Critical Thinking In Learning:
A Review Article

Napa Valencia, Loida Luz[1] , Cárdenas Rivera Marino[2] , Jacinto Leiva Yomayra[3]

[1]*(https://orcid.org/0000-0002-8939-9147) Email: lnapa4@ucvvirtual.edu.pe*
Villanueva Galván Yony Fredy (orcid.org/0000-0001-7311-2052) Email:
Yfvillanuevav@ucvvirtual.edu.pe
[2]*Leandro Ríos Kelly Kimberlyn Orcid :0000-0003-2554-1607 Email:*
KLEANDRO@ucvvirtual.edu.pe Email: ccardenasri6@ucvvirtual.edu.pe
[3]*Dra. Cadenillas Albornoz, Violeta (orcid.org/0000-0002-4526-2309) Email:*
cadealbo@ucvvirtual.edu.pe Email: YJACINTOL@ucvvirtual.edu.pe Orcid:
https://orcid.org/0009-0001-2217-9377

Critical thinking is necessary for proper decision making and quality of life. The objective was to analyze the implications of critical thinking on learning. The study corresponds to a systematic review, using search engines such as AND, OR, FROM and with keywords Critical thinking, learning, critical thinking strategies, argumentation, development of critical thinking. The inclusion criteria consider articles from the last 5 years, from 2020 to 2024, including open access articles written in English and Spanish. The exclusion criteria consider closed access articles. The selected articles considered 2 articles from the Scopus database, 5 Scielo articles and 16 Latindex articles, with 23 articles being considered in the construction of results. Concluding that critical thinking develops forms of autonomous, critical and ethical thinking and behavior, guaranteeing the promotion of a more conscious and responsible society in social, ethical and environmental matters. It is recognized that when the student uses methodological strategies, the development of critical thinking skills is promoted in them. The strategies to develop them are, flipped classroom, problem-based learning, projects, cooperative work, analysis of written texts, studies. of cases, oral argumentation, study of problems and skills such as: creativity, collaboration, communication must be developed. Furthermore, the development of critical thinking requires taking advantage of technology as transformative tools.

Keywords: Critical thinking, learning, strategies, argumentation.

Resumen

El pensamiento crítico es necesario para la adecuada toma de decisiones y la calidad de vida. El objetivo fue analizar las implicancias del pensamiento crítico en el aprendizaje. El estudio corresponde a una revisión sistemática, utilizando motores de búsqueda como, AND, OR, WITH y con palabras clave Pensamiento crítico, aprendizaje, estrategias de pensamiento crítico, argumentación, desarrollo de pensamiento crítico. Los criterios de inclusión consideran artículos de los últimos 5 años, del 2020 al 2024, se incluyeron artículos de acceso abierto redactados en inglés y español. Los criterios de exclusión consideran artículos de acceso cerrado.Los artículos seleccionados consideraron 2 artículos de base de datos de Scopus, 5 artículos Scielo y 16 artículos Latindex, siendo considerados 23 artículos en la

construcción de resultados. Concluyendo que el pensamiento crítico desarrolla formas de pensamiento y comportamiento autónomos, críticos y éticos, garantiza la promoción de una sociedad más consciente y responsable en materia social, ética y ambiental. Se reconoce que cuando el estudiante hace uso de estrategias metodológicas, se promueven en ellos el desarrollo de las habilidades de pensamiento crítico, las estrategias para desarrollarlas son, aula invertida, aprendizaje basado en problemas, proyectos, trabajo cooperativo, análisis de textos escritos, estudios de casos, argumentación oral, estudio de problemas y se debe desarrollar habilidades como: la creatividad, la colaboración, la comunicación. Además, el desarrollo de pensamiento crítico requiere de aprovechar de la tecnología como herramientas transformadoras.

Palabras clave: Pensamiento crítico, aprendizaje, estrategias, argumentación.

Introduction

Globally, there is concern about the low development of critical thinking among students. This could have a structural background that does not facilitate its development, including physical premises, the distribution of furniture, curricular management, workload schedules, individual characteristics of students, their social contexts, and the responsibilities that fall on teachers (Mendoza, 2021). Accordingly, the Program for International Student Assessment (PISA, 2018) report revealed Spanish students exhibited unsatisfactory learning outcomes. Consequently, the Ministry of Education of that country has endeavored to encourage a shift in focus, advocating for a reduction in memorization and an emphasis on critical thinking (Menargues, 2021).

A discrepancy exists between public policies on teacher training and actual performance scenarios in practice in Latin America (Oviedo and Paez, 2020). The necessity for the creation of novel forms of teacher training in Latin America is evident, as one of the key challenges lies in the fact that existing reforms fail to adequately address issues related to the identity of the teacher and the quality of the instruction being provided. It is imperative to integrate critical thinking strategies into teacher training programs (Benavides and Ruiz, 2022). To effectively impart these skills to students, teachers must first cultivate them (Buñuelos, 2017). Just as it is crucial to develop thinking skills, such as critical thinking, problem-solving, and creativity, it is also vital to understand teachers' perspectives on these skills and factors that influence their implementation (Heffington, 2023).

In Peru, there is a clear necessity for an educational system that cultivates students' capacity for critical thinking, particularly within the academic setting (Campos 2019). It is therefore recommended that the Peruvian education system should also place greater emphasis on the strengthening and development of critical thinking (Chimoy 2023). Following two years of classroom closures due to global pandemic of 2019-2021, Peru experienced a significant loss of learning, with the World Bank estimating setback was equivalent to a decade's worth of progress (UNICEF 2022). This naturally gave rise to question of: What are implications of fostering critical thinking in context of basic education?

Critical Thinking

Critical thinking is defined as a self-regulated and purposeful evaluation leads to interpretation, analysis, evaluation, and reasoning (focused processes). These processes are oriented internally to the text or situation and also include the interpretation of methods, concepts, background, and other relevant elements (Facione, 1990). Critical thinking is a self-corrective, context-dependent, and criterion-oriented process (Pinzas, 2006). It entails reflecting on one idea in accordance with another, where the second idea serves as the basis for subsequent idea and is a consequence of original ideas. This cyclical thinking process, when a conclusion is reached, is called reflective or critical because it produces a new idea and a reason for further consideration (Núñez, 2022).

Theoretical Approach to Critical Thinking

A theory related to critical thinking category is Piaget's psychogenetic theory, which was developed through empirical and theoretical research on the structural and functional aspects of the mind. For Piaget, there is no structure without function, and vice versa. In addition, Piaget delineates the stages of intellectual evolution, elucidating manner in which knowledge develops (Arias et al., 2017).

The objective of this study is to:

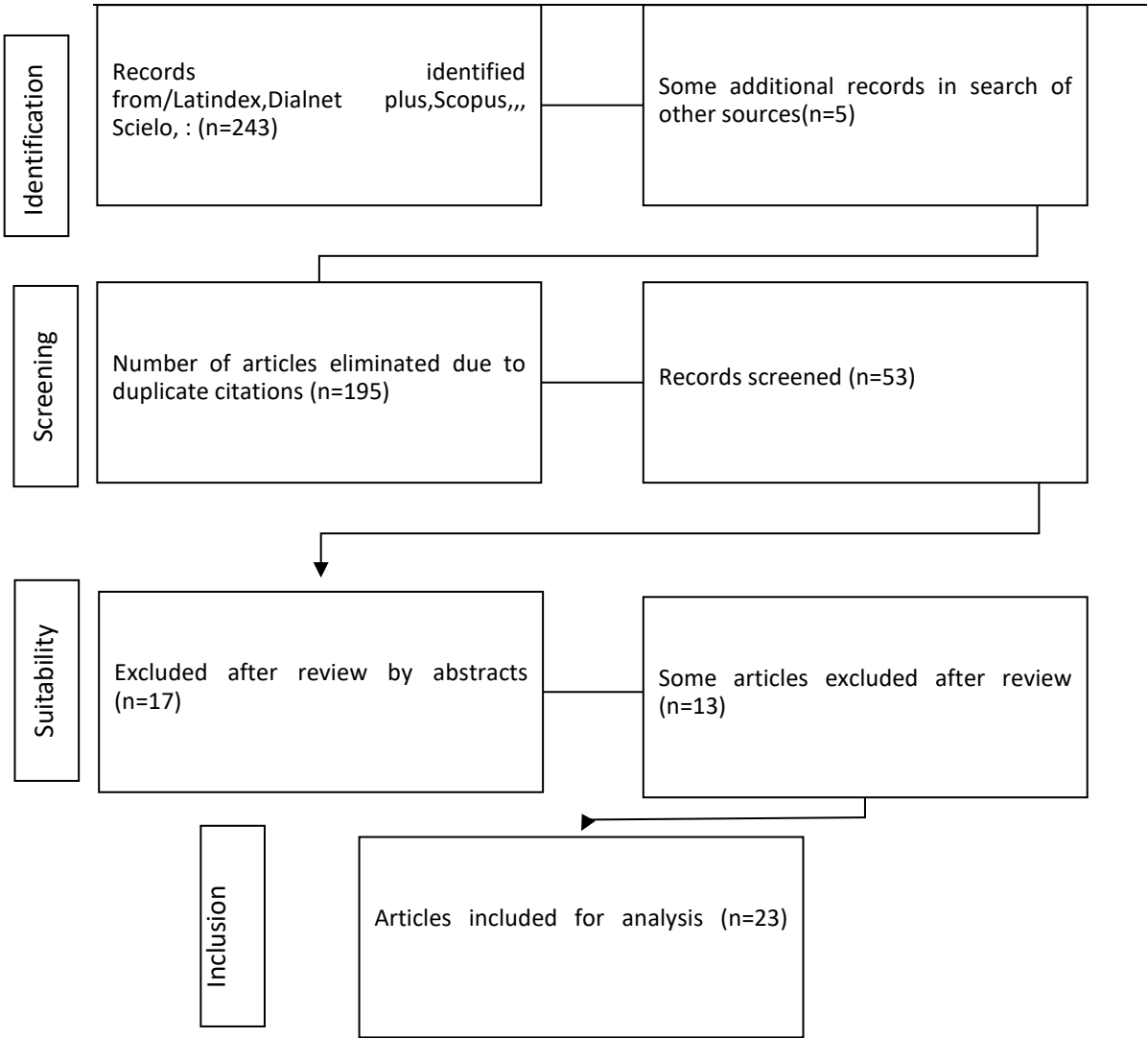The overarching objective was to examine implications of development of critical thinking.

Methodology

The study was conducted through a systematic review of literature, employing search engines such as AND, OR, WITH, and keywords including "critical thinking," "learning," "critical thinking strategies," "argumentation," and "development of critical thinking." Inclusion criteria included articles published between 2020 and 2024, written in English or Spanish, and accessible via open access. The exclusion criteria included articles were not accessible via open access.

The selected articles were drawn from two Scopus database articles, five SciELO articles, and 16 Latindex articles, resulting in a total of 23 articles included in final analysis.

Figure 1: Flow chart for article selection according to the PRISMA guidelines.

Identification

| Records identified from/Latindex,Dialnet plus,Scopus,,, Scielo, : (n=243) | Some additional records in search of other sources(n=5) |

Screening

| Number of articles eliminated due to duplicate citations (n=195) | Records screened (n=53) |

Suitability

| Excluded after review by abstracts (n=17) | Some articles excluded after review (n=13) |

**Inclusion**

Articles included for analysis (n=23)

Figure 2: Contents considered in the results

In Figure 2, it was determined that 25% of the results pertained to the significance of critical thinking, 36% were related to methodological strategies for developing critical thinking, 12% were associated with oral argumentation as a strategy for developing critical thinking, 12% were associated with relationship between critical thinking and technology, 3% were associated with informational competence and critical thinking, and 12% were associated with barriers to development of critical thinking.

Figure 3 depicts results yielded by the database utilized in the analysis.
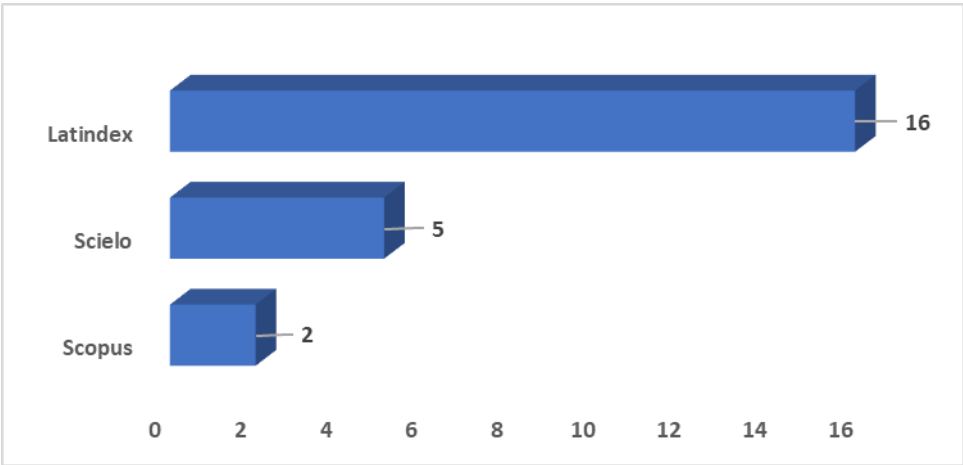
As illustrated in Figure 3, 16% of the articles are Latindex entries, 5 articles are drawn from the Scielo database, and 2 articles are from Scopus.
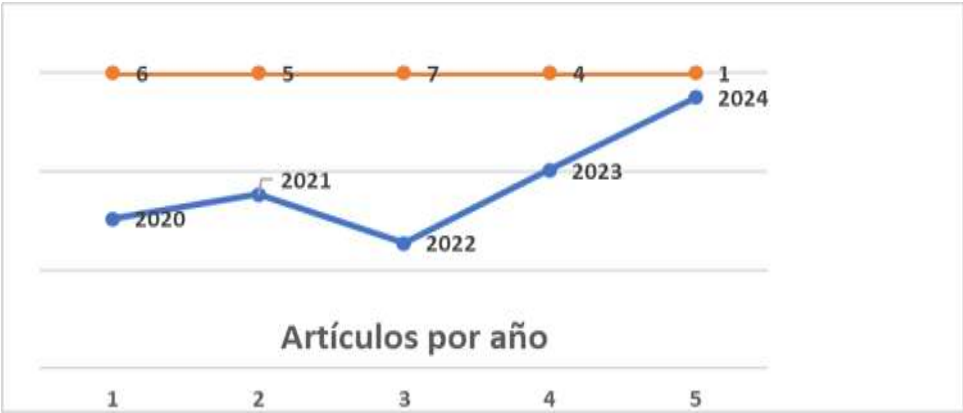
Figure 4: Items considered in the results

Figure 4 illustrates that six items were produced in 2020, five in 2021, seven in 2022, four in 2023, and one in 2024.

Results

The importance of critical thinking

The development of critical thinking is of paramount importance, particularly in context of the current century and potential for education to foster autonomous, critical, and ethical modes of thinking and behavior. This is why researchers are concerned with developing critical thinking skills in students at all educational levels (Collazos, 2020). An education based on critical thinking has a positive impact on quality of interactions within school environment and the educational processes of students. Consequently, the potential for integrating the concepts of critical thinking can enhance educational processes (Uribe and Gutiérrez, 2023).

The promotion of critical thinking contributes to advancement of a more socially, ethically, and environmentally conscious and responsible society (Vendrel, 2023). Consequently, the development of this thinking is of paramount importance for formation of an integrated individual, as it enables the comprehension of a problem and the implementation of a solution (Benavides, 2022). The abilities cultivated through critical thinking facilitate academic growth of each student. This enables education to transcend limitations of the classroom, where students become agents of social change and no longer merely passive observers of their educational journey. However, if teachers are unable to impart and apply knowledge from everyday life, the effort in education will be futile, as students will remain alienated from learning process (Castillo, 2020).

It is imperative to transition towards an ethical, strategic, dialogic, and interactive educational paradigm acknowledges critical thinking as a formative potential of every human being and prepares for its management and development. In order to achieve this objective, it is essential to construct an axiomatic model of management education for continuing professional education (Deroncele, 2020).

Methodological strategies to develop critical thinking in education students

The various methodological strategies of critical thinking are designed to cultivate in students capacity for reflection and analysis within a given context (Achahuanco, 2024). It is incumbent upon the educational institution to promote the application of methodological strategies with objective of strengthening the development of critical thinking. This is of vital importance, as it is necessary to activate dimensions of knowledge, self-regulation, significance, and motivation, while ensuring that students are guaranteed favorable conditions to achieve it. It is the responsibility of the teacher to be aware of the strategies that can be employed to develop skills for critical and reflective action. It is acknowledged that the utilisation of methodological strategies facilitates the advancement of critical thinking abilities in students (Soto & Chacón, 2022).

The most commonly utilized learning strategies are those that afford students a prominent role, including inverted classroom, problem-based learning, projects, technology, and cooperative work (Pedraja, 2023). The development of oral argumentation strategies in the classroom that are related to students' daily life issues serves to strengthen critical rationality. In Peru, the development of critical thinking in university students is a necessity and a requirement for effective decision-making and problem-solving. Consequently, it is also imperative to implement cross-disciplinary academic programs that cultivate creative thinking, particularly in context of business careers (López, 2022). A number of strategies have been identified that have been shown to be effective in fostering critical thinking in students. These include critical reasoning, the inverted classroom, cooperative learning, project-based learning, the production of argumentative essays, news analysis, and others. However, prior to engaging with these strategies, students must develop a range of skills, including creativity, collaboration, critical thinking, and communication (Collazos, 2020).

The most frequently cited strategies for developing critical thinking are problem-based learning (PBL), analysis of written texts, case studies, and problem studies (López et al., 2023). The learning environment should be utilized as a foundation for acquiring new knowledge. In other words, educational strategies should be designed to enable students to effectively solve real-world problems. Consequently, the concrete and abstract are inextricably linked in the reintegration of critical thinking (Martos, 2022). The problem-based approach is of great importance because it takes as a starting point problem from student's daily life to reach conclusions promote critical thinking (Landeo, 2022). The implementation of problem-based learning at the secondary level has been demonstrated to result in improvements in critical thinking (Bermúdez, 2021).

Oral argumentation as a strategy

The development of oral argumentation strategies in the classroom that relate to students' daily life issues serves to strengthen critical rationality. Furthermore, a classroom can be conceptualised as a democratic micro-society, wherein student is a social actor (Cobos, 2022). Reading can be defined as act of reflecting on content of a text and making sense of it in context of one's own life; it is a constructive process. The teacher must create opportunities

for interaction with student to foster critical thinking through techniques such as academic and philosophical essays, and even debate activities on a topic (Flores and Neyra, 2021).

There is a strong positive correlation between critical-reflective reading and critical thinking. However, it is challenging to encourage elementary students to develop critical thinking through critical-reflective reading. To achieve this, educators must dedicate their expertise and experience to this objective. Promoting moral and ethical values in students to foster their development into responsible citizens can be achieved by fostering reading habits and a certain level of reading comprehension. The practice of critical-reflective reading has been demonstrated to enhance students' capacity for critical thinking. This is achieved through the utilisation of a methodology that enables students to engage in reflection and analysis of perspectives presented by authors, to question these perspectives, and to make informed decisions regarding most pertinent topics (Callohuanca, 2021).

Critical thinking and technology

The utilization of technology in education is challenging due to existing digital divide (fundamentals, access, and resources), yet technology has the potential to transform education. Therefore, it is essential to provide agents of the educational process with transformative tools and a significant departure from traditional forms of teaching and learning (Cruz and Hernández, 2021). In the context of the 21st century, there is an urgent need for teacher training and updating to develop critical thinking, taking into account the aspects or dimensions must be developed on a permanent basis. The advent of the SARS-CoV-2 pandemic highlighted necessity to develop critical thinking in all users in order to facilitate the appropriate use of technology, both individually and collectively, with due consideration for the common good (Tapia, 2022).

The ability to analyze information is associated with informational competence, which in turn is linked to critical thinking. The latter is a fundamental tool for managing large amounts of information. However, the development of critical thinking skills is not being adequately addressed due to factors such as a lack of teacher training or investment of resources. This calls for a change in methodology. Furthermore, the lack of development in this area has a series of detrimental consequences, such as spread of misinformation (Jiménez, 2020). The practical and continuous application of computer skills will allow new generations to adapt to the changing and evolving environment through which our sociocultural context is passing (López, 2020).

Development of informational competency and critical thinking

Information literacy is associated with analysis of information, and critical thinking is therefore a transcendental tool for the management of large amounts of information. To achieve this, students must possess well-developed critical thinking skills, active methodologies, and resources that allow them to confront real-world contexts. However, this competence is not being adequately developed due to factors such as a lack of teacher training or investment of resources. This necessitates a shift in methodology. Furthermore, the lack of development of this competence has a series of detrimental consequences, including spread of misinformation (Jiménez, 2020).

Barriers to the development of critical thinking

The presence of an underlying structural problem that does not facilitate the formation of critical thinking. The physical spaces, the distribution of furniture, the curricular management of the center, the workload, the characteristics of the students and their social and life contexts, the responsibilities that fall on teachers, among others, do not favor the attempt to develop a critical approach (Mendoza, 2021). The administrative workload is excessive, preventing teachers from meeting and working in groups to integrate strategies and content from different areas (Lopez, 2023). Additionally, there is inadequate management of the development of critical thinking. Students respond to questions based on their existing knowledge, as there is no directed teaching to enable them to analyse and synthesise information. A notable shortcoming is the lack of guidance provided by educators when students are tasked with writing conclusions to their texts (Núñez, 2022).

Conclusions

The development of critical thinking is of paramount importance as it fosters growth of autonomous, critical, and ethical ways of thinking and behaving. Furthermore, it ensures the advancement of a more socially, ethically, and environmentally conscious and responsible society. An education based on critical thinking has a beneficial effect on quality of interactions within school environment and on educational processes of students. It is acknowledged that the utilisation of methodological strategies facilitates advancement of critical thinking abilities in students. These strategies encompass the inverted classroom approach, problem-based learning, project-based learning, technology-enhanced learning, collaborative work, the analysis of written texts, case studies, oral argumentation, and the examination of problems. The development of these skills is essential for fostering creativity, collaboration, critical thinking, and communication. Furthermore, the advancement of critical thinking necessitates utilisation of technology as transformative instruments. The practical and continuous application of computer skills will enable the younger generations to adapt to the changing and evolving environment that our socio-cultural context is undergoing.

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