MOOCs on Autism Spectrum Disorder and Down Syndrome: perceptions of health professionals

Douglas Moraes Campos

Federal University of Maranhão (UFMA), São Luís, Maranhão, Brazil

douglasmoraescampos@gmail.com

Paola Garcia Trindade

Federal University of Maranhão (UFMA), São Luís, Maranhão, Brazil

paola.garcia@ufma.br

Deysianne Costa das Chagas

Federal University of Maranhão (UFMA), São Luís, Maranhão, Brazil

deysianne.chagas@ufma.br

Cadidja Dayane Sousa do Carmo

Federal University of Maranhão (UFMA), São Luís, Maranhão, Brazil

cadidja.dayane@ufma.br

Ana Emilia Figueiredo de Oliveira

Federal University of Maranhão (UFMA), São Luís, Maranhão, Brazil

ana.figueredo@ufma.br

Abstract: Health care for people with Autism Spectrum Disorder (TEA) and Down Syndrome (SD) requires a constant movement of (re)construction of knowledge by health care professionals. In this sense, Massive Open Online Courses (MOOCs) can contribute to the acquisition and implementation of this knowledge in the workplace. This article explores the perceptions of health

professionals learning about ASD and DS from two MOOCs. It is a qualitative study that interviewed 22 health professionals who had completed courses in the five regions of Brazil. The MOOCs proved to be important allies for continuing education in the health sector and, moreover, in this research they point to the graduate as a source of problematization of educational resources, since when learning, this student also becomes critical of his own learning process.

Keywords: Distance Education; Autistic Spectrum Disorder; Down Syndrome.

MOOCs sobre Transtorno do Espectro do Autismo e Síndrome de Down: percepções de profissionais da saúde

Resumo: A assistência à saúde de pessoas com Transtorno do Espectro do Autismo (TEA) e a Síndrome de Down (SD) exigem do profissional de saúde um movimento constante de (re)construção de conhecimentos. Nesse sentido, Cursos On-line Abertos e Massivos (MOOCs) podem contribuir para apreensão e implementação desses saberes no ambiente de trabalho. O presente artigo analisou a percepção quanto à aprendizagem de profissionais de saúde egressos de dois MOOCs sobre TEA e SD. Trata-se de um estudo qualitativo que entrevistou 22 trabalhadores da saúde egressos dos cursos das cinco regiões do Brasil. Os MOOCs mostraram-se como importantes aliados para a Educação Permanente em Saúde e, para além disso, nesta pesquisa, apontam para o egresso como fonte de problematização dos recursos pedagógicos, uma vez que ao aprender, esse aluno torna-se, também, crítico de seu próprio processo de aprendizagem.

Palavras-chave: Educação à Distância; Transtorno do Espectro do Autismo; Síndrome de Down.

MOOCs sobre Trastorno del Espectro Autista y Síndrome de Down: percepciones de los profesionales de salud

Resumen: La atención sanitaria a personas con Trastornos del Espectro Autista (TEA) y Síndrome de Down (SD) requiere un constante movimiento de (re)construcción de conocimiento por parte de los profesionales sanitarios. En este sentido, los Cursos Online Masivos y Abiertos (MOOCs) pueden contribuir a la aprehensión e implementación de estos conocimientos en el ámbito laboral. Este artículo analizó la percepción de los profesionales de la salud que aprenden sobre TEA y SD a partir de dos MOOCs. Se trata de un estudio cualitativo, en el que se entrevistó a 22 trabajadores de la salud que se habían graduado en los cursos procedentes de cinco regiones de Brasil. Los MOOCs demostraron ser importantes aliados para la Educación Continuada en Salud y, además, en esta

investigación, apuntan al egreso como fuente de problematización de los recursos pedagógicos, ya que al aprender, este alumno también se torna crítico de su propio proceso de aprendizaje.

Palabras clave: Educación a distancia; Trastorno del espectro autista; Síndrome de Down.

1 INTRODUÇÃO

Massive Open Online Courses (MOOCs) are teaching-learning environments designed for the active participation of many people who self-organize themselves around a learning objective, knowledge, and common interests (MCAULEY et al., 2010). Mediated by Digital Education and Communication Technologies (TDICs), these courses align the ideals of education opened to the multiple pedagogical needs, in different areas of knowledge (AMADO; PEDRO, 2018; CARMO, H; CARMO, T, 2016).

In the context of health training strategies, MOOCs are significant allies in the implementation of Continuing Health Education (EPS), especially when we consider that professionals' learning processes should be continuous for the development of multiple skills. These courses can strengthen this implementation by promoting actions and policies that qualify assistance in different health contexts, in a scalable and systematic way (CEZAR; COSTA; MAGALHÃES, 2017).

The collaboration of MOOCs for EPS is mainly focused on providing opportunities for updating and training health professionals in different areas. These can contribute to a professional qualification, with the specific needs of health groups and places as a basic point, as stated in the National Policy of Continuing Education (PNEP) of 2018 (BRASIL, 2009, 2018; GASQUE *et al*., 2021).

Although EPS is essential for the establishment of more qualified health work processes, its multiple objects of study are not fully explored (BARCELLOS et al., 2020; SILVA et al., 2013). This exiguity is potentiated in more specific thematic extracts, as in the context of TEA and SD. It has been demonstrated in recent studies highlighting the scarcity of EPS actions for the qualification of in-hospital care for people with TEA (PIMENTA et al., 2021) and the need for EPS to achieve greater inclusion of people with SD (SILVA, 2020).

Considering the little explored spaces at the intersection of EPS, TEA, and SD, the purpose of this article was to analyze the perceptions regarding learning of health professionals who graduated from MOOCs entitled 'Care for the Rehabilitation of People with Autism Spectrum Disorders' and 'Assistance to People with Down Syndrome'.

2 METHODOLOGICAL PATH

This is a qualitative research with healthcare professionals who have completed two MOOCs: Care for the Rehabilitation of People with Autism Spectrum Disorders (MA) and Assistance to People with Down Syndrome (MD). These courses were offered by the Open University of the Unified Health System of the Federal University of Maranhão (UNA-SUS/UFMA), which integrates the UNA-SUS network, of educational offerings that seek access to and promotion of knowledge for the development of professional skills, especially in the context of the health of the Brazilian population (UNA-SUS/UFMA, 2023). The courses were made available by UNA-SUS/UFMA in March 2021.

The field study was conducted between July and September 2021 and included graduates who had completed the MOOCs by May 2021. A total of 308 graduates were eligible, 204 from the MA and 104 from the MD. These candidates were stratified according to the region of the country where they worked (Midwest, Northeast, North, Southeast, and South) and invited by email to participate in the interview. Initially, 100 potential interviewees were randomly invited, of which only 08 graduates agreed to participate. A second round of random selection was conducted with 200 possible participants, resulting in 16 acceptances.

The Theoretical Saturation Technique (FONTANELLA; RICAS; TURATO, 2008) was used determine the number of interviews. The field study ended with 22 participants, due to the repetition of ideas found since the interview number 19.

A semi-structured questionnaire was used to conduct the individual interviews. This instrument included questions about impressions of the course and knowledge acquired through the educational resources. All interviews were conducted using the Google Meet® platform and were audio and video recorded. This material was fully transcribed.

To analyze the speeches, we used the Content Analysis technique in thematic mode (MINAYO, 2014). The first stage consisted of the organization and reading, which allowed the first contact with the speeches. The following stage had an exploratory character with the selection of units of meaning and extracts that were made from the ideas expressed by the speeches about the expectations and impressions about the MOOCs and their resources, potentials, and limitations found in each stage of the courses. In the last stage, the categories were constructed based on the theoretical concepts of the Kirkpatrick Model (WADDILL, 2006).

The Kirkpatrick Model consists of four levels of evaluation, but in this research, we used the first two: 1) Reaction, which assessed graduates' perceptions of the different resources and content approaches used in MOOCs; 2) Learning, which provides graduates' perceptions of the acquisition

of knowledge during the courses. These two theoretical concepts were useful to build a systematic analysis of the data, while maintaining the flexible nature of data interpretation in qualitative research (WADDILL, 2006).

The understanding of these theoretical concepts led to an interpretation of the data anchored in the concepts of "Problem Teaching" and "Meaningful Learning" of EPS (CECCIM; FERLA, 2008). They contribute to the understanding that the graduates' speeches express their critical sense of MOOCs since EPS promotes the problematization of practices and conceptions of health work, including those used in the courses (CECCIM; FERLA, 2008). In addition, these students attach importance to what is seen as potential; this potentiality is given, above all, in the light of their previous experience with the work routine. Thus, based on the concreteness of everyday clinical practice, graduates critically reflected on how and what they had learned in the MA and MD (CECCIM, 2005; CECCIM; FEUERWERKER, 2004).

The interviewees are represented throughout the text with fictitious names in italics and have no connection to their real identities. This study is part of a larger investigation entitled "Evaluation of the Production and Offering of Educational Resources in Distance Education", approved by the Research Ethics Committee of the University Hospital of the Federal University of Maranhão, under Ethical Appreciation Submission Certificate no. 08686819.2.0000.5086.

3 RESULTS

It is possible to observe the different backgrounds of the respondents in the health sector, the participation of recent graduates, and workers with more experience in clinical practice, working in different regions of the country (see Chart 1). This heterogeneity is the result of methodological care in obtaining the participation of at least one health professional from each region of the country to contribute to an analysis of statements with different perspectives.

Regarding the analysis of the speeches, the results were divided into two categories: 3.1) Perceptions about learning, which analyzed the graduates' expectations and correlated them with what they perceived as knowledge for their daily work; 3.2) Perceptions about MOOCs, which used the graduates' perspective to analyze the educational resources applied in the courses. In the presentation of the verbal results, we decided to work with the dialogic line of the interlocutors. Thus, the interviewee who talks about his expectations concludes with what he has learned from the courses; the one who talks about the potential concludes with the limitations. The chosen lines

represent the particular idea of each participant but also consider the meanings found in the speeches of others.

Chart 1 - Profile of the interlocutors of Brazil's survey, 2022.

NAME/COUSE(S) TAKEN[1]	GENDER[2]	PROFESSION	YEAR OF UNDERGRADUATION	WORKING REGION	WORKING AT SUS[3]
Bruna/MAD	F	Speech Therapist	2014	Southeast	Yes
Alice/MA	F	Nutritionist	2005	Southeast	No
Roberta/MA	F	Nutritionist	2018	Northeast	No
Alana/MA	F	Nurse	2011	South	Yes
Juliana/MD	F	Psychologist	2012	Southeast	Yes
Rodrigo/MA	M	Psychologist	2009	Northeast	Yes
Gabriela/MD	F	Nutritionist	2011	Northeast	Yes
Olívia/MD	F	Nutritionist	2019	Southeast	No
Rogéria/MA	F	Occupational Therapist	2021	Southeast	Yes
Sofia/MA	F	Nursing Technician	2000	Southeast	Yes
Renato/MA	M	Dentist Surgeon	2019	Northeast	Yes
Leandro/MA	M	Psychologist	2005	Northeast	Yes
Cássia/MA	F	Psychologist	2006	Northeast	Yes
Lucas/MAD	M	Speech Therapist	2010	Southeast	Yes
Valéria/MA	F	Nursing Technician	2020	Northeast	Yes
Catarina/MAD	F	Speech Therapist	1997	Southeast	Yes
Helena/MD	F	Occupational Therapist	2012	Southeast	Yes
Bárbara/MAD	F	Nursing Technician	2012	Southeast	Yes
Sílvia/MAD	F	Occupational Therapist	2005	Northeast	Yes
Mariana/MA	F	Nurse	2016	North	Yes
Lívia/MAD	F	Psychologist	1998	Southeast	No
Joice/MAD	F	Psychologist	2019	Midwest	Yes

[1]MA= egress only in MOOC 'Attention to the Rehabilitation of the Person with Autism Spectrum Disorders'; MD= egress only in MOOC 'Assistance for People with Down Syndrome'; MAD=egress from both MOOCs;
[2]F=female; M=male;
[3]SUS = Unified Health System
Source: Field study, 2021.

3.1. Perceptions about learning

The speeches examined here are organized into two perspectives: the first uses the graduates' expectations of what they expected to find in the MOOCs. The second is related to what they

captured and transformed into a component of their technical knowledge. Thus, the results are correlated, ultimately producing a line of reasoning between expectations and what was significantly captured for reality.

The participant Bruna works in a Primary Health Care Unit that is a reference in assistance to Disabled People (PCD). She expected "something new" from the course.

> *"My expectation is always to know something new that I don't know [...] the guidelines are always changing, I say what's new in SUS because I work in the SUS network [...] so it's always interesting to be up to date so we can guide the families correctly."* (Interview granted by Bruna/MAD on: 07/03/2021, our translation).

The interviewee presents what she learned from the MOOCs. The focus is on the knowledge of the Health Care Network (RAS) of the PCD public and the possible comorbidities of the clinical picture of the person with Down Syndrome.

> *"I found the presentations very interesting, I don't know if they were laws or directives, regulations that were very specific to the SUS network. I thought it was very important, they were new things that I hadn't read, and I read them there. In Down's part [about MD], I found very interesting the part about comorbidities, I had no knowledge of some issues like that, some diseases."* (Interview granted by Bruna/MAD on: 07/03/2021, our translation).

The participant *Roberta*, a private nutritionist, commented that her interest in the MA arose from the observation of a significant number of children with TEA in the health service where she works. From this, she hoped to learn more about the clinical picture of the person with TEA.

> *"It was to get to know the autistic public better. Because, as I said, we don't know much about this disease, the levels of autism, how to recognize the signs of autism."* (Interview granted by Roberta/MA on: 07/03/2021, our translation).

When asked about something that she has learned from the course, *Roberta* argues about the approach that she has had to the topics that she has listed in her expectations.

> *"[...]especially in terms of how to identify autism [...] the part of food selectivity, right, which is very prominent in the autistic population, especially in children."* (Interview granted by Roberta/MA on: 07/05/2021, our translation).

The interviewee *Sofia*, a nursing technician, works in the regulatory sector of her city. Her expectations were "to learn more", especially so that she could improve her work actions.

> *"[...] was to learn more about the subject and to know how to handle the situation, because it is a public that has been growing for a while and there is no [laboratory] test that can say, 'You are autistic'. It is more like observation. So I needed this to be able to act more in my field of work."* (Interview granted by Sofia/MA in: 25/08/2021, our translation).

When asked about what she learned in the course, Sofia comments on the observation of the child and her family.

> *"I am satisfied, I am learning to deal with the situation and to observe the child more and in general, not only in what he presents to me, but as a whole, both the child and the family."* (Interview granted by Sofia/MA on: 25/08/2021, our translation).

3.2. Perceptions about MOOCs

In this section, we use the perspective of MA and MD graduates to evaluate the educational resources used. Based on their experiences with the courses, as well as their educational and professional backgrounds, the graduates pointed out the opportunities and limitations of MOOCs.

Participant Rodrigo is the only psychologist in primary health care (ATP) in a countryside city in the northeastern region of Brazil, and he daily attends to the PCD public. The strengths he mentions are the self-instructional format and the clinical cases covered in the course.

"I like [the self-instructional format] because it gives autonomy to the student, you know, so the question of being asynchronous as well. You can make your own way[...] especially the question, if I'm not mistaken, the course had a kind of case [clinical case], right, that we were supposed to follow. You, like, see it in practice" (Interview granted by Rodrigo/MA on: 07/21/2021, our translation).

In terms of limitations, *Rodrigo* points to the need for a focus beyond health.

"I think I could bring more details about the [clinical] condition itself in different contexts of application, you know? In health, in education, in the family, and so on." (Interview granted by Rodrigo/MA on: 07/21/2021, our translation).

Participant *Leandro*, a psychologist at a rehabilitation center, considers the objectivity, the autonomy of the self-learning model, and the ease of navigation within the course to be positive aspects.

"[...]it is very objective, it is easy to use, everything is available and, thus, you don't have to rely on a third or a second person to give us feedback to continue the course" (Interview granted by Leandro/MA on: 07/30/2021).

When asked what could be improved in the MA, *Leandro* comments on the number of hours and depth of information in the course.

"I liked the information very much, but I think that given the time, I could have taken a course with a little more time and a little more information in the treatment part." (Interview granted by Leando/MA on: 07/30/2021, our translation).

Joice, a psychologist, works in the private sector and regularly assists children and families in the context of the TEA and the SD. She confirms the aspects of potential already mentioned by her, with an emphasis on the objectivity of the content approach within the MOOCs.

"It is objective, it brings you very well bound information, it comes in a continuum, you know? It keeps growing without getting out of focus, but it closes. So, look, this is the definition, this is the diagnosis, these are the ways to make the diagnosis, and these are the ways to act. So I think it closes the circle in what it proposes to do" (Interview granted by Joice/MAD on: 27/08/2021, our translation).

When pointing out the limitations of MOOCs, *Joice* turned her evaluation to the weakness regarding the multiprofessionality of certain resources/approach.

"The only thing I remember that I even made as a suggestion was that it shouldn't just be the nursing team or the medical team, you know, in the game. But that there could be something more multi-professional" (Interview granted by Joice/MAD on: 08/27/2021, our translation).

4 DISCUSSION

The recognition of the need for improvement in one's work process is, for the health professional, a product of the technical and intersubjective encounter between professional and patient. This encounter contributes to the knowledge of these workers in a challenging way, given the complex nature of health needs. It is because of their lack of knowledge that they find the EPS a useful space to overcome the daily challenge of working at different levels of care.

In the first category, participants were asked to mark the possibilities and limitations of MOOCs, MA, and MD. In the field study, when asked about the limitations of the courses, they sometimes responded with a certain shyness and caution, especially professionals with less experience. The more experienced interviewees, on the other hand, spoke more openly and in more detail about possible points for improvement within the courses.

This suggests that within the group of respondents in the research, the critical reflection on limitations was associated with a certain degree of confidence, a result of the time of work activity. Moreover, it provokes the reflection that the social time of work is constituted by a continuous process of knowledge acquisition inherent to their activities (LAURELL; NORIEGA, 1989; RODRIGUES et al., 2020) and that, therefore, in this study, may have contributed to a more detailed criticism among the participants with more than five years of training.

As potentialities, the self-instructional format was explicitly associated with an idea of autonomy, which in this evaluation is related to the construction of knowledge itself and the use of the course platform. It is an important point of reflection, as it is understood that autonomy is a skill required in courses with a self-instructional format (AGONÁCS; MATOS, 2020). This autonomous learning is essential for work routines that require more flexibility, such as Rodrigo's. This characteristic also corresponds to the different learning dynamics that each student has (SOUZA; CYPRIANO, 2016).

In addition, this more autonomous behavior contributes to the improvement of competencies intrinsic to the processes of change in the work environment, such as self-analysis and self-management (BRASIL, 2018; CECCIM, 2005; CECCIM; FEUERWERKER, 2004). These competencies are essential for the construction of micropolitical policies, which are attitudes whose legitimacy is not explicit in the norms of health services, but which, in the technical and social interactions between professional-professional and professional-patient, are fundamental for the production of more resolutive care (MALTA; MERHY, 2003).

Other elements related to the potential of the course are its objective and practical-illustrative nature. This objectivity, according to Souza and Cypriano (2016), is essential to make the content addressed in MOOCs as understandable as possible for different types of audiences. Although they are mainly used by health professionals, a distinction can be observed: we have respondents of high and medium technical levels. However, the objectivity of the MA and MD contributed positively to the learning experience of the different graduates.

The interlocutors Rodrigo and Joice cite clinical cases, practical and illustrative resources presented in the MA and MD. These resources proved to be efficient in the learning experience of these participants, especially by provoking the apprehension of knowledge from the construction of hypothetical situations that are close to the reality of health services, i.e. it sets the practice. These clinical cases are serious games that, besides entertaining their players, lead to a meaningful experience in the learning process (BOWEN et al., 2014; DESMET et al., 2015). Therefore, they appear as important allies in EaD to motivate and facilitate learning (KAPP, 2012).

The limitations pointed out by the participants mostly concern endogenous elements of MOOCs, i.e. technical and content-related aspects of the courses. Participant Leandro focuses on technical issues related to the workload of the courses. The MOOCs are generally of short duration (MATTAR, 2013), but Leandro's perception shows that there is a lack of actions that contribute to the improvement of health practices for people with TEA and SD.

Rodrigo's and Joice's presentations have limitations related to the multiprofessional nature of the course. The two participants, psychologists, evoke the need for a multiplicity of contexts and professionals that participate in the clinical cases and other resources that illustrate a practical experience of care for people with TEA and SD.

These perceptions contribute to the idea that, at some point, it is important for MOOCs aimed at health professionals, in general, to work with the concept of interprofessional. Interprofessional work promotes communication between different knowledge and professionals and, based on this, the cross-cutting and complementary relationships that exist between the different theoretical and practical bases of each piece of knowledge. For this reason, health, as a complex and multidimensional field, is a favorable scenario for this type of approach (GOMES, 1997; REBOUÇAS, GONDIM; PINHEIRO, 2019).

These perceptions, especially those about limitations, have a strong correlation with the problematization capacity developed from the clinical practice of each of the interviewees and also from their training experiences (CECCIM; FERLA, 2008). Such problematization, as emphasized by Castro Filho and Motta (2018), can subsidize the correction of misconceptions and theoretical perspectives adopted in the construction of didactic-pedagogical materials for MOOCs. All these reflections are based on what is perceived and evaluated by the students themselves, a fruitful exchange that overcomes the hierarchical and, above all, archaic perspective of the student as a passive agent of the teaching-learning process.

In the second category, Bruna and Sofia report the expectation to learn "something new" to improve their knowledge and skills. These expectations are directly linked to the specific demands of their work environments: the public ambulatory sector in the case of Bruna and the public hospital sector in the case of Sofia. In these scenarios, there is an inevitability of permanent updating of theories and work practices, which is, therefore, a great challenge: on the one hand, the speed of renewal and transformation of scientific-technological knowledge, which requires health workers to study; on the other hand, the construction of a public health system with universality, which challenges the training of these professionals (CECCIM, 2005).

The speeches of Bruna and Sofia show that the EPS is perceived by healthcare workers as a strategy for technical improvement. The same was demonstrated in the study of Moletta, Almeida, and Ribeiro (2018) with a nursing team in Paraná. The evidence is in line with the practice of the Permanent Health Education Policy (PEPS), according to PEPS, educational actions in different work settings must focus on the training needs of these professionals (BRASIL, 2009, 2018).

It is also possible to observe how the courses contributed to the training of Bruna and Sofia in terms of knowledge of the health care network and clinical observation, important skills in the care process of people with TEA and/or SD. In the context of these interlocutors, knowing the network of support for the PCD population and improving clinical observation of these people is also a political act. Through these skills, these professionals implemented SUS principles such as inclusiveness and equity. Therefore, the recognition of people with TEA and SD as subjects of law, given the awareness that health is constitutionally a feature of the exercise of citizenship.

There is a political link between the training of health professionals, the promotion of self-analysis and self-management skills, and the environment in which health professionals are challenged daily by the reality of services (CECCIM, 2005; CECCIM; FERLA, 2008). This is because these skills, which are technical and political, contribute to creativity and reorganization when interacting with the environment in which their work processes are inserted (CECCIM, 2005).

The interviewee Roberta works in the private sector and also came to the MA because she felt the need for improvement that was presented to her in her work experiences. Thus, regardless of the level of complexity and sector of activity, the health professionals interviewed here can identify the needs of the services in which they work and the gaps in their knowledge to effectively meet the specific needs of people with TEA and SD. In this context, MOOCs are an effective educational tool for absorbing new theories, changes in practices, and policy reflections for training in this area.

Thus, Bruna, Roberta, and Sofia, by filling the knowledge gaps necessary for their current work demands, find a point of permanence that keeps them attached to the MOOC and makes its completion possible (FIUZA; SARRIERA, 2013). This learning process is closely related to the transformation of health practices based on the different realities in which these professionals are inserted and also in their interaction with different social actors, such as professional colleagues, other members of the health teams, and users (CECCIM; FEUERWERKER, 2004).

It is observed that among the professionals interviewed in this research, there is a greater number of SUS workers, especially in APS, which makes us think that there is a demand for EPS proposals that promote the improvement of the care of people with TEA and SD. On the other hand, most of the professionals interviewed told us that HPS activities were not included in their workload, which led them to use other moments, such as time off and lunch hours, for these actions.

Some contrasting points can be observed from the growing demand for EPS aimed at the PCD public and the low incentive for EPS actions. It is in this scenario that MOOCs have a great potential for insertion since they can contribute in an objective way to theoretical and practical

changes that will benefit both professionals in their work environment and users.

The limitations of this study lie in the way these participants were contacted, by email. This strategy may have somehow captured only those participants who felt engaged with the MOOC proposals, which may have led them to talk more about their potentialities than their weaknesses. On the other hand, even with this engagement, participants did not limit their perceptions of what they did not find positive, and thus suggestions for improvement emerged during the interviews. These two opposing perceptions contribute to the promotion of debate through different interpretations of the educational resources, which leads us to think about actions for improvement within this and the next MOOCs to be developed.

5 FINAL CONSIDERATIONS

The perceptions of learning in both courses lead us to believe that health professionals are routinely challenged in their clinical practice. These challenges are present and concretely contribute to their perception of the constant need to update in a given clinical practice, to learn new ways of diagnosing and monitoring cases, and even to understand the dimension of the service in which they work. Furthermore, the speeches analyzed here present the limitations found in the formative experiences during the courses and point to the need for improvement, also for those who carry out this process: the MOOC.

It is important to think that, in this study, the analysis is based on the speeches of professionals who carry within themselves a critical sense that is the product of their previous experiences in other formative modalities and their daily work.

In addition, the speeches make the connection between Kirkpatrick's model and the EPS theoretical-political concrete. This association allows us to systematize what is evaluated by the graduates by relating the speeches to the foundations of the EPS. Moreover, it favors the compression of the intersection between education and the work environment. In this way, it has been possible to generate reflections that can promote other debates, such as the challenges of health professionals to respond to the complexity of health needs and the challenges of fulfilling EPS activities in exhausting work shifts.

Finally, we highlight how different professional profiles participated in the research, from recent graduates to those with more than two decades of experience. This demonstrates the speed with which scientific knowledge about TEA and SD has evolved, which consequently leads health

professionals to seek out teaching-learning environments such as MOOCs.

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