students' intrinsic motivation to explore new methodologies.

The development of resilience (98.8 %) was particularly noteworthy, as students learned to navigate challenges collaboratively, strengthening their ability to adapt under pressure. Likewise, teamwork and collaboration, initially limited to task distribution, evolved into meaningful cooperative efforts, supported by empathy (98.2 %) and openness (96.8 %). Although leadership (86.2 %) was the most challenging skill to cultivate, students gradually assumed roles that fostered group cohesion and decision-making.

By the end of the study, students recognised soft skills as dynamic and developable rather than fixed traits. This shift, coupled with their improved capacity for critical reflection and problem-solving (98.1 %), underscores the potential of well-structured PBL approaches in preparing future educators for the complexities of the teaching profession.

Discussion

The findings highlight the transformative potential of Project-Based Learning (PBL) and collaborative methodologies in developing essential soft skills, which are critical for preparing future educators to meet the evolving demands of contemporary education. These skills play a pivotal role in the professional development of Primary Education trainee teachers, particularly in regard to music education. Such methodologies facilitate the explicit development of competencies beyond technical teaching aspects, transforming the hidden curriculum into meaningful learning experiences.

This study adopts a holistic perspective, considering socio-educational context to enhance problem-solving, communication, and information literacy. Regardless of subject matter, this approach equips pre-service teachers with valuable tools applicable in compulsory education. Meaningful learning requires intentional planning that integrates hard and soft skills, including both formal and informal elements (Redecker, 2017).

A key aspect of this model is the transformation of students from passive recipients to active content creators. This shift fosters deeper learning by encouraging the application of knowledge in practical ways, supporting a transition towards student-centred education, increased autonomy and personalisation to enhance motivation and engagement. Moreover, active participation not only enriches students' educational experiences but also reshapes the social learning environment, fostering soft skills such as teamwork, empathy, and effective communication.

This inclusive approach strengthens students' sense of belonging — an essential factor for emotional well-being and holistic professional development. These findings align with the CASEL framework, particularly its emphasis on fostering relationship skills and responsible decision-making through active participation and collaborative learning.

Several soft skills emerged as critical for future educators, particularly autonomy, self-confidence, and commitment, which were reinforced through PBL's experiential and reflective components. Autonomy is central to decision-making and self-regulation, crucial for modern education. Self-confidence thrives in environments that encourage experimentation and iterative learning, aligning with Dweck's (2006) concept of "safe failure" spaces. Commitment, linked to intrinsic motivation, reflects educators' ability to engage meaningfully in collaborative efforts, supporting broader findings on the effectiveness of collaborative pedagogies in teacher education (Scardamalia & Bereiter, 2014). These skills directly correlate with the CASEL framework's competencies of self-management and responsible decision-making, highlighting the importance of creating learning environments that cultivate self-directedness and ethical judgment.

Resilience and problem-solving were identified as key skills for addressing classroom challenges and fostering innovation, supporting persistence and adaptability under pressure. Furthermore, the interplay between empathy, collaboration, and leadership underscores the social dimensions of teaching. Relational skills are essential for fostering inclusive and supportive learning environments. However, the lower acquisition of leadership skills suggests the need for targeted development in training programs, as these skills require extended practice and structured support.

In this context, the use of an interactive book to enhance music education for trainee primary school teachers has proven highly effective in developing personal, social, and musical competencies. This approach reflects a collaborative learning process encompassing cognitive processes, teaching design, educational innovation, and critical thinking — skills closely linked to emotional intelligence (Goleman, 2005). In short, self-regulation, motivation, empathy, and both soft and hard skills play a crucial role in effective learning.

Conclusion

Active and creative methodologies such as PBL enable educators to prepare future teachers not only in technical competencies but also in social and emotional skills, essential for modern classrooms. This study advocates for a holistic competency framework in teacher training. Looking ahead, emerging technologies such as artificial intelligence and virtual reality could further enhance interpersonal skills, preparing future educators for increasingly digital classrooms (Liu, 2024). The limitation of the study is with the reliance on self-assessments which presents challenges to objective evaluation. Future research should explore how learning environments can simultaneously foster subject-specific competencies and transversal skills while also investigating alternative assessment methods that enable more precise and context-sensitive measurement of these abilities.

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