


Identification of learning styles in undergraduate students: the case of bachelor students in Business Administration and in Tourism in Mexico

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Resumen

La investigación sobre educación explora la existencia de varios factores relacionados con la percepción del registro académico y el control de las calificaciones de los estudiantes que obtienen a través del aprendizaje, como la motivación y la mejora por sí mismos. El objetivo es identificar los diferentes estilos de aprendizaje utilizados por los estudiantes de la universidad, estableciendo una buena relación entre esto y la formación integral. Se propuso que existen diferencias significativas entre los estilos pragmáticos activos y contrastados con los estilos reflexivos y teóricos. Todos los resultados obtenidos en este estudio tienen el propósito de estudiar el conocimiento de los alumnos para saber cómo piensan, cómo son y cómo actúan para aprender de una manera integral y significativa.

Palabras clave

Empresa; turismo; aprendizaje permanente; estilos de aprendizaje

Abstract

The investigation about education explores the existence in several factors which are related to the perception from the academic register and the control from the students' grades they get through learning such as motivation and the improvement by themselves. The objective is to identify different learning styles used by the students at university, establishing a good relation between this and the integral formation. It was proposed that there are significant differences between active and contrasted pragmatic styles with the reflexive and theoretical styles. All the results got in this study have the purpose to analyze students' knowledge to know how they think, how they are and how they act in order to learn from a holistic and significant way.

Key words

Business; tourism; Permanent learning; learning styles

Introduction

Some time ago, educational investigation which explores the topic from the real academic goal, or the success has been expanded by asking some easy questions from intelligence and academic merits. There is a list of concepts related to the learning process such as the perception of the academic control and motivation performance which focus their attention by identifying the factors that affect the learning process (Cassidy and Eachus 2000). There is a particular concept which gives some important ideas about learning in the academic process and in another learning style process. The university formation process supposes a complex building for the different actors in the educational system. For the principal and teachers is to adapt the curriculum for the needs and students' characteristics, it is fundamental in the learning and teaching process (Madrid-Lopez, et al., 2016). In

this case, the students analyze and build the information in the different ways to develop the learning process (Acevedo, Cavadla and Avis, 2015).

From this way, the learning styles have got special importance in the scientific literature related to the teacher's education (Gil-Madrona et al., 2007; Gonzalez et al., 2013). Nowadays, there are different efforts focused on the development an educational system to make easy the students' learning and apply it in their whole lives which permits to develop their creativity, their innovation, their production and their personal development to respond to different changing situations that each day are more complex for the society. The educational model has not given an integral answer to social challenges, its historic and epistemological basics in which the mechanism, determinism and materialism where the values are the control, the consumption, the competence and speed; the material successes are the ones that we are working with in the current educational model and the problem that has not been solved, for this reason we are in front of this challenge that is over the classic education (Prada, 2005), to start a new education with the human being, a formation based on different learning styles for the student who develops "Learn how to learn".

The aspiration for the students learn how to learn is very important in a permanent education that determines the efficient use and learning styles which they are not sometimes good for being a complex phenomenon in which there are different variables for the social context requirements with the personal characteristics the human being has (Pupo, et al, 2009). This search has taken some relevance in the learning styles which is very necessary in the current psychological investigations due to its theoretical and methodological value to improve the teaching-learning process in the different educational levels where students are immerse. The current psychological tendencies show a great interest between the didacts and psychologists who are the experts in education to be further from the instruction models to focus in the investigation and comprehension for the learning process. The main idea behind this movement is so clear: If there is an idea to improve the learning process, it must transit for being better and clearer for the learning process comprehension and all what will be learnt (Valcarcel and Verdu, 1996).

On the other hand, Albert et al (2005) points out these tendencies that consider the necessity to take into account the individual variables which are important in the students' performances (motivation, previous knowledge, and others), those that are part of the challenges that face teachers in the learning process in Mexico. Today, there are many obstacles which stop the learning process in the students, for example the difficult homework teachers have to attend the different learning styles for the students, this happens when they do not have any training to use the right strategies in the learning and teaching process neither in the referential framework in which they can find the necessary answers for their problems with the concept "Learning styles" where education experts identify in people's behavior.

In this context, the most important is the knowledge, the comprehension and the learning styles analysis for the becoming professionals and the teaching styles for them. Cabrea et al., (2006), Cornejo and Redondo (2007), say that it is fundamental to determine those variables which are associated with academic performance due to the low performance levels that the university students have which are associated to school desertion and the low terminal efficacy. Edel (2003) points out the different learning styles and other variables such as the students' expectations, their

personal context, their social abilities or their auto concept which are related to the academic performance.

The main goal in this investigation is to do a real analysis from the learning styles strategies that students have at the beginning of the semester, generation 2017 in Business Administration (BA) and the students have Tourist Administration (TA) at Complejo Regional Mixteca in Atlixco, Mexico. Knowledge that is coming from the exploration will permit to adapt the formation processes to reach better learning results (Catalan and Santelices, 2014). The hypotheses raised is that there are meaningful statistic differences between active learning styles and pragmatic styles well contrasted with the theory and reflexive learning styles for those students in both careers.

The word style defined by the Spanish real academic (2014), comes from the latin stilus that means temper, peculiarity, mood and the way to do the right things. It is used in daily life to identify human's qualities or group of people in the different contexts from human activity. Hederich and Cargano (2000) say that this term reflects the necessity to identify themselves with the purpose to find their own personal identity. This is a great necessity that appeared since humanity started so the Romans and the Greeks' classification have different criteria and different typologies for human beings. For this reason, when the learning style appeared, many investigators made history studies related to personality (Pupo, et al., 2009).

The notion of learning styles (or cognitive styles for some authors), have their own ethimology backgrounds in the psychology context. This concept was used in bibliography 50 years ago in the last century by cognitive psychologists. H. Witkin (1954) was the first investigator who was interested in all the problems of "cognitive styles", such as the expression in the way to give and process the information. His investigation and the investigation from Holzman and Clein, (1954); Eriksen (1954); Scheerer and Goldstein (1954), found echo very soon between pedagogues mainly in the United States where a huge movement was coming from the curricular reforms in qualitative transformations to renovate the traditional methodologies and the students' rescue in the learning and teaching process (Albert et al., 2005).

Learning styles can be identified like different mechanisms where the mind processes and acquire all the information form the superior knowledge (Gil-Madrona et al., 2007). These are flexible and changing schemes form the learner context, its experience and teachers' strategies where it is immersing (Bahamon et al., 2012; Isaza, 2014). Important investigations have shown that people have different learning ways (Newble and Entwistle 1986) and different cognitive strategies well known as "cognitive styles" (Cabrera and Farinas, 2001) where learning styles are derived. The cognitive styles are defined like "individual variation to acquire, remember and think how to learn, store, transform and use the information" (Di Bernardo, 2005:35).

Newble and Entwistle (1986) and Weinstein (1985) refer to learning styles like a set of strategies that are used by some people to reach the learning process. These strategies involve motivation attitudes and personality. Thus, learning styles can be considered like cognitive, affective and physiology ways in students' knowledge who interact and respond to the learning process in the educational context (Felder, 2005). One of the first model to classify the learning styles was proposed by Rita and Keneth (1993) which is centered in the acquisition component and define the three different learning styles:

visual style, hearing style and touching style. The way where a person focuses the learning style is described in many ways and theory models (Table 1)

Table 1. Taxonomy from the learning style in education context

| Model | Curry (1987) | | | | Equitación y Cheema (1991) | | Rayner y Riding (1997) | |
|--|---------------------|--------------------|---------------------|-----------------------|----------------------------|------------|------------------------|---------------------|
| | Academic preference | Social interaction | Information Thought | Cognitive personality | Holistic | Analytical | Cognitive centered | Focused on learning |
| Witkin (1962) Field dependence / Independence | | | | * | * | | * | |
| Kagan (1965) Impulsiveness - Reflectivity | | | | * | * | | * | |
| Holzman y Klein (1954) Leveler -Grinder | | | | * | * | | * | |
| Pask (1972) Advertising equipment | | | | * | * | | * | |
| Pavio (1971) Verbaliser - Visualizer | | | | * | | | * | |
| Gregorc (1982) Style eyeliner | | | | * | * | | * | |
| Kauffmann (1979) Assimilator - Explorer | | | | * | * | | * | |
| Kirton (1994) Adaptation - Innovation | | | | * | * | | * | |
| Allinson y Hayes (1996) Intuition - Analysis | | | | * | * | | * | |
| Kolb (1984) ELM | | | * | | | | | * |
| Miel y Munford (1992) LSQ | | | * | | | | | * |
| Vermunt (1994) LSI | | | * | | | | | * |
| Entwistle & Tait (1995) Depth of the surface | | | * | | | | | * |
| Biggs et al. (2001) SPQ | | | * | | | | | * |
| Schmeck et al. (1991) ILP | | | * | | | | | * |
| Hunt, Butler, Noy y Rosser (1978) Conceptual level | | | * | | | | | * |
| Dunn, Dunn y Price (1989) LSI | * | * | | | | | | * |
| Reichmann y Grasha (1974) Learning styles interaction models | * | * | | * | | | | * |
| Ramírez y Castañeda (1974) Child qualification form | * | * | | * | | | | * |
| Reinert (1976) Cognitive style interests inventory | | | | * | | | | * |
| Letteri (1980) Types of students | | | | * | | | | * |
| Keefe y Monks (1986) Profile of learning style | * | * | | * | | | | * |

Taken and modified from (Cassidy, 2004)

This categorization from learning styles can mention the existence from a great classification varieties which are in the whole world; however, for this investigation, a reference was taken from Honey and Mundford (1992) which admits different potentialities from a new learner classification in the four categories in the learning process (Maureira, 2015); to recognize the predominance from the learning style in a student and its characteristics through these categories which are considered phrases from a cyclic process in most people: active, reflexive, theoretical and pragmatic (Acevedo et al., 2015) (Table 2)

Table 2. Learning styles proposed by Honey and Mumford

| | |
|---|--|
| Improvise-Active | They are open, improvised and spontaneous, for them, it is not important the risks and errors. They retain the best information, making something with knowledge to discuss, explain or apply. They like to do active work, develop guides, posters and workshops. |
| Objective Theoretical-methodical | It refers to objective students with a deep critical, methodical and discipline sense to solve the problems from a logic point of view. They prefer to structure activities to comprehend complex systems, also they prefer to take masterly lessons in the classroom. |
| Realistic-Pragmatic | They remember all what they see, pictures, demonstrations, diagrams. They prefer the support from the didactic material. They prefer to discover relations, possibilities. They like innovations get the best abstractions. They are able to solve the problems easily after getting the general context. They are realistic, direct and efficient people and they prefer to make plans to see a good relation between treated affair and its application. |
| Reflexive-analytic | They prefer to think carefully about what they do and prefer to work alone. They increase their comprehension in lineal steps, they cannot attend neither understand the material, but they can connect all the parts in a logical way. They prefer to elaborate conceptual maps, diagrams and problem trees. |

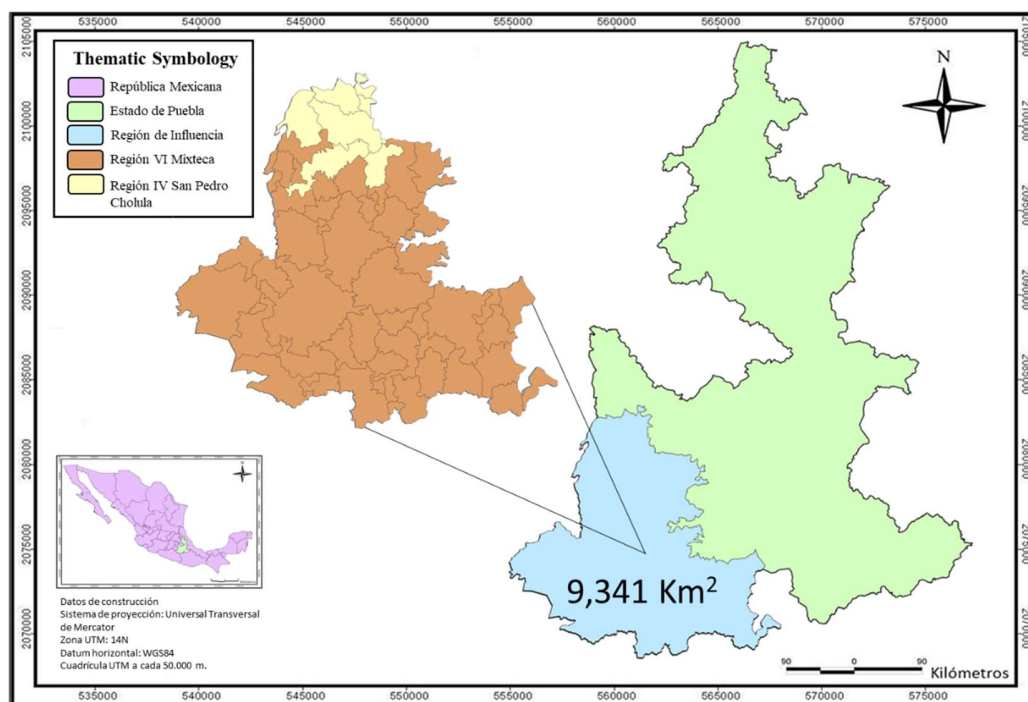
Source: Correa, (2006:43).

In general, the findings observed in literature indicate the predominance in the learning style which are more reflexive for students at university (Acevedo et al., 2015). There are some studies which have the prevalence from other styles, they are also characterized by their links in the teaching process more traditional in higher education. Santizo et al. (2008) checked out the predominance from a learning style more theoretical for students at university. On the other hand, in the last years there has been the predominance from some styles in the new learning and teaching process, such as the pragmatic for those students in their different careers (Izasa, 2014), or the combination from the different styles suggested like the best styles and their transfer (Bahamón et al., 2012; Cordero et al., 2015).

The students of both degrees come from the economic regions in Puebla, San Pedro Cholula and la Mixteca, both have the same surface 9,341 km², having 27% from the total surface in Puebla state. In this region, people knit in palma, they are farmers, and plant agave mezcalero, these are the highest economic sources for the families who live there (Mora, 1987; INEGI, 2000; Ibarra, 2002). Their livestock activity in rural communities is a social measure which has the main frequency in goat production of a family type in the farm economy (Franco, 1999; Hernández et al., 2001), where there are some risks in the fish production made by the producer, some people migrate to big cities, states or countries where they settle for so long (Hernández-Hernández, 2006; Sánchez, 2006). Agricultural and ranchers are the main development in la Mixteca Poblana, they cover all the community needs due to the low purchasing power (INEGI, 2000). These production systems face the

defiance's in some technological, social, economic, and politic changes, and the ones in some institutions. In some places the lifestyle is very low, there are not enough Jobs, there is not enough education, health and places where to live. People do not have enough food, they have low salaries, they do not practice any sport and do not know anything about their culture so they prefer to emigrate to the United States (Hernández et al., 2011).

Figure. 1 San Pedro Cholula and Mixteca Poblana locations



Methodology

Population and Sample

Students from generation 2017 participated in in this investigation; Tourism Administration (TA) and Business Administration (BA) both careers belong to the Complejo Regional Mixteca, Campus Atlixco at Benemérita Universidad Autónoma de Puebla, who are making investigation in methodology and administration courses respectively (n=64).

Design and procedure

An observation study was done in the exploratory, transversal and correlational way (Martínez, 2007). The groups where this instrument was applied were selected by convenience and permission from the students who participated in a voluntary way during this investigation. To identify the learning styles a questionnaire was used by Honey-Alonso "CHAEA" (Alonso y Gallegos, 2000) that has 80 items in four sections from 20 items corresponding to the four learning styles (Active, Reflexive, Theoretical and Pragmatic). Students were examined in their classroom and in their school

Schedule at the beginning of the course considering the school calendar 2017. The interviews were done in one section in each group. Instructions were given to answer it, they had 10 minutes to ask questions, finally students answered the questionnaire and gave it to the investigator.

Variables, procedure and data analysis

Learning styles. Silent variable that has the numeric value from the four learning styles identified each person: active, reflexive, theoretical and pragmatic. Each grade got for each student indicates the level in the four learning styles. This instrument had these characteristics: agree (+ sign), disagree (- sign). The result is obtained by the students' grades in each section. From this way, the necessary data's is obtained to consider the preferences in each student for each learning style and finally got the right learning style. The instrument helps to identify the predominance in the student learning style (active, reflexive, theoretical or pragmatic) (Table 2).

All data were organized and classified according to each bachelor and data base was created in Excel program with all the correspondent information to the general data (age and gender), also the results obtained from the questionnaire "CHAEA". Then, statistics calculations (frequencies and percentages) Descriptive media and typical deviation from data by using the software IBM SPSS Statistics version 23.

Results

From the total students who were selected, 56% correspond to Business Administration (BA) and 44% corresponds to Tourist Administration (TA). Most of the participants in this study are women 80% from ages 21. 70% from the students said that they did not have any experience in any kind of job and only 30% did, mainly in some activities related to their bachelor. Some students showed theoretical and reflexive learning style (Picture 2). When comparing the learning profiles of the two groups, the active style was seen in Business Administration (BA) while in Tourism Administration (TA) their learning styles were the reflexive and the active (Picture 3).

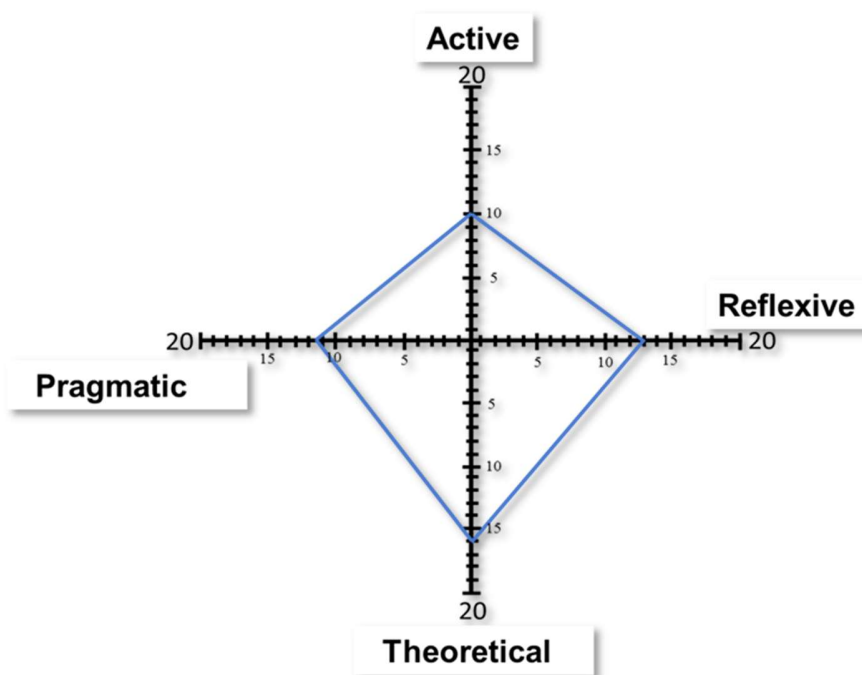


Figure 2. Sample learning profile

| Degree | | Active | Reflexive | Theoretical | Pragmatic |
|--------|-------|--------|-----------|-------------|-----------|
| TA | Media | 10.25 | 13.01 | 16.10 | 11.89 |
| BA | D.T. | 3.35 | 2.95 | 3.0 | 2.60 |

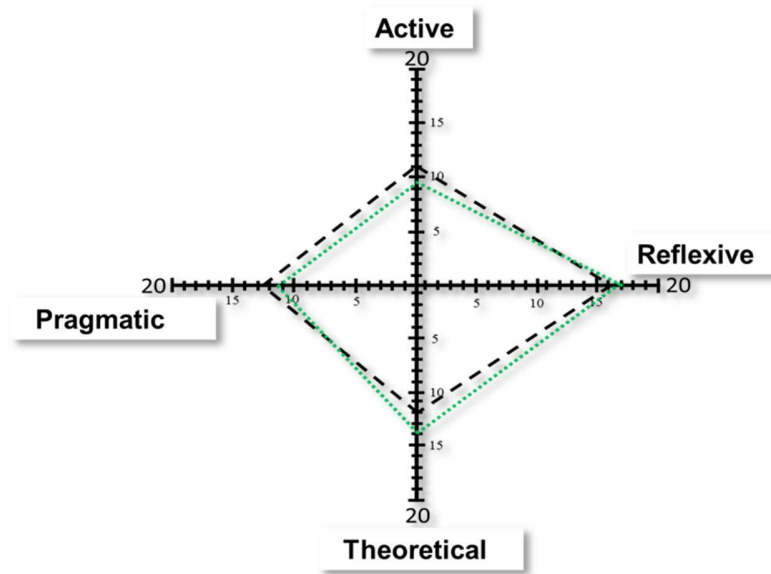


Figure 3. Comparison of the learning style of students in Business Administration (BA) and Tourism Administration (TA).

| Degree | | Active | Reflexive | Theoretical | Pragmatic |
|--------|-------|--------|-----------|-------------|-----------|
| BA | Media | 9.62 | 17.16 | 14.11 | 11.44 |
| | D.T. | 3.43 | 2.81 | 3.11 | 2.82 |
| <hr/> | | | | | |
| Degree | | Active | Reflexive | Theoretical | Pragmatic |
| TA | Media | 10.99 | 16.24 | 12.06 | 12.63 |
| | D.T. | 3.31 | 2.68 | 2.91 | 2.21 |

Contrast of the differences between the scores obtained in the four learning styles of the two degrees. The homogeneity test from the variances points out some meaningful differences for all the active styles $p < 0.045$ and pragmatic $p < 0.029$, for this reason, it was made a test ANOVA with the reflexive styles $p < 0.002$ and theoretical $p < 0.000$ getting results statistically meaningful. With this contrast from Scheffé and Bonferroni was seen that the media got from the punctuation in the learning reflexive style of students at Tourism Administration (TA) had a very low level from the students at Business Administration (BA). So, the media got from the theoretical learning in Tourism Administration (TA) was lower than the students at Business Administration (BA). $p < 0.004$ and $p < 0.000$ respectively. For the Pragmatic and active learning styles did not get meaningful differences between both careers according to the test from Kruskal-Wallis. Regarding to the possible relation between students from both bachelors with a job experience, it was applied a statistics test from the T Student, the results got did not show statistics significance.

Discussion and final remarks

The results presented in this investigation allowed to characterize the students learning level that study Tourism Administration (TA) and Business Administration (BA). In this way, we can see a clear trend towards the theoretical and reflexive learning style on the part of both groups. By getting this result, teachers that work in both bachelors will have the most important pedagogical strategies with their own styles where students will have the opportunity to think about and answer in a critical and reflexive way and participate in their job chores through extra homework's with practical experiences like development case that generate a complex thinking through analysis, synthesis and auto evaluation from the activities in their formation. Gordón (2016), says that to discover the learning style permits to reach meaningful learnings; students learn in a better way when their teachers suggest the right activity which identify themselves with their own learning style. Students learn more effectively when there is coherence between the teaching and learning style which improves performance in the students, it gives relation teacher-student, theory and praxis, there is bidirectional communication and as a result of this there will be holistic learning.

To identify the learning style from the students in both bachelors, it will permit that teachers use different strategies, techniques and tools in order to the students learn in a better way, with efficacy and being better people in all ways. The use of pedagogical strategies immerses in Administration with a business or tourist focus will permit being more competent in basic science like the observation, data analysis, methodical work, well organized and objective. In this regard, Alonso (2002), points out that university students have their own learning style and, therefore, a "learning profile", where their natural tendency is evidently evidenced by one of the four defined categories. It seems that as they develop competences in the field of the discipline they are modifying their preferences, so that they acquire more interest in observation, analysis of facts and methodical, systematic and logical work; and they lose interest in learning by discovering, experimenting, applying and putting into practice what they have learned. In this sense (Aguilera and Ortiz, 2010, Castro and Guzmán, 2005), Cited by Pérez, et al. (2016), establishes that the university teacher has a scientific reference of what are the characteristics that the student with a willingness to train as a person, as a professional and throughout his life, justifiably deserves his knowledge.

On the other hand, Gordon (2016) points out the teacher must have established the student's cognitive learning styles, their motivation and their interests and be more comprehensive for the students control their learnings without forgetting the individual and autonomous learning. Therefore, it is necessary to look for some alternatives to reach the pragmatic and active styles in the same level from the theoretical and reflexive styles in order to the students have the best way to learn and have the best opportunities in the learning process for their whole life. To eradicate the student's desertion, bad grades or lack of motivation, acquire the main elements in their careers to have a meaningful learning in whole life that permit being better people at university. On the other hand, teachers need to use reliable instruments to diagnose the different learning styles in their students. The "CHEA" questionnaire consists of an important tool to reach the goal mentioned before to know the high learning style from the student.

This tool showed the preference in the learning styles for each of the four scales with a tendency by the theoretical style which concludes that the hypothesis is not refused because of the meaningful

statistics between the active $p = 0.045$ and pragmatic $p = 0.029$ learning styles, contrasting the reflexive $p = 0.002$ and theoretical $p = 0.000$ learning styles. It is important to point that the teaching strategies could be used by teachers according to the learning styles identified by the students; most of the times these are conditioned by the hermetic part from the university system which gives determined learning fields based on only with the theoretical and reflexive style which makes more difficult to reach the pragmatic and active style that limit teacher's creativity. So, the teaching is not only focused nor in the theoretical neither in the reflexive.

This characteristic of the learning styles that students have in Tourist Administration (TA) and Business Administration (BA) at Complejo Regional Mixteca, Unidad Atlixco has reached the individual learning process that each student has and also, they are benefitted with:

1. The identification, analysis and meaning that is made in this research with respect to the study of learning styles, justifies the need to deepen through observation and dialogue between the teacher and the student the different ways in which he learns, as well as the use of didactic strategies that are well planned, that there are place and space conditions where different learning styles and activities converge.
2. The importance in which teachers know the way of being, thinking and acting of the students will allow to plan and use different methods, techniques, procedures and evaluation instruments that can generate a meaningful and lifelong learning in the student.

The current scopes of the university studies programs of the Complejo Regional Mixteca, Campus Atlixco of the Benemérita Universidad Autónoma de Puebla, offer wide possibilities in teaching methods, however, their design and lines of action, especially in the operational part, are The teachers convert the teaching-learning scenarios into rigid, closed and extraordinarily structured systems that on many occasions have not been sufficiently developed by teachers. ➤

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