

Las nuevas tecnologías en el contexto del aprendizaje significativo y su referente en las ciencias de la información

New technologies in the context of Significant Learning and its reference in the information sciences

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RESUMEN

El presente trabajo tiene por objetivo identificar los retos que impone la sociedad digital al proceso de Aprendizaje Significativo. Para procesar la información obtenida se utilizaron métodos y técnicas del nivel teórico y empírico que permitieron analizar los retos que supone para el Aprendizaje Significativo la era de las nuevas tecnologías de la información y la comunicación, explicar las teorías existentes en relación con esta temática, así como identificar sus ventajas, desventajas.

Palabras clave: Aprendizaje significativo; Ausubel; Pedagogía; Psicología; Tecnología

ABSTRACT

This work aims to identify the challenges that digital society imposes on the Significant Learning process. In order to process the information obtained, methods and techniques of the theoretical and empirical level were used that allowed to analyze the challenges for the Significant Learning in the era of new information and communication technologies, explain the existing theories in relation to this theme, as well How to identify its advantages, disadvantages.

Key words: Significant learning; Ausubel; Pedagogy; Psychology; Technology

INTRODUCCTION

The educational centers occupy a leading position in society, while it is the space where new knowledge is acquired and what is learned at home is complemented, it is the context in which values and principles are formed, as well as, the place of greatest socialization for a student.

In the school the strengths and weaknesses of the student are noticed, as well as, the reflection of the diverse aspects that identify their personality. For all these elements the selection of the appropriate school is so important, space where the learning process occupies the center of attention.

As a result of the existence of two parallel worlds in terms of learning, the theory of Significant Learning, devised by David Ausubel, emerged in order to distinguish what was banal from what was approached more deeply and likely to be remembered

According to Ausubel's thesis, Significant Learning starts from a learning built and related to previous knowledge. Other scholars of the subject, since Psychology, have offered several versions on the subject, however, it has been the most applauded Ausubel theory, so that in the present work, its study will be taken as a starting point for the analysis based on its placement in the current era, dominated by new technologies based on his placement in the current era, dominated by new technologies.

The new technologies are, without a doubt, an useful tool for teaching-learning processes, however, they must be used according to pedagogy and based on it, since it is not their role to be located in the teacher's attention center, but to obtain a secondary role in order to support the fulfillment of the methodological objectives, as well as the best delivery of the contents that integrate the subjects.

DEVELOPMENT

According to González Serra, learning is nothing more than a process where there are interactions that generate changes of internal order and changes in the configuration of the subject from the psychological point of view in a permanent and active way (2000).

Learning is based on the formation of knowledge, it is a kind of puzzle where each of its parts fit together to offer a result, that is, an integral vision (Ballester, 2002). It is a process that is constantly changing since it adapts to the conditions of the environment, to the demands of a reality that is in constant movement.

From the point of view of Educational Psychology, a theory was developed that revolutionized the existing conceptions in relation to the way of realizing and understanding the learning process, based on the theory of constructivism raised by Lev Semionovitch Vygotsky (1987), it was developed by David Ausubel the thesis of Significant Learning, a long-term learning based on the connection between new knowledge and previous concepts.

In the voice of the authors Ausubel (1983) and Novak (1988) among others the fact of the acquisition of the information generates a variation in the field of the information obtained as well as in what concerns the cognitive structure that is related to it (Ausubel, 1983).

In Significant Learning changes are produced by knowledge, thus having a personal seal, it is not a mechanical or memorial process, hence its originality and preference for pedagogues and scholars in general.

Memory learning is based on the incorporation of meaningless data (Ballester, 2002) and the fact of making it impossible to connect with previous knowledge, where there is no feedback between educational agents. For its part, Significant Learning provides a teaching environment where students understand the information provided to them, because precisely this type of learning favors the transfer, even creativity, by using what they learn based on new problems. It is not about memorizing or reproducing textually but about understanding; in this sense, teacher must be able to provide the necessary tools so that the student can apply what they have learned.

Significant Learning manifests itself through two elements, preexisting knowledge and new information; elements that complement each other and provide intellectual enrichment. It is a relational learning, what gives life to its existence is the relationship that occurs with the new knowledge.

According to the thinking of Ausubel (1983), Significant Learning could be of three types, representational learning, concepts and propositional. In the first one, meanings are assigned to certain symbols: basic type of Significant Learning, in it, meanings are assigned to certain symbols and these are identified as their referents. In the second, the concepts are equivalent to objects and their representation is made from specific symbols, while the third is focused on learning the meaning of the ideas contained in a proposition, it is about learning based on an analysis of the whole.

Taking into account the theoretical criteria of Diego González Sierra, this type of learning has an external character that occurs on the basis of the internalization of elements that make up the physical and social environment (González, 2000).

From the aforementioned, the following can be summarized as Elements of Significant Learning, organization of the material presented to the student, connection of new knowledge with previous knowledge, and the student's willingness to learn, which is achieved from an adequate motivation while among its advantages are more lasting retention of information, facilitation around the acquisition of new content, storage of new information in long-term memory, and the attribute of being a more active and personal learning.

Despite Ausubel's valuable contribution with his theory of Significant Learning, is criticized that he only takes into account the material and the way in which the educational situation and the psychological disposition of the subject has been elaborated, leaving aside other factors such as the ecological environment, as well as, the relationship with the group and with Professor Viera (2003). Likewise, he is questioned for his inability to transcend other types of learning (by discovery, the cooperative) and for limiting the way of internalizing knowledge "to sub-suborpton and supra-ordination" (Idem: 42)

Anyway, it is our criterion, that it is a positive conception and nothing negligible compared to the type of memorial learning, which still persists in many classrooms. On the other hand, it is wise to analyze the positive elements of each of the conceptions and take advantage of them based on a better education.

Theories linked to Significant Learning

The theories that will be stated below present points of connection with Significant Learning or take it as the basis.

Novak Education Theory

Ausubel revealed the role of the student's aptitude in the learning process, however, Novak (1988) goes a step further because it includes the emotional experience in this process, which constitutes an exchange of meanings between student and teacher. This author also introduced concept maps as an indispensable tool when viewing and ranking information.

Gowin Education Theory

In the case of Gowin (1981) there was a dedication based on deepening the role of educational agents and educational material. One of his main contributions was the heuristic V, a diagram that reflects the structure of knowledge through central questions.

Theory of Johnson-Laird Mental Models

This model seeks a better understanding of the world, according to its author, mental models are similar structures of the environment and images, so that each model is, in short, a model analyzed from a certain perspective or view (Johnson-Laird, 1981).

Vergnaud Concept Fields Theory

It is based on cognition and mechanisms that define reality, it is based on the interconnection of concepts in post of a meaning, since in isolation would lack it.

Generative Learning Theory

According to Wittrock (1974) individuals learn the most significant from the construction of relationships between new information and knowledge contained in long-term memory.

Other theories

In the voices of other authors, other elements can be contributed to the debate. Bruner (2002) based his analysis on the non-linear nature of learning, considering that it is a spiral process. Eysenck (1969) was based on the role of the personality of individuals in the learning process, Cronbach (1975) stressed the importance of

individualization of methods since there is no uniformity in relation to students, hence the same method for all, may prove ineffective.

For his part, Vygotsky (1987) pointed out the role of the routine after the instruction, while Voss (1987) emphasized previous knowledge. As for Norman (1978), proposed three ways of acquiring knowledge, namely, by accumulation, structuring and specialization; while Gagné (1974) highlighted the hierarchical character of learning.

The new Information and Communication Technologies (ICTs) in relation to the learning process

The ICTs are the group of processes and also products that are derived from the new instruments, information media and communication channels, in relation to the actions of storing, processing and transmitting large volumes of digital data from the use of high speeds (González, 1996).

Humanity has been witnessing for some years of a transformation from the social point of view, of an industrial society it has traveled with leaps and bounds towards a society dominated by creativity and innovation, fundamentally from the technological point of view.

Thus, terms such as society 1.0, 2.0 and 3.0 have become frequent in the language of the media and people as well, and these are numbers that correspond to certain levels of development from the technological point of view. Especially society 3.0 pursues a rapid social and technological change, a society that demands innovative, adaptable and creative individuals. Thus, the design of the learning processes must go hand in hand with this vertiginous development of ICTs in the 21st Century.

The learning process must be in order to instruct the individual for a really dynamic labor market, hence the necessary links that must exist between society and the education system, the individual must be prepared for a society dominated by the new technologies.

In order to enter in a society with the aforementioned characteristics, it is necessary to take into account a group of tools, skills, abilities, as it is preferred to call. In a society dominated by ICTs, a creative human being is required,

competent in ICTs, critical, autonomous, enterprising and adaptable to different work environments.

Any learning process has to be a tribute to training students on the basis of flexibility and autonomy, without losing sight of the emotional aspect, since the cognitive and emotional aspects must go hand in hand. Teachers with their ability to change, should offer to students a range of possibilities so that they can adapt themselves to this society 3.0, which requires a continuous learning process.

However, it is not enough to prepare the individual for a digital society when the levels of use and access are not uniform anywhere in the world. The huge economic gaps involve others that are equally serious and impact on all orders, including social, technological, educational, labor.

To this, it must be added that the increasing levels of inequality in this field are based on many factors, including the slow steps at which the digitalization process has advanced in the different territories, as well as the inefficient administration of the resources allocated for this purpose or also the absence of funds.

In another sense, the approach to the topic cannot ignore the challenges for the digital society of thinking about the future, so that the student to be trained should be concerned and act in correspondence around the future of the human beings. In this sense the concept of "sustainable development" has particular expression.

The definition of development has found support under many adjectives, but in the subject that concerns in this investigation is the creation of a space in which personal fulfillment coincide based on the possibilities, needs and interests (Ugarte, s / a); in the same way Caraballo (2001) expresses that the main issue in addressing sustainable development focuses on the urgency of meeting the needs of today's man, needs that must take into account three parameters: that there is a possibility that the quality is equal for the community, that it is possible and real its equal materialization for all without leaving aside the quality of life of the rest of the species (Idem). It is definitely a concept that entails an appropriate use of technologies without losing sight of the role of the learning process.

In the field of economics, the need to allocate resources to education is also highlighted in order to acquire the technological means demanded by society, in

this sense, the changes that are required are clear from different points of the world (OECD, 2001).

Within the framework of the challenges that a digitalized era for education implies, it is precisely the fact of contemplating technology as a complement, an accessory, an accompaniment to the properly configured objectives and pedagogical methods, it is a work from and for pedagogy, and not vice versa. In the process of selecting the appropriate ICTs all educational agents have a role to play, it cannot be the decision of a small group, in this sense collective intelligence is essential.

In relation to the evaluation processes of learning when the use of ICTs mediates, it is necessary to start from the fact that the results must be measured on the basis of the competences that have been developed in the student and not on the basis of the amount of acquired content.

As a summary, it can be said that the factors that must be addressed when analyzing the development of learning processes are dissimilar with the support of the new information and communication technologies, among them, the accompanying role that ICTs play when designing the objective, method and curriculum of a class.

Advantages and disadvantages of the use of ICTs in the Significant Learning process.

The analysis of this particular, based on the contributions of Majo and Marqués, can be done from different edges, that is, from the point of view of learning, the educational center, the student and the teacher (Majo, 2001). Likewise, it is appropriate to clarify that this analysis is valid for all types of learning, which is why the topic will be referred in a general sense.

- From the point of view of learning

The main advantages are associated with interest and motivation, interaction, development of the initiative, learning from mistakes, greater communication between students and teachers, the development of skills around the search and selection of information, the improvement of the skills of expression and creativity, free access to an important volume of information, the visualization of simulations,

cooperative learning, the high degree of interdisciplinarity and digital and audiovisual literacy.

Among the disadvantages, it can point out the unreliable information since on the Internet it can publish without a filter in all cases in relation to the type of information that is published, the incomplete and superficial learning since there is such freedom in the process interaction can be accompanied by shallow depth, wasted time, distraction and dispersion when browsing entertainment sites to the detriment of those who can enrich knowledge, rigid dialogues, partial vision of reality, anxiety, as well as, dependence on others.

- From the point of view of teachers

Among the main advantages it can be noted that, it is a source of educational resources that can be used with students, individualized treatment can be done, group activities are organized, there is greater contact with students, they are encouraged self-assessment activities preventing the teacher from having to read repetitive works or qualify large volumes of work, contribute to the professional update from contact with other teachers and educational centers, as well as constitute a means of didactic research in the classroom.

On the other hand, the disadvantages are: stress, development of strategies where the least possible effort is used, lag in relation to other pending works, deconfiguration of technological equipment, technological dependence, greater dedication to the study of the use and operation of ICTs which is closely related to the imperative of constant updating.

- From the point of view of educational centers

It can be referred as advantages, the lowering of training costs thanks to teleformation systems, the improvement in the administration and management of educational institutions, the manifestation of new channels for information exchange with family nuclei and society in general, (new information channels regarding the managers of the educational facilities arise), the shared resources, as well as the existence of greater possibilities around the projection of the center's strategies (use of web pages, email).

As disadvantages are identified, the large allocations of monetary resources for the repair and renovation of equipment and computer programs, the need for a good equipment maintenance system, the obligation to create a department dedicated to the topic of ICTs, the lack of adequate quality controls, and expenses for cloister formation.

- From the point of view of the students

In this group it can be located as advantages that students learn faster and take more time, it is an attractive environment with access to many resources, the individualization of educational processes, self-evaluation, the greatest student-teacher bond, flexibility in studies, effective tools for information processing, existing alternatives for people with special needs, the possibility of sharing knowledge with questions with a greater number of people, which is a sign of greater collaboration and solidarity.

Among the disadvantages can be identified, the economic effort, the existence of viruses, the inefficiency of teaching resources, lack of knowledge of the language, inappropriate behaviors, the excess of information that leads to overflow, the investment of time, food and physical illnesses, addiction and isolation.

On the basis of the previous presentation, it is possible to affirm the undoubted value of ICTs for the learning process, despite the existence of disadvantages. Among the main advantages are the communication between a greater number of people, facilities for people with special needs, as well as an extensive range of information available to all those who have access and connectivity possibilities.

CONCLUSIONS

Ausubel's theory of Significant Learning introduced important changes in the pedagogical system known until then, based on the interconnection between elements already learned and new concepts, based on the existence of adequate material, the student's cognitive structures and motivation. However, his conceptual reductionism is pointed out by not accommodating other types of learning. In the context of ICTs, learning acquires new nuances, which can be located from different edges, namely, for teachers, teaching centers, students and for the learning process itself. The use of ICTs, like all phenomena, has advantages and

disadvantages, the key to its success is that users assume their use responsibly and are committed to real use, according to their needs and depending on the learning process.

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