Digital Teaching Competence and Foreign Language Learning in Students of a National University in Lima

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Abstracts

The research shows the relationship between digital teaching competence and foreign language learning in students at a national university from Lima. It is a non-experimental descriptive study with a cross-sectional correlational design, applied to a sample of 151 students from Enrique Guzmán y Valle National University of Education. To collect data for the first variable, it was built a questionnaire with the response parameters of the Likert scale. Based on the Cronbach's Alpha test, this instrument reached a reliability index of 0,780. For the second variable, a test was applied and the reliability level was measured through the Kuder-Richardson coefficient, showing an index of 0,865, so it is inferred that these instruments had a high level of reliability. About the general hypothesis, Spearman's correlation coefficient was 0,705, a high positive correlation. The investigation result allows to confirm that there is a direct and significant association between teaching digital competence and foreign language learning, that is, the higher the level of teaching digital competence, the better the learning achievements of the students.

Keywords: Digital competence, foreign language learning, communicative competence.

Introduction

The research focuses its concern on exploring the concept of digital teaching competence, which has attracted a lot of interest, given the circumstances of virtual work that has been developed in recent years in educational institutions such as universities. This competence is a necessity that must be integrated into the professional performance of the teacher.

Some authors, including Pérez and Monteza (2013), consider that digital competence is directly related to the use of ICTs in a safe and critical way for communication, work, and hobby purposes. However, Rodríguez and Gómez (2017) believe that competition has a greater scope than just knowing and using ICTs; According to these authors, the teacher must be able to create learning environments through it. Being a digitally competent teacher involves much more than simply the use of a computer and ICT. According to the National Institute of Educational Technologies and Teacher Training (Intef) (2017), various competencies must be developed.

Information and information literacy competence, where the teacher develops strategies for identifying, locating, organizing and analyzing information, data and digital content, which must be evaluated and selected for the teaching-learning process.

Communication and collaboration skills, according to Arroyo (2017), are related to the use of digital technologies to achieve effective, committed, and healthy communication and collaboration. The most relevant skills are to interact with various digital devices and applications, manage communication properly, share information and digital content, among others (Intef, 2017).

The competence of creating digital content, which is a form of digital data or information. What is considered in documents, graphs, photos, academic and scientific articles, statistics, music, e-books, databases, etc. This implies digitized information that is developed or acquired in order to share it and is accessible.

The security competence develops the capabilities that refer to personal protection, data and digital identity, as well as security measures and responsible use of technologies (Intef, 2017).

According to Intef (2017), problem-solving competence implies that teachers develop skills to identify needs in terms of the use of technologies, to be informed and to make decisions regarding the digital tools they choose according to the need and purpose of their use. In addition, he must be able to solve problems of a conceptual and technical nature.

Emphasis is placed on digital teaching competence as an indispensable means in the process of student training, since the advancement of technology is increasing and forms of learning in virtual environments become more necessary and recommended in various situations. Therefore, the relationship that this study makes with learning, in this case of the foreign language English.

In this regard, it is pointed out that learning is the product of a process that generates change; In this context, the learning of foreign languages generates the acquisition of communicative skills of the language being learned, from the point of view of interaction in dynamic contexts in order to master these languages. As Acosta and García (2016) pointed out, the learning process is influenced by the use of technologies; however, it is necessary to consider direct communication with other speakers of the language, the psychological and social factors of the student, as well as his/her culture regarding language learning.

In the context of the study, the foreign language learning competences that are developed in accordance with the Common European Framework of Reference for Languages are described, which are framed in communicative competence and methodological and didactic competence.

Communicative competence in foreign languages is understood as the sum of capacities that a person develops to interact through the exchange of experiences, ideas, opinions; which allows them to develop in a communicative context in an adequate and effective way, managing to sustain a specific strategy to communicate. In addition, the development of skills to produce oral and written texts in foreign languages and to establish social correspondence with people who speak the target language.

Communicative competence is achieved through the development of linguistic, sociolinguistic, discursive and intercultural competences. Linguistic C. includes the grammatical, lexical and phonological phonetic aspect; while sociolinguistic C. refers to social conventions as rules of courtesy; norms that regulate generational relations, linguistic codes referring to rituals that are necessary for coexistence in a community. Discursive C. is the one that makes combinations of grammatical forms and meanings that generate an oral or written text coherently. Finally, the Intercultural C. that allows recognizing and acting according to cultural, sociopragmatic and sociolinguistic conventions/keys.

Methodological and didactic competence refers to the knowledge of strategies and activities inherent to the teaching-learning process; as well as the knowledge and application of the updated theories of the didactics of language teaching-learning.

The development of these competencies is carried out in the various subjects that comprise the Curriculum of the foreign language programs of the UNE EGyV.

This study aimed to establish the degree of association that exists between teaching digital competence and foreign language learning in students of a national university in Lima, whose study sample was constituted by foreign language students who are studying cycles VIII and X of the career, as they are the ones who already evidence the achievement of all the described competencies.

Materials and methods:

The study was developed within a quantitative approach, since it privileged the use of measurement schemes with respect to the description of the variables digital competence of teachers and learning of foreign languages, in order to establish certainty of the existence of a direct and significant association between them, through the use of statistical tests.

The basic type was used. According to Carrasco (2006), the aim is to broaden and deepen the knowledge about the phenomenon being studied, in this case the variables already mentioned, without immediate application purposes.

It obeyed a cross-sectional design, because the data of each of the variables were collected at a single time, and correlational, since the purpose of the study was to establish the degree of association between the variables Teacher digital competence and foreign language learning.

In addition, it is limited to the hypothetical deductive method. There is an approach to the knowledge of the phenomenon under investigation, there is a preconceived idea of the existence of a direct and significant association between the study variables, which will be corroborated with what really happens in the context where this study is carried out.

A total of 506 undergraduate students assigned to the study programs of the Academic Department of Foreign Languages (Dalex) of the Faculty of Social Sciences and Humanities of the UNE EGyV was considered, as follows: English-Italian, 118; English-Spanish as a Foreign Language 128; English-French, 140; English-German,120.

Among the inclusion criteria for the sample, students enrolled in the 2022-II Academic Cycle of Dalex, who are studying cycles VIII and X of the career, were taken into account. In

addition to their regular attendance at virtual classes. For the exclusion criteria, students with more than 30% of absences from classes, those who attend classes, but do not belong to the foreign languages career, because one of the instruments is applied in English, were taken into account.

In accordance with the above, the sample was made up of students from the aforementioned study programs in the population because they represent the students of the population and are on the verge of concluding their careers and the competencies acquired in learning the foreign language English can be evidenced. As follows: English-Italian, 31; English-Spanish as a Foreign Language, 53; English-French, 52; English-German, 15. Which makes a total of 151 subjects. Intentional non-probabilistic sampling was considered.

The survey technique was used for data collection and a questionnaire with Likert scale responses was applied as instruments to collect data on variable 1 and the examination to collect data on variable 2. To collect data for the Teaching Digital Competence variable, the questionnaire was designed considering each of its dimensions: (a) Information and information literacy, (b) Communication and collaboration, (c) Digital content creation, (d) Security, and (e) Problem solving; with the following ranks and levels: Basic [20-47], Intermediate [4873] and Advanced [74-100]. Meanwhile, for the variable learning of foreign languages, the exam considered the dimensions: (a) Communicative competence, and (b) Methodological and didactic competence, with the following ranges and levels: Low [0-12], Medium [13-23] and High [24-35].

Results

Descriptive analysis of the results obtained from the variable Teaching digital competence

Digital competence, although it is not a new topic, has become something topical that, at the same time, is under debate. It is basically related to the use of ICT in educational work. In this regard, Falloon (2020) indicates that digital competence is something necessary that today must be integrated into the professional performance of teachers. Various authors define it, including Lázaro and Gisbert (2015), who point out that teacher digital competence (CDD) is an ability for teachers to develop a certain level of digital competence to effectively use technology and adapt it to their students and the learning they must achieve. Similarly, Gutiérrez (2014, as cited in Sarango, 2021) points out that teachers' digital competence is the appropriate use of technologies through the integration of values, beliefs, knowledge, skills, and attitudes. In addition, the use of computers, programs, the Internet and other technological tools that generate the possibility of searching, accessing, organizing and using information to build knowledge.

Therefore, the teacher of this time must develop strategies that allow the use of technological tools for educational purposes, that is, develop the entire process that involves teaching-learning in a virtual context in order to ensure that students learn meaningfully.

According to the descriptive analysis of the teaching digital competence variable, 49.7% (75) of the respondents perceive that they have achieved a medium-level proficiency, while 41.1% (62)

have an advanced proficiency, and finally 9.3% (14) perceive that a basic proficiency has been achieved.

These results were achieved based on the study of each of the competencies that were considered as dimensions. According to the respondents, 49.0% (74) perceive that they have had an advanced level of mastery, while 42.4% (64) have a medium level of mastery, and finally 8.6% (13) perceive that they have had a basic mastery. This competence, which according to Vuoraki, Punie, Carretero, and Van Den Branden (2016) is related to the use of technological tools in a digital environment in order to develop a collaborative process, in the same way, has to do with the development and creation of new resources and knowledge. For Arroyo (2017), it is directly related to the use of digital technologies to communicate and collaborate effectively, committedly, and healthily.

According to Intef (2017), the skills that allow the development of this competence are, mainly, Communication in digital environments; share resources through online tools; that is, they must be able to know how to distribute, present and manage digital communication. Similarly, the ability to connect and collaborate with their students using digital tools, which implies interaction through different digital devices and applications.

Likewise, it was found that the digital content creation dimension, according to the respondents, 49.0% (74) perceive that they have had an advanced level mastery, while 41.1% (62) a medium mastery, finally 9.9% (15) perceive that they have had a basic mastery. Considering that digital content is a form of data or digital information. This consists of documents, graphics, photos, videos, academic and scientific articles, statistics, music, e-books, databases, among others. That is, it is digitized information that is developed or acquired with the purpose of being shared and accessible.

According to Intef (2017), this area involves skills that teachers must develop and are related to creativity, knowledge creation through the edition of new digital content; as well as integration and re-elaboration of previous knowledge and content. Activities related to artistic production can be produced; as well as multimedia content and computer programming. It is important to mention the application of intellectual property rights and licenses of use.

Regarding the digital competence of teachers of problem solving, It was found through the respondents, that 53.0% (80) perceive that they have had a medium level mastery, while 41.1% (62) an advanced mastery, finally 6.0% (9) perceive that they have had a basic mastery. This competence, Intef (2017) points out that the teacher must develop skills in order to identify needs in terms of the use of technologies; to be informed and make appropriate decisions regarding the choice of digital tools according to the need or purpose of their use. In the same way, through the use of digital media, solve conceptual and technical problems. It is important for teachers to use their creativity when using technological tools, in addition to constantly renewing their own competence and that of their students.

In the same way, this competence includes the ability to identify the needs of the use of digital resources, as well as to innovate and creatively use digital technology. The teacher must be able to produce collaboratively; as well as communicating creatively, originating knowledge and providing solutions to conceptual problems; all through digital tools. In addition, to effectively

solve technical problems that may arise in the use of technological tools. Another aspect to be taken into account by the teacher is the need to identify gaps in digital competence, which means that the need for improvement and updating must be considered, as well as developing the digital competence of both their own and their students. This updating must be continuous in order to develop the digital competence necessary for effective teaching and the achievement of learning by students.

The competence of Information and Information Literacy, ranked fourth in the students' perception of the level of mastery of teachers, 53.6% (81) perceive that they have had a medium level mastery, while 29.1% (44) an advanced mastery, finally 17.2% (26) perceive that they have had a basic mastery. In this regard, the United Nations Cultural, Scientific and Educational Organization (UNESCO, 2011) indicates that information literacy is part of a group of integrated skills that adults need to acquire in order to be effective in all aspects of their lives.

In this context, Sales (2019) points out that it is a set of trained competencies that include finding information, understanding how it is produced and valued, and using information to create new knowledge in order to participate ethically in learning communities. Meanwhile, Gutiérrez and Leguizamón (2021) state that information literacy focuses on analysis, specifically, textual and that the documents have veracity given the value of what is found.

According to Intef (2017), this area that the teacher must develop three important aspects: first, navigation, search and filtering; second, storage and retrieval; and, third, evaluation. This involves the search for data and digital content on the network, entering them, transmitting information needs in an organized manner, locating important information for teaching activities, being effective in choosing educational resources, managing diverse sources of information, as well as producing personal information strategies so that it is critically grouped, Understand and evaluate information, data, and digital content. Another capacity to be developed is that which allows the management and storage of information, data and digital content in order to enable their retrieval, as well as to organize information, data and content.

The digital competence of security teachers ranked last according to the students, who in 45.7% (69) perceive that they have had a medium level mastery, while 30.5% (46) an advanced mastery, finally 23.8% (36) perceive that they have had a basic mastery. according to Intef (2017), this competence deals with the development of skills that have to do with personal protection, both data and digital identity; also, of security measures and the responsible use of technologies.

What was expressed in the previous paragraph and following what was stated by Intef (2017), can be explained in terms of the protection of devices and the knowledge that teachers must have regarding the protection of their own digital content. In the same way, you must understand the risks and threats found on the network, as well as know about prevention and security. Another important aspect is the protection of personal data and digital identity. Teachers must know how to protect personal data. Respect for student privacy and protection against threats, fraud and cyberbullying are also relevant.

Protecting health is also a capacity that teachers must consider. This has to do with physical integrity and psychological well-being; therefore, health risks associated with the use of

technology must be avoided. Another very important aspect concerns the protection of the environment against the impact of technologies.

All searches, comments, locations, photos, posts once registered and shared belong to the Internet and to anyone who can take a screenshot or use technological resources to follow a person's footprint. This is how the issue of digital security has been showing alternatives to guarantee greater protection. This can be achieved through the use of applications, recommendations and education in the management of what is shared on the web. Although all information about it can be found on the web, the issue must be exposed by the media or training centers so as not to go unnoticed, and thus avoid cases of fraud, impersonation and hacking of accounts.

Education has spaces like this, one of them is research, in which alternatives for past improvements are promoted by academic filters, the training of professionals who have this knowledge tends to multiply the information that also becomes increasingly accessible. The academic sector also has filters to avoid plagiarism and train in respect for authorship, such is the case of the Turnitin version to improve the research level, respecting copyright (Garrote, 2013).

Descriptive analysis of the results obtained from the variable Foreign Language Learning

Regarding the foreign language learning variable, it can be pointed out that the level reached by the students of the Academic Department of Foreign Languages of the UNE EGyV is as follows, 44.4% (67) reached a high level, while 44.4% (67) reached a medium level, finally 11.3% (17) reached a low level. In this regard, it should be noted that the learning of foreign languages, Krashen (2009) argues that it is a conscious process through which the student obtains knowledge and skills of the second language, making the difference with the acquisition of the language, which he points out is a subconscious process, by which the student knows that he is using the language, but not that it is acquiring it.

There are some theories that pertain to second language acquisition, and they are used in a context of learning second or foreign languages. Latifa (2019) mentions that, according to Gardner's theory of the socio-educational model, learning a second language involves components of skill and motivation. Therefore, the learner must possess great motivation and positive attitudes to achieve high performance in the language they are learning. He also points out that if this individual perceives that learning another language is of benefit to him or her, then learning will be better.

The learning of foreign languages, in the context of the UNE EGyV, where the student is going to be trained as a foreign language teacher, must develop certain competencies that ensure their performance in this task. Competence is understood as the ability or skill that is developed through knowledge of an area and allows you to achieve what is desired, in our case, by learning a foreign language. So, these competencies are: communicative competence, which involves linguistic, sociolinguistic, discursive and intercultural competences; as well as methodological and didactic skills.

When analyzing the results obtained in each of the dimensions of the foreign language learning variable, it can be seen that in the dimension Communicative competence, 47.0% (71)

of students reached a medium level, while 45.7% (69) reached a high level, finally 7.3% (11) reached a low level. Regarding this communicative competence, Ortega (2017) states that it is not only an academic process, that is, it takes place in the classroom; on the contrary, it corresponds to daily life and the professional context. The person learns to create and use codes through signs that use language, representation capacity, given in a context and for specific objectives.

Likewise, it is pointed out that this competence is the sum of capacities that a person develops in order to interact through the exchange of experiences, ideas, opinions; which implies developing in a communicative context in an adequate and effective way. It also refers to the development of capacities to produce oral and written texts in foreign languages in accordance with the provisions of the Common European Framework of Reference for Foreign Languages. In addition, it establishes social correspondence, based on values, with people who speak the foreign languages that students learn.

This competence is achieved through the effective development of other competences, such as linguistic, sociolinguistic, discursive and intercultural. Regarding linguistic competence, Canale (1983, as cited in Ayora, 2017), refers to the fact of knowing linguistic codes (verbal or non-verbal). In other words, linguistic competence is directly related to knowledge that the individual acquires and that allows him to understand and express literal meanings of all types of sentences; which implies a mastery of grammatical, lexical and phonological aspects.

With regard to sociolinguistic competence, it is pointed out that it develops the knowledge and fundamental skills that the use of language entails in a social aspect. According to Del Mazo (2007), the person must have suitable knowledge of the specificities of the text, which occurs in a social environment; as well as the communication circumstances in which the text is generated, such as type of information, intention of communication, level of interaction, etc. It should be understood as the ability to orally produce and adequately understand various messages, taking into account the context, condition, intention and social rules or conventions.

With respect to discursive competence, Canale (1983) points out that it develops the ability to make combinations of grammatical forms and meanings that generate an oral or written text coherently. To achieve this combination, the user of the language must know the relationships that exist between the different elements of a message and have mastery of the rules that make it possible to combine the aforementioned elements correctly. This competence refers to the ability of the speaker to choose the text or discourse in order to achieve its objective in the listener; it can be an authoritarian, cheerful, melancholic text, etc.

The teacher in training must develop strategies to establish social correspondence with people who speak foreign languages, considering the levels of coherence and cohesion. These levels have to do with the way in which the various elements of a text are integrated, which is done through linguistic mechanisms, such as reference, substitution, ellipsis, among others. In the same way, logical and temporal connectors and other discourse markers are considered.

Regarding intercultural competence, Corti (2016) points out that a language is not exempt from culture and, therefore, there can be no relevant communication if culture is not present. This

allows us to state that language is a means through which cultural aspects such as traditions, customs, etc. are transmitted.

In order to achieve comprehensive development in teacher training, it is necessary to develop intercultural competence in the various subjects of language learning. In this regard, Borghetti (2017) says that, through education and experience, a variety of cognitive, affective, and behavioral factors are developed that have an impact on the understanding of diversity and on interaction with it in a broad way, which would define intercultural competence.

The CEFR (2020) includes plurilingual and multicultural competence and indicates that the person develops communicative competence with the contribution of knowledge and linguistic experience, acquired in the family, in society and in the languages of other peoples that he or she learns in a school institution or through direct experience. The expansion of this linguistic experience in cultural environments of a language, then, favors the development of communicative competence.

In the Methodological-Didactic Competence dimension, it was found that 62.3% (94) of the students achieved a medium level, while 21.2% (32) reached a low level, and finally 16.6% (25) reached a high level. In this regard, it can be mentioned that the competencies that are developed in the teaching-learning of foreign languages consider the updated theories of teaching didactics, and the development of research projects related to the acquisition and learning of languages.

According to Alberteris, Rodríguez, and Cañizares (2018), the training of future teachers must consider content and processes of communication of the language, as well as didactic content. The latter are the ones that will lead to vocational training. In addition, this competence allows foreign language students to understand and adequately handle concepts, theories, approaches, methods, strategies and didactic techniques that are related to the teaching-learning of these. In the same way, they allow them to be in a position to efficiently conduct the teaching-learning process and to adapt this process to the needs and characteristics of the students of the institutions where they are going to exercise their teaching practice. It is necessary to mention the importance of considering the development of strategies applied to the use of ICTs in their professional practice.

Discussion

Regarding the general hypothesis raised, there is a direct and significant association between teaching digital competence and the learning of foreign languages in students of a national university in Lima, the study confirms this association; however, it becomes more evident when the teacher has an advanced and medium mastery of digital competences. but not necessarily when the teacher has a basic mastery of these competencies. This result confirms the findings of Quintana (2019), who conducted a quantitative study to determine the relationship between teachers' digital competencies and the integration of ICT in English language teaching. After analyzing the results, he concluded that there is a relationship between the aforementioned variables. Similarly, the study carried out by Vega (2017), which proposed to explain the use of ICT in the teaching and learning of the English language, concluded that there is a positive relationship between the variables studied.

Likewise, Martínez-Garcés and Garcés Fuenmayor (2020), in their research with the purpose of determining the digital competencies of teachers in the implementation of virtual education; found that most teachers show that they are in a stage of integration II with respect to the level of digital competence achieved, since they are able to use information technologies and apply them in their teaching work, considering ethics and morals.

On the contrary, Quiñones (2020) in his research on digital competence in English teachers in primary schools in southeastern Mexico, demonstrated, through the results, that the level of digital competence of 81% of teachers is low. Although teachers highlight the importance of ICT tools for teaching the English language, as they motivate students, promote an interactive environment, provide support resources and generate attractive and innovative classes.

As for the specific hypotheses 1,2,3,4,5 that seek to demonstrate that there is a direct and significant association between (1) information and information literacy competence, (2) communication and collaboration competence, (3) digital content creation competence, (4) security competence, and (5) problem-solving competence, on the one hand, and the learning of foreign languages in students of a national university in Lima, on the other. This research shows a high positive association between each of the digital competences and the learning of foreign languages.

However, clarifications must be made with respect to each of these associations. For specific hypothesis 1, the study shows that when teachers have an advanced level of mastery of information competence and information literacy, most students (22.5%) demonstrate that they learned the foreign language at a high level; as well as, when teachers achieve a medium mastery of this competence, the majority of students (32.5%) achieve medium-level learning.

This study corroborates the findings of Martínez-Garcés and Garcés Fuenmayor (2020), who in their study determined the digital competencies of teachers in the implementation of virtual education; Regarding the digital competence of computerization and information literacy, they point out that they are the most developed by teachers.

Similarly, García-Ruiz and Pérez (2021), in their research on the

teachers as a key to strengthening the responsible use of the Internet, found that there is a greater mastery of the competence of management and storage of information, as well as the use of information on the Internet for purposes of continuous improvement.

Regarding specific hypothesis 2, the study shows that when the teacher achieves an advanced mastery of the digital competence of communication and collaboration, students (31.8%) achieve a high level of foreign language learning. Similarly, if teachers achieve a medium level of proficiency, the majority of students (28.5%) achieve an average level of learning of these languages.

This result confirms the one obtained by Martínez-Garcés and Garcés Fuenmayor (2020), who in their study determined the digital competencies of teachers in the implementation of virtual education; Regarding the digital competence of communication and collaboration, they affirm that there is a greater development of this by teachers.

In this regard, García-Ruiz and Pérez (2021), in their research on the

digital competence teachers as a key to strengthening the responsible use of the Internet, found that there is a greater mastery of the competence of configuring digital tools for continuous learning purposes; in addition, they know the digital tools that they must use in learning situations; uses selection criteria to search for and store information on the network; communicates in networks to express their critical thinking, values, social support.

In the case of specific hypothesis 3, it is evident that when teachers reach an advanced mastery of the digital content creation competence, the learning of foreign languages of the majority of students (33.1%) reaches a high level. Likewise, if teachers achieve an average level of proficiency, the majority of students (27.2%) achieve an average level of foreign language learning.

The research carried out by Rojas, Zeta, and Jiménez (2020) on digital competencies in a Peruvian public university proposed to find the state of the digital competencies of teachers and students. Regarding teachers, they showed that most of them have a basic mastery of digital skills; however, the content creation dimension is the one that dominates the most (85.7%).

On the contrary, Martínez-Garcés and Garcés Fuenmayor (2020), in their research with the purpose of determining the digital competencies of teachers in the implementation of virtual education; They found that the competence of digital content creation has a weak development by teachers.

For specific hypothesis four, the association becomes more evident when teachers achieve an advanced mastery of digital security competence, since most students (27.2%) reach a high level of foreign language learning, and when teachers reach a medium mastery of this competence, the learning of most students (34.4%) achieves a medium level.In contrast to the exploratory research of Falcó (2017), who proposed to describe and analyze the level of digital teaching competence of secondary school teachers in the autonomous community of Aragon (Spain), he points out that the security competence in terms of data protection and personal identity, teachers show a high proficiency, although its application in the pedagogical field is low.However, Álvarez-Flores (2021), in his research whose purpose was to identify the training requirements for safe browsing practices carried out by teachers on the internet. After the descriptive and inferential statistical analysis, it concluded that universities are training teachers in digital skills, but they lack training in security. Finally, and with reference to the findings related to specific hypothesis five, it is evident that when teachers achieve a high mastery of digital problem-solving competence, the majority of students (29.8%) achieve a high level of foreign language learning; likewise, when teachers reach a medium level of this competence, most students (31.8%) achieve a medium level of learning.

This result corroborates the one obtained by Falcó (2017), in his exploratory research, which proposed to describe and analyze the level of digital teaching competence of secondary school teachers in the autonomous community of Aragon (Spain), points out that the problem-solving competence, in this case technical, teachers show a high mastery, although its application in the pedagogical field is low. On the contrary, Martínez-Garcés and Garcés Fuenmayor (2020), in their research with the purpose of determining the digital competencies of teachers in the

implementation of virtual education; They found that digital problem-solving competence has a weak development by teachers.

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