Creative thinking strategies in primary education classrooms

Estrategias de pensamiento creativo en aulas de educación primaria

Estratégias de pensamento criativo em salas de aula do ensino fundamental

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ABSTRACT. The development of creative thinking must be considered as a necessity in pedagogical practice in every educational system. The objective of this article was to present some concepts and strategies that are being developed in the classrooms. The methodology used was the experimental documentary technique. In addition, a search was done for articles of a scientific nature, published in various reliable databases. Concluding that, creative thinking is a capacity that the person must possess in the 21st century. Therefore, every student must develop it to produce innovative ideas that allow them to solve problematic situations.

PALABRAS CLAVE
Aula, creatividad, estrategias, habilidades, pensamiento creativo.

RESUMEN. El desarrollo del pensamiento creativo debe ser planteado como una necesidad en la práctica pedagógica en todo sistema educativo. El objetivo de este artículo fue dar a conocer algunos conceptos y estrategias que se vienen desarrollando en las aulas. La metodología que se empleó fue la técnica documental exploratoria. Se hizo una búsqueda de artículos de carácter científico, publicados en diversas bases de datos confiables. Concluyendo que, el pensamiento creativo es una capacidad que debe poseer la persona en el siglo XXI. Todo estudiante debe desarrollarlo para producir ideas innovadoras que le permitan resolver situaciones problemáticas.

PALAVRAS-CHAVE
Sala de aula, criatividade, estratégias, habilidades, pensamento criativo.

RESUMO. O desenvolvimento do pensamento criativo deve ser considerado uma necessidade na prática pedagógica em todos os sistemas educacionais. O objetivo deste artigo foi apresentar alguns conceitos e estratégias que estão sendo desenvolvidos em sala de aula. A metodologia utilizada foi a técnica documental exploratória. Procedeu-se à procura de artigos de caráter científico, publicados em várias bases de dados fiáveis. Concluindo, o pensamento criativo é uma capacidade que a pessoa deve possuir no século XXI. Cada aluno deve desenvolvê-lo para produzir ideias inovadoras que lhes permitam resolver situações problemáticas.

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1. **INTRODUCTION**

According to Carvalho et al. (2021) schools will have to train students to face jobs that have not yet been created, handle technologies that have not yet been invented and solve social problems that we do not yet know about.

In different countries, creative thinking is supported to innovate and break with the established paradigms, giving priority to the imagination that is the source of all human achievement. Likewise, Casillas and Sternberg (1999) consider it essential to develop creativity in the classroom, taking advantage of the times and spaces that the school has when they accept challenges to solve problems that directly affect their lives.

To meet educational challenges, 21st-century skills must be strengthened and formed by talents such as creative and critical thinking, communication, collaboration, entrepreneurship, problem-solving, and productivity. Those that allow you to contribute to society, making critical decisions in an era of globalization and innovation. Creativity is related to the characteristics of the knowledge societies of the present century and should be considered in school (Ambrose & Sternberg, 2016).

Creative thinking is a cognitive component of creativity, and it is essential to stimulate it to solve problems critically (Prieto et al., 2002). Creative thinking is a cognitive component of creativity, and it is essential to stimulate it to solve problems critically (Dogan et al., 2020).

Students are willing to take risks and are open to new experiences that allow them to solve everyday problems creatively (Van Broekhoven et al., 2020).

When facing an innovative and technological world, it is appreciated that children are increasingly immersed in digital technologies, fostering critical and creative thinking skills. Therefore, teachers must offer strategies that allow students to develop skills that promote autonomy and problem-solving originally and innovatively.

In Turkey, a study was conducted to explore the relationship between creative thinking and scientific process skills of preschool children. In that study, it was determined that there was a moderately significant relationship between creative thinking skills and scientific processes (Yıldız & Guler, 2021).

In Spain, metacognition was investigated as a means to train creative thinking. It was found that students undergoing intervention increased their initial levels of this thinking (Cachinero, 2007).

Similarly, an evaluation was made of a creativity development program at early childhood education and the first cycle of primary education. Again, we conclude that creative thinking can be developed, taking into account the pedagogical strategies to be used (Prieto et al., 2002).

In Colombia, a study was carried out that aimed to promote didactic tangram and soma cube games in students as didactic tools to develop creative thinking, based on activities where students approach mathematical concepts and ideas, allowing them to understand and solve problems in this area (Africa et al., 2020).
In Peru, a study was carried out that aimed to evaluate how the application of playful strategies improves the development of creative thinking in students. The results found show that the application of these strategies does improve this thinking in students (Paredes, 2015).

In this context, this research aimed to review various sources of information and analyze the proposals about some concepts and strategies of creative thinking developed in primary school classrooms.

2. METHOD

In the preparation of this article, original bibliographic documents of scientific papers have been compiled in the databases of Scopus, Ebsco, Pro-Quest, Scielo, and Dialnet. The search began as of July 2021; the records obtained correspond to 70 articles; of which those documents that are related to creative thinking developed at the primary level have been selected.

The experimental documentary technique was used to extract the information and critical reading of the articles, data obtained from the information sources, and the management of the information collected.

Table 1

| Study universe | Axes                              | Sub axes of study                          |
|----------------|-----------------------------------|-------------------------------------------|
| Theoretical review of strategies for creative thinking in the classroom. | Conceptual bases of creative thinking      | Ability                                    |
|                |                                   | - Capacity                                 |
|                |                                   | - Cognitive component                      |
|                |                                   | - Human quality                            |
| Benefit / importance of developing creative thinking. |                                   | Generate processes                        |
|                |                                   | - Systematic and divergent thinking       |
|                |                                   | - Autonomy and independence                |
| Didactic strategies for the development of creative thinking. |                                   | - It encourages creativity and innovation. |
|                |                                   | - Generate ideas                           |
|                |                                   | - Encourage innovation                     |
|                |                                   | - Riddles                                  |
|                |                                   | - Formative game Cuatro C: create, connect, understand and build |
|                |                                   | - ABP strategy                             |
|                |                                   | - The tales                                |
|                |                                   | - The audiovisuals                         |
|                |                                   | - Stimulation of creative thinking         |
|                |                                   | - The mural                                |
3. RESULTS

3.1. Conceptual bases of creative thinking

Through time, various investigations have been carried out that have allowed us to contrast definitions of creative thinking.

Table 2
Systematization of information on the definition of creative thinking

| Author / Authors                        | Key Considerations                                                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------|
| Dogan et al. (2020).                    | Skill that develops with the use of appropriate materials.                         |
| Parra et al. (2020).                    | Learning condition that involves experiences.                                     |
| Medina y Rodríguez (2018).              | The medium that encourages problem-solving.                                       |
| Flannery et al. (2013).                 | The cognitive component of creativity is used to solve problems.                  |
| Carvalho et al. (2021)                  | Allows personal development through problem-solving.                              |
| J. Gómez et al. (2017)                  | Ways to solve problems for decision making.                                       |
| Vallejo et al. (2020)                   | New ideas and original concepts to satisfy a need.                                |
| De Bono (2004)                          | Lateral thinking is creative thinking that can be acquired, practiced, and used by anyone. |
| Ргпу y Герцена (2014)                   | A higher form of thought integrates other ideas such as logical, divergent and convergent, visual-direct, practical, concrete, and abstract. |
| Logroño y Romero (2012)                 | Human qualities that are developed with adequate learning.                         |
| Flannery et al. (2013)                  | The cognitive component of human creativity.                                      |
| Bolívar y Morín (2021)                  | The ability that allows you to have valuable and innovative thoughts.             |
| Diaz et al. (2016)                      | Ability to solve problems creatively or in an innovative way.                     |
| Chaverra y Gil (2017)                   | A vital component that is acquired when facing various situations.                |
| Cachinero (2007)                        | Particular structuring of psychological functions that allow the solution of problems in open-thinking circumstances. |
| Gómez (2020)                            | Potential that requires a favorable environment to develop.                        |
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Jenaro et al. (2019)  
Set of capabilities and dispositions that generate innovative products.

Escobar y Gómez (2006)  
Brain function that integrates knowledge to obtain new ideas.

DiFonzo y Bordia (2002)  
Motor creativity is the ability to express thoughts and feelings.

Romero (2005)  
A social and cultural phenomenon that facilitates a creative education.

Benedek et al. (2014)  
High expression of new ideas.

Puertas (2016)  
An essential skill for 21st-century learning.

From the previous considerations, it can theoretically be stated that there are several conceptual bases of creative thinking. It is conceived as the ability, capacity, environment, and cognitive component to solve problems. Likewise, creative thinking is conceptualized and can be acquired, practiced, and used by anyone to face various situations.

Another perspective of researchers conceptualizes it as a potential social and cultural phenomenon that requires space to develop.

3.2. Benefits of creative thinking

When developing creative thinking, many benefits are acquired that are mentioned, considering the opinion of several authors:

Table 3

| Author / Authors | Benefit |
|------------------|---------|
| Hernández et al. (2018) | It generates processes of search and discovery of solutions. |
| Prada et al. (2020) | It allows children to cultivate systematic and divergent thinking. |
| Groyecka et al. (2020) | They encourage people to be more sensitive to others. |
| Mench (2006) | They achieve autonomy and independence. |
| Chancahuaña et al. (2020) | Encourage students to think, design, try, and participate. |
| Moura et al. (2021) | The most favorable conditions allow time to think and develop your ideas. Evaluate products and ideas. Consider error as a stage in the learning process. Encourage imagining constructive feedback on their performance and promote self-evaluation. |
| Casillas y Sternberg (1999) | Generates lots of ideas. |
| Cevallos (2016) | Encourage creativity and innovation. |

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| Author / Authors | Strategies |
|------------------|------------|
| Alzamora (2019)  | Encourages generating ideas by thinking creatively. |

From table 3, it can be stated that creative thinking achieves autonomy and independence in the student. It encourages creativity and innovation, generating them to produce ideas.

Likewise, creative thinking promotes self-evaluation, makes students value their products, and considers error as a source of learning. But, on the other hand, it encourages people to be more sensitive to others.

3.3. Strategies

The strategies promote independence, responsibility, and the ability to control students' learning process (Prieto et al., 2002). In addition, learning strategies allow the student to coordinate the knowledge that she needs to fulfill an activity depending on the characteristic of the educational situation in which the action occurs (Monereo, 2008). That is why educational institutions must promote up-to-date novel strategies that allow students to achieve significant learning that encourages creativity and creative thinking.

Table 4

Systematization of information on strategies

| Author / Authors | Strategies |
|------------------|------------|
| Castro (2011)    | Riddles |
|                  | This strategy seeks to adapt traditional riddles to a multimedia language to stimulate children's creative thinking when solving puzzles. |

| Albornoz (2019)  | Formative game four C: create, connect, understand and build |
|                  | The implementation of the 4C methodological strategy seeks to enhance students' creative thinking from the knowledge of being and its relationship with the environment. |
|                  | This proposal allows the student to create, connect, understand and build actions that promote individual and social change (Navarrete et al., 2021). |

| Acuña (2016)     | Problem-Based Learning Strategy (ABP) |
|                  | Numerous studies show satisfactory results in the development of creative thinking when applying the PBL strategy. This is based on work respecting the autonomy of the student and motivation that arouses interest. |
|                  | In this sense, through PBL, students manage to make use of new knowledge and articulate it with previous ones to solve a problem collaboratively. |

| Franco and Alonso (2011) | The tales |

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Through the story, students are taught concepts and values, amusing, beautifying the child's life, and awakening their curiosity. With levels, imagination and playful activity are stimulated by developing creative potential.

**Audiovisual**

It is a strategy that allows contact with art, thus being a powerful teaching tool to improve creativity.

Audiovisual resources become an ideal setting for the child as it leads him to analyze, decipher and evaluate ideas in a motivating way that favors his creativity.

**Strategies to stimulate creative thinking**

Consider the following strategies for stimulating creative thinking:

- **Humor:** Fosters an atmosphere of trust, fluency.
- **Games:** They create a pleasant environment to develop the creative process in students.
- **Creative visualization:** It allows moving the individual towards the projection of a goal by moving it towards the most intimate of his being.
- **Brainstorming:** Allows students to express prior knowledge on specific topics.
- **Mental map:** Through the graphic representation in images and the logical sequence, the coherence of the ideas.
- **Concept map:** It allows creating associations that will serve as a starting point to develop combined ideas and others.

**The mural**

This strategy is used to evaluate the knowledge, skills, and creative attitudes of students. Through this, the child communicates what they think, feel, and perceive in the context.

**Metacognitive strategies**

This author conceives a proposal to stimulate creative thinking skills that include comparing, analyzing and synthesizing, until resolving problems or decision making.

This allows the control of learning progress considering the planning, monitoring, and evaluation processes.

**Whirlwind of ideas**

The idea whirlwind proposal favors creative thinking, where groups first generate ideas and later evaluate them. It is a strategy designed to avoid the inhibiting critical attitude that so often appears in informal meetings.

**Case studies**

Another collaborative work technique using the Moodle platform.
The strategies promote autonomy, responsibility, and the ability to control the learning process of students. In addition, they allow you to select in a coordinated way the knowledge you need to fulfill an activity depending on the characteristic of the educational situation in which the action occurs. That is why the classrooms must promote updated strategies that allow students to achieve learning for their daily lives that encourage creativity and creative thinking.

4. DISCUSSION

J. Gómez et al. (2017) define creative thinking as solving problems necessary for decision-making. On the other hand, Medina and Rodríguez (2018) consider it as a means that encourages problem-solving. Despite the multiple definitions of this term, the authors agree that creative thinking can solve problems and innovatively make decisions.

According to the demands of the current world, there are new studies carried out to develop creative thinking in students. Therefore, it is evident that all the articles reviewed current creative thinking as one of the skills of the 21st century and that they are developed using various strategies, which have boosted their progress. They conclude that the development of this type of thinking takes time, but its improvement is possible. Among the methods identified we have: riddles, a whirlwind of ideas, ABP, robotics, formative game four C: create, connect, understand and build that is suggested to be applied in the classrooms (Acuña, 2016; Albornoz, 2019; Astupiña, 2018; Castro, 2011; Rodríguez et al., 2010).

After analyzing the information reviewed, several studies have been found that propose different strategies to improve creative thinking; however, some limitations lead to continuing taking it into account as a priority in the educational system with the purpose that students develop complex skills that today’s society requires. It should be considered that creative thinking is a primary ability. Therefore, it should be stimulated in schools so that students solve various situations in applying the acquired knowledge.

5. CONCLUSIONS

After conducting the search and analysis of information, it is concluded that creative thinking is vital in education because it allows generating ideas and concepts. It will enable the student to achieve autonomy and independence from it, promoting creativity and innovation to solve situations.

Developing creative thinking in the classroom represents the possibility of facing challenges in a different way, of keeping an open mind to new ways of seeing things. In the same way, promoting various strategies to develop...
creative thinking is achieved by developing their ideas; assessing products and ideas considering error as a stage in the learning process. Therefore, it should be stimulated in both students and teachers.

Several studies have been found that propose different strategies to improve creative thinking. However, it is still an aspect that needs to be taken as a priority in the educational system for new students to develop the complex skills that today’s society requires.

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