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ORIGINAL ARTICLE

Autonomous learning strategies: critical and creative thinking in primary education

Estrategias de aprendizaje autónomo: pensamiento crítico y creativo en educación primaria

Estratégias autônomas de aprendizagem: pensamento crítico e criativo no ensino fundamental

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KEYWORDS

autonomous learning, strategies, creative thinking, critical thinking.

ABSTRACT. The objective was to design a model of autonomous learning strategies aimed at developing critical and creative thinking in primary school students of Educational Institution No. 11239 Las Dunas Lambayeque - Peru. The research was of a primary propositional type, in which 58 students participated, who were administered a test on the development of critical and creative thinking. The instruments were validated by experts who agreed with a reliability coefficient of 0.80. The results regarding the level of development of critical and creative thinking indicate that 60.3% of the total are at the average level for critical thinking, and 65.5% are also at the intermediate level concerning creative thinking, which allows determining that the students participating in the research need to develop higher-order skills in different situations to make decisions and solve problems of daily life.

PALABRAS CLAVE

aprendizaje autónomo, estrategias, pensamiento creativo, pensamiento crítico.

RESUMEN. El objetivo fue diseñar un modelo de estrategias de aprendizaje autónomo orientadas al desarrollo del pensamiento crítico y creativo en estudiantes de educación primaria de la Institución Educativa N° 11239 Las Dunas Lambayeque - Perú. La investigación fue de tipo básica propositiva, en la que participaron 58 estudiantes a quienes se les administró un test sobre el desarrollo del pensamiento crítico y creativo. Los instrumentos fueron validados por expertos quienes dieron conformidad con coeficiente de confiabilidad 0,80. Los resultados en cuanto al nivel de desarrollo del pensamiento crítico y creativo indican que 60.3 % del total se encuentran en el nivel medio para el pensamiento crítico y 65.5 % también en nivel medio respecto al pensamiento

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creativo. Lo que permite determinar que los estudiantes participantes en la investigación necesitan desarrollar las habilidades de orden superior en las diferentes situaciones para tomar decisiones y solucionar problemas de la vida cotidiana.

PALAVRAS-CHAVE

aprendizagem autônoma, estratégias, pensamento criativo, pensamento crítico.

RESUMO. O objetivo foi desenhar um modelo de estratégias autônomas de aprendizagem voltadas ao desenvolvimento do pensamento crítico e criativo em alunos do ensino fundamental da Instituição Educacional No. 11239 Las Dunas Lambayeque - Peru. A pesquisa foi do tipo propositiva básica, da qual participaram 58 alunos, aos quais foi aplicada uma prova sobre o desenvolvimento do pensamento crítico e criativo. Os instrumentos foram validados por especialistas que concordaram com um coeficiente de confiabilidade de 0,80. Os resultados referentes ao nível de desenvolvimento do pensamento crítico e criativo indicam que 60,3% do total estão no nível médio para o pensamento crítico e 65,5% também estão no nível médio no que diz respeito ao pensamento criativo. O que permite determinar que os alunos participantes da pesquisa precisam desenvolver habilidades de ordem superior em diferentes situações para tomar decisões e resolver problemas do cotidiano.

1. INTRODUCTION

Currently, and under this context of the COVID-19 pandemic, it has been observed that students have had to learn on their own. This has generated learning strategies accompanied by teachers that have allowed them to develop high-impact cognitive skills such as critical and creative thinking. The latter are competencies with unique characteristics that imply reflection and the last innovation (Rich et al., 2010). Students exhibit critical thinking skills that lead them to try new ideas and solve problems. In the same way, it allows them to analyze and evaluate thinking by deducing and inferring until reaching conclusions (Ikhsan et al., 2020).

The United Nations Organization for Education, Science, and Culture (UNESCO) states that the curriculum does not include critical thinking skills and creativity. Likewise, it specifies that such skills aim to people to commit to practicing values and good attitudes (Gonzales et al., 2020).

Cangalaya (2020) states that skills such as arguing, analyzing, evaluating, formulating solutions constitute the essence of critical and creative thinking. Therefore, they must be developed permanently during the learning process. The situation indicates the need for teachers to be prepared and manage strategies to work with students to develop these thoughts.

Morante (2020) stated that creative thinking in students should be reinforced. However, teachers are the ones who must know and apply various strategies such as music and games. Likewise, Chernezcaya (2014) indicates that creative thinking is a higher form of thinking that represents an integration of different types of thinking, which suggests that the more integrated various types and mechanisms of thinking are, the higher the level of creative thinking.

This issue has been addressed from various contexts. Thus, Medina et al. (2017) carried out applied research related to developing creativity in children. The sample was intentional and used criterion sampling. He obtained as a result that a didactic strategy contributes to the development of creative capacity in children.

In another investigation, a study was carried out that considered the skills of critical thinking, creativity, innovation, and problem-solving. A sample of 73 students was taken, and a rubric was used to collect information

and analyze it. Obtaining as a result that the skills under study have a low development. It was concluded that these are not treated by teachers adequately (Pereira et al., 2021).

On the other hand, Mundaca (2018), in his research on the formation of critical thinking, mentioned that there are models that do not allow vital and analytical training that causes students to present deficiencies in the skills of analysis, interpretation, inference, self-regulation, explanation, decision making and taking a critical position to solve problems.

Through the diagnosis made, it was possible to find that the fifth-grade students of primary education of Educational Institution No. 11239 Cristo de Pachacamilla - Lambayeque showed deficiencies in critical and creative thinking development. They manifested limitations to compare characters, elaborate experiences, and rules to argue their opinions. These difficulties generated effects such as lack of interest in learning, conformist attitudes, exaggerated memory in handling information, and limited critical beliefs.

The theoretical contribution of the research is justified in having designed a model of autonomous learning strategies that integrate theories, which will serve to increase scientific knowledge. At the methodological level, a proposal for the identified problem was structured. In the social aspect, the students who participate in this study will benefit when the said proposal is applied.

Considering the aforementioned theoretical assumptions, the general objective of this work was to design a model of autonomous learning strategies for the development of critical and creative thinking in fifth-grade students of Primary Education of the Initial and Primary Educational Institution No. 11239 Cristo de Pachacamilla. - The Dunes- Lambayeque-2021. The specific objectives were to diagnose the level of development of critical and creative thinking of students through a test develop a model of autonomous learning strategies aimed at developing critical and creative thinking in students based on theoretical foundations and learning activities. And validate the model of independent learning strategies through expert judgment.

2. METHOD AND MATERIALS

Type and design

The type of research was primary because, as an effect, it is not interested in acquiring wealth. Its motivation is curiosity, the enormous joy of manifesting new knowledge (Ñaupas et al., 2018). Likewise, it was of a propositional level since it had the purpose of proposing a modification, repeal, or creation proposal (Tantaleán, 2015). The design that was applied in the investigation was the non-experimental one.

Population

The study population consisted of 58 fifth-grade students enrolled in the Educational Institution No. 11239 Cristo de Pachacamilla Las Dunas Lambayeque, Peru, during 2021.

Data collection technique and instruments

In the investigation, the observation technique was used through a test that allowed measuring the students' level of development of critical and creative thinking. The test consisted of 20 items using the Likert scale. As Muñoz (2015) points out, this technique is a fundamental element for research since it allows the most significant number of data to be collected.

The survey technique was by applying a questionnaire aimed at teachers of the Initial and Primary Educational Institution to collect information related to the study variables autonomous learning strategies. According to Damián et al. (2018), the survey technique allows collecting and analyzing information regarding the study variables of the present investigation. A questionnaire comprises a group of questions regarding one or more variables to be measured, according to Chateauneuf cited by (Hernández et al., 2014).

Likewise, an interview was carried out through a semi-structured interview guide and applied to the director to collect information related to the study variables. The validity of the research instruments and the proposal submitted to the judgment of 5 expert doctors in education. Those who received an application with the necessary documents and tools. Aiken's V was then applied to determine validity. It was evidenced that every one of the items evaluated by the judges presented a perfect validation V= 1.00.

Reliability was determined with a pilot test with 25 children who did not belong to the study sample. Cronbach's alpha was applied to assess its reliability, resulting in the high reliability of the instrument since a Cronbach's alpha coefficient of 0.90 was observed; therefore, said measurement instrument is acceptable for its applicability.

Procedures

For the present investigation, authorization was requested from the director of the educational institution to facilitate the application of the instruments. Likewise, informed consent was invited from teachers and parents to participate in the study, making them aware of the importance of research on the development of critical and creative thinking. Then, the instruments that were processed statistically were applied using reliability tools such as the SPSS-V26 program, from which statistical tables and figures resulted. In the same way for the analysis of the results, the MS Excel 2019 program was used.

Ethical considerations

Ethical aspects were considered taking into account the code of ethics of the Universidad César Vallejo (2020) applying the principle of integrity and respect for intellectual property by referencing sources citing the authors who provide the present study using the APA Standard in its 7th version; In the same sense, confidentiality is practiced, in the mind that the identity of the informants and the freedom to develop the investigation freely and independently are reserved.

3. RESULTS

The results of the investigation of the variables are presented below.

Diagnosis of critical thinking

Table 1

Critical thinking level in fifth grade students of the I.E.I.P. N° 11239 Christ of Pachacamilla from Las Dunas, Lambayeque

Levels	F	%
Under	16	27,6
Means, medium	35	60,3
High	7	12,1
Total	58	100,0

Note: Test applied to the study sample.

Table 2 shows that the students presented an average level in the development of critical thinking with a value of 60.3%, representing 35 students concerning the total. A 27.6% equivalent to 16 shows a low level, while only 12.1% represents seven that reached a high level.

Diagnosis of creative thinking

Table 2

Level of creative thinking in fifth grade students of the I.E.I.P. N° 11239 Christ of Pachacamilla of Dunas, Lambayeque

Levels	F	%
Under	10	17,2
Means, medium	38	65,5
High	10	17,2
Total	58	100,0

Note: Test applied to the study sample.

It is observed in the previous table that 65.5% represents 38 students who register a medium level in the development of creative thinking. At the low and high levels, they report the exact percentages, that is, 17.2%, which represents ten students, respectively.

Diagnosis of critical and creative thinking

Table 3

Level of development of critical and creative thinking in fifth grade students of the Educational Institution No. 11239 Cristo de Pachacamilla de Las Dunas, Lambayeque

Levels	F	%
Under	8	13,8
Means, medium	41	70,7
High	9	15,5
Total	58	100,0

Note: Test applied to the study sample

It is observed that a total of 41 students represent 70.7% who were located at the average level of development of critical and creative thinking. 15.5% is equivalent to 9 students at the high level, and 13.8% represents eight students at the low level.

For the elaboration of the model of autonomous learning strategies, the diagnosis obtained from applying a test to the students, an interview with the director, and a questionnaire to the teachers related to the study variables were taken.

In the same way, fundamental theories of Piaget, Vigotsky, and Paul and Elder were considered, which agree that children develop their cognitive abilities and interact with their peers to function in various contexts with autonomy to generate their learning.

According to Bravo (2018) Vygotsky's theory is related to social interaction, whose essential function is the active participation of students, which is presented on two levels through interaction with others and then integrates knowledge into the individual mental structure producing autonomous learning. Allowing cognitive growth and building new skills that strengthen their processes through reflection.

According to Gil (2020), Piaget's theory proposes specific stages during cognitive development that occur during human development over time with the child at various ages. The steps, according to Piaget, are a set of events that occur continuously and progressively in cognitive development according to approximate age. Piaget considers that the end of education is the development of autonomy, which means thinking critically. The student is the author of his learning both in the moral and intellectual aspects to face real-life situations.

According to Paul and Elder (2003) they define critical thinking as thinking about a content, situation or theme insofar as the thinker develops by appropriating the structures of thought.

All this allowed to design the model in which objectives, principles, fundamentals, values and the program with its learning activities for its subsequent application have been considered. The model was validated by 5 experts whose data were processed with aiken's V, obtaining the significance value equal to 1, which indicates that it can be applied with the characteristics established with the fifth-grade children who study in the institution above. For the last objective, which was to validate the proposal, the experts unanimously agreed to the design and its applicability.

4. DISCUSSIONS

Among the limitations found to apply the instrument was that many of the students did not have internet service at home and most of them accessed with a recharge service. Parents only had a cell phone and many of them went to work carrying the cell phone. To carry out the application of the instrument, it was necessary to coordinate with the teacher and talk with the parents to obtain informed consent.

Faced with this situation, it was possible to apply the instrument that served to make the diagnosis and propose the proposal despite the difficulties.

From the results observed, it was evidenced that 41 students are located in the middle level concerning critical and creative thinking. The high level with 9 students and a low level corresponds to 9 students. This information was related to Pereira et al. (2021) who conducted a study to identify the development of critical thinking skills, creativity and innovation, and problem solving. Using a quantitative approach and taking as a sample 73 students, obtaining results that the three skills have a low development in science classes. Noting the lack of support from the teacher to develop these skills in the classroom.

We see that these investigations are similar to this study because they agree that critical and creative thinking are skills that need to establish alternative solutions to overcome the problem encountered. That is why, among several strategies that have been used, it can be highlighted that autonomous learning is considered essential to develop these thoughts.

Likewise, relating to Solórzano (2017) in a study on critical and creative thinking and its relationship with autonomous learning, the objective of this study was to determine if critical and creative thinking corresponds to autonomous learning, working with a sample of 300 students. students, it was concluded that there is a significant correlation between critical and creative thinking and autonomous learning, ($r = 0.80$) at the level of the students who participated in the research.

Regarding the results of critical thinking, it was observed that most of the students presented a medium level in the development of this thought, that is, 35 students concerning the total, 16 presented a low level, while only 7 reached a high level. . Relating this research in the Lambayeque region, Mundaca (2018) mentions that in the formation of critical thinking there are models that do not allow critical and analytical training, for that reason the students show deficiencies in developing the skills of analysis, interpretation, inference, self-regulation, explanation of ideas, decision making and taking a critical position to solve problems.

Likewise, in Chiclayo, a study was carried out related to the teaching practice in Regular Basic Education and to place critical thinking in the Framework of good teaching performance to develop skills in schoolchildren. The analysis corresponds to the qualitative approach. The perception of 14 teachers about critical thinking has been contrasted. In this sense, it can be concluded that the four domains require critical thinking because it is about the development of cognition to generate new knowledge from school classrooms (Rojas et al., 2021). Relating the research with the results obtained, we can determine that the teacher's guide is relevant in the teaching and learning activities in the students to strengthen critical and creative thinking.

Likewise, the study carried out by Verawati et al. (2020) promotes critical thinking by applying an inquiry model, for which he used a quasi-experimental research with a pre-test and post-test design of a group that is related to the low level of critical thinking and the results obtained mention that the model Inquiry learning is effective in encouraging critical thinking skills in students and that the applied strategies benefit their development. It is important to highlight the research carried out with the results obtained that it is necessary to promote learning models in students that promote higher-order skills.

In the same way, Rodríguez (2020) carried out a study in which he set as a goal to propose didactic strategies to stimulate creativity in young children, the research is based on a qualitative approach, through the phases of diagnosis, feasibility and design. In addition, observation and interview techniques were applied. The results concluded that teachers rarely use techniques to stimulate creative thinking and should promote teaching strategies that strengthen creativity in children. Even though this work was applied to a sample of characteristics different from this research, it has been considered important because it works on creativity from early childhood, which becomes the basis for later educational levels.

This model of autonomous learning strategies will allow the student to be the author of his development, choosing the paths, strategies, tools and moments that he considers pertinent to learn and independently put into practice what Gonzales et al. (2017). Likewise, autonomous learning refers to people thinking for themselves and taking responsibility for their process of appropriating and transforming said process (Paucar y Budnik, 2018).

5. CONCLUSIONS

The level of development of critical thinking in the students who participated in this research was diagnosed. Being the most outstanding diagnosis, the participants are in the middle level with 60.3% of the total population.

The level of development of creative thinking of the students surveyed in this study was examined and it was found that the most important thing was that more than half of the students are in the medium level with 65.5%, while 12.5% have a high level. and low. What allows to know the reality in which students find themselves concerning the development of creative thinking. The level of critical and creative thinking development of the students whose result was medium level was diagnosed, allowing the proposal to be designed.

A model of autonomous learning strategies aimed at developing critical and creative thinking in students was developed based on theoretical foundations, objectives, principles, values and learning activities that serve as a guide for subsequent application.

The model of autonomous learning strategies aimed at developing critical and creative thinking was validated through expert judgment who determined that the proposal can be applied and that it will contribute to improving critical and creative thinking in students.

The development of critical and creative thinking must continue in the classroom to promote other research and contribute to the improvement of current higher-order skills that students require to learn by themselves, making use of their abilities to act in society with autonomy.

Conflicto de intereses / Competing interests:
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Rol de los autores / Authors Roles:
Inés Varías: conceptualización, curación de datos, análisis formal, adquisición de fondos, investigación, metodología, administración del proyecto, recursos, software, supervisión, validación, visualización, escritura - preparación del borrador original, escritura - revisar & amp; edición.

Marcelino Callao: conceptualización, análisis formal, investigación, metodología, administración del proyecto, recursos, software, supervisión, validación, visualización, escritura - preparación del borrador original, escritura - revisar & amp; edición.

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