

Preservice Teachers' Experience with Problem-Based Learning (PBL) in Early Childhood Language Education

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Abstract

The role of teachers in early childhood education is very important. The early childhood education environment is where young children first receive established education and develop their first social relationships, aside from those with their parents. Therefore, strengthening the capacity of early childhood teachers improves young children's human environment, which serves as the foundation that can lead to dedication to life-long education. Therefore, this study applied problem-based learning (PBL) in early childhood language education courses at K University (Busan, Republic of Korea) as a methodological approach to strengthen the capacity of preservice teachers. The results showed that, first, PBL led the students to actively participate in class. Second, the students started to consider their roles, and over time, they began to actively interact and communicate with teammates. Third, the students felt that PBL generated positive changes in their self-confidence and potential development. Thus, PBL enabled the students to develop experience-based knowledge and provided them with the opportunity for reflection on their learning. In addition, PBL elicited students' internal motivation to learn and provided them with continuity to sustain learning. Therefore, this study contributes to the development of PBL objects and methods and to experiential research with preservice early childhood teachers.

Introduction

As society develops, new knowledge and information are constantly emerging. New knowledge is accumulated in a variety of ways. Knowledge makes human life convenient and leads to adaptation by society. Many scholars, including Drucker, have emphasized the importance of this knowledge and have stressed the importance of continuing education in the current information society [1]. Thus, the acquisition of knowledge in this information society is the driving force to accumulate a variety of information that is necessary for people to live a better life [2, 3]. In addition, the ability to use and understand knowledge is required for humans to be successful in the information society.

Beginning in childhood, we, as learners, experience education in a school environment. Such education is a conscious human effort, as education in the modern knowledge and information age is focused on improving the quality of education [4]. In addition, a current issue related to education is the development and application of an effective curriculum so that students can acquire and use knowledge. Most curricular outcomes are determined by a student's ability, skill, education and/or learning process [5]. However, it can be inferred that student outcomes are also determined by the quality of the curriculum. In this regard, what can we do to improve the quality of the curriculum? This study

aims to focus on student-centered learning and a new learning environment as ways to improve curricular quality and students' educational performance [6, 7].

First, students and teachers play important roles in curriculum development. What roles can students and teachers play in improving the quality of the curriculum? Students have become the major driving force of the curriculum. As such, in the new learning environment, problem-based learning (PBL) helps students approach challenges by providing a process-oriented curriculum that requires students to face and solve problems directly [8-12].

As such, PBL is sometimes regarded as a constructivist approach because it emphasizes student-centered learning, collaborative learning environments, and self-directed learning. In the constructivist approach, teachers are considered students' advisors and peer learners who present appropriate tasks for certain contexts and situations and help students learn. Therefore, in learning environments that are focused on helping students perform their roles well, the role of teachers is very important.

The PBL curriculum was initially developed in the Tamblyn School of Medicine in the 1960s. PBL was developed to promote student learning so that much of the knowledge gained by medi-

cal students would contribute to their own roles and maintenance of clinical knowledge and skills in the future. The application of PBL has been shown to increase students' level of motivation for learning and improve their professional attitudes toward teamwork and their values. Wood defined PBL as a process of improving knowledge and understanding to allow students to solve a given problem [13]. As such, PBL is student-centered and facilitates students' active participation in learning and understanding of knowledge. The improvement of learning ability through PBL has facilitated solutions to difficult problems [14]. The PBL approach has been extended to other colleges, K-12 education, and other fields of study (public health, science, mathematics, law, education, economics, social sciences, engineering, etc.).

As such, PBL ensures that students continue learning for a long time by encouraging them to actively participate in class as active subjects and develops their hidden potential by requiring students to engage in self-directed learning. In addition, PBL encourages students to form small groups with other students to improve their communication (interaction) skills and build a conceptual knowledge frame for prior knowledge. The advantage of PBL is that it increases the persistence of knowledge by allowing students to fully understand a problem and to gain firsthand experience the problem.

In addition, teachers are understood as advisors and peer learners who help students learn. In various learning environments that are focused on helping students perform their roles well, the role of teachers is especially crucial.

A review of the research on PBL shows that it has been concerned with problem design and the development of PBL as well as the PBL instructional model [15-20]. In addition, research has been conducted to determine how to improve cognitive factors such as problem-solving ability, learning comprehension, communication, and cooperative learning ability [17, 19, 21]. One study was conducted to determine how to improve the definitive aspects of PBL, i.e., learning motivation, interest and attitude [22]. Therefore, a phenomenological study analyzing the learning process in PBL is imperative.

The role of early childhood teachers in early childhood education is very important, as early childhood education serves as a learning environment (human environment) where young children first receive established education and develop their first social relationships, aside from those with their parents. Therefore, strengthening the capacity of early childhood teachers improves the learning environment (human environment) of young children, which serves as the foundation that can lead to dedication to life-long education. Thus, preservice early childhood teachers' capacity for development is very important, and PBL aids in their capacity building. Therefore, this study applied PBL in early childhood language education courses to strengthen the capacity of preservice early childhood teachers. In addition, this study attempted to analyze the preservice teachers' learning process and to explore the meaning of their PBL activities. The research question of this study is as follows: What are the characteristics of PBL activities that preservice early childhood

teachers perform, and what are the meanings of these PBL activities?

Research Method

This study was conducted with 30 sophomore students in the early childhood education program at K University in Busan, South Korea. The research period was from March 2, 2019, to June 21, 2019. In this study, teacher-centered classes were given from weeks 1 to 3. From weeks 4 to 6, extended PBL learning classes were given. From weeks 7 to 13, PBL-focused classes were given.

Research Procedure

PBL Teaching and Learning Process

Among the numerous PBL teaching and learning processes proposed by researchers, e.g., Barrows and Tamblyn, Delisle and Wood, this study was based on that described by Delisle [13, 23, 24]. The six-step PBL model proposed by Delisle is more detailed than other models and is still used in various fields [24].

The PBL teaching and learning process proposed by Delisle consists of 6 steps: 1) engaging in issues, 2) designing overall structures, 3) investigating the issues, 4) reinvestigating the issues, 5) presenting and implementing chosen solutions and 6) reviewing performance [24]. However, in this study, step 3) investigating the issues and step 4) reinvestigating the issues were combined, so there were only five steps. First, in the first steps, the students engaged in discussions or reading topics related to personal experiences that the students were interested in. In step 2, the students designed the overall structure for solving the issues. In this step, the students designed an action plan to record ideas, facts, learning issues and problem-solving activities. The teacher served as a facilitator to help the students identify the problem in this step. In step 3, the students were encouraged to explore and rediscover the problem, to construct a hypothesis to solve and analyze the problem and to develop a specific action plan. In this step, the teacher also served as a peer advisor and assistant who facilitated interaction. Step 4 was to create a solution to the problem and complete the outcome. Finally, in step 5, the students underwent an evaluation process of their work, team activities and problems.

Data Collection

Qualitative data can be collected through various methods, such as the documentation of information; interviews; direct observation or participation observation; and the use of audio recordings, photos and videos, as suggested by Yin [25]. In this study, the collected data included extended PBL learning materials from weeks 4-6, PBL activity photos and videos from weeks 7-12, 6 self-reflection journals (recorded once a week), group evaluation questionnaires from week 13 (8 times), and 6 participant observation journals (recorded once a week), and all of these data were analyzed.

Data Analysis

The results of this study were analyzed in two ways. First, a three-step analysis process consisting of data reduction, data arrangement, and formulation of conclusions was performed based on the data analysis process presented in Carney (1990). The

PBL Drives Our Participation

What is PBL?

Many students were unfamiliar with PBL. They recalled their first PBL class and described feeling overwhelmed, insecure and confused. Gradually, however, as classes progressed, they found ways to solve problems, suggested various solutions, and participated in class. This change was expressed in the students' self-reflection journals. The students noted that as the class progressed, they became more interested in PBL and increased their understanding of the class.

Before (starting) PBL, it seemed to be difficult and complex, but it was very interesting to take classes. Also, I was able to participate actively and passionately in the program. It (PBL) can be an activity that can be applied in the actual field when becoming an early childhood teacher. April 30, 2019 (Group 7, Haeyeon Kim)

The other classes so far have been lecture-centered, with little student-led activity. In PBL, however, I was able to experience the broadening of my thoughts as I became a subject of the class and actively participated. In addition, the result of the class is good, so I think the effect of learning is excellent. April 30, 2019 (Group 4, Jihyeon Kim)

I loved being able to communicate freely with my colleagues. But in the first PBL class, I was puzzled because I didn't know which way to go. Starting in the next class, I wanted to make a good frame for questions and make the class clearer and get good results. April 30, 2019 (Group 1, Minkyung Kim)

At first, it was difficult to know what to do, but it was fun to organize our own classes. In addition, I learned the content of the lecture more directly so that what I learned was memorable for a long time. The PBL teaching style will be useful in the field when I become an early childhood teacher in a few years. April 30, 2019 (Group 1, Yejin Noh)

Before proceeding with PBL, the students needed to understand PBL, which some students were unfamiliar with. Therefore, the teacher posed a problem for the students to allow them to directly experience PBL and guided them in solving the problem. At first, the students had difficulty communicating with each other. Gradually, the students began to learn what PBL was. PBL was unfamiliar and new to the students, but as the class progressed, the students applied the PBL content to their own situations and found its value.

We Participated in PBL

PBL is a more attractive, stimulating and good way to learn than ordinary lectures because it is more flexible and interesting to students. The greatest advantage of PBL is that learners motivate themselves and expect that PBL will have a positive impact on their future learning processes. The reflection journal excerpts shown below illustrate how PBL improved the students' attitudes, resulting in their self-motivation. In addition, the excerpts show the students' efforts to solve the problems encountered during self-learning and their discovery of the changes in the learning process.

PBL has many areas in which students may act directly and participate in the program on their own. We communicated with our team members in thematic activities and got a lot of ideas in the process. I seemed to be more focused because I directly participated in classes. April 30, 2019 (Group 3, Sung-Ah Yang)

It was amazing that the activities in various fields merged with each other. We have found that we can integrate any activity for our learning goals. Theoretically, it seemed difficult for us to let children do even one activity. Through PBL, we learned that it is possible to combine activities in a balanced manner while planning and conducting classes. May 16, 2019 (Group 1, Yejin Noh)

PBL allows us to conduct active learning because we participate in class and talk about our own opinions and learn to accept others' opinions. In addition, PBL also expands our thinking, deepens the depth of knowledge and allows us to remember for a long time. May 21, 2019 (Group 2, Eunsol Cho)

All team members gave their opinions and actively set learning goals. At first, it was difficult to express my opinions. As I organized the lessons through the hourly discussions, I found that our thoughts were much richer than I knew. May 16, 2019 (Group 4, Hye-Ryoung Kim)

Because it is a class that we lead and participated in, the class was very concentrated. In this regard, we were able to spend time in class well. And it seems that the group members have learned a lot from each other by collaborating with each other. April 30, 2019 (Group 8, Jihyeon Kim)

PBL is different from an ordinary lecture class, so I'm looking forward to it. Before class, I asked myself "What class will I have today?" Also, since I participated myself, my concentration increased, and I was very proud to see the results of my activities. April 30, 2019 (Group 3, Eon-Jeong Choo)

Based on the reflection journal excerpts above, PBL caused the students to adopt an active attitude that led them to engage in active participation and allowed them to perceive changes in themselves. The students expressed that through the curriculum, they were able to develop self-confidence, change their view of the problem and develop problem-solving ability. In addition, they said that class time was constructive time that allowed them to learn about themselves, which they had not previously done, and to have positive attitudes toward future learning processes. Indeed, for students to demonstrate self-learning competency in class, their attitudes and willingness to solve problems by themselves are very important. Therefore, PBL is a very important learning experience in that students can increase their own problem solving and self-directed learning.

Creative Curriculum Design

Collaboration in PBL Learning - My Role

Most students experienced anxiety and confusion because of the difference between PBL and traditional teaching styles. However, as the class progressed, they found ways to solve problems, suggested various solutions, and participated in class. Through

this process, the students learned how to use their ideas. The expectation that the results will be the same regardless of the problem given does not apply in the PBL.

At first, working with teams was frustrating and difficult. However, with each additional class, the burden of working with friends was lessened, and activity with friends instead became more powerful. When I give team presentations on a topic, I see myself getting more involved. May 16, 2019 (Group 8, Jiyeon Nam)

When I first started on my team, I had a hard time figuring out how to prepare and proceed. I noticed that as time went by, progress went smoothly. Now, even if they (team members) don't explicitly talk to each other, they learn to work well with each other, which speeds up the learning task. It was a fun time to discuss together. May 30, 2019 (Group 5, Minkyung Kim)

Everyone in the group, including myself, came up with ideas for the presentation and prepared together. I am pleased that my idea was reflected in my group presentation so I could contribute to class activities. As we planned the content, we could think about how to organize the activities to help the children. May 16, 2019 (Group 1, Sehee Kang)

Each member of the group was able to come up with an idea to lay the groundwork for solving the problem and prepare class materials for presentation based on the idea. It is remarkable that my active participation, in spite of my passive personality, resulted in satisfactory results for team activities. May 16, 2019 (Group 8, YoonjiJoo)

I felt my teammates were like family members since we worked together. We are now doing our own work, encouraging and commending each other. PBL seems to have given us confidence –“we can do it”. May 30, 2019 (Group 8, Heejong Oh)

Team activities continue to delight us. PBL allows us to solve problems and achieve a sense of accomplishment, thereby giving us confidence. Now, when a team is given a task, the team members know what to do with each other. We can do what we need to do automatically. May 21, 2019 (Group 1, Jeong-In Lee)

As indicated in the reflection journal above, PBL led to cooperative learning among the students. Each student was proud that he or she could do something on his or her team and showed a willingness to work harder. In addition, the students learned their skills through team-based cooperative learning and became aware of their roles on their teams. As the class progressed, they appeared to adhere to their roles. The students developed the confidence and enthusiasm to complete any given tasks.

Interaction - The Importance of Communication

In PBL, interaction and communication play important roles: student-student and faculty-student interaction and communication are of paramount importance in driving PBL.

When I first encountered PBL, I didn't know what to do. But I continued to discuss with my friends, interact with them, and

come up with ideas. As a result, we were able to create what we wanted, and we were so proud of the result. I think that PBL was a very effective learning method. April 30, 2019 (Group 4, Soobin Park)

When someone asked a question, I used to give short answers, and now, I am the person who asks the question, “What should I do?” It is amazing that the question arises. Also, my friends actively discuss my questions, and it seems that my knowledge is activated. May 31, 2019 (Group 4, MinjooKang)

Problems that seemed to be difficult at first felt easy through team activities. It was amazing to see how diverse and creative teaching methods were used for a single subject through team interaction. I promised myself to plan more specific activities next time. May 16, 2019 (Group 4, Jihyun Kim)

Class is a time to communicate with friends. This is because students can lead the class directly through communication with friends rather than having a one-sided class. We discuss and exchange our ideas. We also interactively share ideas. It seems to be an attractive aspect of PBL. May 21, 2019 (Group 2, Sekyung Kim)

At first it was hard to discuss. Not only me but also my other friends felt awkward discussing together. But as time passed, we became more open to discussion, which allowed us to share so many ideas and share our thoughts with each other. May 30, 2019 (Group 5, Minkyung Kim)

PBL is creative and encourages students' communication. We are given time to participate, to think deeply, to focus, and to communicate. By talking with the group members about what they think, students were able to create creative activities, which deepened their depth of thought. May 30, 2019 (Group 3, Eon-Jeong Choo)

PBL creates a think tank-like environment. This is because students can express their thoughts freely and interact with their friends to get more ideas. I create ideas and discuss them with my friends. It is no longer difficult to discuss. I am very proud of myself for being active in class. May 21, 2019 (Group 7, Soobin Park)

When the students first encountered PBL, they found it very difficult to interact and communicate with each other. Gradually, however, they learned how to interact with each other and were able to interact more actively as their communication skills improved. The students began to enjoy interacting and communicating in class and experienced immersion (flow) in finding ways to solve problems. This immersion (a.k.a. flow) acts as a major variable in achieving the purpose of learning by generating positive effects such as active participation by learners and high academic achievement in PBL.

My (Our) Change(s)

PBL made a substantial difference for the students. The majority of students expressed their appreciation for the changes they experienced by overcoming anxiety and confusion about PBL and becoming confident and active.

One day, I realized I was actively participating in group activities. Now, I'm more familiar with the group. Contrary to my first worries about PBL, I look forward to class and have fun in class. May 30, 2019 (Group 1, Yejin Noh)

With PBL, I learned how important class attitudes are. I found myself actively participating in the class. I also promised myself to be a teacher who communicates and interacts with young children. June 13, 2019 (Group 7, Jimin Park)

As I organized my class with my friends, I learned what I was good at. Until then, I did not know that I draw well. I am so proud to discover my ability. May 30, 2019 (Group 7, Hoeyun Park)

Before PBL, I was passive in class, but after I started PBL, I became active. My active involvement made my thoughts richer and more creative, and I gained confidence. I feel good now that I have the ability to plan for my future. May 30, 2019 (Group 2, Ham)

Now, whatever topics are given to me, I challenge them. It's completely different from when we first encountered PBL. Now, we do more than we are given. May 30, 2019 (Group 4, Minjoo Kang)

I had a hard time presenting in front of others. Now, I can convey my thoughts to others correctly. PBL allow me to learn things about myself that I didn't know before and made me grow. In this class, I learned that I have a lot of creative ideas. Now, I think I can build relationships so that I can actively speak and exchange my opinions in other classes. May 30, 2019 (Group 5, Hyejin Park)

Given what the problem was and looking for ideas that matched the subject, I admired every one of my friends' ideas. I also tried new activities and thought I should apply them when I go to the field. After class, I still remembered a lot about the content of the class. I think about how I can optimize classes for my children when I become an early childhood teacher. May 14, 2019 (Group 3, Jihyun Kim)

When starting PBL, the students typically experienced worries and confusion about unfamiliar courses. However, as the class progressed, the students set their own learning goals for the curriculum, which they originally thought was difficult. Through the processes of problem solving, implementation and evaluation, the students gained confidence and satisfaction. The students in this study became interested in the practical problems that may occur in the field of early childhood education and showed their willingness to develop helpful knowledge in the future.

Conclusion

Based on the results of this study, the following conclusions are drawn.

First, the students mentioned that they needed to understand PBL, which in turn led to their participation. When the students first encountered PBL, they were not sure how to complete the

assigned tasks. As the class progressed, the students were able to recognize the PBL content and apply it to themselves. Student involvement in PBL stimulates students' internal motivation for learning, which improves their own abilities. These abilities allow them to challenge themselves through new experiences in activities that are inconsistent with their expectations and to form an innate desire to participate in activities according to their will as autonomous beings (Stipek 1998). Therefore, despite the burden of task execution, PBL motivates students to seek continuous and effective learning outcomes.

Second, the students were concerned about their roles in designing and leading PBL, and the members of each team performed their own tasks and collaborated with each other. As the PBL class progressed, students had to interact and communicate to solve problems. They were able to provide a variety of solutions and showed enthusiasm in solving the problems. The students became familiar with the problem, planned the structure for solving it, and solved it.

Third, the students felt that they changed because of PBL. They expressed their opinions that PBL was an important opportunity to learn more about their participation in class and their abilities that they were not previously aware of. This finding is consistent with the results of Matusove's study, which showed changes in thoughts and attitudes toward learning, the importance of reflection activity, and the cultivation of ownership about the learning process [22]. In this way, PBL encourages students to reflect on learning, leading them to anticipate the next learning situation and recognize their ability to learn what is needed. This ability gives students a sense of confidence about their next learning situation and a positive perception of learning. Therefore, it is possible for students to overcome more difficult learning situations so that their internal motivation for learning can be strengthened.

In conclusion, PBL enables students to learn experience-based knowledge and provides an opportunity for their reflection on direct learning. In addition, PBL provides students with the internal motivation for learning through critical thinking about the learning experience and provides them with continuity to sustain learning. This study contributes to the development of PBL objects and learning methods and to research on teaching and learning methods among early childhood teachers. Ultimately, we believe that this study has research significance in its contribution to the development of early childhood education [26-34].

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