

Original article

Digital skills: teacher's perspective in the teaching process for secondary school students



Competencias digitales: visión del docente en el proceso de enseñanza en estudiantes de secundaria

Competências digitais: a visão do docente no processo de ensino para estudantes do ensino médio

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ABSTRACT

Technology has become increasingly important in recent decades, enabling teachers and students to acquire basic, intermediate, and advanced digital skills. This study aimed to explore teachers' perspectives on digital competencies in the learning process for secondary school students. The methodology employed a qualitative, phenomenological-interpretive design. Interviews were conducted using an interview guide, with five versioners from a public school in Nepeña, Peru,

participating. Content analysis facilitated the selection of categories and subcategories that best represent the meaning of the participants' words. The results show that the main category that emerged was "teacher digital competence," along with the following subcategories: professional commitment, digital content, teaching and learning, assessment and feedback, student empowerment, and facilitating students' digital competence. Therefore, it can be concluded that teachers' understanding of digital competencies in the learning process of secondary school students is progressively developing within the analyzed context, with a favorable disposition among teachers to incorporate technologies into their daily pedagogical practice. However, significant challenges remain related to teacher training, technological infrastructure, internet access, and the availability of digital resources.

Keywords: learning; digital competence; engagement; performance; teaching; motivation.

RESUMEN

Las tecnologías tienen gran relevancia en las últimas décadas, lo que ha permitido la adquisición de competencias básicas, moderadas y avanzadas en los docentes y estudiantes. El propósito del estudio fue develar la visión de los docentes hacia las competencias digitales en el proceso de aprendizaje en estudiantes del nivel secundario. La metodología estuvo configurada bajo el enfoque cualitativo diseño fenomenológico interpretativo. Como técnica se empleó la entrevista y un instrumento denominado guion de entrevista, con una participación de cinco versionantes docentes de la institución pública de Nepeña, Perú. El análisis de contenidos facilitó seleccionar la categoría y subcategorías que representan el significado de las palabras de los participantes. Los resultados muestran que emergió la categoría principal competencia digital docente y las subcategorías: compromiso profesional, contenidos digitales, enseñanza y aprendizaje, evaluación y retroalimentación, empoderamiento de los estudiantes y facilitación de la competencia digital de los estudiantes. Por lo anterior, se concluye que la visión de los docentes hacia las competencias digitales en el proceso de aprendizaje en estudiantes del nivel secundario se encuentra en desarrollo progresivo dentro del contexto analizado, existiendo una favorable disposición de los docentes para incorporar las tecnologías en su hacer diario pedagógico. No obstante, se mantienen importantes retos vinculados con la formación docente, infraestructura tecnológica, el acceso a internet y posibilidad de contar con recursos digitales.

Palabras clave: aprendizaje; competencia digital; compromiso; desempeño; enseñanza; motivación.

RESUMO

As tecnologias têm tido grande relevância nas últimas décadas, o que permitiu a aquisição de competências básicas, moderadas e avançadas por parte de docentes e estudantes. O objetivo do estudo foi revelar a visão dos docentes sobre as competências digitais no processo de aprendizagem de estudantes do ensino secundário. A metodologia adotou uma abordagem qualitativa, com um desenho fenomenológico-interpretativo. Como técnica, utilizou-se a entrevista, apoiada por um roteiro de entrevista, contando com a participação de cinco docentes de uma instituição pública em Nepeña, no Peru. A análise de conteúdo permitiu selecionar a categoria e as subcategorias que representam o significado das falas dos participantes. Os resultados revelaram a categoria principal "competência digital docente" e as seguintes subcategorias: compromisso profissional, conteúdos digitais, ensino e aprendizagem, avaliação e feedback, empoderamento dos estudantes e facilitação do desenvolvimento da competência digital dos estudantes. Diante disso, conclui-se que a visão dos docentes sobre as competências digitais no processo de aprendizagem de estudantes do ensino secundário encontra-se em desenvolvimento progressivo no contexto analisado, observando-se uma disposição favorável dos docentes em incorporar as tecnologias à sua prática pedagógica diária. Contudo, persistem desafios importantes relacionados à formação docente, à infraestrutura tecnológica, ao acesso à internet e à disponibilidade de recursos digitais.

Palavras-chave: aprendizagem; competência digital; compromisso; desempenho; ensino; motivação.

INTRODUCTION

Currently, the world is interconnected through technological and digital means, requiring teaching professionals who not only possess knowledge of their subject matter, pedagogy, and methodological strategies, but also urgently need to master the digital realm. Therefore, it is crucial that teachers receive timely training in digital competencies (Verdú Pina *et al.*, 2024), since it is known that

digitalization attracts and stimulates students and facilitates the pedagogical process, thus leading to better academic results (Vargas Zúñiga *et al.*, 2024).

However, many teachers lack the digital skills necessary to fully perform their professional duties and provide quality education to their students. This became evident during the COVID-19 pandemic, when they had to abruptly adapt to a new way of teaching. According to Carranza Yuncor *et al.* (2024), is due to a lack of internet access and insufficient teacher training. This is reflected in a study in Nepal, which found that only 12% of schools use digital technologies, and only 1% of teachers have developed digital skills (UNESCO, 2023).

Similarly, various studies, such as the one by the Organisation for Economic Co-operation and Development (OECD) (Forsström *et al.*, 2025), have identified the importance of teachers' digital competence in effectively guiding students. A student using technology without proper guidance may become confused and waste time on distractions that are irrelevant to their learning. Therefore, Carranza Yuncor *et al.* (2024) emphasize the crucial need for teachers to receive training in Information and Communication Technologies (ICTs) from their university studies onward, along with frequent professional development, to improve their performance in their work.

Given this context, the aim of this research is to uncover teachers' perspectives on digital competencies in the learning process of secondary school students (Nepeña, 2024). Specifically, it explores teachers' knowledge and practices regarding digital competencies in student learning. Furthermore, it examines the importance they place on developing digital competencies for their professional work and, finally, it outlines the underlying elements in the development of digital competencies in teaching professionals.

Digital skills in the learning process

Digital competence is understood as the ability to use digital technologies responsibly, identifying their potential benefits and threats. Thus, the ability to use digital technology in learning involves integrating pedagogical theories, professional skills, and technology into academic activities (Tzafilkou *et al.*, 2023). This is in order to intervene in the motivation and attitude of students and achieve better learning outcomes.

Digital technologies are changing routine teaching and learning methods, transforming them into motivating and innovative classes. For this reason, the Peruvian Ministry of Education (MINEDU,

2021), focused on improving the quality of education for the Peruvian population, promotes formal ICT training for teachers to encourage the use of technology in student learning and provide a quality education. Similarly, the United Nations Children's Fund (UNICEF, 2023) invites nations to bridge the digital divide and use technology to achieve SDG 4 and foster a new generation that is successful in developing social skills.

Teachers' views on digital skills

Teachers are a fundamental element in student learning. In this era of globalization, teachers face the new challenge of not only using technology, but also implementing their skills to integrate digital technology into their classes, adapting it to students' needs, and fostering collaborative participation (Fonts Fernández & Stable Rodriguez, 2024). Essentially, it involves using computerized systems in their professional practice so that students, considered native users in this field, are effectively guided and critically develop digital skills to achieve their learning goals.

In this regard, various studies have concluded that teachers lack sufficient skills to integrate technology into the classroom. Furthermore, male teachers and younger teachers are more likely to be proficient in digital technologies, while those with years of experience in technology are the most prominent in this area (Tzafilkou *et al.*, 2023). Given the above, teachers who are not trained in digital skills do their best to train themselves; while now universities train future teachers incorporating ICT; however, it is necessary to reinforce reflection on the importance of the use of technologies in their teaching work, because many times their education in ICT is technical and superficial (Falloon, 2020).

Consequently, to evaluate teachers' digital competence, there are various models and criteria such as: professional practice using technologies, adapting content, planning, analyzing results, empowering students, and developing digital skills in students. (Redecker, 2017). All these criteria are measured in levels of digital competence development, and allow us to visualize the digital situation of a teacher at any academic level.

MATERIALS AND METHODS

The study presented here was designed within a qualitative approach focused on descriptions of observable events, interactions, and behaviors, in which participants narrate their experiences, beliefs, and reflections. This aligns with the study's objective: to uncover teachers' perspectives on

digital competencies within the teaching and learning process for secondary school students. This type of approach is considered systematic, rigorous, active, and flexible.

In this sense, the design used was the interpretive phenomenological one, because the perspectives of the individuals involved were interpreted and understood through a systematic process through observations and versions about a reality that is of interest to the teaching community in these scenarios where technology is advancing in an increasing way.

The study participants were 23 secondary school teachers from a public institution in Nepeña, Peru. Aged between 28 and 56, each participant became a "versioner" (a participant who can provide feedback on their own performance) because they were aware of their strengths and weaknesses in digital skills and abilities within the student teaching and learning process. These versioners were interviewed using an interview guide developed within the European Model for Digital Competence of Educators (DigCompEdu) (Redecker, 2017). Adjusted by the researchers and validated by experts, the face-to-face interviews allowed researchers to reach the point of saturation (Martínez, 2004), resulting in a total of five versioners who provided valuable and insightful information about the problem. They were identified by the following pseudonyms: DC1, DC2, DC3, DC4, and DC5.

Table 1. Identification of versioners

Versioner	Post	Functions
DC1	Contracted teacher	English Specialist
DC2	Contracted teacher	Communication Specialist
DC3	Contracted teacher	Mathematics Specialist
DC4	Contracted teacher	English Specialist
DC5	Contracted teacher	Specialist in Religion

Following the interviews with the versioners, each conversation was recorded in a digital logbook using the Pinpoint program, which allowed for tracking the study's progress. The research team then applied content analysis, extracting the meanings of words and concepts by interpreting the participants' statements. From this analysis, categories and subcategories emerged and were structured to identify patterns representing the object of study. The NapKin AI application was also used to confirm the emerging category: digital teaching competence, and the subcategories: professional commitment, digital content, teaching and learning, assessment and feedback, student

empowerment, and students' digital competence. The textual revelations were coded within these subcategories, which were subsequently selected and cross-referenced to ensure the validity of the results.

RESULTS

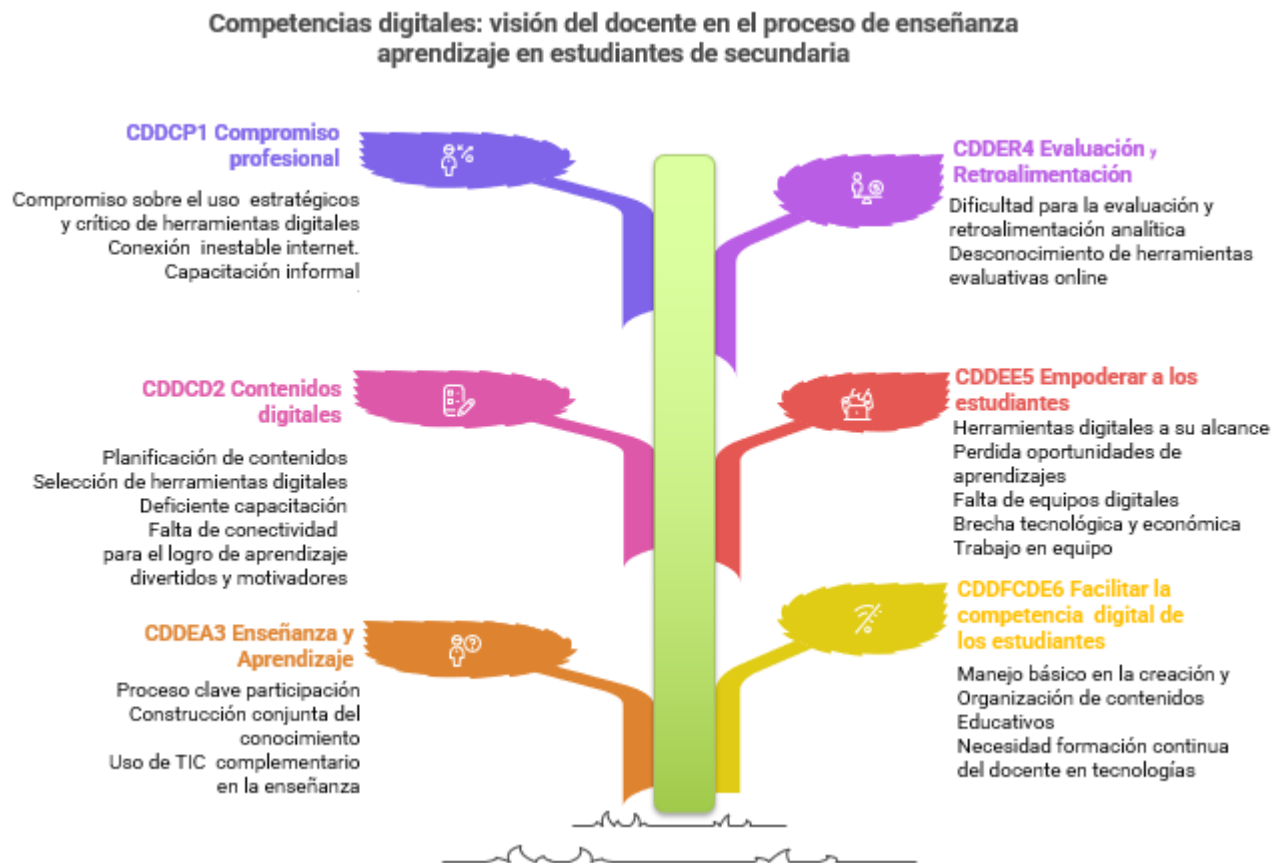
Based on the interviews conducted with secondary school teachers, Table 2 shows one category and six subcategories that allowed the information to be contrasted through triangulation, which allowed the description of the text to reach the conceptual level that assists the interpretation and narrative construction of the studied reality, which is characteristic of the method.

Table 2. Research category and subcategories

Category	Subcategories	Codes
Digital teaching competence	Professional commitment	CDDCP1
	Digital content	CDDCD2
	Teaching and learning	CDDEA3
	Evaluation and feedback	CDDER4
	Empowering students	CDDEE5
	Facilitating students' digital competence	CDDFCDE6

Source: Interviews with the versioners

Figure 1 holographically represents the categories and subcategories that emerged from the coding of the interviews, thanks to the NapKin AI tool.

**Figure 1.** Emerging categories and subcategories

DISCUSSION

The content analysis resulting from the interviews conducted with teachers facilitated the presentation of the following findings: teachers' digital competence is structured through six interrelated subcategories. Greater intensity is evident in professional commitment and teaching-learning, driven primarily by individual motivation and self-training. However, the flows decrease in digital content, assessment and feedback, student empowerment, and the facilitation of students' digital competence due to structural limitations such as lack of connectivity, formal training, and technological resources.

Subcategory: professional commitment

The CDDCP1 code refers to the fact that teachers are the implementers of a set of provisions designed to foster change processes within the educational context. Therefore, teachers are key actors and managers, and their professional commitment acts as a powerful link in identity formation and a driver of professionalism, providing purpose, meaning, participation, and action in the internal and external transformation processes of an educational institution. Teachers' current experiences have led to a rethinking of the academic system, which is now focused on guiding and developing useful competencies for both teachers and students, in order to meet the demands of the future.

In this regard, Mamani Guzman *et al.* (2025) explain that professional commitment is the central element that guides action within the educational organization, both individually and collectively, through motivation as the driving force behind connection and dedication to their work in order to achieve pedagogical and institutional goals. Therefore, it is essential to understand the teacher's educational practice and their intentionality in light of current demands, such as the use of digital tools that enable a comprehensive and innovative education.

Thus, the DC1, DC2, and DC4 versioners stated that "we assume our professional commitment through good practices, focusing on student learning and the development of society, considering constant training through formal and informal courses to incorporate pedagogical innovations relevant to current times in order to respond to the needs and characteristics of students; while the DC3 and DC5 versioners expressed that, through "our practices, we reflect critically to recognize the need for dynamic and contextual learning in students."

Along these same lines, UNESCO (2023) points out that 21st-century education requires professionals skilled in responding to changing scenarios, with critical thinking skills, and capable of integrating digital technologies, which is fundamental for navigating globalization. In this sense, ongoing teacher training is linked to professional commitment, given that teachers have the moral and ethical responsibility to support their students' learning, encompassing all aspects of subject matter and active learning methodologies.

In this way, the deepening of the professional commitment of the teachers interviewed is confirmed, demonstrating that it is not an option, but rather a duty to exercise skills for the strengthening of their pedagogical practice that contribute to the shaping of the integral personality of the students and, therefore, of society.

Digital content subcategory

The CDDCD2 code emphasizes the importance of supporting teaching practices during the delivery of secondary education curriculum content. To this end, content planning, the selection of digital tools, and learning strategies are essential to ensure students have a better understanding of the topics covered. Teachers must ensure that the digital content they teach is delivered through appropriate means for the learner. These media or resources enable students to grasp the content more effectively, making learning more meaningful.

According to H'Ormaycht Meza (2025), digital content is created by the teacher considering certain criteria, such as the selection, development, usefulness, and didactic application of the content through the use of information and communication technologies. This implies that the teacher must possess basic and intermediate digital skills to efficiently and effectively conduct class sessions.

Among the results, it was found that most of the DC1, CDC3, and DC4 versioners indicated that "We use tools such as Canva, PowerPoint, Word, Edmodo, Kahoot, and blogs in a basic way, where the selection of content already designed and shared on the internet predominates; however, the creation of content with our own materials is difficult for us due to the lack of internet connectivity and the deficient training in advanced digital techniques." Likewise, the DC2 and DC5 versioners indicated that "we are instrumental users of digital content, but the institution does not have sufficient equipment for the creative creation and critical development of contextualized digital content."

This explains the need for a stable internet network, as it enables the creation of digital content and offers contextualized teaching opportunities and the management of fun and motivating learning experiences. In this regard, Romero García *et al.* (2023) highlight the importance of internet access in the education sector due to its significant benefits for life and work; therefore, national and local governments must improve digital infrastructure, since Information EHPand Communication Technologies (ICTs) can foster a high level of education and economic advancement for those who use them.

Furthermore, it is emphasized that teachers must constantly adapt to the use of ICT for their professional performance; presenting content in innovative, technological, and modern formats to students, which they will then replicate when submitting their academic assignments. Undoubtedly, digital content represents a wealth of meaningful and purposeful materials that can be viewed and

listened to at any time, fostering learning. Consequently, teachers who create digital resources not only transmit information but also improve the quality of the teaching process by developing innovative technical skills and abilities in students, contributing to higher student achievement resulting from experiences with dynamic and creative content.

Teaching and learning subcategory

In accordance with code CDDEA3, this approach focuses on the core learning process, as teaching and learning are permanently linked in the classroom, fostering spaces for participation and the collaborative construction of knowledge. The teacher guides the process, facilitating the acquisition of knowledge in order to develop critical and reflective individuals who understand their reality. Thus, teaching and learning are key processes within the educational setting, as they promote interaction between teachers and students, and among students themselves, contributing to the personal and intellectual development of all participants. Furthermore, teaching and learning are distinct processes: one is operationalized by the teacher and the other by the student; however, they complement each other, since the teacher facilitates and guides through didactic strategies, while the student grasps and assimilates their own learning.

The results obtained from the responses provided by versioners DC1, DC2, and DC3 indicated that: "In my class, I incorporate interactive videos, collaborative activities in Canva, digital presentations, and tools such as LiveWorksheets and content-related forms to make the content meaningful. Most students participate, are motivated, and collaborate." On the other hand, versioners DC4 and DC5 stated that "the use of ICT is complementary to traditional teaching; these sessions with these types of tools are occasional."

This evidence shows that the use of media and tools is essential in teaching, as they offer numerous advantages and possibilities for both teachers and students. *Online* teaching media and resources enhance learning, enabling the development of new skills and knowledge due to the rapid pace at which technological areas offering educational content are updated, thus facilitating the understanding of relevant and current topics.

Teachers must take advantage of the potential of available technologies. Today, more than ever, teachers with intermediate and advanced digital skills are needed, as this enables the integration of diverse and more impactful pedagogical strategies.

Evaluation and feedback subcategory

The data obtained revealed the difficulties teachers faced in addressing CDDER4. It was observed that educators use Excel to collect summative assessment data and Word to create rubrics and checklists to monitor student learning progress. They also unusually use tools such as Google Forms, Kahoot, and PowerPoint, not only for formative assessment but also for real-time feedback. However, there is no evidence of assessment being used to inform decisions aimed at improving teaching and learning.

More specifically, teachers DC1, DC2, and DC4 assess student learning through the creation of posters, brochures, *podcasts*, digital murals, program-based dialogues, and PowerPoint presentations. This approach also allows students to evaluate and provide feedback to them. In contrast, teachers DC3 and DC5 mention being in the process of implementing technology for assessment and feedback, and have only viewed student-recorded videos for summative assessment purposes.

It is argued that a teacher who makes little use of technology in the classroom is at a novice or explorer level, which is the lowest level according to the DigCompEdu model. This data corroborates that teacher training in software and hardware is necessary to guarantee good job performance, enabling all students to receive a quality education.

Ideally, for quality education, teachers should be constantly training in classrooms, working in environments equipped with technology for teaching. This would allow them to conduct assessments and provide feedback analytically, rather than merely organizationally. However, barriers exist, such as: a lack of personal motivation to pursue formal training, deficiencies in the national education system, lack of internet access at educational institutions, a lack of devices, inadequate infrastructure, and a lack of technical support.

Student empowerment subcategory

The results for CDDEE5 showed that the teachers They encourage the use of technological tools by assigning students tasks, giving them the flexibility to complete them with whatever tool or program they have available. Consequently, students are motivated to use their creativity, producing podcasts, posters, and PowerPoint presentations at home, due to the lack of technological devices

and internet access at the school. However, not all students have computers at home, highlighting the existing technological and economic gap in the community.

Explicitly, DC1 aims to empower students with technology, as do DC2, DC3, DC4, and DC5. However, the physical digital divide and the decline in teacher engagement leave students to find their own ways to use digital tools. And it is the teacher who must advise them on avoiding distractions and making the most of online information.

This reality aligns with the findings of Carranza-Yuncor *et al.* (2024), who clarify that the lack of infrastructure, computer equipment, and connectivity in educational institutions hinders the proper development of education, resulting in missed learning opportunities. This reflects the students' motivation to use digital tools and, in doing so, empower them in digitalization and skills development. This is consistent with UNESCO (2023), which states that digital technologies foster comprehensive communication and teamwork among students, enhancing the development of competencies and skills.

Ultimately, developing this dimension requires accessible technological devices, the necessary connectivity, and teachers trained in digital skills to guarantee personalized teaching for each student, so that they take responsibility for their own learning individually and collaboratively.

Facilitating students' digital competence subcategory

In this subcategory CDDFCDE6, students are observed using technological tools to organize and create different educational content; however, they do so in a basic, non-fluent, and neither strategic nor critical manner. The teacher does not guide the students' digital work, only reviewing the finished products, due to limitations in teacher digital training and the educational institution's infrastructure. Therefore, they are not guiding students as envisioned in the DigCompEdu model or as proposed by the Ministry of Education, leaving this dimension neglected and underutilized.

The points mentioned in the previous paragraph differ from the DigCompEdu model, which details that a digitally competent teacher must use innovative formats in the classroom and guide critical and reflective learning, thus developing the student's digital competence (Redecker, 2017; Carranza Yuncor *et al.*, 2024). Therefore, a teacher must be constantly trained to guide students in building upon their existing knowledge of technology, thereby fostering critical thinking skills in students who can challenge the proliferation of uncontrolled communication.

This suggests that, in order to develop digital competence in students, continuous training of teachers in technologies is essential to ensure autonomy, reflection and critical analysis of digital content and intangible resources in students; so that they can navigate virtually in a safe way, acquiring, developing and transforming knowledge.

The research allowed for an understanding of teachers' perspectives on digital competence within the teaching and learning process for secondary school students. It shows that digital competence represents a multidimensional and complex phenomenon that integrates different technological, pedagogical, and contextual components. Thus, the results demonstrate that teachers' digital competence is fundamentally structured around six interconnected subcategories: professional commitment, digital content, teaching and learning, assessment and feedback, student empowerment, and facilitation of students' digital competence.

It is evident that teachers' understanding of digital competencies in the learning process for secondary school students is progressively developing within the analyzed context, with a positive attitude among teachers toward incorporating technology into their daily teaching practices. However, significant challenges remain related to teacher training, technological infrastructure, internet access, and the availability of digital resources. Therefore, it is essential that secondary schools promote and implement ongoing training programs in digital competencies, as well as equip computer labs with current technologies, in order to improve teaching and foster meaningful learning experiences for students.

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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.



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