



ORIGINAL ARTICLE


Relationship between information pills, learning and teaching

Relación entre píldoras informativas, aprendizaje y enseñanza

Relação entre pílulas de informação, aprendizagem e ensino

Reina Castellanos¹

Universidad de Zaragoza, Zaragoza, España

 <https://orcid.org/0000-0001-7484-0262>

rvega@unizar.es

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KEYWORDS

pedagogical beliefs,
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ABSTRACT. The objectives of this research were to know the teaching styles, the learning styles of the participants, and how they influence the transmission of knowledge through the use of information pills. A cross-sectional ethnographic design was used in the study. Fourteen groups of students of the primary education teaching degree from the University of Zaragoza participated in the second semester of the 2019 academic year. The instruments used are the questionnaires of learning styles, pedagogical beliefs, and evaluation of the information pill. The results obtained indicate a relationship between pedagogical beliefs, the learning style, and the way of transmitting information, with instruction in these aspects being necessary for both future teachers and those who are active teachers who take into account the skills and abilities of the student can cause significant changes in their learning.

PALABRAS CLAVE

creencias pedagógicas,
enseñanza, estilos de
aprendizaje, píldoras
informativas.

RESUMEN. Los objetivos de esta investigación fueron conocer los estilos de enseñanza, los estilos de aprendizaje de los participantes y cómo influyen éstos a la hora de transmitir el conocimiento a través del uso de píldoras informativas. En el estudio se utilizó un diseño etnográfico de corte transversal. Participaron catorce grupos de alumnos del grado de magisterio de educación primaria de la universidad de Zaragoza, segundo cuatrimestre del curso 2019. Los instrumentos utilizados son los cuestionarios de estilos de aprendizaje, creencias pedagógicas y de evaluación de la píldora informativa. Los resultados obtenidos indican que hay relación entre las creencias pedagógicas, el estilo de aprendizaje y la forma de transmitir la información, siendo necesaria la instrucción en estos aspectos a los profesores tanto futuros como los que están activos. Los profesores que tienen en cuenta las destrezas y habilidades del alumno pueden provocar cambios significativos en su aprendizaje.

¹ Associate Professor at the University of Zaragoza. **Correspondence:** rvega@unizar.es



PALAVRAS-CHAVE

crenças pedagógicas, ensino, estilos de aprendizagem, pílulas de informação.

RESUMO. Os objetivos desta pesquisa foram conhecer os estilos de ensino, os estilos de aprendizagem dos participantes e como eles influenciam na transmissão do conhecimento por meio do uso de pílulas de informação. Um desenho etnográfico transversal foi usado no estudo. Participaram catorze turmas de alunos do curso de licenciatura do ensino básico da Universidade de Zaragoza, segundo semestre do ano letivo de 2019. Os instrumentos utilizados são os questionários de estilos de aprendizagem, crenças pedagógicas e avaliação da pílula de informação. Os resultados obtidos indicam que existe uma relação entre as crenças pedagógicas, o estilo de aprendizagem e a forma de transmissão das informações, sendo necessária a formação nestes aspectos tanto para os futuros professores como para os que atuam. Os professores que levam em consideração as competências e aptidões do aluno podem causar mudanças significativas em seu aprendizado.

1. INTRODUCTION

Education according to Organic Law 8/1985, of July 3, regulating the right to primary education in Spain has as its objective the development of the personality and the performance of a valuable activity to society. At the university level, a similar situation is promoted in Organic Law 6/2001, of December 21, on universities, article 1, one of the functions of the university, is the preparation for the exercise of professional activities that require the application of knowledge and Scientific methods for artistic creation Hernández and Thomas (2018) share the idea that two laws offer the preparation to pour into society in an appropriate way.

Concerning the above, the question can be posed: What is education? García (2020) reflects on this term, making it known as a complex human and cultural process "linked to the achievement of practical skills" (P.14). Educating is training subjects and has the purpose of completing the human condition of man as the culture wants it to be. León (2007) affirms that "culture and education cannot be undone, but they can be strengthened, using conservative and innovative strategies" (p. 596).

Once a brief reference to the term education has been made, what is teaching? González and Criado (2003) define it as a "gradual process and a complicated task" (p. 19). According to Nieto (1996) it is what one person does to help another learn, for them to do more, know more, and be more. According to Prieto (2020) some teachers leave their mark because they are concerned with the brain's functioning and its influence on student learning. It is essential, as teachers, to be aware of the strategies we use to transmit information to our students; otherwise, it will perpetuate the lack of motivation because they do not understand the information or do not see the practicality of the contents (Aguilar, 2016; Petric & Sucari, 2020).

Nieto (1996) highlights some aspects to consider when teaching: whatever is taught. The own personality is introduced, the students learn from the teacher and the teacher from the teachers through imitation of what he is doing or says. A student can be brought to the source of knowledge, but he cannot be forced to drink, and teaching alone does not produce learning, just as horticulture does not have plants; everything needs a process.

Regarding the above, in education, it is necessary to know how our students learn and what techniques, strategies teachers use to teach and thus produce learning that is individualized, personalized, and of course, significant (Castellanos, 2018).

When talking about teaching or teaching styles, Díaz and Hernández (2002) state that they are concepts and methodologies used in the study of teachers' professional knowledge. Aguilar (2016) refers to the set of attitudes and actions supported and manifested by who teaches, expressed in a defined educational environment, and related to aspects such as the teacher-student relationship, planning, conducting, and controlling the teaching-learning process.

There are many classifications of teaching styles: open, formal, structured, and functional (García, 2020; Liliana, 2002; Medina et al., 2021; Sevillano et al., 2007; Zabala & Arnau, 2007). In this research, the classification of Nieto (1996) is taken as a reference, explaining two types of primary education: conventional and alternative teachers. He elaborates an evaluation questionnaire distributing them according to where the teacher may be more oriented, like this: very traditional and traditional teacher, more conventional than an alternative teacher, more alternative than a traditional teacher, and innovative alternative teacher.

The conventional teaching style: the teacher has a realistic conception of his class, thinks that there is everything, and, of course, students with bad intentions. Therefore, he has a certain distrust; he is authoritarian, the knowledge is presented in order, ready for understanding, assimilation, and systematization. If he observes that he needs external discipline, he accepts it to achieve ranking in his class; he emphasizes that learning requires effort, perseverance and classes are not fun. He uses preventive field, keeps his distance, and in some moments, paternalism. He tries that each one is in his place; he does not like cooperation, wants to control everything, maintains a severe attitude with the undisciplined, and encourages competitiveness (Nieto, 1996).

Continuing with the teaching style, at the methodology level, he focuses on his word, on its contents. His tasks are complex. They impose order and rules in class so that there is uniformity, with a marked and strict schedule. Its teaching is based on the text and the student's study. It pays special attention to cultural knowledge, the articulation, retention, and application of knowledge. It seeks that student acquire basic knowledge and procedures. It uses an exhibition - dialogue with the whole class or group, with elaborated contents and then applying what was received (Cruz, 2008). Use extrinsic motivation if intrinsic motivation is not enough through praise or blame. The classroom layout is arranged in rows in front of the teacher's table. At the evaluation level, it only promotes those students who have met the minimum requirements required by the administrative authorities (Nieto, 1996).

Nieto (1996) expresses the advantages of this teaching style that the minimum knowledge is assured. The students of average type, difficulty, or special educational needs benefit from this form of teaching. As a drawback, authoritarianism, students do not achieve their autonomy, they form rebels, and some reject school.

The other teaching style is the alternative; the teacher focuses the activities on the students; he considers that he must adapt to the class. He has an optimistic conception of his students; he believes them to be mischievous but educable with proper treatment. He likes to cooperate with other teachers; he cares about teaching them how to learn to advance on their own. He prefers an open curriculum where the administration's prescriptions are minimal or do not exist. The relationship between teacher and students is horizontal; the teacher is a partner and consultant. For Cruz (2008) the teacher “claims spaces and times to put it into practice” (p. 145).

At the level of methodology in this style, they carry out their class activities thinking of the students, they learn by playing, with flexible hours, they work with cards and exercises. However, they are late in the program; they give importance to creativity, personal expression, critical spirit, and fantasy (Álvarez et al., 2007). Part of tasks and procedures until reaching knowledge and principles is extended elaboration and structuring of knowledge. It aims at more profound levels of Bloom's taxonomy. The rules of coexistence are assumed and agreed upon by the students, natural punishments are established. They work through projects or activities where knowledge is extracted through inter-cooperation between groups. It uses intrinsic motivation, and the classroom distribution is arranged in teams or a horseshoe (Nieto, 1996).

At the level of the evaluation in the alternative teaching style, its promotion is automatic for the next course; it only uses the observation that tests or exams. The important thing for this teacher is not learning, but rather that they feel happy (Román & García, 2020).

Nieto (1996) offers the advantages of this teaching style: the progress in knowledge is firmer; although slow, it is helpful for gifted and challenging students. As for disadvantages or disadvantages: it forces the teacher to prepare the classes with exercises and abundant bibliography. Some students are delayed because they do not know what to do or do anything. It should be noted that it must also be taken into account that parents' parenting styles influence the academic results of students (Cerezo et al., 2011).

They are continuing with the interest of this research in that the teacher must know their teaching style and their learning style. Alonso et al. (2007) classify it into four types: active, pragmatic, theoretical, and reflective.

An active learning style means that they learn through the question How? They like to be surrounded by people, trying new ideas, being protagonists, and doing short activities. He is an entertainer, improviser, discoverer, risk-taker and spontaneous. The second style is reflective learning; they usually learn by asking what? Analyzing



the information to conclude, they opt for an observer role. The pragmatic learning style: they like to learn through experimentation, where they relate theory and practice; to plan and order their actions, they answer the question What would happen if? They are experimental, practical, direct, effective, and realistic. Finally, in the theoretical learning style: they like to learn from theories, models to synthesize the information, contrast the data, and clarify the doubts they may have; that is, they answer the question Why? Characteristics of this style are: methodical, logical, objective, critical, structured, disciplined, planned, systematic, orderly, with the capacity for synthesis, reasoner, thinker, relational, perfectionist, generalizer, hypothesis seeker, theory seeker, model seeker, question finder, underlying assumptions finder and concept finder among others (Arenas, 2017).

Research has been found in this regard, one of them shows that the use of learning styles serves as a teaching orientation, taking into account diversity and the improvement of learning (Mena et al., 2019; Rubio & Castellanos, 2015).

Regarding the training pills, Bustamante et al. (2016) consider that our education needs changes; one of them is to create meaningful learning and skills-based learning (Flores et al., 2021). The preparation of the pills seeks to be a complementary alternative to the training to consolidate the knowledge acquired throughout the semester, to achieve sustained interest in learning (Crespo & Sánchez, 2020; Estévez & González, 2014; Razo, 2018; Rebollo & Espiñeira, 2015). In other investigations, consider that the use of pills favors autonomous learning (Posada et al., 2018).

Vidal et al. (2016) express that it is an educational model centered on the student; it focuses on the development of competencies in students and on the demonstration of their mastery (Ayala, 2020). An educational pill "is a short video (between 5 and 10 minutes) in which students will concretely explain a concept and briefly demonstrate a competence related to a topic" (Bustamante et al., 2016, p. 224). For this, it is necessary to observe the competencies according to the teaching guide of the subject.

This research aims to know the teaching styles, the learning styles of the participants, and how they influence the transmission of knowledge through the use of information pills. If we take these aspects into account, they provide "valuable information to plan didactic strategies that should be used in the classroom, changing the conception of proposing an education centered on the teacher who teaches to move to a new approach to the process centered on the students who learn" (Bravo, 2014, p. 245).

2. METHOD AND MATERIALS

The methodology used in this research is cross-sectional ethnographic. Being ethnographic, detailed descriptions of situations, events, people, interactions, and behaviors are made. It tries to capture the meaning that people give to their actions, ideas, and the world around them (Barbolla et al., 2010). It aims to improve educational processes' quality and help educators reflect on educational practice. It is the most widely used method in the academic field to analyze teaching practice. Likewise, it is cross-sectional since it is carried out at a particular time (Asencio et al., 2017).

Participants

Fifty-one students divided into 14 groups participated in this research, are students who are studying the degree of primary education teaching in the subject of developmental psychology, Faculty of Education of the University of Zaragoza (Spain).

Instruments

During the fieldwork, the researcher used the following instruments:

The CHAEA Learning Styles questionnaire by Alonso et al. (1994) to know the predominant learning style in the different groups. This instrument consists of 80 questions where the student must answer with a sign (+) or (-) their preference. For the validity of the device, the authors have used Cronbach's Alpha coefficient to measure the scale's internal consistency (Alonso et al., 2012, p. 81). Furthermore, authors such as Freiberg and Fernández (2013) carry out an analysis of the Psychometric properties in University students.

The pedagogical beliefs questionnaire was proposed by Cruz (2008) to find out what future teachers currently present the teaching style. This instrument includes aspects such as: "role of the teacher in the teaching and learning of the student, planning of the classes, the content of the subject, way of approaching it, resources and methodology used by the teacher for teaching and learning, motivation and evaluation of learning" (p. 147). It consists of 50 questions and five answer options. The validity of this instrument is based on both expert judgment and pilot administrations.

The informative pill, an educational tool where groups of students had to choose a topic for the subject, made a short video with the following indications: they made a group presentation, introduced the case informing what they had observed inside the pill, some framework Theoretically, they commented that they had requested permission from the caregivers. If recordings had been used, they expressed the objective of the drug, they responded to what is sought with the demonstration, the competence that they had addressed according to the

teaching guide of the subject, the methodology used: Who has been observed? What has been done? What material has been used? The conclusions that responded to what is demonstrated according to the competence worked observed according to the theory seen in class, and the one consulted, finally, farewell and gratitude (Bengochea & Medina, 2013; Carrera, 2003).

E Various investigations support the validity of the information pill (Bustamante et al., 2016; Crespo & Sánchez, 2020). To realize the drug, some image and video management programs were offered. As recommended by the authors. Delgado and Ruiz (2004) these are Windows Movie Maker, Magix Video Easy, video ad Video Editor or image capture programs such as debut Video Capture, activate Presenter, and Camtasia.

Students could access a document that adds recommendations when speaking in public in the Moodle platform, such as presentation of content, colors, font, and personal appearance. Also, as the form and delivery date, once the pill is made.

Finally, a pill assessment sheet is used, asking the group what style they have operated according to the characteristics of each learning style and contrasted according to the teacher's observation. It was taken into account if they have shown practical cases, asked reflection questions to the class group, dynamics, introduced concepts with their authors and dates.

Procedure

The experience was developed through groups of three to four students, with social relationships being of great importance in the educational field in learning strategies (Aparisi et al., 2019). Afterward, the learning styles and pedagogical beliefs questionnaires were completed to get to know the class group in these aspects. Subsequently, an information session was given to future primary school teachers about learning styles and teaching styles. Later, students were encouraged to develop short audiovisual material in which they demonstrated the competencies associated with each of the topics covered in the subject, their teaching and learning styles.

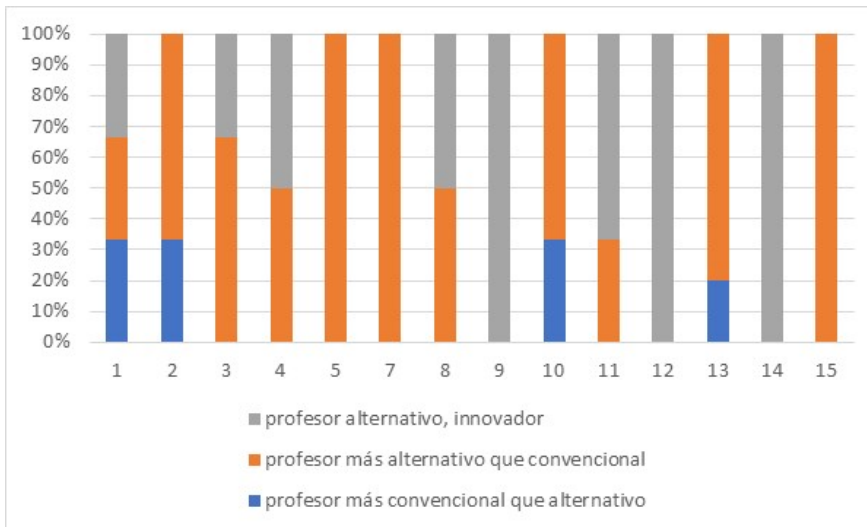
3. RESULTS AND DISCUSSIONS

The data obtained from the responses acquired in the questionnaires on teaching styles or pedagogical beliefs were analyzed at a descriptive level; groups 5,7, 15 have a more alternative than conventional teaching style, groups 9, 12, 14 are alternative and innovative. In group 1, each group member presents each teaching style; there are more conventional, alternative, and innovative styles. Groups 2, 10, and 13 have more traditional and alternative pedagogical beliefs, and in groups 3,4,8,11, there are more alternative and creative teaching styles

(Graph 1). This indicates that the class group mainly presents a more alternative than conventional teaching style in 66%, followed by an alternative and innovative style in 53%, and 26% present a more traditional style of teaching.

Graphic 1.

Group relationship and pedagogical beliefs



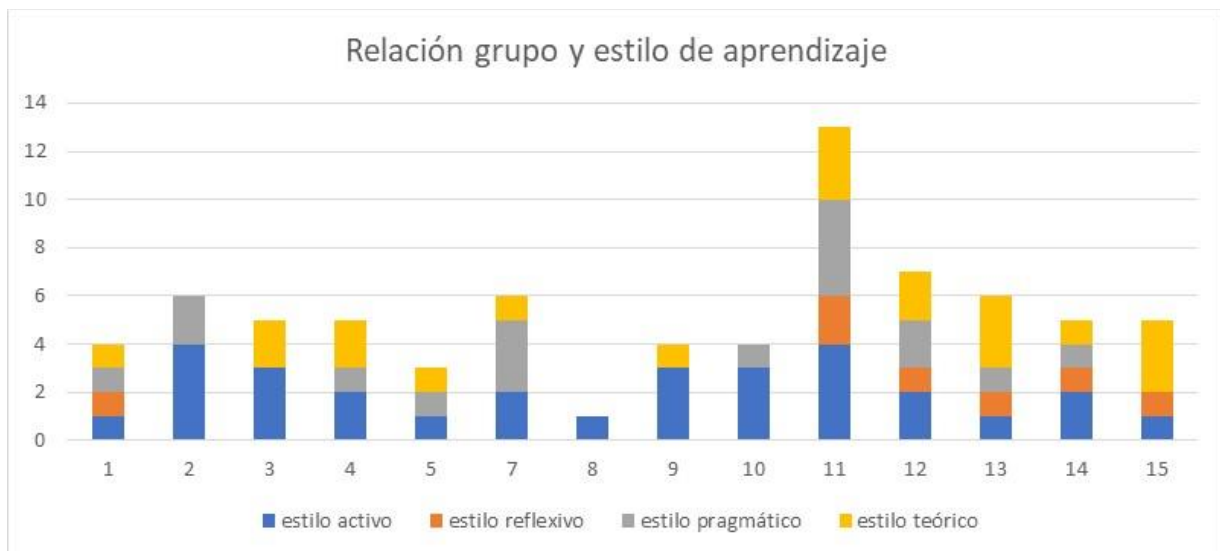
Note. According to the pedagogical beliefs questionnaire, the graph represents the participating groups and the predominant teaching style. Own elaboration

Second, regarding the learning styles of each of the evaluated groups, taking into account the high and very high level of preference, it is found that groups 1, 12, 13, 14. There is one member for each learning style. Learning, in group 11, the same happens, but there is a more significant predominance energetically and pragmatically. In groups 2 and 10, the active and pragmatic style predominates. Groups 4,5,7 prevail over the energetic, practical, and theoretical techniques. Groups 3 and 9 dominate the functional and academic classes. In group 8, only the active style predominates, and in group 15, the dynamic, reflective, and theoretical type predominates (Graph 2).

The class group presents 100% an active learning style, followed by 66% by a pragmatic and theoretical sort and a lower percentage (33%) reflective. With this, it is essential to highlight the importance of knowing the learning styles in the classroom to adapt the best teaching and learning techniques to each class (Pérez et al., 2019).

Graphic 2.

Group relationship and predominant learning style

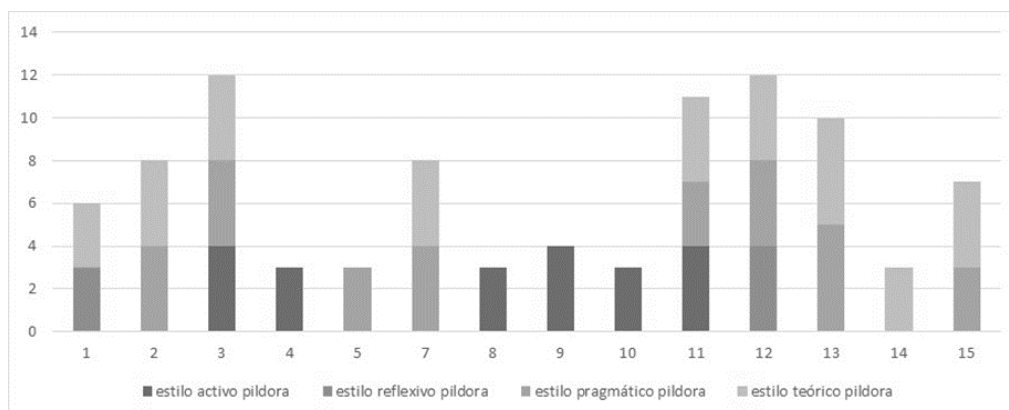


Note. The graph represents the participating groups and their predominant learning style. Own elaboration

Third, knowing in the groups how they have transmitted their pill according to characteristics of learning styles. It is found that groups 4,8,9,10 share their information through the elements of the active type. Group 5 sends the information through the pragmatic style. Group 14 transmit the information through the theoretical style. Groups 2,7,13,15 share information practically and academically. Group 1 through the reflective and academic style. Groups 3 and 11 use active, pragmatic, and theoretical techniques. Group 12 uses the thoughtful, practical, and theoretical (Graph 3).

Graphic 3.

Group relationship and way of transmitting pill



Note. The graph represents the participating groups and how they have used to transmit the pill according to the learning style. Source: self-made

Suppose we relate learning styles and teaching styles with transmitting the pill. In that case, it can be said that the 5,7,15 groups present a more conventional pedagogical belief with a pragmatic, theoretical, and reflective

learning style. They transmit the information highlighting the characteristics of the practical and theoretical type, observing in the pill where they have related theory and practice, they have experimented. According to the guiding structure, there is an organization of their work, establishing objectives, analyzing, synthesizing, and being critical of the information.

The groups that present alternative, innovative pedagogical beliefs, such as groups 9,12,14, predominate all active, reflective, pragmatic, and theoretical learning styles. Except in group 9, which has only the functional and academic classes. To transmit her knowledge to all students, she will need to know or have a little of all learning styles. In such a way that the information is transmitted creatively, with new ideas and using different forms of teaching.

On the other hand, groups 1,10,13 that are considered more conventional and alternative present a predominantly active, pragmatic, and theoretical learning style. They choose to create new ideas; they like to combine practice with theory and search for it. They have transmitted knowledge through the pill has been the same way. Therefore, a pragmatic and theoretical style was chosen, except in group 10 for an active style.

Groups 3,4,8,11 present a more alternative than conventional pedagogical belief and combine it with an innovative teaching style. The most prominent learning style in the groups is the active style, followed by the pragmatic and theoretical; likewise, the information has been transmitted through the pill carried out.

In this research, it is observed that there is a relationship between pedagogical belief, learning style, and the way of transmitting information (Chiang et al., 2016). It is knowing each of the students' learning styles and teaching styles and corroborating this information with the use of the pill. It seeks to understand their resources, the help of creativity, experimentation, or any characteristic related to their pedagogical beliefs and learning style; it is a point of feedback to future teachers in the way they transmit knowledge to your students. The previous statement is related to what Nieto (1996) says about the choice of teaching style, which is due to the norms and ideas received in its preparation and the characteristics of the students themselves.

Research such as M. González (2013) expresses that efficient learning begins with reducing disagreements between teaching styles and learning styles. For this Renés (2018) is shared when considering that it is necessary to train future teachers in learning techniques, teaching classes and verify that, as well as using their styles, they are transmitted to their students. The use of strategies and the same means should always be avoided; therefore, it is essential to train teachers in learning styles in teaching strategies for their identification (Canalejas et al., 2005; Castro & Guzmán, 2005). In addition, these new strategies should be used within the classroom to organize multi-media-rich learning environments that promote their motivation and interest in



learning. The teacher must have a leading role as a conductor of the activities in the classroom (Gil et al., 2018; Mazzitelli et al., 2018; Zapatero, 2017).

Different investigations relate teaching styles and learning styles (Laudadio & Da Dalt, 2014). In addition, there are many classifications of teaching styles and learning styles that it would be necessary to combine to generate a joint guideline to promote techniques and strategies aimed at each learning style and each teaching style.

It is necessary to investigate more about the relationship between pedagogical beliefs, learning styles, and the way of transmitting information individually to clarify and verify the existing relationship between these aspects. The few investigations that analyze the implementation of any action within the institution after learning about learning styles should be highlighted (Alanya et al., 2021). Thus, this research wants to be a contribution to the approach of making scientific dissemination of educational practices (Pamplona et al., 2019).

4. CONCLUSIONS

Regarding the first objective of this research, which is to know the pedagogical beliefs or the teaching styles, it has been found that the more alternative types predominate in the groups than conventional and alternative and innovative. This indicates that we are facing a group of classes that learn through varied activities, without following a rigid structure; they know that playing, with flexible hours, gives importance to creativity and personal expression.

Regarding the second objective, active, pragmatic, and theoretical learning styles are predominant in each group evaluated. As teachers, we must be prepared to create activities and transmit the information to each student, answer the questions How? What would happen if? Why? Without leaving aside the thoughtful style with his question, What? Being these questions are the ones that they use to acquire meaningful learning.

By relating learning styles and pedagogical beliefs with the type of pill made by the students, the third objective of this research is the groups that present a more conventional pedagogical confidence or teaching style, have a pragmatic, theoretical learning style, and are thoughtful. However, observing the relationship between theory and practice in the pill. They have organized their work according to a guide structure, established objectives, analyzed, synthesized, and be critical of the information.

The active learning style predominates in groups that present a pedagogical belief that is more alternative than conventional, followed by the pragmatic and theoretical. The groups transmitted knowledge through new ideas through short activities that relate theory to practice and involving the public.

About the groups that present alternative pedagogical beliefs, innovators predominate in all active, reflective, pragmatic, and theoretical learning styles. A teacher with this type of teaching style will use knowledge and strategies of all learning styles; in this way, he will transmit information creatively, generating new ideas using different forms of teaching.

Concerning the above, teachers to develop and prepare classes to need to know themselves both in the teaching styles and in the learning styles that are predominant in the teacher himself. This can influence when transmitting information; the aim is to be aware of using all possible resources and strategies to reach all the styles that can be found in the classroom.

Conflicto de intereses / Competing interests:

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