

## Project-Based Learning as a Method to Develop Soft Skills in Four-Year-Old Infants

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### KEYWORDS

Project-based learning, soft skills, infants.

### ABSTRACT

The study presented focused on analyzing the influence of project-based learning on the development of soft skills in four-year-old infants from an Educational Institution in Guayaquil, considering that based on a previous study it was determined that most children had difficulties in self-regulating their emotions, having a positive vision or showing empathy with their peers. This research considered an applied methodology, with a quantitative approach and quasi-experimental design. The study population consisted of 70 children from the initial education sublevel one, who were divided equally to form the control and experimental group. An observation guide was used as a data collection instrument that was applied as a pre-test and post-test to all participants. The results showed a significant improvement in the experimental group after the application of project-based learning activities.

## 1. Introduction

In general, soft skills involve a set of aspects that direct the behavior of a subject according to the situations they face. In the framework of today's society, the development of soft skills is established as a strength, since it allows effective interaction within the different contexts in which the human being develops. In this way, unlike hard skills that are associated with specific knowledge, soft skills pose multiple opportunities, becoming an important pillar for both personal and professional development. (Macías & León, 2024) (Salcedo & Colán, 2023)

In recent years, the approach to soft skills has become more representative. Situations such as Covid 19, among many other global events, have highlighted the importance of developing soft skills from very early stages in the development of the person. The need to establish efficient management of emotions in high-stress situations can become a determining factor when making a decision or protecting a person's mental health. In the same way, managing to maintain a positive attitude in the face of adversity can become an invaluable resource when seeking to overcome the multiple challenges posed by life in general. On the other hand, aspects such as empathy allow us to have a clear idea of the feelings that others have, generating greater understanding and connection in personal interactions. (Leyva et al., 2022) (Bailey et al., 2023) (Salcedo & Colán, 2023)

These premises place soft skills as a capacity that should be stimulated from the educational process, providing students with the necessary tools to be able to function effectively in a dynamic and changing environment. The educational framework becomes a fundamental scenario for the integral development of students, since beyond establishing itself as a source of knowledge, it also generates experiences that can be meaningful. (Macías & León, 2024) (Gustafsson et al., 2021)

In the Ecuadorian curriculum, soft skills are not a concept determined as essential. Although it is mentioned, there are no processes specifically aimed at strengthening these skills by adapting to the different educational levels and sublevels. (Alegre & Bujaico, 2021)

At the levels such as initial education, soft skills are defined as a determining aspect in the development not only of a positive interaction between students, but also as a means to guarantee harmonious coexistence. At this stage, children are facing a new reality that can be complex if they are not provided with the necessary tools to be able to function effectively within their group. (Arabacioglu & Bagceli, 2020) (Devlin et al., 2024)

However, by not developing activities according to the particularities of each group, the educational process can

become uninteresting, limiting the possibility that children can interact effectively and therefore achieve an optimal development of their soft skills. ( Şenol & Metin , 2021)

This problem became frequent in an Educational Institution in the city of Guayaquil, where four-year-old infants presented difficulties when it came to self-regulating their emotions, establishing a positive vision of reality or understanding the position of their classmates, significantly affecting the interpersonal relationships of the children, being reluctant not only to participate in class, but also to participate in class. but also to interact with their peers. In this sense, it is considered that project-based learning could become an effective response to the needs observed in infants. The project-based learning methodology can be conceptualized as a dynamic method for the acquisition of knowledge. This methodology proposes the development of real projects in order to solve problems from an active and participatory approach. ( Kheioh & Low, 2022a) ( Kheioh & Low, 2022b)

Through project-based learning, not only are dynamic and integrative experiences generated that facilitate the understanding of content, but also students are directed to interact by taking advantage of the strengths they possess to achieve shared objectives. By implementing projects appropriate to the possibilities of early education students, the conditions are generated so that infants can interact with their peers, express their ideas and emotions, as well as negotiate solutions to previously determined aspects. (Zang et al., 2022) (Yao et al., 2024)

In relation to the above, this research sought to analyze the influence of project-based learning on the development of soft skills in four-year-old infants from an Educational Institution in Guayaquil. For this process, different conceptual and theoretical perspectives have been taken as a basis that support the various opinions expressed based on the results observed. In this way, two main hypotheses were established: Hi. Project-based learning influences the soft skills of four-year-old children in an educational institution; Ho. Project-based learning does not influence the soft skills of four-year-olds in an educational institution.

## **2. Methodology**

### Type of research

An applied research is determined by establishing a detailed analysis of the existing knowledge regarding project-based learning in order to generate adequate solutions to promote the development of soft skills in four-year-old infants.

### Research Focus

The particularities of this research process raise the need for a quantitative approach that allows carrying out actions of collection, organization, analysis, processing and presentation of data in a quantified way, giving timely and verifiable results.

### Scope

Evaluative: when the analysis is established, the influence of project-based learning is determined, an experimental design of a quasi-experimental type is determined, which will integrate a control group that will receive traditional classes and an experimental group to which different project-based learning activities will be applied in order to know if there are differences between both groups.

### Population and sample

The study population consisted of 70 four-year-old children from an educational institution in Guayaquil. The entire population was considered, dividing 35 for the control group and 35 for the experimental group.

In this sense, the inclusion criteria implied.

- 4-year-olds
- Infants of the educational institution addressed

Some exclusion criteria were also considered:

- Infants who did not have the permission of their representatives
- Infants with health difficulties who could not participate in the process

### Techniques and instruments

The technique used was observation, taking into account the particularities of four-year-old children regarding the development of their soft skills.

As an instrument, an observation guide was designed that implied criterion validity, as well as statistics using data from a pilot test in which an Alpha of .880 was obtained, establishing a high confidence.

**Table 1. Protocol for the development of the research by phases**

Stages	Category	Related activities
Stage 1	Document	Theoretical and conceptual definition of the variables investigated in scientific articles based on Scopus, Ebscot, Dialnet, Redalyc, and Scielo through digital platforms. Finally, it concluded with the selection and documentary analysis of the two variables: Project-Based Learning and Soft Skills in infants.
Step 2	Linking to the sample	The focus continued on an educational institution in the city of Guayaquil of private support. Subsequently, the participants of the sample (students) were determined.
Step 3	Instrumentalizing	It began with the validation of 5 experts, in relation to the instrument applied. Likewise, a pilot test was applied to 35 students, obtaining an Alpha of .880. The soft skills observation guide was applied to 4-year-old infants.
Step 4	Analysis of results	The respective descriptive and inferential analysis was established, for which the Mann Whitney U statistic was used using the SPSS tool.
Step 5	Return	The respective results, conclusions and recommendations were returned to the teachers of the Educational Institution. After this, dissemination to the scientific community continued through the publication of a scientific product.

Source: own elaboration 2024

### 3. Results

#### Pre test applied

The data presented reveal notable differences between the experimental group and the control group before and after implementing the project-based learning program. In the experimental group, 82.9% of the students are in the "Beginning" stage, 11.4% are in "In process" and 5.7% have reached the "Achieved" stage. On the other hand, in the control group, 80.0% are in "Beginning", 17.1% are in "In process" and 2.9% have managed to advance to the "Achieved" stage. The data reflect that the majority of students in both groups are in the initial stages of soft skills development, with a small proportion reaching more advanced levels (Table 2).

**Table 2. Dates for the test.**

Scale	Experimental group		Control group	
Beginning	29	82,9%	28	80,0%
In process	4	11,4%	6	17,1%
Accomplished	2	5,7%	1	2,9%
Total	35	100%	35	100%

Source: own elaboration 2024

#### Project-Based Learning Program

The project-based learning program sought to solve the needs present in the students. The program applied to the experimental group had a total of twelve activities focused on promoting the development of three specific soft skills in infants (self-regulation, positive vision and empathy). Its application was face-to-face, in a period of time of 12 working days (Table 3).

**Table 3. Project-based learning activities designed**

PBL Activities	Soft skills
Quiet obstacle course	Self-regulation
Calm Corner	Self-regulation
Emotions card	Self-regulation
Calm bubbles	Self-regulation
Tree of Gratitude	Positive view
Butterflies of praise	Positive view
Positive dramatization	Positive view
Happy Moments Journal	Positive view
Puppet theatre	Empathy

Circle to share feelings	Empathy
Helping the community	Empathy
Swapping roles	Empathy

Source: own elaboration 2024

Post-test applied

The results observed after the application of the proposal reveal a notable improvement in the experimental group compared to the control group. In the experimental group, 65.7% of the students reached the "Achieved" stage in the development of soft skills, which represents a significant increase compared to the initial phase. In contrast, the control group only shows 5.7% of students in the "Achieved" stage, with the majority, 71.4%, still in the "Start" stage. This difference in the results highlights the positive impact of the proposal in the experimental group, evidencing a considerable evolution in the students' soft skills compared to the control group, which does not show similar progress (Table 4).

**Table 4. Post-test data**

Scale	Experimental group		Control group	
Beginning	4	11,4%	28	71,4%
In process	8	22,9%	8	22,9%
Accomplished	23	65,7%	2	5,7%
Total	35	100%	35	100%

Source: own elaboration 2024

Inferential Testing

The inferential Mann-Whitney U test applied showed a statistically significant difference between the experimental group and the control group in the results obtained. The experimental group, with an average range of 21.61 and a sum of ranges of 756.50, obtained a Mann-Whitney U value of 126.500, while the control group, with an average range of 49.39 and a sum of ranges of 1728.50, had a Z-value of -5.717. The asymptotic p-value of .000 indicates that the difference between the groups is highly significant, accepting  $H_1$  and determining that project-based learning does influence the development of soft skills in infants (Table 5).

**Table 5. Mann Whitney U Test Results**

Ranges				Test statisticians	
Groups	N	Average Range	Sum of ranks	Statistical	Values
Post control	35	49,39	1728,50	U de Mann-Whitney	126,500
Post experimental	35	21,61	756,500	With	-5,717
Total	70			Asymptotic Sig.	,000

Source: own elaboration 2024

#### 4. Discussion

From a more experiential approach, the application of the different activities framed in the project-based learning methodology allowed four-year-olds to explore and develop soft skills in a practical and meaningful way. Activities designed to improve self-regulation, positive vision, and empathy were implemented in a way that children could directly experience the proposed concepts and strategies. Through collaborative games, group dynamics and thematic projects, the children had the opportunity to face real situations that challenged them to regulate their emotions, maintain a positive attitude and understand the perspectives of their peers.

In this way, the implementation of project-based learning processes conditions a series of significant experiences that promote interaction between children, adapting to their cognitive and motor possibilities. The main finding and contribution is the corroboration and influence of project-based learning as a proven method to develop soft skills in four-year-old children. This is similar to the research of Damjanovic & Ward (2024), who points out that the implementation of project-based learning processes in infants can generate positive changes in their predisposition to interact in class, as well as to actively participate in previously planned processes.

Another study that is related to the results of the research corresponds to Zang et al (2022), which points out that project-based learning processes are adequate when seeking to promote the active participation of students, depending on the conditions, collaboration and practical application of the skills that characterize each student

may be required.

In this way, by offering project-based learning experiences adjusted to the characteristics of child development, children can be actively involved in stimulating learning, the formation of essential cognitive and social skills in a stimulating and age-appropriate environment.

Taking into account the effectiveness of project-based learning in the experimental group, it was considered important to design a teacher training plan focused on improving soft skills in infants through project-based learning strategies. This proposal integrated a set of both theoretical and practical content to strengthen knowledge regarding this methodology, facilitating both the creation and implementation of projects that adapt to the particularities that characterize four-year-old infants. Based on this proposal, it is expected that the integration of these strategies into the curriculum will promote a notable improvement in students' soft skills.

## 5. Conclusions

The quasi-experimental process evidenced a significant impact of project-based learning on the development of soft skills in four-year-old infants. The results showed a marked improvement in soft skills compared to the control group. The implementation of structured activities and collaborative projects allowed infants to experiment and practice these skills in practical and relevant contexts, facilitating more effective development in these areas critical to their emotional and social growth.

The project-based learning methodology proved to be effective in motivating and engaging children in their learning process. By involving the children in interactive activities and group dynamics, it was possible to capture their interest and foster an environment of collaboration and active participation, which not only enhanced the acquisition of soft skills, but also improved the children's willingness to face challenges and solve problems together.

The training plan was designed to foster a collaborative environment among teachers that allows the exchange of experiences and good practices related to project-based learning. In this way, it is expected that educators will be able to share effective strategies, solve common challenges and enrich their teaching methods through mutual learning, contributing to a more cohesive and above all competent educational community.

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