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Review article

Design Thinking as an educational strategy to promote entrepreneurship in bachelor's students

El *Design Thinking* como estrategia educativa para fomentar el emprendimiento en el estudiantado de bachillerato

Design Thinking como estratégia educacional para promover o empreendedorismo em estudantes do ensino médio

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ABSTRACT

In the educational field, there is evidence of the presence of subjects related to the development of capacities and skills that will be useful to students in the future, as is the case of the Entrepreneurship and Management subject, which proves to be a subject that allows students, through their creativity, to generate innovative ideas to apply them in the future. However, as it is a subject where special emphasis is placed on the generation of new ideas, the search for new work methodologies is imperative, one of them being Design Thinking. Therefore, the objective of the article is to describe how the Design Thinking strategy has been implemented to develop entrepreneurship skills in high school students. For the development of the work, a qualitative approach has been used, accompanied by a PRISMA methodology, where the research sample corresponds to twenty-five

Translated from the original in Spanish

scientific studies that demonstrate the use of Design Thinking. Thinking in the subject of Entrepreneurship and Management. The results show that the use of Design Thinking is evident in the creation of prototypes, business profiles, web pages and other entrepreneurial initiatives that benefit students. It is concluded that the successful implementation of Design Thinking underscores the importance of adopting innovative and student-centered pedagogical approaches, since, by providing practical and meaningful learning experiences, it stimulates creativity, curiosity and innovation.

Keywords: high school; entrepreneurship; design thinking.

RESUMEN

En el ámbito educativo se evidencia la presencia de asignaturas relacionadas con el desarrollo de capacidades y habilidades que servirán en el futuro al estudiantado, como es el caso de la asignatura de Emprendimiento y Gestión, la cual demuestra ser una asignatura que permite que el estudiantado, mediante su creatividad, pueda generar ideas innovadoras para aplicarlas en un futuro. No obstante, al ser una asignatura donde se pone especial énfasis en la generación de nuevas ideas, es imperativa la búsqueda de nuevas metodologías de trabajo, siendo una de ellas el *Design Thinking*. Por ello, el objetivo del artículo es describir cómo se ha implementado la estrategia del *Design Thinking* para desarrollar la competencia de emprendimiento en el alumnado del bachillerato. Para el desarrollo del trabajo se ha utilizado un enfoque cualitativo, acompañado de una metodología PRISMA, donde la muestra de investigación corresponde a veinticinco estudios científicos que demuestran el uso del *Design Thinking* en la asignatura de Emprendimiento y Gestión. Los resultados demuestran que el uso del *Design Thinking* se evidencia en la creación de prototipos, perfiles de negocio, páginas web y otras iniciativas de emprendimiento que benefician al estudiantado. Se concluye que la implementación exitosa del *Design Thinking* subraya la importancia de adoptar enfoques pedagógicos innovadores y centrados en el estudiantado, ya que, al proporcionar experiencias de aprendizaje prácticas y significativas, estimula la creatividad, la curiosidad y la innovación.

Palabras clave: bachillerato; *design thinking*; emprendimiento.

RESUMO

No campo educacional, é evidente a presença de disciplinas relacionadas ao desenvolvimento de capacidades e habilidades que servirão aos alunos no futuro, como a disciplina de Empreendedorismo e Gestão, que se mostra uma disciplina que permite aos alunos através de Sua criatividade pode gerar ideias inovadoras para aplicar no futuro. Porém, por se tratar de uma disciplina onde se dá especial ênfase à geração de novas ideias, é imperativo a procura de novas metodologias de trabalho, uma delas é o *Design Thinking*, razão pela qual o objetivo do artigo é descrever como a estratégia foi implementado de *Design Thinking* para desenvolver competência empreendedora em estudantes do ensino médio. Para desenvolver o trabalho foi utilizada uma abordagem qualitativa acompanhada de uma metodologia PRISMA onde a amostra da pesquisa corresponde a vinte e cinco estudos científicos que demonstram a utilização do *Design Thinking* no Empreendedorismo e Gestão. Os resultados mostram que o uso do *Design Thinking* fica evidente na criação de protótipos, perfis de negócios, páginas web e outras iniciativas empreendedoras em benefício do corpo discente. Concluindo que o sucesso da implementação do *Design Thinking* delineia a importância da adoção de abordagens pedagógicas inovadoras e centradas no aluno, uma vez que ao proporcionar experiências de aprendizagem práticas e significativas estimula a criatividade, a curiosidade e a inovação.

Palavras-chave: ensino médio; *design thinking*; empreendedorismo.

INTRODUCTION

Today's society is characterized by rapid changes in education, the economy and any area that involves the intervention of technology. Therefore, it is essential to implement innovative educational strategies in order to provide high school students with the necessary skills to deal with the challenges of today's world with success in a dynamic and highly competitive environment (Belalcázar, 2022). Within this particular scenario, the Design Thinking emerges as a promising methodology in the educational field, by establishing a solid connection between theory and practice, with the aim of stimulating the development of entrepreneurial and creative skills.

In the field of education, where it is necessary to prepare students to face the numerous challenges presented by contemporary society in constant change, the incorporation of Design is proposed as

an innovative and relevant proposal. Thinking as an educational strategy at the high school level (Mora et al., 2019). The Design Thinking is an approach focused on people and their problem-solving skills, based on the generation of innovative ideas. It was popularized by David Kelley and Tim Brown in the 1990s, through their firm IDEO, which contributed to the dissemination of this work methodology (Auernhammer & Roth, 2021).

Design Thinking in high school

The Design Thinking in high school education is an innovative response to train students with the necessary skills to contribute to society (Londoño and Álvarez, 2021). At the institutional and community level, there are challenges and opportunities in the implementation of Design Thinking. Thinking in high school education. Schools must adapt institutionally to incorporate this methodology effectively, adequately training teachers and aligning with curricular objectives (Paz-Calderón, 2023).

Researching the use of Design Thinking in high school education solves problems and challenges, filling gaps in knowledge and justifying its comprehensive and systematic approach. Understanding the factors that impact the effectiveness of Design Thinking at different levels will help improve educational programs and design educational policies. In view of this, the research question that has been raised is: how has the Design Thinking strategy been implemented? Thinking to develop entrepreneurship skills in high school students? This question will allow us to establish the context of the research that must be carried out and the focus that will be taken.

The reason why it is considered appropriate to carry out the application of the Design approach Design Thinking as an educational strategy at the high school level lies in the urgent need to foster and develop entrepreneurial skills and core competencies essential for the 21st century (Cedeño and Rodríguez, 2022). In a world characterized by rapid technological advances and continuous changes, Design Thinking is a key element in the development of entrepreneurial skills and core competencies essential for the 21st century (Cedeño and Rodríguez, 2022). Thinking is presented as an avant-garde approach that provides a revolutionary methodology.

It is important to note that the theoretical justification for this approach is based on the ability of Design Thinking to merge theory and practice in a highly efficient way. This approach focuses on addressing and solving real-world problems in a comprehensive and effective way (Rodríguez, 2020). When students fully understand how this process works, they acquire the ability to proactively use the principles of Design Thinking. Thinking in a variety of areas, such as detecting opportunities,

creating innovative solutions and evaluating ideas for confirmation. This gives them the skills necessary to efficiently address the complex challenges that often arise in the business and professional world.

The Design Thinking promotes collaboration and teamwork, fundamental aspects in an interconnected and globalized society. By promoting the joint construction of solutions, the relevance of the variety of approaches and capabilities is strengthened, generating a positive impact on society by promoting mutual understanding and appreciation of individual contributions within a team (Buendía, 2019). This approach provokes both personal creativity and community collaboration, with the purpose of preparing students to be citizens committed to the challenges of society. Design Thinking about high school education is socially justified by its ability to train individuals as agents of change in society.

Finally, based on the practical justification, it is important to mention that the use of Design Thinking in education prepares students for a dynamic and competitive work and social environment. This approach allows to promote the entrepreneurial spirit and meet the needs of a society that values innovation, creativity and problem-solving skills, as well as fostering the individual development of students (Moreira *et al.,* 2021). The goal is to empower students with Design Thinking, so that they are agents of change and contribute to social and economic progress.

Scientific novelty and social importance

The Design Thinking is a user-centered methodology, used to solve problems in creative and innovative ways. This approach is based on five fundamental phases that are applied in an iterative manner. In the first phase, empathize, designers immerse themselves in the user's context to understand their needs, desires, and motivations. Using techniques such as observation, interviews, and ethnographic research, they gain deep insight into the user experience. The second phase, define, involves analyzing the acquired knowledge and formulating a specific problem or challenge to be addressed (Ketlun, 2020). In the third phase, ideate, numerous ideas and potential solutions are generated through ideation techniques such as brainstorming workshops and visual creativity. The fourth phase, prototype, involves giving tangible form to the most promising ideas through rapid and inexpensive prototypes. These prototypes allow for testing solutions and obtaining early feedback from users. Finally, in the evaluation phase, the performance of the prototypes is analyzed, areas for improvement are identified and the iterative cycle is repeated until an optimal solution is

reached (Márquez *et al.*, 2021). The scientific novelty presented lies in the revolutionary way in which Design Thinking is approached as an educational strategy to promote entrepreneurship at the high school level. This is highlighted by its innovative approach, which establishes a direct connection between the theory of Design Thinking and its practical application within the educational context (Argandoña *et al.*, 2020). The combination and fusion of these two dimensions result in the configuration of a comprehensive and constantly evolving approach to foster the growth of entrepreneurial skills, presenting a unique vision that transcends conventional educational forms.

In a society where technology and the economy are experiencing accelerated growth, it is essential to have the ability to generate new ideas and carry out business projects. Incorporating the Design Thinking approach in high school students not only involves preparing them for their future careers, but also allows them to develop the skills and abilities necessary to face social challenges and actively participate in building strong and cooperative communities (Llanes, 2020).

This situation has a positive impact on reducing inequalities in education and provides everyone with equal access to opportunities for growth and entrepreneurship. The application of Design Thinking in teaching not only implies a novel way of educating, but also becomes a means to promote inclusion and guarantee equal opportunities in society (Rangel *et al.*, 2023). Thus, this article aims to describe how the Design Thinking strategy has been implemented. Thinking to develop entrepreneurship skills in high school students.

DEVELOPMENT

For the development of the theoretical systematization, a methodology was used with the PRISMA declaration (Preferred Reporting Items for Systematic Reviews and Meta- Analyses) which, according to Page *et al.* (2021), has been created with the main purpose of facilitating the performance of systematic reviews of studies that seek to evaluate the effects of interventions in a certain group of people with a similar object of study, such as health interventions, regardless of the variety of study designs that are included in the process. Taking this definition as a starting point, it was important to determine the eligibility, inclusion, exclusion criteria and the bibliographic bases that were taken into consideration.

Inclusion criteria:

- Studies published from 2020 onwards.
- Studies with a clear and precise methodology.
- Studies that belong to established databases.
- Studies that work with students of technical or general unified high school.
- Studies that work with public educational institutions.

Exclusion criteria:

- Studies prior to the specified date.
- Studies that work with students in higher education, primary school or universities.
- Studies that conclude ambiguously.
- Studies that do not show direct conclusions from the proposed entrepreneurial ideas.

Sources of information

The bibliographical bases that have been taken into consideration for the development of the study are Redalyc, SciELO and Google Scholar, mainly. The Boolean operators AND and OR were used; the search path was with the words: Design Thinking, educational strategy, teaching techniques, entrepreneurship and high school students. At the same time, the quality of the articles was assessed using the PRISMA checklist. Information that allowed the traceability of the research was also extracted, including: author, year, country, design, journal, address, URL or DOI (Figure 1).

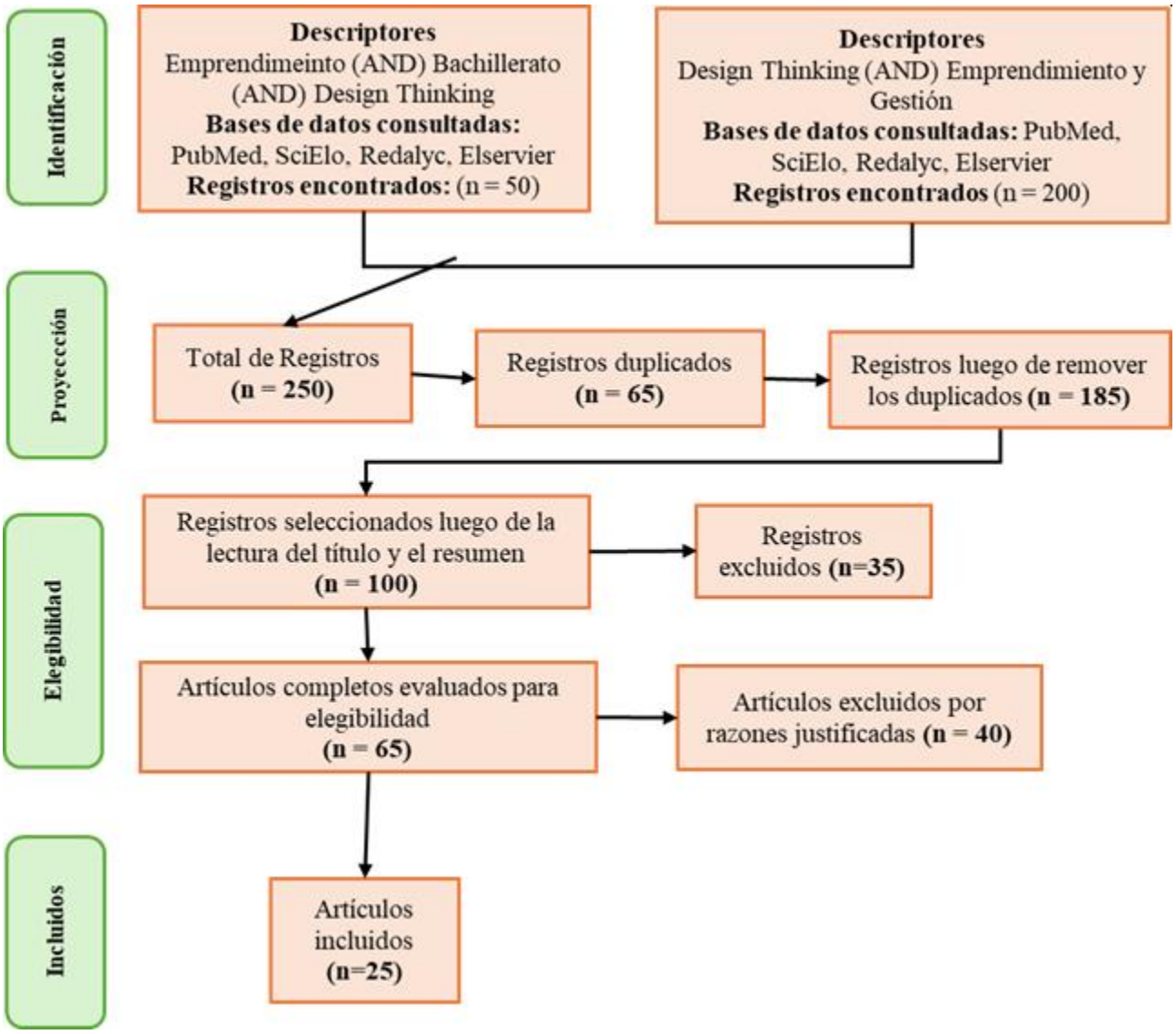

Figure 1. PRISMA diagram for systematic review

Note: The diagram presented above was made according to the way in which the articles selected for the development of the research were found

Design Thinking strategy has been implemented to develop entrepreneurship skills in high school students, to promote entrepreneurship. Based on the diagram presented above, the selected articles have been evaluated, as reflected in table 1. Below are the scientific data of the 25 integrated studies according to the inclusion criteria.

Table 1. Systematization of scientific data with results of the studies included in the research

No.	Year	Qualification	Results
1	2018	Developing creative and practical thinking skills to start a business plan: designing learning evidence.	The didactic transposition of the Design Thinking methodology to the teaching-learning processes; in parallel, to measure performance, mastery levels and indicators for the development of the aforementioned competencies are established (Hernández *et al.*, 2018).
2	2018	Design Thinking in the teaching-learning process. Proposal: Educational Portal.	The Design Thinking was implemented in the development of the Educational Portal; it was divided into different stages and games such as role-playing and brainstorming (Cantos and Monserrate, 2018).
3	2020	Design Thinking as a methodology for business projects.	Design Thinking, in addition to carrying out their project, the students learned a way of working and acquired very interesting and necessary capacities and skills such as teamwork, public speaking, organizing their work and managing their time (García and Vallés, 2020).
4	2020	Business plan for the creation of an additional service unit in open and distance education for high school level in a Private Educational Unit in the city of Guayaquil.	The Design Thinking methodology was used for the development of the business plan for students, where they can act in the construction and progress of the proposed business (Parrales *et al.*, 2020).
5	2021	Promoting entrepreneurship in higher secondary education using the Design Thinking methodology.	The implementation of the Design Thinking methodology was based on a project divided into five phases, which led to the development of this project based on a prototype to solve the problem identified in relation to the use of technology from home (Sánchez & Marín, 2021).

6	2021	Design Thinking in high school: innovative design strategies for creating contemporary spaces.	The Design Thinking was channeled towards the design of an educational intervention proposal inspired by the near future. This is done through the design of a public space in a civic center of the city that proposes alternatives for the configuration of the public space, promoting benefits, given that the Design Thinking has the ability to transfer new skills to the present and future (Ferreiro, 2021).
7	2021	Digital tools in learning and their relationship with students' creative skills.	The use of Design Thinking was the methodology that allowed the design of projects to be executed appropriately, through the use of brainstorming and workshops in class, which allows the development of didactic actions by the teacher to stimulate the creativity of the students (Echeverría, 2022).
8	2021	The Design Thinking model as a pedagogical strategy in teaching-learning in Higher Education.	Design Thinking - based learning prototype directing what has been learned into a communication product (Moreira, 2021).
9	2021	Design Thinking Program to develop creativity in fifth-year high school students at IE Tte. Miguel Cortés, 2021.	Developing a Design Thinking Program is justified because its implementation can be thought of from a single curricular area or in an interdisciplinary way. The implementation of this methodology in the program, in the area of communication, will strengthen linguistic skills (Mendoza, 2021).
10	2021	Project method in the entrepreneurship of students of the VII Cycle of the IE "Miguel Grau", Magdalena del Mar, 2021.	The application of this methodology was linked to six dimensions, in addition to its respective indicator, where the process is necessary based on personal, social and productive methods. The Design Thinking made it possible to generate a conceptual, procedural and attitudinal project based on the area of technology (Avilés, 2021).

11	2021	Digital marketing in the learning of the subject of Entrepreneurship and management.	The Design Thinking methodology was evident in the development of the digital marketing program where its application is valuable to carry out the student entrepreneurship projects established in the curriculum; in addition, with the teaching of this field, skills such as problem solving, communication and leadership are acquired (Párraga and García, 2021).
12	2022	Design Thinking, a methodology to promote meaningful learning.	The Design Thinking was implemented based on a pre-posttest that combined the observation of the problem by the students and greater participation by the students was observed, since the importance of personalizing the sessions according to the needs of the group and the consideration of the socio-educational disadvantage caused by not implementing such an undertaking was evident (Izquierdo *et al.*, 2022).
13	2022	Innovation as a strategy in the projects of the entrepreneurship subject with the high school students of the Quince de Octubre Educational Unit of Jipijapa.	The Design Thinking was applied in the subject of entrepreneurship and management through an application workshop that defined the management of each of the sustainable entrepreneurship projects, based on a four-phase system, which complies with the social well-being sought by the generation of the sustainable project (Delgado and Vélez, 2022).
14	2022	Design Thinking Implementation for project development in the subject of Entrepreneurship and Management.	The Design Thinking methodology was used for the design and implementation of a teaching guide that guides the project creation process with an organized, dynamic and innovative methodology so that students can consolidate knowledge and develop skills, abilities and meaningful learning (Caiza, 2022).

15	2022	The Design Thinking about learning.	The Design Thinking was implemented for entrepreneurship learning as a methodology that improves the process and the results; that is, that contributes to the generation of entrepreneurial students who have the knowledge, attitudes and skills that allow them to undertake and adapt to the current socioeconomic dynamics, enhance critical and creative thinking, and accept and process their mistakes as opportunities while respecting and caring for their community (Maldonado, 2022).
16	2022	Project-based learning as a strategy for developing creative entrepreneurship in high school.	The Creative Imagination Test allows to measure creativity, taking into account the following variables: the fluency of ideas, the flexibility of thought, the originality of the productions, the elaboration of the responses, the use of creative details such as: color, shadows, expansiveness, which makes one think of big ideas or products, to have a great vision, reveals the creative capacity when designing something that goes beyond the established limits, or can carry out the union of several elements (Torres, 2022).
17	2022	Design Thinking as a teaching strategy for meaningful learning in high school students.	The Design Thinking as a teaching strategy positively influences meaningful learning applied in classes taught to students at the Cascales Educational Unit, where it was shown that creativity and design favor imagination, motivation, and collaborative work (Quichimbo and Salinas, 2022).
18	2023	Creative thinking and its impact on the development of entrepreneurial skills in students of circuit 13D02 of the Montecristi Canton, Manabí Province.	The methodology has been implemented through creativity strategies, which must be rescued, and not annulled with rigid educational systems that limit the creative capacity of children. It has also been implemented through the use of

			entrepreneurial training methodologies based on discussions, readings and project development (Farfán, 2023).
19	2023	Training in innovation and entrepreneurship: a teaching experience of Design Thinking.	Design Thinking was implemented based on a lesson plan divided into three units to learn how this methodology works in entrepreneurship projects (Bedregal, 2023).
20	2023	Design Thinking as a tool for fostering innovation and entrepreneurship.	The implementation of Design Thinking was evident in the way in which the resolution of the problem was proposed based on a prototyped methodology, with the development of periodic evaluations on how students approached the development of an undertaking based on a previously determined problem in society (Obregón *et al.*, 2023).
21	2023	Educational podcast on the subject of entrepreneurship and management for third-year science baccalaureate students.	The Design Thinking was implemented in the development of the podcast, as it serves as a fundamental educational strategy for students who do not have enough time and the development of these digital tools to have a new way of learning how to develop entrepreneurship and management programs (Caranqui, 2023).
22	2023	Technological tools in the development of skills and abilities in the subject of Entrepreneurship and Management.	The Design Thinking was implemented through the development of three modules for creativity; this allowed the development of creativity, curiosity and the ease of managing the development of web pages that allow the management of Entrepreneurship and Management (Tacán et al., 2023).
23	2023	Design Thinking Methodology to improve the management of entrepreneurship projects in	The intervention of the Design Thinking Methodology program (DT) was successful and improved the management of economic or social entrepreneurship projects of students of the sixth

		students of Educational Institution No. 86548, 2023.	cycle of the institution, where the development of projects was constantly increasing due to the motivation that exists when using the DT (Flores, 2023).
24	2023	Design Thinking Methodology to improve competence manages economic or social entrepreneurship projects in Huamachuco Secondary School students 2023.	The Design Thinking methodology was applied in learning sessions, where various dynamic activities were used that allowed students to generate a series of capabilities such as capacity, application of techniques, teamwork and application of creativity (Torres and Valdivia, 2023).
25	2024	Design Thinking for prototype development in high school.	The Design Thinking was used through the implementation of technology and digital resources based on collaborative learning and work environments to improve projects (Mendoza Hernández & García Contreras, 2024).

When performing a qualitative analysis of the 25 studies included in this systematic review, with the support of the MAXQDA2022 program, six categories emerged. These categories were found to be related to techniques used when developing the Design Thinking strategy, which are: projects, techniques to stimulate creativity, teamwork, problem solving, workshops and brainstorming. Figure 2 shows the code statistics obtained in MAXQDA2022, in which the most frequently referred techniques in the studies are observed from highest to lowest.

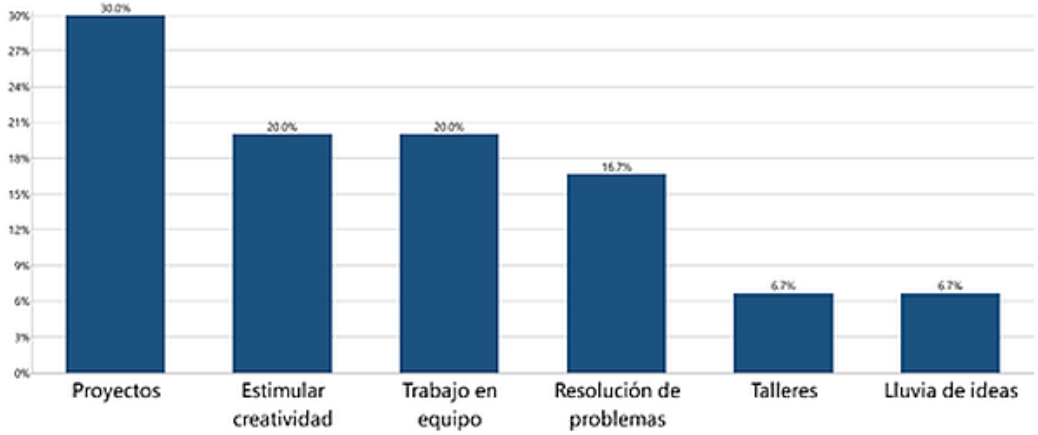

Figure 2. Teaching techniques applied during the implementation of the Design Thinking
Source: Own elaboration at MAXQDA2022

Figure 3 shows examples of coded segments taken verbatim from the studies included in this systematic review, with support from MAXQDA2022 on the techniques used when developing the Design Thinking strategy. The width of the line reflects the technique from most to least used during the implementation of the Design Thinking.

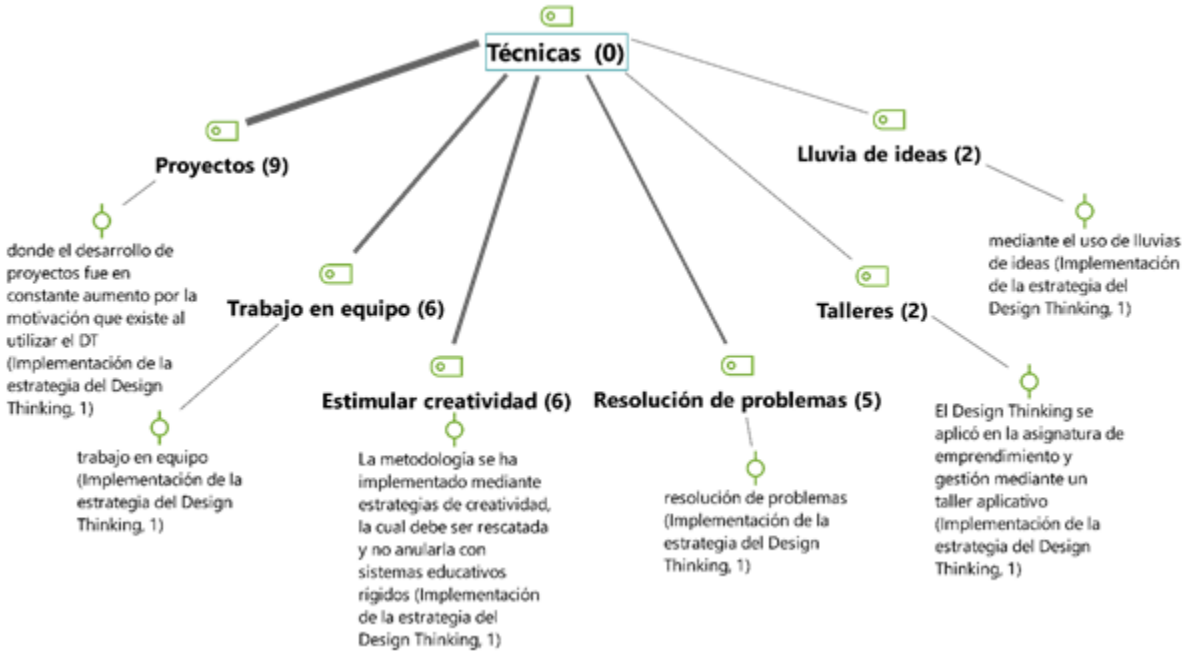

Figure 3. Teaching techniques applied during the implementation of the Design Thinking and coded segments

Source: Own elaboration at MAXQDA2022

This systematic review describes how the Design Thinking strategy has been implemented to develop entrepreneurship skills in high school students to promote entrepreneurship. It was observed that there are six techniques, mostly referred to by the studies reviewed: projects, techniques to stimulate creativity, teamwork, problem solving, workshops and brainstorming.

Regarding these results, it can be said that they are consistent with the Design Thinking methodology, which includes in its phases the development of projects, collaborative work, stimulating creativity, problem solving, workshops and brainstorming. However, in what is cited by authors such as Rosch *et al.* (2023) disagree with their methodology by questioning the linearity of the phases and emphasizing the importance of constant iteration and flexibility to adapt to emerging findings during the process. These authors argue that Design Thinking should not be seen as a set

of rigid steps, but rather as a more fluid and organic approach that allows for free movement between the different phases as needed. They also criticize the excessive simplification of the methodology, as in practice the process can be more complex and require continuous adjustments and adaptations.

However, despite these divergences in terms of methodological approach, the essence of Design Thinking remains the same: a user-centered, iterative process based on empathy, collaboration, and experimentation. So, while there are different perspectives on the exact implementation of the methodology, the fundamental goal remains the same: generating innovative and effective solutions that meet the real needs of users.

The research compiles a series of studies that explore the implementation of Design Thinking as a strategy to develop entrepreneurship skills in high school students. Authors such as Hernández *et al.* (2018), Cantos and Monserrate (2018), García and Vallés (2020) and Parrales *et al.* (2020) agree in highlighting the value of Design Thinking to foster creative and practical thinking in the development of business plans and entrepreneurial projects. These studies show how this methodology has become an effective tool to stimulate creativity and promote management and teamwork skills among students, fundamental aspects in the field of entrepreneurship.

On the other hand, authors such as Sánchez and Marín (2021) and Ferreiro (2021) complement this approach by showing how Design Thinking has been applied specifically in higher secondary education to promote entrepreneurship. Both studies underline the importance of this methodology to generate innovative ideas and develop entrepreneurial skills among students, demonstrating the versatility of Design Thinking in different educational contexts and teaching levels.

The research also highlights the implementation of Design Thinking in the creation of educational programs and projects aimed at developing entrepreneurial skills. Mendoza (2021) and Avilés (2021) address this aspect by designing Design Thinking programs aimed at high school and college students, respectively. These programs focus on promoting creativity and innovative thinking as fundamental tools for entrepreneurship, demonstrating the capacity of Design Thinking to adapt to different educational levels and specific contexts.

Likewise, authors such as Párraga and García (2021) and Izquierdo *et al.* (2022) delve deeper into the impact of Design Thinking about meaningful learning and innovation in entrepreneurial projects. Both studies highlight how this methodology not only facilitates the acquisition of practical knowledge, but also promotes the personalization of the teaching process, according to the needs of

the group and fosters creativity and critical thinking among students, key aspects for success in entrepreneurship.

On the other hand, authors such as Merino Delgado and Bravo Vélez (2022) and Farfán (2023) emphasize the importance of rescuing creativity in the educational process and promoting methodologies that allow the development of entrepreneurial projects. These studies show how Design Thinking has become a valuable tool to stimulate creativity and innovation among students, which contributes to strengthening their entrepreneurial skills and their ability to face the challenges of today's working world.

Furthermore, authors such as Bedregal (2023) and Tacán et al. (2023) highlight how Design Thinking has been applied in training in innovation and entrepreneurship, using technological tools and organized methodologies to enhance student learning. These studies show how Design Thinking has become a valuable tool to stimulate creativity and innovation among students, which contributes to strengthening their entrepreneurial skills and their ability to face the challenges of today's working world.

CONCLUSIONS

In conclusion, the research shows that Design Thinking has been effective in developing entrepreneurial skills in high school students, providing practical tools and fostering creativity and innovation in the educational field. Through a variety of studies and approaches, it is evident that this methodology has been adapted to different educational contexts and levels, highlighting its versatility and its positive impact on the development of entrepreneurial skills among students.

The authors have shown how this methodology promotes creativity, innovative thinking and the practical skills necessary to start and manage business projects. From the design of business plans to the creation of educational programs, Design Thinking has positioned itself as a versatile tool that not only facilitates meaningful learning, but also prepares students to face the challenges of today's working world.

In addition, the research highlights the value of Design Thinking about the comprehensive training of students, by promoting skills such as teamwork, effective communication and time management. These skills are essential not only for entrepreneurship, but also for the personal and professional development of students. Likewise, the adaptability of Design Thinking across different educational

contexts and teaching levels suggests its potential to transform education and prepare future generations for an increasingly changing and competitive world.

Ultimately, successful implementation of Design Thinking in educational settings underscores the importance of adopting innovative and student-centered pedagogical approaches. By providing practical and meaningful learning experiences, this methodology not only stimulates creativity and problem-solving, but also empowers students to become change agents and entrepreneurial leaders in their communities.

REFERENCES

Argandoña Mendoza, M. F., Villavicencio Cedeño, J. L., Briones Párraga, W. S., & Cedeño Zambrano, M. E. (2020). Virtualización educativa y su aplicación en la asignatura de emprendimiento y gestión para los estudiantes de bachillerato en la provincia de Manabí, Ecuador. *Dominio de las Ciencias*, *6*(Extra 3), 210-231.

Auernhammer, J., & Roth, B. (2021). The origin and evolution of Stanford University's design thinking: From product design to design thinking in innovation management. *Journal of Product Innovation Management*, *38*(6), 623-644. https://doi.org/10.1111/jpim.12594

Bedregal-Alpaca, N. (2023). Formación en innovación y emprendedurismo: Una experiencia de enseñanza de design thinking. *Revista Internacional de Humanidades*, *12*(Monográfico), 1-19. https://doi.org/10.37467/revhuman.v12.4679

Belalcázar, M. (2022). *Design Thinking en la Cátedra Unadista de posgrados. Procesos de emprendimiento en propuestas curriculares para la virtualidad.* Universidad Nacional Abierta y a Distancia. http://repository.unad.edu.co/handle/10596/51586

Buendía, J. (2019). El pensamiento creativo como herramienta en el design thinking. *Negonotas Docentes*, *14*. https://doi.org/10.52143/2346-1357.592

Caiza Quillupangui, E. E. (2022). *Implementación del Design Thinking para el desarrollo de proyectos en la asignatura de Emprendimiento y Gestión*. Quito: Universidad Tecnológica Indoamérica. https://repositorio.uti.edu.ec//handle/123456789/4994

Cantos, C., & Monserrate, S. (2018). *Design thinking en el proceso de enseñanza aprendizaje. Propuesta: portal educativo*. Universidad de Guayaquil. Facultad Filosofía, Letras y Ciencias de la Educación.

Caranqui Pineda, V. P. (2023). *Pódcast educativo en la asignatura de emprendimiento y gestión en los estudiantes de los terceros años de bachillerato en ciencias*. https://repositorio.utn.edu.ec/handle/123456789/14258

Cedeño Santos, M. A., & Rodríguez Loor, G. B. (2022). Herramientas de educación imaginativa en la generación de ideas de negocios innovadoras. *ECA Sinergia*, *13*(1), 139. https://doi.org/10.33936/eca_sinergia.v13i1.4068

Echeverría Pidghirnai, V., & Molina Villacis, P. de las M. (2022). Herramientas digitales en el aprendizaje y su relación con las habilidades creativas de los estudiantes. *Revista Científica Sinapsis*, *2*(21). https://doi.org/10.37117/s.v2i21.608

Farfán Veliz, L. A. (2023). *El pensamiento creativo y su incidencia en el desarrollo de habilidades para el emprendimiento en estudiantes del circuito 13D02 del Cantón Montecristi Provincia de Manabí. Universidad San Gregorio de Portoviejo*. http://repositorio.sangregorio.edu.ec/handle/123456789/3473

Ferreiro-Lorenzo, P. (2021). *Design Thinking en bachillerato: Estrategias innovadoras de diseño para la creación de espacios contemporáneos*. https://reunir.unir.net/handle/123456789/11630

Flores Pastor, K. Y. (2023). Metodología Design Thinking para mejorar la gestión de proyectos de emprendimiento en estudiantes de la Institución Educativa N° 86548, 2023. *Repositorio Institucional - UCV*. https://repositorio.ucv.edu.pe/handle/20.500.12692/125956

García, C., & Vallés, J. (2020). *Design thinking como metodología del proyecto empresarial*. https://zaguan.unizar.es/record/98544?ln=es#

Hernández Jaime, J., Jiménez Galán, Y. I., & Rodríguez Flores, E. (2018). Desarrollo de competencias de pensamiento creativo y práctico para iniciar un plan de negocio: Diseño de

evidencias de aprendizaje. *RIDE. Revista Iberoamericana para la Investigación y el Desarrollo Educativo*, *9*(17). https://doi.org/10.23913/ride.v9i17.383

Izquierdo-Izquierdo, M., Gómez-Calero, C., & García-Lázaro, D. (2023). *Design Thinking, una metodología para fomentar el aprendizaje significativo*. https://doi.org/10.22320/S07179103/2022.01

Ketlun, M. del M. (2020). Fases y redes en la metodología del Design Thinking. *Cuadernos del Centro de Estudios en Diseño y Comunicación. Ensayos*, *78*, 91-102. https://doi.org/10.18682/cdc.vi78.3663

Llanes León, J. E. (2020). *Perspectivas del emprendimiento y espíritu emprendedor en los estudiantes de tercero Bachillerato General Unificado del Colegio Nacional "Mejía"*. Quito: Universidad Andina Simón Bolívar, Sede Ecuador. http://repositorio.uasb.edu.ec/handle/10644/7335

Londoño Montoya, S., & Álvarez Giraldo, C. M. (2021). Emprendimiento e innovación social: Experiencia de jóvenes rurales en Caldas - Colombia. *Revista de ciencias sociales*, *27*(Extra 4), 108-126.

Maldonado Llano, P. E. (2022). *El design thinking en el aprendizaje del emprendimiento* Universidad Tecnológica Indoamérica. https://repositorio.uti.edu.ec/bitstream/123456789/5010/1/MALDONADO%20LLANO%20PAULINA%20ELIZABETH.pdf

Mendoza Cánova, E. S. (2021). Programa de design thinking para desarrollar la creatividad en los estudiantes de quinto año de secundaria de la IE Tte. Miguel Cortés, 2021. *Repositorio Institucional - UCV*. https://repositorio.ucv.edu.pe/handle/20.500.12692/82857

Mendoza Hernández, L. E., & García Contreras, J. M. (2024). Design Thinking para el desarrollo de prototipos en bachillerato. *Uno Sapiens Boletín Científico de la Escuela Preparatoria No. 1*, *6*(12). https://doi.org/10.29057/prepa1.v6i12.11754

Merino Delgado, H. M., & Bravo Vélez, L. E. (2022). La innovación como estrategia en los proyectos de la asignatura de emprendimiento con los estudiantes del bachillerato de la Unidad

Educativa Quince de Octubre de Jipijapa. *REVISTA ALCANCE*, *5*(1). https://doi.org/10.47230/ra.v1i5.19

Mora Pacheco, P. F., Aguirre Quezada, J. C., Álava Atiencie, N. G., Cordero López, J. F. (2019). Jóvenes universitarios y su apuesta al emprendimiento social. *Revista Economía y Política*, *30*, 3-27.

Moreira Cedeño, J. A., Zambrano Montes, L. C., & Rodríguez Gámez, M. (2021). El modelo Design thinking como estrategia pedagógica en la enseñanza-aprendizaje en la educación superior. *Polo del Conocimiento: Revista científico - profesional*, *6*(3), 1062-1074. https://dialnet.unirioja.es/servlet/articulo?codigo=7926866

Obregón Espinoza, E. L., Neri Ayala, A. C., Ramos y Yovera, S. E., Caro Soto, F., & Muñoz Vilela, A. J. (2023). Design Thinking as a tool for fostering innovation and entrepreneurship. *Salud, Ciencia y Tecnología*, *3*, 368. https://doi.org/10.56294/saludcyt2023368

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Alonso-Fernández, S. (2021). Declaración PRISMA 2020: Una guía actualizada para la publicación de revisiones sistemáticas. *Revista Española de Cardiología*, *74*(9), 790-799. https://doi.org/10.1016/j.recesp.2021.06.016

Párraga, E., & García, B. (2021). *El marketing digital en el aprendizaje de la asignatura de Emprendimiento y Gestión*. Universidad San Gregorio de Portoviejo. http://repositorio.sangregorio.edu.ec:8080/handle/123456789/2463

Parrales Castaneda, J. D., Charco Suqui, J. J., & Soriano Idrovo, P. (2020). *Plan de negocios para la creación de una unidad de servicio adicional en educación abierta y a distancia para el nivel de Bachillerato en una Unidad Educativa Particular de la ciudad de Guayaquil*. Escuela Superior Politécnica del Litoral. http://www.dspace.espol.edu.ec/handle/123456789/53108

Paz-Calderón, Y. (2023). Una aproximación al tema de emprendimiento de mujeres jóvenes en México. *Revista Espiga*, *22*(45), 78-95. https://doi.org/10.22458/re.v22i45.4645

Quichimbo, Y. L., & Salinas, F. B. (2022). *Design thinking como estrategia didáctica para el aprendizaje significativo en estudiantes del bachillerato.* Universidad de Otavalo. http://repositorio.uotavalo.edu.ec/handle/52000/701

Rangel, G. Z., Alvarado, J. A. P., Hernández, V. M. H., Ramos, S. K. M., & Madrigal, M. V. (2023). Emprendimiento como propuesta transversal para desarrollar habilidades personales y responsabilidad social en estudiantes de bachillerato. *Ciencia Latina Revista Científica Multidisciplinar*, *7*(2), 8553-8564. https://doi.org/10.37811/cl_rcm.v7i2.5973

Rodríguez, D. M. (2020). Design Thinking para la docencia universitaria en bibliotecología. *Bibliotecas*, *38*(2). https://doi.org/10.15359/rb.38-2.1

Rösch, N., Tiberius, V., & Kraus, S. (2023). Design thinking for innovation: Context factors, process, and outcomes. *European Journal of Innovation Management*, *26*(7), 160-176. https://doi.org/10.1108/EJIM-03-2022-0164

Sánchez, L., & Marín, L. (2021). *Promover el emprendimiento en la educación media basada en la metodología "Design Thinking"*. Universidad Escuela Colombiana de Carreras Industriales.

Tacán Meneses, A. L., Zumba Novay, E. G., & Tacán Meneses, S. P. (2023). Las herramientas tecnológicas en el desarrollo de habilidades y destrezas en la asignatura de Emprendimiento y Gestión. *Revista Imaginario Social*, *6*(1). https://revista-imaginariosocial.com/index.php/es/article/view/92

Torres Caballero, L. J., & Valdivia Chilon, J. C. (2023). *Metodología Design Thinking para mejorar la competencia gestiona proyectos de emprendimiento económico o social en estudiantes de Secundaria Huamachuco 2023*. https://repositorio.uct.edu.pe/handle/123456789/3835

Torres Espitia, L. I. (2022). *Aprendizaje basado en proyectos como estrategia para el desarrollo de emprendimientos creativos en bachillerato*. Pontificia Universidad Católica del Ecuador. https://repositorio.pucesa.edu.ec/handle/123456789/3586

Vargas Márquez, B. L., Inga Hanampa, L. A., & Maldonado Portilla, M. G. (2021). Design Thinking aplicado al Diseño de Experiencia de Usuario. *Innovación y Software*, *2*(1). https://doi.org/10.48168/innosoft.s5.a35

Conflict of interest

Authors declare no conflict of interests.

Authors' contribution

The authors participated in the design and writing of the article, in the search and analysis of the information contained in the consulted bibliography.