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THE PERCEPTION OF TECHNICAL EDUCATION TEACHERS REGARDING THEIR CONTINUING EDUCATION IN ASSISTIVE TECHNOLOGY AND THE 2030 AGENDA

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Abstract: This work presents the perception of teachers of professional technical education regarding their continuing education in assistive technology, aiming at the full participation of the disabled in society and meeting the Sustainable Development Goals (SDGs) of the 2030 Agenda. The objective is characterized by the perception of professors about their continuing education in assistive technologies. The adopted approach was the exploratory and bibliographical research, and questionnaires. As a result, limitations regarding the knowledge and use of assistive technology by teachers were obtained. What can be concluded refers to the need to expand training on the subject to enhance the teaching-learning binomial, respecting the SDGs of the 2030 Agenda.

Keywords: Assistive Technology, Continuing Education, Professional Education.

INTRODUCTION

After 2 years of negotiation between civil society and the 193 Member States of the United Nations (UN), the 2030 agenda was concluded in September 2015, which includes 17 sustainable development goals (SDGs) and 169 goals.

The 2030 Agenda is constituted, according to the document translated by the United Nations Information Center for Brazil (2015), as:

> a plan of action for people, planet and prosperity.

> It also seeks to strengthen universal peace with more freedom. We recognize that eradicating poverty in all its forms and dimensions, including extreme poverty, is the greatest global challenge and an indispensable requirement for sustainable development.

> All countries and all stakeholders, acting in collaborative partnership, will implement this plan. We are determined to free the human race from the tyranny of poverty and famine and to heal and protect our planet. We are determined to take the bold, transformative steps that are urgently needed to shift the world onto a sustainable and resilient path. As we embark on this collective journey, we commit that no one is left behind.

> The 17 Sustainable Development Goals and 169 targets we are announcing today demonstrate the scale and ambition of this new universal Agenda. They build on the legacy of the Millennium Development Goals and will complete what they failed to achieve. They seek to realize the human rights of all and achieve gender equality and the empowerment of women and girls. They are integrated and indivisible, and balance the three dimensions of sustainable development: economic, social and environmental.

It is emphasized in the approved text that "no one is left behind" and, therefore, it is evident that among the 17 SDGs, on several occasions, terms specifically aimed at inclusion arise, such as: inclusive education, inclusive economic growth, inclusive industrialization, inclusive cities and human settlements and peaceful and inclusive societies, confirming the relevance of the theme, since according to UN data (2018) about one billion or 15% of the world's population correspond to people with disabilities, and approximately 80% of them are in age to work.

Even with all the efforts to include people with disabilities established in the 2030 agenda, it was only on December 3, 2018 that the UN launched the first world report on disability and development, according to the entity's website. According to UN Secretary-General António Guterres, the report (UN, 2018) "shows that people with disabilities are at a disadvantage" with regard to most of the Sustainable Development Goals (SDGs). In addition, with the context of globalization, there is the advent of Information and

Communication Technologies (ICT) permeating social transformations and changes in society's values, since "information and knowledge have become primordial elements" nowadays according to Boy (2014, p. 30).

However, people with disabilities are on the margins of transformations, as according to UN Secretary General Antonio Guterres (UN, 2018) "in many societies, people with disabilities often end up disconnected, living in isolation and facing discrimination".

With so many transformations and efforts of world society aimed at sustainable and inclusive development, education presents itself as a path of inclusion. Work is also presented as another means of inclusion, since it allows the person to act fully and without assistance, and digital technologies have contributed to inclusion, in addition to contributing to enhancing learning.

In this sense, the importance of continuing training of professional technical education teachers in assistive technologies is highlighted to enhance the learning of people with disabilities, thus contributing to the implementation of the 2030 agenda.

In light of the above, the research problem is: What is the perception of teachers about their participation in courses, training and/or training on the use of Assistive Technology?

The objective refers to the characterization of the perception of professional education teachers regarding their continued training in assistive technologies, aiming to contribute to the participation of the disabled in society and to meet the SDGs of the 2030 agenda.

THEORETICAL FRAMEWORK

According to Maria Teresa Égler Mantoan (2015, p. 21-22):

> a new paradigm of knowledge is emerging from the interfaces and new connections that are formed between previously isolated and divided knowledge and from the encounters of human subjectivity with every day, social, cultural. Increasingly complex networks of relationships, generated by the speed of communications and information, are breaking the boundaries of disciplines and establishing new milestones of understanding between people and the world in which we live.

Ratified by Galvão Filho (2012) when he stated that "with new technologies, changes, transformations and advances occur very quickly, making information and new knowledge become much more quickly overcome and outdated".

Thus, according to Galvão Filho (2012) that:

> the technological possibilities that exist today, which make these different alternatives and pedagogical concepts viable, beyond mere tools or supports for carrying out tasks, constitute themselves in realities that configure new environments for the construction and production of knowledge, which generate and expand the contours of a differentiated logic in man's relations with knowledge and learning processes.

According to Peterossi (2005, p. 105) "new technologies are changing the nature of what needs to be learned, who needs to learn, who teaches and how it can be taught", legitimized by Galvão Filho (2012) by ensuring that "Information and Communication Technologies have definitely changed the ways humanity relates to knowledge, teaching and learning", bringing the current and constant use of technologies to the classroom.

In this context of changes, transformations in society, in teaching and learning relationships, as well as the advancement of information and communication technologies, the inclusion of people with disabilities in school units, culminated in the use of Assistive Technology (AT) to assist the teacher to enhance the learning of people with disabilities, since, according to Bersch (2006,

p. 146):

> Assistive Technology (AT) is made up of features and services. The resource is the equipment used by the student, and that allows or favors the performance of a task. And the AT service at school is the one that will seek to solve this student's "functional problems", finding alternatives for him to participate and act positively in the various activities of the school context.

According to the Technical Assistance Committee - CAT, established by Ordinance No. 142 of November 16, 2006 according to Sartoretto and Bersch (2019):

> Assistive technology is an area of knowledge, with an interdisciplinary characteristic, which encompasses products, resources, methodologies, strategies, practices and services that aim to promote functionality, related to the activity and participation of people with disabilities, disabilities or reduced mobility, aiming at their autonomy, independence, quality of life and social inclusion.

According to Bersch (2017) "the objective of assistive technology is to provide people with disabilities with greater independence, quality of life and social inclusion, through the expansion of their communication, mobility, control of their environment, their learning and work skills".

It must be noted that for the SDGs of the UN's 2030 agenda to be achieved, a true transformation of society is necessary and the school has an extremely relevant role, because according to Oliveira and Oliveira (2018, P. 15):

> Undoubtedly, the school is a formative environment for everyone – teachers, students, managers, civil servants or family members – and contemporaneity places us in the face of the challenge of rethinking the current organization and structure to meet a new perspective, that of school inclusion.

According to Mantoan and Santos (2010, p. 9) "the defense of inclusion, as a new educational perspective in public and private schools, aims to welcome all students in their specificities", since according to Oliveira e Oliveira (2018, p. 15):

> When talking about an inclusive school, we cannot lose sight of the fact that we are referring to a highly complex process, since it will require the abandonment of a certain paradigm and its framework of conceptions and assume a new logic in relation to the educational process, that is, "instead of thinking about the problem according to the canons of formal logic, which is the logic of the exclusion of opposites, it would be appropriate to think of them in dialectical terms, in which the opposite poles do not exclude each other, but include each other, determining each other reciprocally" (SAVIANI, 2012, p. 23). This means that at the same time that we deny the current school – for not incorporating the diversity of the human constitution – we have to affirm it as the starting point for the necessary transformations in the constitution of what we are calling *inclusive*.

From this juncture, the importance of continuing education in assistive technology for teachers is verified, since "school education begins to play a fundamental role in the training of individuals to perform functions in the social productive system" (OLIVEIRA, 2016).

At the same time, alongside education, work plays a fundamental role in the life of people with disabilities and technology permeates both environments, since a large portion of this population layer is of working age, according to Mendes, Nunes, Ferreira and Silveira (2004, p. 106) that:

> through work, individuals with disabilities can demonstrate their potential and skills and build a more independent and autonomous life. Consequently, work also has a rehabilitating effect, as it contributes to an increase in self-esteem and a level of personal adjustment.

Thus, the relevance of professional

education is verified, which unites education and work, to contribute to the formation of the individual's identity by facilitating their entry into the labor market.

In the professional field, "the main competitive factor today is the ability of an individual, a company, a country to transform knowledge into innovation and, primarily, technological innovation" (PETEROSSI, 2014, p.24-25) then there is the need for quality training, as "professional training and technological learning are strategic mechanisms for Brazil's insertion in the international economic scenario" (PETEROSSI, 2014, p. 17).

From this context, there is still "the social appeal for the commitment of these courses with a socially productive and potential action to meet demands for in-service training for specific productive sectors" (PETEROSSI, 2014, p.29).

METHOD

The research carried out has a qualitative approach according to the perspective addressed by Sampieri, Collado and Lúcio (2013, p. 36), based on "the understanding and interpretation of phenomena, through the perceptions and meanings produced by the experiences of the participants".

As for the purposes, an exploratory character was acquired, since, as defined by Vergara (2016), it is an area in which there is little accumulated and systematized knowledge and of great interest to society, thus highlighting the importance of the study in function of the need to produce knowledge and disseminate it given the little existing material on the subject in our society.

The work is a *survey* carried out in the field, as a data collection technique, questionnaires were sent to vocational technical education units, with an exploratory and cross-sectional purpose, according to Freitas, Oliveira, Saccol and Moscarola (2000, p. 105):

> *survey* research can be described as obtaining data or information about characteristics, actions or opinions of a certain group of people, indicated as representative of a target population, through a research instrument, usually a questionnaire.

The population is composed of the Institution's professors, non-probabilistic for typicality, as it consists of key elements, according to Vergara (2016) "it is constituted by the selection of elements that the researchers considered representative of the target population" having been constituted by 143 respondents.

The object of study was a vocational technical education institution in the State of São Paulo, which makes up a network of 223 State Technical Schools distributed across 165 municipalities in São Paulo, with decentralized classes.

Questionnaires were sent by email, with questions about inclusion, assistive technology, legislation on the subject, and the consent form for the directors of the units on October 31, 2019, with instructions to pass them on to the professors of the Institution's units.

As for teachers, the institution has 11,879 teachers in technical schools, of which 143 responded to the questionnaire, which corresponds to approximately 1% of the total number of teachers hired. According to data from the Citizen Information System.

The e-mails from the units were obtained via the institution's website, however they could not be forwarded to the units located in the cities of Santa Cruz das Palmeiras, Guarulhos and Taboão da Serra, as there is no e-mail registered for these locations on the institution's website.

According to consultation with the Integrated Citizen Information System in the ETECs of Santa Cruz das Palmeiras there are

5 teachers, in Taboão da Serra 10 teachers and in Guarulhos 4 teachers who did not receive the forms with the questionnaire.

RESULTS AND DISCUSSION

In the questionnaire sent to the professors, was asked about the knowledge of the term assistive technologies?

As for total knowledge about assistive technologies, it was found that 18 (12.6%) of respondents have it; 79 (55.2%) have partial knowledge and 46 (32.2%) do not have knowledge on the subject.

Next, the teacher's participation in courses, training and/or training for the use of assistive technologies was questioned. Having been found that 115 (82.1%) have already participated in this training.

The need for continued teacher training on the subject is then evident, as according to Gil (2005, p. 53):

> When we talk about technologies and resources that help children or adolescents with disabilities in the classroom, we must remember that they are not resources that will magically make the student overcome their difficulties. Whatever aid is thought of, it always depends on the perception that the teacher has about the difficulties and possibilities of his student. Aid only makes sense based on this relationship. Therefore, we say that there are no rules, there are suggestions to help the teacher think about possibilities, but this will always be after this first contact and previous knowledge of the teacher in relation to the child or adolescent.

Thus, according to Rehem (2009, p. 60), it is up to the teacher to have the "competences that "use, integrate or mobilize knowledge" and, with the use of Assistive Technology, contribute to the inclusion of students in education, highlighted by Mantoan (2013)., p. 62) when stating that "it is essential that the teacher has high expectations regarding the ability of students to progress and never give up on seeking ways to help them overcome school obstacles".

FINAL CONSIDERATIONS

It is important to use the ways of inclusion for the improvement of society, and as culture permeates the individual as explained by Moran (2011) in the uniduality of the human being to constitute himself in and through culture, the school has a primordial role in the development of a culture of inclusion and thus "every teacher, in order to develop his/her practice in attending to diversity, needs to reflect, above all, on the process of school inclusion and the changes that this entails in schools" (ZANATA and CAPELLINI, 2012, p. 74)

Furthermore, "from the perspective of an open school for all, it becomes evident the need, on the part of the educator, to seek specific knowledge and resources that help his practice, as well as his professional training" (ZANATA and CAPELLINI, 2012, p.74).

Therefore, the importance of adequate training for teachers is highlighted, as a strategy for professional development and improvement of society in order to achieve the sustainable development objectives of the 2030 Agenda, since "the teacher, when faced with a new reality, needs to know create means to reformulate their practice and adapt it to new teaching situations, as well as act as the subject of their own formation, that is, self-education" (ZANATA and CAPELLINI, 2012, p. 74)

The continuous training of teachers is a fundamental tactic for inclusion in the school environment, consequently in vocational technical education there are two ways of inclusion, education and work because, according to Farias (2015, p. 17) "to better understand the relationship between the art of teaching, technique and work, we can synthesize technical education as the

revolution in adapting education to technology and professional qualification for the labor market", thus, the need to mobilize investments in the human capital that composes this mode of teaching. Therefore, the importance of teacher training and continuing education with practices, techniques and strategies is highlighted, aiming at the qualification of teachers in face of assistive technologies aimed at the inclusion of people with disabilities and, consequently, contributing to the implementation of the SDGs of Agenda 2030 regarding continuing education.

With the improvement of discussions on inclusion and the need to implement the SDGs of the 2030 Agenda, continuing education in assistive technology is fundamental for the improvement of society.

As it is a preliminary study of an exploratory nature, it is verified that the article portrays introductory perceptions on the theme addressed, thus suggesting the possibility of further academic research and studies on the results presented in order to expand the scope and at the same time present alternatives for action.

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