

Learning styles in virtual environments from the Veterinary Zootechnics specialty. Learning styles in virtual environments from the specialty Veterinary Zootechnics

Jasiel Pavón Leyva

Carmen del Milagro Odio Brook

Yanyorkys Sanchez Perez

Center of Technological Applications for Sustainable Development (CATEDES), Guantánamo, Cuba.

University of Guantánamo. Guantánamo, Cuba.

ORCID: <https://orcid.org/0000-0001-8680-5691>

<https://orcid.org/0000-0002-2242-1047>

<https://orcid.org/0000-0002-1451-0218>

E-mail(s):

jasiel@catedes.gtmo.inf.cu

Received: 10/16/2020

Accepted: 02/18/2021

Summary: An innovative proposal is presented, able to meet the diversity arising from the heterogeneity of learning styles shown by students participating in virtual training programs, through a research carried out between 2017 and 2019 with the intention of presenting a way to determine the learning styles from virtual environments in students of the Zootechnical-Veterinary specialty of the Instituto Politécnico Agropecuario "Manuel Simón Tames Guerra". A theoretical conception constituted by dimensions, indicators and evaluative scales is exposed, which allows the characterization of learning styles in virtual environments.

Keywords: Learning styles; Virtual environments; Zootechnics - Veterinary.

Abstract: An innovative proposal is presented, capable of addressing the diversity arising from the heterogeneity of learning styles shown by the students who participate in virtual training programs, through research carried out between the 2017 and 2019 stages with the intention of presenting a way to determine learning styles from virtual environments in students of the Animal Science - Veterinary specialty of the "Manuel Simón Tames Guerra" Agricultural Polytechnic Institute. A theoretical conception consisting of dimensions, indicators and evaluative scales is exposed, which allows the characterization of learning styles in virtual environments.

Keywords: Learning styles; Virtual environments; Zootechnics - Veterinary.

Introduction

New trends in education are paying increasing attention to students' learning processes, in response to the social demand to train people with the competencies to learn effectively.

Learning style theories have become an alternative to explain why, when a group of students share the same learning environment, each member learns differently. Alonso (1997) states that there is enough research showing the relationship between learning styles and academic performance, i.e., that students learn more effectively when they are taught with their learning styles.

In the new knowledge society, the incorporation of new information and communication technologies, such as the computer and the Internet, have generated new educational approaches focused on student learning through virtual learning environments. These involve new ways of teaching and new ways of learning.

The great expansion of virtual teaching systems has posed a great problem, which consists of how to make the best use of the tendencies, preferences and dispositions that students have when assimilating knowledge within a virtual environment. In face-to-face classes, students usually show indicators that help the teacher to approach the understanding of the strategies with which each subject captures, processes and stores information, prior conversion and knowledge. In the case of blended learning (bimodal) and full virtual teaching, the possibility of detection by the tutorial team of this type of indicators through observation is very limited and in many cases non-existent, especially taking into account that the variables of the predominant learning styles arise from the individualized response to questions such as Why do we learn, how do we learn, when do we learn, etc.?

How is what has been learned applied in practice, what degree of satisfaction does the training process produce, etc.?

According to Clares (2010), the introduction of learning styles in the educational field confirms the recent concern for the way students learn, and the attempt to facilitate their task by means of proposals that are closer to how they better perceive learning. According to the aforementioned author,

learning styles have been applied to many fields and subjects, namely: learning mathematics, music education related to emotional intelligence, languages, veterinary medicine, leisure and recreation, intellectual giftedness.

In Cuban education there have been few researches related to learning styles: we can point out the studies of Cabrera (2004), applied to the teaching of English for specific purposes; the one developed by Aguilera (2007) and Campos (2015), authors who from the personological approach establish three dimensions: cognitive, affective and metacognitive dimension.

This paper considers that the elements investigated by the referred authors are basic to characterize learning styles, but in face-to-face environments and not in virtual environments, so there are gaps in the theory regarding the union of both categories (learning styles and virtual environments). Such is the case of the incorporation of virtual practical activity, which is a function of personality as an integral virtual system.

The authors of the present research consider that it is a necessary element to be able to explain the fundamentals of the styles in learning environments in the reality under investigation.

Other fundamental elements to consider are the results obtained from a previous diagnosis, in which the following limitations were verified:

Limitations in the existing models to identify the learning styles of students in virtual environments, based on the use of the potential of Information and Communication Technologies (ICT).

Insufficient preparation of teachers on the learning styles of students in virtual environments, which is manifested in their attempts to extrapolate the forms of face-to-face interaction to this modality.

The above-mentioned shortcomings indicate that it is necessary to develop a theoretical conception, from a more comprehensive approach, to identify the styles of

The use of ICTs to support student learning, and thus contribute to increase the effectiveness of individual attention to the way students learn.

In view of the above, it is proposed as a scientific problem:

How to characterize the learning styles in virtual environments of students of the zootechnical - veterinary specialty, in order to achieve a more personalized teaching-learning process?

Development

In order to offer an answer to the research problem, a theoretical conception is shown that allows teachers of the zootechnical-veterinary specialty of the agricultural polytechnic institute "Manuel Simón Tames Guerra", to characterize the learning styles of their students in virtual environments. The proposed conception has its epistemological bases from the psychological point of view in the postulates of the Historical-Cultural conception, developed by Vygotsky (1994).

Therefore, the Marxist-Leninist conception of knowledge and activity is assumed, since the cultural-historical approach has its epistemological foundations in Marxist philosophy, assuming the criterion that human thought is a subjective reflection of objective reality.

The process of characterization of learning styles in virtual environments is produced from the combination of the particularities in the affective, cognitive, virtual practical activity and metacognitive components, during the process of internalization of the social-historical experience, which leads to a learning style in each individual.

Table 1 shows the dimensions and sub-dimensions of the Conception with their corresponding indicators, including the evaluative scales for each indicator.

Table 1. Dimensions, indicators and evaluative scales of the Theoretical Conception.

Dimensiones	Indicadores	Escalas
Afectiva	Motivación profesional y hacia la actividad de estudio desde el contexto virtual	- Nivel Alto - Nivel Medio - Nivel Bajo
Actividad Práctica Virtual	Desarrollo de hábitos y habilidades prácticas virtuales	- Adecuados - Parcialmente adecuados - Inadecuados
Metacognitiva	Autovaloración del aprendizaje desde el contexto virtual y las estrategias utilizadas	- Adecuación - Inadecuación parcial - Inadecuación total

Source: Own elaboration.

Affective dimension

This dimension was proposed by Aguilera (2007) for the Special Education career and in this work it is adapted to the Zootechnical-Veterinary specialty, integrating the virtual environment. According to this author, the affective dimension expresses the relationships established by the student towards the learning process, according to his or her needs and future expectations. Relationships that depend to a great extent on their motivation, so that professional motivation and motivation towards the study activity from the virtual context is considered as an indicator of the affective dimension.

Structuring of the Affective Dimension

High Level

- Possesses satisfaction with the chosen profession.
- It has information on the profile of the average technician in Zootechnics - Veterinary.
- They have objectives of a mediate nature related to their future profession.
- Enjoys performing the learning task in the virtual environment and is independent in performing them

Medium Level

- He is satisfied with his chosen profession, but shows contradictory elements.
- It has incomplete information on the profile of the average technician in Zootechnics - Veterinary.
- They have objectives of a mediate nature related to their future profession, but with a lesser basis.
- Possesses interest in the learning task in the virtual environment, but as an action to achieve high grades and is not totally independent in performing them.

Low Level

- Possesses dissatisfaction with his or her chosen profession.
- They have incomplete information about the profile of their profession because they are unaware of aspects that characterize the average technician in Zootechnics - Veterinary.
- It has a future projection reduced to the enumeration of objectives that are not substantiated.
- The interest in performing the learning task in the virtual environment is associated with passing the subjects and is not independent when performing them.

Virtual practical activity dimension

This dimension explains the particularities manifested by the students during the virtual practical activity. The characterization of these practical activities makes it possible to determine the students' predilection for virtual education. It involves the formation of **virtual practical habits and skills** as ways of assimilation of the activity in this modality, which constitute indicators of this dimension.

For the structuring of the evaluative scale of this dimension, the practical skills stated in the objectives of the years are taken into account and it is a new dimension that is studied within the trend of the personological approach.

A representation of the above relationship is presented in Figure 1.

Figure 1. Representation of the relationship between virtual practical activity and professional habits and skills from the virtual environment.



Source: Scheme adapted from González, Castellanos, Córdova, Martínez, Fernández, 2001.

Structure of the virtual practical activity dimension

First year evaluation scale

Adequate development of practical virtual skills

- You can make use of the virtual environment without assistance
- Uses the communication tools of virtual environments without assistance.
- Has interest in using the virtual platform.

Partially adequate virtual practical skills

- Can make use of the virtual environment with difficulties
- Uses the communication tools of virtual environments with assistance.
- Little interest in the use of the virtual platform.

Inadequate development of practical skills

- Cannot use the virtual environment
- Does not use the communication tools of virtual environments.
- No interest in using the virtual platform.

Second year evaluation scale

Adequate development of practical virtual skills

- Proficient in the use of communication tools in virtual environments.
- Shows interest in the contents of the courses taught through the virtual environment.

- Likes the execution of the activities from the virtual platform and is independent in carrying them out.

Partially adequate virtual practical skills

- Poor proficiency in the use of communication tools in virtual environments.
- Shows little interest in the contents of the courses taught through the virtual environment.
- Dislikes little the execution of activities from the virtual platform and is partially dependent when carrying them out

Inadequate development of practical skills

- No mastery of the communication tools of virtual environments.
- No interest in the contents of the courses taught through the virtual environment.
- Does not like the execution of the activities from the virtual platform and is dependent when carrying them out

Third year evaluation scale

Adequate development of practical virtual skills

- Actively participate in the discussion forum and chat
- Has created profile page through the wiki and personal diary blog.
- Learning is supported by the use of videoconferencing, virtual assignments and self-assessment quizzes.

Partially adequate virtual practical skills

- Regularly participates in the discussion forums, chat
- You have created the page profile through the wiki, but not the personal blog diary.
- Learning is partially supported by the use of videoconferencing, virtual assignments and self-assessment quizzes.

Inadequate development of practical skills

- Does not participate in discussion forums, chat

- It has neither created the page profiles through the wiki, nor the personal blog diary.
- No support for learning through the use of videoconferencing, virtual assignments and self-assessment quizzes.

Fourth year evaluation scale

Adequate development of practical virtual skills

- Assimilates knowledge of course content through the virtual environment
- Manage information through the virtual platform.

Partially adequate virtual practical skills

- Partially assimilates knowledge of course content through the virtual environment.
- Partially manages the information through the virtual platform.

Inadequate development of practical skills

- No Assimilates knowledge of the content of the courses through the virtual environment
- Does not manage information through the virtual platform.

Metacognitive dimension

This is mainly determined by the level of development of **self-esteem**.

as a particular psychological formation of the inductive regulation (Aguilera, 2007).

In the virtual teaching model the student becomes autonomous, which allows him to develop metacognitive regulation since he is not subjected to the rigors of a traditional physical environment, but begins to explore on his own and more importantly, to become aware that he must seek the means to reach the goal proposed for his learning. Self-assessment of learning from the virtual context and the strategies used is proposed as an indicator for the metacognitive dimension.

Structure of the Metacognitive Dimension

Adequate self-assessment of learning from the virtual context and the strategies used.

- Adequately self-assesses as a student.

- You are aware of your learning style in the virtual environment because you have previously reflected on it.
- Knows what strategies to develop in a learning situation and achieves its purposes.
- Assesses own learning and makes necessary corrections depending on tasks and context.
- Learn from the mistakes you make.

Self-assessment of learning from the virtual context and partially adequate strategies used.

- Adequately self-assesses as a student.
- You are aware of your learning style in the virtual environment because you have reflected on it.
- Presents difficulties in achieving their goals, does not know what strategies they can develop in a learning situation.
- Assesses his or her own learning, although he or she does not make the necessary corrections depending on the task and the context.
- It is not always able to learn from its own mistakes.

Inadequate self-assessment of learning from the virtual context and the strategies used.

- His self-assessment as a student is inadequate.
- You are not aware of your learning style in a virtual environment, you have not reflected on it.
- He always uses the same learning strategies, although the learning tasks vary, so he does not always achieve his purposes.
- Inadequately assesses his learning and is therefore not always able to make the necessary corrections.
- It is almost always difficult for them to learn from their own mistakes.

To carry out the characterization, the following actions must be developed:

To deepen in the theoretical foundations that allow understanding the characterization of learning styles in virtual environments. For this purpose, the head of the pedagogical team should diagnose the level of preparation of each teacher with the use of appropriate methods and techniques, among which can be used the survey, class visits, review of the preparation of the subjects and the assessments that the teachers themselves make of their knowledge on the subject. Design the preparation strategy for teachers (which can be a postgraduate course or through methodological work). It is necessary to hold a workshop where the normative documents of the specialty are analyzed.

To analyze how the conception of the personalized teaching-learning process is reflected in the documents of the specialty. Analyze how to apply the results of the characterization of learning styles from the virtual environments in the students' life projects, in the planning of the tutor's personalized attention, in the group meetings, in the design of the didactic strategies of the teaching activities.

The theoretical conception was applied in a group of first year students of the Zootechnical-Veterinary specialty and positive results were obtained, and it was also evaluated by the method of expert criteria, also with positive results.

Conclusions

A theoretical conception is proposed that integrates four dimensions with the corresponding indicators and evaluative scales, which allows the characterization of the learning styles in virtual environments of the students of the Zootechnical-Veterinary specialty and to provide personalized attention to these students.

The theoretical conception was applied to a group of first year students of the Zootechnical specialty.

- The results were positive and were also evaluated by the method of expert criteria, also with positive results.

Bibliographic references

Aguilera, E (2007). *Theoretical conception for the characterization of learning style profiles in first year students of Education.*

Special. Thesis presented in option to the scientific degree of Doctor in Pedagogical Sciences. Higher Pedagogical Institute 'José de la Luz y Caballero, Holguín.

Alonso, C. (1997). *Los estilos de aprendizaje*. Madrid: Ediciones Mensajero

Cabrera, Albert. J. S. (2004) *Didactic system for teaching English for specific purposes*. (Doctoral Thesis) Pinar del Río.

Campos, V. (2015). *Theoretical conception for the characterization of learning style profiles in the agronomy career*. Doctoral thesis in Pedagogical Sciences. University of Havana. Havana.

Clares, J. (2010). *Learning styles in elearning under the salem-d model, in medical course*. Spain: University of Seville.

González, V., Castellanos, D., Córdova, M., Martínez, M., Fernández, A.M. (2001). *Psychology for educators*. Havana: Pueblo y Educación.

Vygotsky, L. (1994) *Pensamiento y lenguaje*. Editorial La Pléyade. Argentina.