Implications of the Theory of Mind in Learning: A Look from the Virtual Education Approach

Umaña Marín D*

Universidad Estatal a Distancia, Costa Rica

Abstract

This research was born as an unknown related to the recent application of Virtual Education in educational centers, not only in Costa Rica, but worldwide. All of the above for reasons of public health prevention, given the presence of the SARS-CoV-2 virus. This is how it is then tried to investigate whether there are implications in relation to the theoretical proposal of the Theory of Mind (TM) and its relationship with Distance Education (virtuality), as part of a new training model (teaching and learning).

Keywords: Theory of mind, Virtual education, Learning, Education, Formative processes, Cognitive sciences, Psychopedagogy

Research question: What are the main implications of the Theory of Mind in Virtual Education?

Justification

Since at present the role of the psychopedagogue must conform to the reality of educational innovation as an ally to achieve the implementation of dynamic learning of the current student. In this research, which is of a bibliographic nature, matrices were used for the documentary analysis of the arguments used as part of its theoretical framework.

The aim of this work is to carry out an in-depth analysis of the implications of the Theory of Mind (TM) in the field of the application of Virtuality in some educational centers of the country, taking into account that said Theory mentions as its main axis the ability to attribute to other versions of one's own desires or intentions, which indicates the ability to understand other individuals and allows us to determine what other people might be thinking or feeling and based on that act or imitation processes.

As mentioned by UNESCO (2020) on the updating and application of technology in training processes, which indicates *"...shares knowledge regarding the various ways in which technology can facilitate universal access to education, reduce differences in learning, supporting teacher development, improving the quality and relevance of learning, reinforcing integration and improving the management and administration of education..."* (parr. 3).[1]

Murillo (2021) in his article for the World Bank of Education indicates that: *"...Education was already in crisis before the pandemic, it makes the situation more challenging for those who are in charge of the responsibility of training future generations, especially in a context of uncertainty because there is no certainty as to how long the educational isolation due to COVID-19 will last..."* (parr. 8).[2]

The importance of this research also lies in analyzing the existence of additional bibliographic material on how cognitive

sciences have analyzed virtual education as a limitation for the social development of students, also reviewing the importance of the psychopedagogue in accompanying changes within of virtual classrooms, Has the implementation of ICT (*Information and Communication Technologies*) affected the learning processes in the new generations (*digital natives*) and in which we have adapted to them (*digital immigrants*) terms used by Marc Prensky.

This is how the need to be able to analyze psychological aspects related to cognitive science and its processes, adaptation to change, scarcity in the construction of knowledge processes and social interaction becomes evident, being a fundamental part of the human being, since we are beings social or as stated by tomasello (2015): Ultrasociales. Mentioned by Piedra (2019).[3]

Method

The next project to be carried out will be of the Bibliographic Research type, which consists of the following stages:

- Bibliographic analysis of the proposed topic (planning or research development).

- Data collection through the databases of the State Distance University (UNED) and Google Academic and proposal.

- Conclusions.

- Bibliographic references.

Planning and data collection

Since the previous century, technology played a fundamental role in the social environments of humanity, the arrival of the new technological era has encompassed everything in its path, from medicine, artificial intelligence, electronics, the handling of machines and of course education. From the demand of the web 2.0 or the emerging web 3.0, which are here to stay, the change in the systematic environments of human beings must be considered, from the advantages to the disadvantages of this implementation.

Cognitive sciences are in charge of analyzing the mind and its processes, worked in an interdisciplinary way, they manage to show cognitive changes. Given the above, it is necessary that these sciences bring to light, those aspects related to the implementation of virtuality in today's society and the changes as a consequence of the not so new distance education.

We must take an in-depth look at pre-pandemic and post-pandemic education as well as the *"In situ"* teaching and learning process, of which human beings are privileged.

The negative perspective from the main theoretical applicants

Base studies, carried out by theoretical applicants, such as Piaget, talk about the relationship to learning and the development

of cognitive structures in the first years of life, suggesting whether the implementation of virtual teaching will be an advantage or a obstacle to the adequate maturation of the individual.

On the other hand, we can mention other studies in relation to TM, such as Lev Vygotsky on cultural instruments and the importance of educational influence for a timely development of the student. This undoubtedly makes us think if the isolation that virtual education or distance education brings us in itself, is a sign of a disadvantage vociferously, according to Sidera and Serrano (2008) in their article *"Learning and theory of mind "makes this point clear to us; "... According to this Piaget perspective, making reference to educational change, learning, is subordinate to evolutionary change. The boy or girl, through their interactions with their surroundings, assimilates new information adapting to reality ..."* (p. 4).[4]

In relation to the above, the analysis is proposed in relation to the effectiveness of virtual education in early development ages, especially due to the null opportunity of discovery that exists through this teaching modality which does not happen in the same way in adults. We can dare in these first investigative stages to reflect on the following question: Is Virtual Education effective only for university education? The TM then explains that the adult individual has already managed to assimilate the information and has had a criterion in relation to previously acquired beliefs, something that is not present in the first years of teaching (first and second cycle).

It is more than studied that in the first years of learning the human being, forms his own criteria, in relation to social exchange, which leads according to TM to the faculty of interpreting, making decisions, the intentions of the other and above all and not least communication. Following up on the above, Tomasello comments: *"... young children progressively develop capacities to interact, relate, understand the perspective and intention of others and act accordingly..."* (2007).

With all of the above, it is clear that TM analyzes cultural tools in favor of the formation and construction of the individual, that it is difficult to interpret the interruption of these formative processes in non-face-to-face education. Sidera and Serrano (2008) explain, *"... if we admit a broad conception of education: scaffolding processes that make cultural appropriation possible, we understand that TM is a cultural tool, although strongly supported by our biological and cognitive heritage, and by therefore object of the vital social scaffolding processes for all individuals... "* (P. 6).

It is undoubtedly vital to be able to establish the importance of absolute supervision of the student, so that he learns in an assertive way to the need for his cognitive and evolutionary development. Therefore, the role of teachers in this vital point and of parents, such as those who are with the minor and are participants in the

educational process, also comes to light. All of the above is essential, to be able to explain that the student has not yet matured enough to be able to establish the responsibilities of distance education in a virtual modality, this therefore has not yet had sufficient contact with their environment to autonomously solve the problems. problems without help and without adult supervision. In this case, according to Vygotsky's proposal we will name: Zone of potential development, as mentioned by Bruner, Rogoff, cited by Sidera and Serrano (2008):

"...Like a farmer, he carefully cares for his fruits and vegetables when they are in the ripening process, watering them, giving them fertilizer, etc. People teach others when their psychological functions are maturing, that is, when they do not know how to solve a problem autonomously but with the help, supervision or guidance of an adult with greater expertise. This is the "potential development zone". Then, through pedagogical aids, the most capable classmates gradually give up responsibility and control of the task to the apprentices. Through their participation in the task, they end up appropriating its use: they write a letter, perform a certain mathematical operation or mentalistic inference, or send an email (Bruner, 1975; Rogoff, 2003).

This aspect we could discern is null in many of the Costa Rican homes, where the parents are absent and it is undoubtedly a negative view of the proposal for primary education from the objective view of the Theory of Mind.

It is evident that there are opposing paths from both applicants in relation to this topic, since from one the learning is from the inside out and for the second it is the other way around, however they make it clear that the higher functions are only achieved through the human relationships, which are rare in virtual education, as mentioned by Sidera and Serrano (2008): *For the first, human development goes from the inside out, that is, from childish egocentricity to socialization made possible by "concrete operations" (Piaget, 1979). For the second the way is the other way around. All higher functions originate in human relationships and in the use of mediation instruments; among them, the most important, language. As popularized in his genetic law of the cultural development of the child, functions appear, first between people, at an inter psychological level, and later, at an individual or intra psychological level (Vygotsky, 1979).*

Observing positive aspects, their implications in the training process

Since the arrival of the Theory of Mind proposal, and subsequent study of Sara in the article D. Premack and G. Woodruff published in 1978, Does the *Chimpanzee have a theory of Mind ?*, where mention is made of first results in important aspects such as the attribution to others and also of mental capacities, the basis of the theory. The

thoughts, beliefs, desires and intentions including language, are an essential part of it. As Serrano (2012) mentions:

"...In recent years, a considerable number of researchers have been interested in the relationship between TM and language. It has been suggested that the development of both occurs in parallel (Mendoza and López-Herrero, 2004), showing signs of the two processes in childhood, developing during the first years of life and reaching a good level of development at the 5 years old (Astington and Flippova, 2005). For this reason, the possibility that each of the skills could exert a certain influence on the advancement of the other has been considered. In this sense, the results of longitudinal studies as well as training and correlational studies have provided evidence on the strong association between TM and language skills..." (Milligan et al., 2007; Resches et al., 2010) (p. 171).

For this reason, we cannot leave behind the communication aspect, this aspect is vital, since communication has always been an essential aspect in the learning of humans and many other animals, so if we see the Electronic devices such as a channel for transmitting information, being able to be used well, can be a powerful ally in the immediate access to quality content, which is present in this educational modality.

Along the same lines, virtual teaching provides the person with social interaction from a different perspective, from interaction only through educational platforms (completely autonomous work) where interaction is almost nil, to immediate interaction through the device's camera. , which allows you to be closer every day through the web.

Likewise, the importance of collaborative learning can be mentioned, where the teacher is the mediator of social interaction and group work is carried out, built by all the participants.

The role of the teacher as a facilitator of the educational process

The role of the teacher is undoubtedly another important aspect to evaluate and examine from a paradigmatic perspective, where the teacher becomes an expert, who guides and orients the processes, instead of assigning them in a repressive and imposed way, fundamental in learning in this educational modality. Transforming the paradigm present since ancient times in education and returning the horizontal process, where the teacher becomes part of the learning, which encourages the aforementioned aspect, about this collaborative work approach.

Of course, it is essential to mention that each person who facilitates the processes must be up-to-date in relation to this change in their role as a professional. From the domain of the subject to the experience of the proper management of the virtual

educational environment, as well as related topics, in this sense as mentioned by Zúñiga (2010)[5]: *"That academics should not limit themselves to transmitting the contents of their specialty but are called to collaborate with students so that they build knowledge within this new social context, in which the capacity for self-training becomes an essential activity. In addition, changes must be introduced in current educational models, materials and even in the technical and infrastructure capacity of educational centers" (P. 3).*

Proposal

If we analyze, how can we apply this to psychopedagogy? We observe something that becomes almost evident. The role of the psychopedagogue, which must also be modified and which now requires adapting the focus of their work from now on, guiding education professionals and students to the new information and communication technologies (NICTs), trying to interpret the best adaptations for those who fail to establish well the objectives of this type of education, through virtuality.

Piaget's studies also speak in relation to environmental experience, reinforcing the possibility that the professional person in psychopedagogy can use the experience of their knowledge and applying it in this educational field, which many mention, is here to stay.

Another important aspect is the analysis of emotional expression, through the devices and to be able to interpret these by language, gaze, eyelids and pupil dilation, for example.

Although it seems that the TM has focused more on early-age populations, it mentions the importance of continuing to work on false beliefs, including, as mentioned by Serrano (2012) *"... Other researchers, on the other hand, have focused on exploring development of TM beyond false beliefs and even after adolescence, encompassing adulthood and old age… "* (p. 167).

Currently the studies include emotional understanding, which is present in the same way through distance education through electronic devices. And which is another aspect that psychopedagogy must take into account in order to stimulate activities in teachers, for the adequate expression of emotions, as mentioned in Serrano 2012 *"... From the age of 6, different studies suggest that children realize that real emotion does not have to correspond to the character's facial expression and even understand that external emotion (feigned or apparent emotion) and internal emotion (real emotion) can be opposite emotions… "* (p. 168).

On the other hand, the TM itself speaks that, *"... the understanding of the more complex emotions will be reached after 7 or 8 years of age…"* (Ruffman and Keenan, 1996; Bennet, et al., 1998, Bradmetz and Scheneider ,1999), which is why the importance of Psychopedagogy professionals working directly on the importance of adequately expressing the emotions in the students and the thoughts related to their feelings remains at stake, which could be limited by the establishment of technologies permanently.

Additionally, teachers must be updated and know how to handle ICTs in an agile way for the benefit of their students and their own, this in order to provide quality teaching and obtaining a decrease in the stress triggers of their work. This will allow you to put aside the fears related to adapting to change and generational difference; limiting the gap between digital natives and digital immigrants, present in the current education.[7,8]

Conclusion

After having covered this interesting topic from several angles and as this bibliographic research has analyzed it, there are aspects related to the positive and negative implications in the implementation of virtual education and its relationship with the Theory of Mind (TM).

As stated, for many years TM has come to study how we can perceive the intentions of others and is strictly committed to visualizing the mental mechanisms related to this ability, present in humans and other species, as demonstrated in the research study, conducted by D. Premack and G. Woodruff.

Piaget and Vygotsky parents of cognition and the implementation of related studies on how human beings learn, it is vital to better understand the role of ICTs in changing the role of both students, teachers and the family.

Aspects such as language, interpretation, discovery, expression of emotions and feelings, collaborative work within virtual classrooms, acceptance of each of the members of the troop, were in one way or another put on the table in this investigation. bibliography, leaving as a result the deep analysis and its relationship with educational virtuality.

The application of TM is necessarily important to be taken into account in the field of action of psychopedagogical theories, in order to offer both professionals, students and families, tools related to this theory and even more so in the application of the current teaching environment.

Continuous updating and manipulation of ICTs by professionals in Education is essential, for the benefit of the student and their own satisfaction at work, avoiding work wear or burnout resulting from the application of the Webs in the teaching work.

It is necessary to carry out more in-depth studies on whether distance education is harmful or detrimental to the adequate cognitive development of the student's Mind in the first years of school education, as well as to validate if this modality is preferably only effective for adults, which have already built a criterion on the relevant aspects for learning.

Making it clear that virtuality is a modality that brings multiple benefits, such as: accessibility of educational content, connectivity in real time, collaborative work, flexible hours and self-taught work, however, it affects relevant aspects in the development of the aspects that have been mentioned in the development of this research and its relationship or implications according to the Theory of Mind.

Conflicts of Interest

Author declares that there is no conflict of interest.

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