

Proposal of a Pedagogic Approach in Online Education: Phenomenon Based Learning

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Abstract

During the Covid-19 pandemic, education took place online in many parts of the world. In addition to the inadequacy of the technical infrastructure, learning losses increased owing to a lack of pedagogical approaches suitable for the online environment, including lesson plans, strategies and course materials. Phenomenon Based Learning is a pedagogical approach aims to develop 21st-century skills and to prepare students for the future not only by disseminating information but by forcing students to process it. In this interdisciplinary, holistic approach to education, students take responsibility for their learning by questioning, determining key phenomenon, performing research, and presenting projects in cooperation with their peers. In this research, a Preschool Music Education course in the music education department of a public university in Turkey was examined using a Phenomenon Based Learning approach online for one semester. The effect of this approach on the pre-service teachers' preschool music education competencies and their level of success in preschool music education has been investigated. In this experimental study, which used a single-group pretest-posttest model, the data obtained at the end of the 14-week process showed the following result: Phenomenon Based Learning significantly increased the level of self-efficacy and success of music teacher candidates in preschool music education.

Keywords: *Phenomenon Based Learning, Preschool Music Education, Music Education, Online Education, Higher Education.*

I. Introduction

In the spring of 2020, the world faced the Covid-19 pandemic. When the pace of the pandemic could not be stopped, partial and complete closures took place to reduce social encounters and human contact. As a consequence, teaching and learning processes changed significantly, and schools at various levels around the world implemented distance education. As in many parts of the world, education was conducted online at all levels in Turkey. Although there were attempts to return to face-to-face education after a while, education in universities was carried out online for one and a half years.

At the university level, online education is not a brand-new situation. Many universities, institutes, and government institutions have been offering online training and modules for many years. Owing to the increasing need for accurate and up-to-date information on dynamics related to globalization and changing social and economic conditions, the increase in communication and computer technologies, the rapid spread of information, and the need for training personnel to face new market conditions (Odabaş, 2004, p. 2), distance education services emerged. The advantages of online education have been expressed by students, who admire its economic efficiency, repetition, pace-based learning, independent initiatives, and time and space flexibility (Er Türküresin, 2020; Keskin & Özer Kaya, 2020; Yolcu, 2020).

However, the fact that all education and training became online during the pandemic period also raised a number of problems. “Burdened with multiple new demands for which they were unprepared, and in many cases inadequately resourced, the capacity of education leaders and administrators, who were also experiencing the stressors...faced by students and teachers was stretched considerably” (Reimers, 2022, p.2). These stressors, including technological infrastructure (lack of internet connectivity or necessary equipment) and isolation, hindered the online learning process. “Teaching online requires not only technological knowledge but also a different pedagogy in order to keep students engaged and motivated to learn” (Prensky, 2001). It has become clear that there is a need for pedagogical approaches that can minimize learning losses, encourage students to learn, research, go deeper into the subject, associate the studied subject with daily and future life, see the big picture, and integrate these aims with technological support. As a matter of fact, research (Er Türküresin, 2020; Keskin, Özer Kaya 2020; Özdoğan & Berkant, 2020; Yolcu, 2020) suggests that students often complaints ineffective learning, impermanence, lack of communication and focus, lack of fun, and loss of motivation in online education in addition to technological problems. Problems also exist related to inequality of opportunity in education and lack of peer learning, assessment, and evaluation.

Phenomenon Based Learning (PhBL) provides useful opportunities to direct students’ research by using technological opportunities to keep them motivated and connected with the subject, their teacher, and their classmates. PhBL might be a key “into versatile utilisation of different learning environments (e.g. in diversifying and enriching while using eLearning environments)” (Silander, 2015-2019).

Phenomenon Based Learning

Finland introduced PhBL into the National Curriculum program in 2016, a teaching and learning approach in which course topics are dealt with in an integrated and holistic way, emphasizing interdisciplinary topics rather than processing individual course topics in schools (Sahlberg, 2018, p. 95). “In the core curriculum 2016 PhBL is referred to with multidisciplinary learning modules and integrative teaching” (Karlsson, 2017, p.29). The main goal of the new curriculum was to teach young people what they needed for their lives (Sahlberg, 2018, p. 97). As stated in Lonka (2019, p.69)’s interview with Jari Lavonen, the emphasis in the new curriculum is not just acquiring knowledge, but using that knowledge.

The new Finnish curriculum of 2016 specifically focuses on competencies that cross the boundaries of individual subjects and aim to link different areas of knowledge and skills. These assets consist of knowledge, skills and values, and attitudes and willpower that can be applied in particular life situations. “Seven transversal competence areas have been developed and considered key in defining objectives and key content areas of the subject. These include: 1- thinking and learning to learn, 2- cultural competence, interaction, and self-expression, 3- taking care of oneself and managing daily life, 4- multiliteracy, 5-information and communication technology competence, 6- working life competence and entrepreneurship, and 7- participation, involvement and building a sustainable future” (Finnish National Boards of Education, 2016; quoted by Symenoidis & Schwarz, 2016). These seven transversal competences include 21st-century skills as defined by the World Economic Forum (2020): complex problem solving, critical thinking, creativity, people management, coordination with others, emotional intelligences, judgement and decision making, service orientation, negotiation, and cognitive flexibility.

PhBL can be described as a synthesis of innovative ways of learning and teaching. “It could be described as an umbrella, where many active pedagogy approaches can fit (OO, SeO,

2014; quoted by Karlsson, 2017, p. 30). This creative process can be defined as an approach that uses methods and approaches that are effective, makes the student active, and incorporates technology in accordance with present and future conditions. PhBL emphasizes a holistic approach to learning. It is based on the idea that school knowledge must be linked to real-life situations in order to develop problem-solving skills. Students need to learn how to come up with new solutions collaboratively (Lonka, 2019, p. 173).

“Throughout the curriculum, and particularly in subject related sections, the term phenomena is often employed to indicate things as they appear in our surroundings or experiences that are observable and can be explored” (Symenoidis & Schwarz, 2016). Students conduct research, seek answers to their questions, and share their results with the public, using methods and techniques within the framework of the determined phenomenon and related questions, working collaboratively and with a holistic, interdisciplinary perspective. This process provides the student with a versatile development opportunity to acquire the skills described above.

Pasi Silander (2015a) has highlighted five essential elements of PhBL as follows:

Holistic: 360-degree perspective. From traditional curriculum integration to real-world phenomena.

Authenticity: The methods, tools, and materials used in the learning situation correspond to the real world in which the knowledge is used.

Contextuality: Learners learn things in context.

Problem-based inquiry learning: Learning and collaborative knowledge building are based on students' own questions. In exceptional learning, students learn by wondering and working together.

Learning process: Learning is seen as a process guided and facilitated by learning tasks in order to facilitate students' processes of perception. Learning something new directs students' knowledge (methodological guidance).

Following the implementation of PhBL in Finnish schools in 2016, studies on this approach have appeared in different parts of the world. Some examine the theoretical structure of PhBL (e.g. Symenoidis & Schwarz, 2016), and some associate PhBL with different fields. For instance, Lechuga Romo (2019) presented a program model to teach ESL with PhBL and Multiple Intelligences, Ngyuen (2018) compared ESL teaching in Finnish and Vietnamese upper secondary school curricula. Grusche (2019) examined its use in the field of physics education. Kallio-Tavin (2016), on the other hand, explored the advantages of using art education together with PhBL. In addition to these, experimental studies on PhBL have been carried out in different countries in recent years. Çimen and Özevin (2021) studied teachers' behaviors and students' views on PhBL in high school music lessons. In that study, the majority of the students (88 per cent) reported positive opinions concerning PhBL. They also determined that the metaphors developed by students for PhBL overlapped with 21st-century skills. Mazzola (2020) conducted a project with a class of 6th graders in Finland, starting with the question of where art education and PhBL meet. He found that the encounter between art education and PhBL could benefit teachers and learners in different ways. Wakil et al. (2019) studied the effects of PhBL on ICT skills in a primary school in Iraq. Their results showed that PhBL improved students' ICT skills and made them last longer. Yuliati and Parno (2018) investigated the impact of PHBL on teaching physics to high school students in Indonesia. Their results indicated that PhBL is impactful when physics is considered as a holistic—and not simply mathematical-based—phenomenon. Also, Valanne et al. (2017) revealed the effect of PhBL on students' reading skills.

As Lonka (2019, p. 180) indicates, there is no one right way to run PhBL projects. There are

different types of knowledge practices at different school levels, which take into account both the level of understanding and interaction. In this research, the possibilities of using PhBL in online education in the "Preschool Music Education" course in the music education department of a state university in Turkey were investigated. The guiding focus was whether lessons taught with PhBL had an effect on preschool music education competencies and the success of music teacher candidates in the course, which was held entirely online owing to the pandemic.

II. Method

In this study, a single group pretest-posttest design was used. In this design, a group is first pretested, followed by an experimental procedure, and finally given a post-test (Cresswell, 2017, p. 172).

Group A O1-----X O2

X = PhBL in online education

Research Group

The research group consisted of 20 undergraduate students in their final year, four male and 16 female, who were studying at Dokuz Eylul University's Faculty of Education in Department of Music Education during the 2020-21 academic year; they volunteered to participate in the research and completed the data collection tools.

Data Collection Tools

Preschool Music Education Achievement Test: a test consisting of 20 multiple-choice questions developed by the researcher.

Preschool Music Education Proficiency Scale

This scale, developed by Fidan (2020), consists of a 5-point Likert-type section consisting of 34 items and two open-ended questions. The reliability coefficient of the scale is $\alpha = .91$. The Cronbach Alpha coefficient for the research group is $\alpha = .775$.

Experiment Process

All courses were held online on the university's digital platform. In the first week of the 14-week academic term, the research process was explained to the students, and the pretest was applied to students willing to participate. Afterwards, students were shown various images that depicted people from different professions, genders, and social statuses (for instance, a Nobel Laureate Turkish scientist, an Olympic medalist, a pilot, a police officer, a thief etc.). Afterwards, the students were discussed about how we can contribute to the future and future professions of children as a teacher. The role of the arts was also discussed. As music teachers, we talked about what we can do for children to ensure their futures. Subsequently, the question "What would you like to know about preschool music education?" was posed to the students, and their questions were written instantly on a Word document by the teacher through screen sharing. The questions were then voted on and ranked. Finally, the question of disciplines with which we might associate all these questions was discussed, and a phenomenon that would include all of them was determined. Students decided on the "jigsaw puzzle"1 phenomenon.

In the following weeks, we applied the educational approaches of Pestalozzi, Fröbel, Montessori, Waldorf, and Reggio Emilia, and considered the roles of play, music, and dance in these approaches, focusing on children's learning of musical concepts, the use of materials, the addition of Orff instruments, and the use of music and dance in stories, including the answers to the questions determined by the students. Topics were handled practically with active student participation as far as online education would allow. In addition, mini

assignments were made and study groups formed in order to examine the theoretical aspects of the subjects. Mindmap, 6 Hats technique, and mini online tests (like Kahoot) were used. In addition, documents that the students left incomplete (especially regarding movement) were prepared, then shared with the students to be worked on. At the end of each lesson, short returns were made to the questions determined by the students in the very first class, who discussed which questions could be answered with the activities of that week and which parts of the jigsaw puzzle was completed.

For the final presentations, students were divided into three groups and a 4-week period was given to conduct them. For this presentation, each group established its own Music and Dance Kindergarten by preparing a name, a slogan, a jingle, an introductory letter to prospective parents, classroom and school layout, a garden arrangement with sound-producing materials, and a sample lesson plan. Open presentations were given to department faculty members and students who wanted to participate. Afterwards, the posttest was applied, and all students involved in the study discussed the processes and the presentations.

Data Analysis: Since the sample size was 20, Shapiro-Wilk was used as the normality test. As a result of normality tests, the t-test for paired samples was applied in order to examine the pre-and posttest levels on the Preschool Music Education Proficiency Scale because it indicated normal distribution. As results were not homogenous, the Wilcoxon Signed Rank test, a non-parametric test, was administered in order to examine the pre-and posttest levels of the Preschool Music Education Achievement test.

III. Findings

The t-test results displaying comparisons of the pretest and posttest mean scores of the preschool music education proficiencies of music teacher candidates are presented below.

Table 1. Pretest and posttest mean scores of preschool music education proficiencies of music teacher candidates

Measurement	N	\bar{x}	SD	Df	t	p
Pretest	20	126,30	9,974	19	-3,054	0,007*
Posttest	20	136,40	15,65			

*p<0, 05

The t-test results of the Preschool Music Education Proficiency Scale of music teacher candidates reported a statistically significant increase in their level of self-sufficiency in this regard after the application (t=-3.054, p=0.007<0.05). The mean score of the students before the application was \bar{x} =126.30, and following the application it rose to \bar{x} =136.40. With this finding, it can be said that the studies conducted were effective in increasing the attitudes of students. At this point, the pre-test and post-test scores of the individual items in the scale were compared; the items with significant differences are presented in the table below.

Table 2. Pre-test and post-test mean scores of the items in preschool music education proficiencies of music teacher candidates²

Item no	Item	t	p
2	I have sufficient equipment to teach preschool children.	-3,847	0,001*
3	I follow educational songs composed for preschool children.	-2,405	0,027*
4	I have enough information about the developmental-characteristics of preschool children.	-2,773	0,012*
6	I follow music education resources and documents created for preschool children.	-2,210	0,040*

7	I consider myself capable to be a music teacher in a preschool-3,199	0,005*
8	I have the knowledge to teach preschool children's songs by-3,390	0,003*
17	I use class time efficiently in preschool education institutions.	-2,773 0,012*
25	I can prepare a lesson plan according to the levels of classes in-2,990	0,008*
33	Lessons for preschool music education are given at an adequate-2,162	0,044*

*P<0, 05

Pre-service teachers mean scores showed an increase in the posttest as compared to the pretest, indicating that they considered themselves to be sufficiently capable to teach PhBL. They believed that they would be able to plan lessons suitable for the developmental characteristics and age ranges of the children, and that they would follow publications on this subject.

The pretest and posttest results of the music teacher candidates are given below.

Table 3. Wilcoxon Signed Rank test results of achievement pretest and posttest scores

Pretest-post-test	n	Mean rank	Sum of ranks	Z	p
Positive ranks	0	0,00	0,00	3,420*	0,001**
Negative ranks	15	8,0	120,0		
ties	5	-	-		

*based on negative ranks

**P<0, 95

The results of the analysis show a significant difference between the achievement test scores of the students participating in the research before and after the experiment ($z= 3.420$, $p= 0.001<0.05$). Considering the mean rank and totals of the difference scores, it is seen that this difference favors the posttest score.

According to these results, it can be said that the PhBL has an effect on the success level of teacher candidates' achievement in preschool music education.

IV. Discussion

In this study, the effect of PhBL, which is used as an education method in the online preschool music education course at a state university music education department in Turkey was examined, and the preschool music education proficiency and success levels of teacher candidates were investigated. The results of the research show that the efficacy perception and achievement levels of teacher candidates increased significantly in the post-test compared to the pre-test. Although this is a different field (music education), it supports previous studies (Çimen & Özevin, 2021; Wakil et al., 2019; Yuliati & Parno, 2018; Valanne et al., 2017) that revealed the effectiveness of PhBL. In addition, studies on art (Mazzola, 2020) prove that PhBL can be effective as an approach to support the creative process in all branches of the fine arts.

As mentioned in the Introduction, online education has become a process that eliminates the possibility of a complete cessation of education and allows education to continue at all levels. Therefore, its benefits are undeniable. However, there were difficulties in creating effective learning-teaching environments owing to the possibility that both the infrastructure and pedagogical approaches used and the related in-class materials may not suitable for the digital

environment.

Lonka (2019, p. 53) states that we cannot improve our cognitive system without reorganizing our social practices and inventing tools that help us use our cognitive limits to our advantage. Learning environments are now increasingly changing, and it may mean combining face-to-face education with virtual learning environments even after the Covid-19 pandemic ends. Recently, new forms of socio-digital engagement and tools such as social media and digital devices have become part of the blended learning solution. Therefore, it may be possible to establish hybrid learning environments that develop joint efforts to generate ideas in general. The pandemic has clearly moved us toward this situation. Therefore, it is thought that PhBL will be effective both in terms of teachers being prepared for possible future processes and in raising individuals who are qualified and have 21st-century skills in online, face-to-face, or hybrid environments. One of the most striking observations in this research process was that the students took ownership of the course. As soon as the first lesson, with questions like "What would you like to know about it?"; "What kind of questions can you ask?"; "Why?" and "How?" prospective teachers began owning the process. Both the depth of the questions they produced and the comments they made on each other's questions were valuable. The process was also instructive for me. Seeing what they were curious about, allowing them to "draw boundaries," and highlighting some points that I had not thought of previously affected and enriched my teaching process. The biggest proof of the students' motivation was their full participation in the synchronous lessons, despite there being no obligation to continue. A small number of students who could not attend the lesson due to various reasons informed me that they followed the lessons from the recordings. Perhaps the most crucial points of the process, and the moments I experienced the value of PhBL, occurred the end of each lesson. I reflected on the questions we generated in the first lesson on the screen and asked, "What question did we find an answer to today?" Doing so allowed us to make inferences for the near and far future (the next course or professional life).

At this point, it is necessary to open a parenthesis to the phenomenon found. The phenomenon is described by (Ostergaard et al., 2010, p. 28) as follows: "A phenomenon is something that is experienced, or something that shows itself in human experiences. Lived experience precedes our conceptual understanding, and our relationship to phenomena is experiential rather than intellectual." The phenomenon that the teacher candidates found is obviously not a real-life phenomenon. However, the reasons why the pre-service teachers chose the jigsaw puzzle as a phenomenon convinced me to accept it, as well. First of all, the subject of preschool music education needs to be addressed holistically. Although each piece of the jigsaw puzzle (activities, lessons, materials, approaches etc.) is important, they are actually part of a whole, so the jigsaw puzzle symbolizes a holistic perspective, i.e. the big picture. At the same time, it symbolizes multidisciplinary fields such as developmental psychology, educational psychology, sociology, learning-teaching methods and approaches, music education methods and approaches, drama, fine arts and architecture, engineering, public relations, and advertising etc. From this perspective, the jigsaw puzzle phenomenon can be placed within "a metaphorical framework for the things to be learned" (Silander, 2015b, p. 18).

An additional holistic point of view was this: adults themselves are not final products. They grow with the effects of every life moment yet still carry traces of their previous lives and experiences. Therefore, as teachers, it is extremely important to create moments that can affect the future of each individual in this profession.

For the final presentations, 20 students were divided into three groups to "found" a Music and

Dance Kindergarten. In the period of lockdown, they consulted with engineers and architects nearby and benefited from their expertise regarding school infrastructure, sound-making materials, and what musical instruments could be placed in the school's gardens, corridors, and classrooms. Doing so was important in terms of addressing problem-based inquiry learning, authenticity, and the contextuality assets of PhBL. Each presentation was carefully crafted and presented with care to all who attended. The name of the kindergarten given by two groups was "Jigsaw Puzzle Kindergarten," perhaps indicating their ownership of the phenomenon they discovered. Another proof of the effectiveness of this study was that, a couple of days later, two students called me and stated that they wanted to establish such a kindergarten after graduation and asked how they should proceed.

Another important feature of this research is that it was conducted with teacher candidates. While pre-service teachers gained knowledge and experience in their vocational education, they also experienced a mini-demonstration of their future profession, including learning-teaching environments, teacher behavior, pedagogical approaches, and materials. The idea that they have experienced an effective online education process carries the hope that they will become effective teachers in the future.

"The idea of phenomenon-based learning takes many shapes in the curriculum of teacher education. This shows that phenomenon-based learning can be seen as a general pedagogical idea that can be implemented in many ways." (Moilanen, 2015, p. 17). In light of the findings of this research, it can be said that PhBL adapted to online education is an effective pedagogical approach.

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