



Análisis histórico de los modelos de caracterización de estilos de aprendizaje

Historical analysis of learning styles characterization models

Vilma Campos-Perales

Universidad de Guantánamo, Cuba

Correo(s) electrónico(s)

vilma@cug.co.cu

ORCID: <https://orcid.org/0000-0003-2269-9863>

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Resumen

El objetivo de este trabajo es presentar los resultados de una sistematización referida a los fundamentos teóricos conceptuales de los diferentes modelos de caracterización de estilos de aprendizaje. Desde el estudio realizado se logró analizar las posiciones teóricas más importantes sobre esta temática y determinar las tendencias históricas de su desarrollo. Para la investigación se utilizaron los métodos, histórico, lógico, análisis, síntesis, crítica de fuentes, entre otros.

Palabras clave: Estilos de aprendizaje; Actividad práctica instrumental; Aprendizaje divergente
Proceso de aprendizaje

Abstract

The objective of this research is to present the results of a systematization of the conceptual theoretical foundations of the different models for characterizing learning styles. From the study carried out, it was possible to analyze the most important theoretical positions on this subject and to determine the historical tendencies of its development. Historical, logical, analysis, synthesis and source criticism methods, among others, were used for the research.

Keywords: Learning styles; Instrumental hands-on activity; Divergent learning; Learning process

Introduction

At present, with the development of science and technology, higher education institutions face the challenge of achieving a teaching and learning process that is increasingly adapted to the particularities of the students. Various scholars on the subject of learning agree that individuals learn differently depending on the stage of development in which they are, the nation in which they live, the culture or traditions in which they developed; these, among other elements -

determine the way people use to learn. Due to the importance of the subject for the improvement of the teaching-learning process, it is considered pertinent to carry out studies in this direction.

Development

The following is an analysis of ideas put forward by some researchers.

Kolb (quoted by Alonso & Gallego 2002), emphasized that the way of learning is the product of three fundamental elements: heredity, previous experiences and the current demands of the environment.

Manzano (2007), states: "Learning styles are located in the attitudinal aspects of human beings, in their gifts, talents, means, instruments they have to interact with reality in a more effective way according to their personal characteristics", (p 101).

These approaches are in line with one of the main theses of Vigotski's Cultural Historical Approach (1987), assumed in this research, which is the mediatized character of psychic processes.

The learning process is considerably complex; it is not limited to the acquisition of answers or knowledge. Several studies were proposed on the subject and various theories emerged from there. A common point of all these studies is the premise that each individual would have a rhythm and a characteristic way of learning, that is, people would not learn in a homogeneous way (Senna, 2011).

As can be seen, it is common for researchers on the subject to recognize that each individual has an individual way of learning, although each one perceives the relationship of the components that determine this phenomenon differently, i.e., from different conceptual frameworks, which defines a learning style for each subject.

This paper presents an analysis of how learning style classification models have evolved, considering three criteria that emerged successively over time. Each one predominated during a certain period, although research continues to be carried out on the basis of all the criteria. The criteria used at each stage were:

1. Information processing (1948 to 1959).
2. Brain organization and functioning (1960 to 1988).
3. Personological approach (1989 - present).

The main ideas developed according to each of these approaches are discussed below.

Approach based on information processing

Different models were elaborated on the basis of various investigations, which are summarized below.

The work carried out by Witkin (cited by Cabrera, 2004), who initially relied on perception to recognize diversities among people, is significant. For this purpose, objects were located vertically in space and subjects who rigidly used contextual cues to locate the vertical were called field-dependent, while those who used internal cues were identified as field-independent.

Another model that stands out in this classification criterion is the one proposed by Felder & Silverman (cited by Navas, 2004). Felder's ideas are based on his pedagogical practice as a professor of Chemical Engineering at a North American university.

Felder & Silverman state that some learners tend to focus more on facts, data and algorithms; while others feel more comfortable with theories and mathematical models. According to these authors, some learners may respond preferentially to visual information such as figures, diagrams and schemes; while others get more from verbal information such as oral or written explanations. Finally, they recognize that other students prefer to learn in an active and interactive way, while others have a more introspective and individual behavior during learning.

On the other hand, Curry (cited by Aguilera, 2007), develops a work in which he regroups learning styles in layers similar to the layers of an onion and organized as follows:

- Learning behavior is controlled by the core dimension of personality.
- It is transferred through the information processing dimensions of the middle layer.
- It is modified by the role of interaction with environmental factors surrounding the external layer.

This classification criterion also highlights the work of Kolb (cited by Alonso and Gallego 2002) who in the 1970s developed a model of learning based on experiences. This author identified two main dimensions of learning: perception and processing; he also stated that learning was the result of the way people perceive and then process what they have perceived.

Kolb's model assumes that, in order to learn something, one must work with or process the information received; for which, on the one hand, one can start from a direct and concrete experience and, on the other hand, from an abstract experience one has when reading about something or when someone tells about it.

In Kolb's conception, the experiences one has, concrete or abstract, are transformed into knowledge when they are elaborated in one of these two ways: by reflecting and thinking about them or by actively experimenting with the information received.

It was the juxtaposition of the two ways of perceiving and the two ways of processing that led Kolb to describe a four-quadrant model in order to explain learning styles:

- Divergent: combination of concrete experience and reflective observation, problems requiring production of ideas are best executed.
- Convergent: combination of active experimentation and abstract conceptualization, distinguished by the practical application of ideas.
- Accommodating: combination of concrete experience and active experimentation, distinguished by engaging in novel experiences.
- Assimilator: combination of abstract conceptualization and observation, they develop the capacity to create theoretical models and prefer theory to practical application.

In the work of Navas (2004), several characteristics of each of these styles are described, which are summarized below.

Active learners: they are fully and unbiasedly involved in new experiences.

Reflective learners: tend to adopt the posture of an observer who analyzes their experiences from different perspectives.

Theoretical learners: adapt and integrate the observations they make into complex and logically well-founded theories.

Pragmatic learners: like to try out new ideas, theories and techniques and see if they work in practice.

Approach based on Brain Organization and Functioning

The second classification criterion that appears in the historical development of the conceptions on learning styles is based on brain organization and functioning, positions that originated a cognitive trend based on the advances of Neuropsychology and Neurolinguistics. Among the research that stood out in this approach, several models will be analyzed (cited by Cazau, 2005).

The model proposed by Sperry (cited by Cazau, 2005), analyzes brain specialization. It identifies the left hemisphere as logical, since it is characterized by processing information in a sequential, linear manner and favors convergent learning; while it recognizes the right hemisphere as holistic, since it processes information from the whole to understand its different parts and facilitates divergent learning.

Another model in this criterion is the Neurolinguistic Programming model of Bandler and Grinder (cited by Cazau, 2005), also called visual-auditory-kinesthetic or VAK model. This model differs from the previous ones in that it takes into account the neurolinguistic criterion, which considers the information input pathways and the representation system as fundamental in the preferences of who learns or teaches.

The styles in the VAK model are classified as follows:

Visual: understands the world as he sees it; the appearance of things is most important. When they remember something they remember it in the form of pictures.

Auditory: tend to be more sedentary than visual and have a lot of inner life. They will be very interested in listening.

Kinesthetic: They relate very easily to other people. They gesticulate a lot, touch themselves and others constantly.

Based on neurological studies, the concept of cerebral dominance is no longer used, but rather the concept of hemisphere of complementary specialization and, in the last decades of the last century, the bilateral mind approach appears, which means learning with the whole brain.

Based on the above, Verlee (cited by Cabrera, 2004) proposed the following classification of learning styles:

- Predominantly synistrohemispheric: individuals with this style solve problems sequentially, process information step by step. Predominantly dextrohemispheric: they are less verbal, solve problems intuitively, prefer images and drawings, process data simultaneously, not linear or causal.

In this second classification criterion, it is observed that the researchers cited above assume that differences in learning depend fundamentally on the particularities of cognitive function, but associate it with the hemispheres of the brain.

Personological approach

The third criterion for classifying learning styles focuses on the personological approach, in which learning is assumed from an integral viewpoint. The subject takes advantage of his or her personological resources in an effective way, while at the same time imprinting a personal stamp on the learning process, which makes it distinctive and absolutely different from the learning of others.

In this criterion of classification of learning styles, the works of Marton, Svensson & Säljö (cited by Manzano, 2007), who form the Gothenburg group, stand out. These authors state that learning is composed of three dimensions: the student's awareness of learning, the content of the subject and the characteristics of the context.

Between 1979 and the early 1980s, the Edinburgh group also emerged with Entwistle & Ramsden (cited by Aguilera, 2007).

Cuban research contributions related to the characterization of learning styles are presented below.

The contributions of Silvestre & Zilberstein (2009) on learning and developmental didactics are essential. These studies emphasize that the student is the subject of learning due to the active role he/she must assume in this activity.

Other recognized contributions are those of Córdova (1996) on intellectual stimulation. Likewise, those of Fariñas (2005) on the system of relationships established between learning and personality, through the study of life style, are valuable.

Studies on learning styles in Cuba are scarce; however, it is a topic of relevant importance for teachers.

Specifically in Cuban Higher Education, there is the research conducted by Manzano (2007) in which the relationship between learning styles and reading strategies in the second language and their influence on the academic performance of students is studied. Manzano uses the "Honey - Alonso" questionnaire (CHAEA) to diagnose learning styles. This research, in the opinion of the author of this work, belongs to the information processing trend.

Other studies developed in Cuban Higher Education are those of Cabrera (2004). This research was conducted for the teaching of English for specific purposes and proposes that students learn to understand, to organize time and to coexist with others. The author recommends the following dimensions and classification of styles:

- Preferred ways to perceive information: visual, auditory-verbal.
- Preferred ways of processing information: global, analytical.
- Preferred ways of planning activities to accomplish goals: planned, spontaneous.
- Preferred ways of orienting toward communication and interpersonal relationships: cooperative, independent or individual.

Another research carried out in Cuba is the one conducted by Aguilera (2007) in which, from the personological approach, three dimensions are established: cognitive, affective and meta-cognitive dimensions.

The previous work constitutes an important link in the recognition of the personological resources involved in students' learning preferences and styles. Although the elements investigated are basic to characterize learning styles, there are edges that have not yet been explored and that - given their essential role in the formation of the learning style - should be studied. Such is the case of imagination and of importance in the recognition of the personological resources that intervene in the preferences and styles of the students whose importance in the creative activity of the student is very relevant, if we start from the role of the basic processes of the professional profile. The author of this research considers these elements

necessary to explain the foundations of the differences in learning in the reality under investigation.

In the analysis of the most significant models of classification of learning styles, it is evident that all of them provide necessary elements for the examination of the problem, but the particularities required for learning in an integral manner are not studied, nor is it recognized that the instrumental practical activity has its particularities according to the professional profile. For this reason, based on the importance of the instrumental component of the personality as an integral system and the difference in the way of learning conceptual and procedural contents, it is considered necessary to study a new component or dimension for the characterization of learning styles: the instrumental practical activity, an element that serves as the central axis of this research.

Practical instrumental activity

When considering the personological approach as a basis for the characterization of learning styles, one must bear in mind the psychic phenomena that drive, orient and sustain the individual's actions (needs, feelings, motivation) and the phenomena that make it possible to take into consideration the conditions in which the individual's actions take place (sensations, perceptions, memorization, imagination, thinking, skills and habits as forms of assimilation of the activity). All these phenomena in their unity constitute the basis of psychological formations; such as interests, convictions, aspirations, ideals, self-regulation and capacities (González, Castellanos, Córdova, Martínez, Fernández & others, 2001).

The above elements are results of the complex process that is learning and therefore the psychic phenomena involved in its formation participate in the formation of learning styles. If it is taken into account that all these processes occur differently in each individual, firstly, because individuals are not immersed in the same situations during their lives and secondly because these situations are not reflected exactly the same, but each according to their particularities, it is possible to understand the individuality of the personality of the subjects and the influence of activity on it.

The category "activity" from philosophy is a concept that characterizes the function of the subject in the process of interaction with the object, it is stimulated by the need, it is oriented towards the

object that gives satisfaction to the need and is carried out by means of a system of actions. Vigotski (1987) considered the activity of the person as a driver of the process of human development. For him, the process of formation of higher psychic functions will be provided through practical and instrumental activity, but in social interaction. He defines the instrument as a means of external activity of man and the sign as a means of internal activity. He explains the real relation between external and internal activity by stating that as man changes nature, he changes his own nature.

Hence, the internal activity is caused by the external practical activity and they maintain a bilateral relationship. Human activity possesses a general structure, has its beginnings in a motive that provokes it and is composed of actions, which arise through the subordination of the process of activity to conscious objectives. Actions occur through operations that are modes of realization of the action that originate from the conditions in which the activity unfolds (Leontiev, 1981).

Man constantly performs different activities: work, teaching, recreational, sports, research, and success in them is largely due to the way in which these activities are assimilated by the subjects. Habits and skills are precisely the forms of assimilation of the activity.

It is necessary to insist that the process of formation of habits and skills occurs differently among people. It has been shown that the speed of learning certain procedures varies from one student to another: some need a long training time, while others need a shorter period of time. This is influenced by motivation and their personal ways of performing the procedures. (González, Castellanos, Córdova, Martínez, Fernández & others, 2001).

These personal forms manifested by the subjects when executing the procedures of certain techniques in practice, must be taken into account in teaching. Teaching should be designed in such a way as to ensure the conditions for the student to be able to deploy these procedures and thus develop his habits and skills. The adequate design of the task or problem to be solved, its differentiated structuring for each particular case, the adequate time or dosage for its realization, among others, are conditions to be taken into account for this purpose. But, how is the teacher able to differentiate what is adequate in the above conditions? This is achieved from the characterization

of the particularities manifested by the subjects in the learning of the procedures during their instrumental practical activity.

Therefore, from the structure of the activity, from the individual particularities in the formation of habits and skills, and from the use of the instrument as a means of the practical activity, the term instrumental practical activity is defined for the process of training professionals.

Practical instrumental activity: Set of actions to be performed by a professional in training to achieve the objective of his profile, from the execution of specific operations, which allows the transformation of the object and his own transformation, using methods and means characteristic of his mode of action according to the conditions of realization.

The above analysis can be taken to a professional profile, for example, that of Agronomy. In this case, the general professional activity is to solve the generation of products of animal and vegetable origin in a stable way, with efficiency and quality, in order to satisfy the needs of society. The fields of action in which the graduates will work are: soil management, water management, agricultural machinery and pest management, economic management, phytotechnics, zootechnics, extension and teaching.

Each of these fields of action becomes an end to be achieved for the mastery of the professional activity. Therefore, it will be necessary for the graduate to be able to develop a set of actions to achieve the objectives, through the execution of different operations. These constitute the fundamental techniques of each field of action, which require methods and means that he/she will have to select and adapt to the real conditions of each work situation he/she will face.

Conclusions

In the study of the historical development of learning styles, the three most current classification criteria were identified: information processing, brain organization and functioning, and the personological approach.

All the models studied are determining references in the characterization of learning styles. However, the personological approach, enriched with foundations of the historical-cultural

approach, constitutes the starting point for the reconceptualization of the theoretical conception to characterize learning style profiles.

It is proposed to include the instrumental practical activity as a new dimension or component for the characterization of students' learning styles profiles.

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