

## **The Impact of Emergency Remote Teaching on Teachers' Perceptions of Learning Difficulties in the Context of Neuropsychopedagogics**

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## **Влияние экстренного дистанционного обучения на восприятие учителями трудностей образовательного процесса в контексте нейропсихопедагогики**

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**Abstract.** This study aimed to analyze the possible impacts of the emergency remote teaching model on the perceptions of teachers working in basic education on indicators of students' learning difficulties. 190 teachers from public and private schools participated, between March and August 2021, in different locations across the country Brazil.

In the analysis of results, emphasis was given to the tensions of this new teaching modality imposed by the health and social crisis. Relevant values were found, which, evaluated on a Likert scale, measured the respondents' opinions on the topic. The results showed that, given the context of teaching in the pandemic, about the impossibility of perceiving the difficulties of their students in the remote teaching model, 44.27 % of the teachers partially agreed and 29.68 % indicated total agreement. In the items that questioned how well they felt prepared in remote teaching, to work with students in situations of learning difficulties, 16.1 % considered themselves totally unprepared, followed by 18.75 % who indicated that they were partially unprepared. Therefore, assuming the obstacles of Brazilian education, the relevance of the teacher in the teaching and learning process, the possibility of contributions from neuropsychopedagogy as a science of learning and the emergency educational scenario, the study integrates, in its intention and results, significance for an analysis current and apodictic data for other studies and conjectures.

**Keywords:** COVID-19; emergency remote teaching; teachers; learning difficulties; neuropsychopedagogy

**Аннотация.** Исследование было направлено на анализ воздействия экстренного дистанционного обучения на восприятие учителями, работающими в системе общего (базового) образования, трудностей процесса обучения. В период с марта по август 2021 г. в опросе приняли участие 190 учителей государственных и частных школ разных регионов Бразилии.

При анализе результатов особое внимание уделялось той напряженности, которая была вызвана введением этой новой формы обучения, а также социальным кризисом и кризисом в области здравоохранения. Для выявления мнения респондентов были определены релевантные значения, которые оценивались по шкале Лайкерта. Результаты показали, что 44.27 % респондентов считают себя готовыми к возможным трудностям учеников при обучении по новой модели, 29.68 % отметили, что дистанционное обучение не обеспечивает понимание таких трудностей. Ответы на вопросы, ориентированные на выявление степени готовности к работе в дистанционном формате с учениками, испытывающими трудности в обучении, позволили определить, что 16.1 % учителей считают себя совершенно не готовыми, а 18.75 % отмечают частичную неготовность. Таким образом, принимая во внимание особенности бразильского образования, значимую роль учителя в процессе обучения, возможности нейropsychопедагогика, результаты опроса могут быть использованы для получения аподиктических данных в других исследованиях.

**Ключевые слова:** COVID-19; экстренное дистанционное обучение; учителя; трудности в обучении; нейropsychопедагогика

## Introduction

The COVID-19 pandemic has changed the most diverse contexts of human social life and the daily lives of different societies. Abruptly, these dynamics were conditioned to the search for alternatives that would respond to the demands and the need for social isolation, as a way of containing the spread of the virus.

The school — an environment that used to be presential and relational — is configured as a space for socialization and construction of systematized knowledge, providing the construction of identity, belonging, desires and principles that permeate the life of a student (Borsa, 2007).

Thus, we can understand, along the lines of Vygotsky (1984), that the school is configured as an environment of interaction and social mediation, concepts imbricated in the author's theory. Therefore, the teacher-student relationship is of paramount importance, considering that there is a dynamic of mediation of knowledge and meanings, which interfere in the students' development.

However, in the context of remote emergency teaching, the school had many of its characteristics put to the test.

Imbued with the various Brazilian inequalities, as well as the tensions that arise in the field of education, the school faced the intensification of problems such as the devaluation of teachers, the absence of continuing education, the socioeconomic impacts, the geographic and social issues, the inaccess to the remote teaching, exacerbating learning difficulties (Stevanim, 2020).

The last decades have set up a scenario in which we can see an increase in the frequency of children and adolescents in the offices of professionals focused on research and intervention on learning difficulties. Such a search is sometimes given by the beckoning of schools that, in their practices, through their teachers, perceive indicators of these phenomena (Carvalho, Crenitte, & Ciasca, 2007).

Neurodevelopmental disorders that affect learning are most easily noticed early in schooling (Amarican Psychiatric Association, 2014). However, this phenomenon points to other tensions, among which the medicalization of students stands out as a factor of normalization or silencing of differences, stigmatization of children and adolescents who come to be understood under the nomenclature of pathologies and/or neurodevelopmental disorders (Benedetti, Bezerra, Telles, & de Lima, 2018), sometimes resulting in what the study by Souza and Novaes (2021) understands as the construction of the social representation of the "problem student." The authors emphasize that the production of school failure is associated with social representations anchored in medical-pedagogical experiments and in an educational formation that does not consider the singularities of the students.

Therefore, given the imposed scenario, we can say that the classroom is an opportune environment for social interactions, mediation of knowledge and neuroplasticity. This mediation, in Vygotsky's theory, has a substrate in the relationships that are established between subjects and constitutes a formative process that goes beyond the transmission

of contents for the construction and development of these social beings. Which, from the perspective of Luria (1979) when understanding the nervous system, under an open, plastic, integral model, which interacts with the physical and social environment. This environment, the classroom, was abruptly conditioned to electronic models, distancing these authors who shared their daily lives and interactions (Vygotsky, 1984).

Thus, the perceptions of teachers about their students (which were once elaborated in the physical space of the classroom), with the health crisis, migrated to a virtual space dependent on the internet and mediated by technological devices. In this context, the motivating question of the research was elaborated as follows: what are the perceptions of teachers working in basic education on indicators of the learning difficulties of students during the first wave of the coronavirus pandemic?

This study aims to contribute to research in education, considering the various uncertainties arising from the pandemic context, the losses in the learning of basic education students and the possibilities of theoretical-methodological, inclusive and relevant constructions deriving from neuropsychopedagogy (Resolution of SBNPp, 2021).

## Methodology

In order to weave an understanding of the exposed question, the study took the form of a quantitative research. Seeking the identification and dimensioning of the teachers' perceptions, the collection was carried out between the months of May and August 2021, and the questionnaire was published on social media. The questions were elaborated using the Likert scale, which consists of a psychometric technique to obtain information about the opinions and engagement of respondents, giving researchers quantitative indices to measure the phenomenon (McClelland, 1976).

Directed by 27 questions, the study allocated the questions into sections with main themes. Featuring: section 1 — identification and presentation of the research; section 2 — general data of the interviewees, considering the right to privacy, the items of questions 1 and 2 name and e-mail were placed as non-mandatory; section 3 — general and mandatory data, in this section questions 3 to 14 dealt with topics such as gender, demographic, educational and professional profile; section 4 — data collection outside the context of the pandemic, built with questions from 15 to 18, which evaluated the degree of agreement on knowledge of the problem of learning difficulties, considering training, experience in teaching and notions about neurodevelopmental disorders; and section 5 — data collection in the context of the pandemic with items numbered 19 to 24, which measured the impacts of remote teaching on the relationship and perception of teachers about the difficulties of their students, preparation of teachers in the face of the scenario, existence of any indicator noticed by the teachers, aggravating factors and risk factors that may have increased the learning problems; question 25 measured the opinion of the subjects about the need or not of a specialized professional working at the school; question

number 26 about the identity of this subject; finally, question 27 in an open format gave the interviewees the opportunity to register their contributions to the research.

To analyze the results, a program for creating and editing spreadsheets and graphs was used, statistically establishing absolute and relative factors in the comparisons for the composition of this work (Fontelles, M. J., Simões, Farias, & Fontelles, R. G. S., 2009). As an inclusion criterion, acting as a teacher in basic education networks before and during social isolation was considered.

## **Theoretical Reference**

There has been a long discussion about the phenomenon of learning difficulties and about the possible contributions between the dialogues of neurosciences, psychology and pedagogy, with regard to the construction of an education based on a new paradigm, which favors integral development of the students (Cardoso & Queiroz, 2019).

The present study assumed the theoretical-methodological assumptions of neuropsychopedagogy established by SBNPP (Brazilian Society of Neuropsychopedagogy), which configures it as a transdisciplinary science, based on neuroscience applied to education, pedagogy and cognitive psychology, which assumes as its object of study the relationship between the nervous system and learning in its most diverse contexts, with a view to the reintegration of subjects in their entirety.

It can be understood that neuropsychopedagogy has been characterized as the science of learning and its context of institutional approach, using pedagogical practices based on neuroscientific evidence in dialogue with cognitive psychology, and intends to favor educational environments with regard to the processes of teaching and learning, with regard to the inclusion of the most diverse subjects and the provision of an education that reaches the majority of students, equipping educators in approaches subsidized by scientific and dialogic research to the practice of teaching (Fülle, Cardoso, Russo, & Heck, 2018).

However, it is worth mentioning that, in dialogue with what theorists like Consenza and Guerra (2011) propose, and assuming the transdisciplinary scenario of neuropsychopedagogy, a new pedagogy or teaching is not proposed here, but to guide the practices already carried out in interventions that understand the developmental milestones and the students' neurodevelopment process.

## **Results and Discussion**

The study had the initial participation of 192 subjects, after applying the inclusion criteria, 190 questionnaires were considered valid for the analyses. The average age of the interviewees was 44 years old, of which 157 identified themselves as female, 32 as male and one indicated a preference for not responding.

Most respondents declared working in the private network, followed by those who cited working in municipal, state and federal public networks, and, in terms of teaching time, the general average was represented by 16 years of experience.

In percentage numbers, respondents declared domicile in the regions: 2 % North, 2 % Midwest, 3 % Northeast, 10 % South and 83 % Southeast.

As for training, 48 % responded that they had a degree in Pedagogy and, with regard to continuing training, 53 % responded that they had a specialization. Regarding the title of master, 21 said they had it, as well as two declared themselves to be doctors and the same number applies to those who carried out a post-doctoral internship.

In summary, the results of data collection outside the context of a pandemic, which included questions 15 to 18, showed that regarding training as a subsidy for identifying and coping with learning difficulties, most considered themselves partially prepared (48.43 %). When asked if, in the pedagogical experience, they can notice “something more” besides the students’ difficulty in learning, 42.7 % of the participants fully agreed. Regarding knowledge about neurodevelopmental disorders, 24.47 % considered themselves partially knowledgeable on the subject.

The *Table 1* presents, in an orderly manner, the motivating statements of section 5, which dealt with the context of the teachers’ perception during the emergency remote teaching.

*Table 1*

**Affirmations, section 5, data collection considering the COVID-19 pandemic**

Order	Affirmative
19	The remote teaching period made my perception of the learning difficulties presented by the students unfeasible.
20	I consider myself prepared to work with students with learning difficulties, even in the remote teaching model.
21	During the period of teaching in remote mode, I was able to notice when my student presented “something more” than learning difficulties.
22	I believe that the pandemic has generated stressors for students, which made them alternate more abruptly between engagement and apathy (highs and lows) in relation to the subject(s) I teach.
23	I believe that remote teaching adopted on an emergency basis aggravated the difficulties of perception and intervention in favor of students who have learning difficulties.
24	Factors such as: social isolation, pandemic, remote teaching, increase in socioeconomic precariousness, gap between public and private education systems, added to problems prior to COVID, constitute a group of obstacles and aggravating factors in the teaching and learning process for education students basic, but more accentuated to those with learning difficulties or neurodevelopmental disorders.

The following *Table 2* presents the systematization of the context responses during remote teaching, evaluated by the statements in the table 1.

Table 2

**Demonstration of Absolute and Relative Factors about the items that measured the teaching period in the pandemic**

Affirmatives	Strongly disagree		Partially disagree		Indifferent		Partially agree		Totally agree	
	AF (n)	RF (%)	AF (n)	RF (%)	AF (n)	RF (%)	AF (n)	RF (%)	AF (n)	RF (%)
19	14	7.29	29	15.10	7	3.64	85	44.27	57	29.68
20	31	16.14	58	30.20	6	3.12	81	42.18	16	8.33
21	17	8.85	45	23.45	8	4.16	91	47.39	31	16.14
22	1	.52	10	5.20	9	4.68	61	31.77	111	57.85
23	2	1.04	12	6.25	4	2.08	73	38.02	101	52.60
24	0	0	4	2.083	1	.52	63	32.81	124	64.58

Note. AF = Absolut Factor, RF = Relative Factor.

Given the context of teaching in the pandemic, about the impossibility of perceiving the difficulties of their students in the remote teaching model, 44.27 % of the teachers partially agreed and 29.68 % indicated total agreement. On topics about the possibility that the pandemic may have generated stressors that caused students to alternate more abruptly between engagement and apathy, and on remote teaching that impeded perception and intervention on behalf of students, in both items more than 50 % showed agreement and, regarding the need for specialized professionals to work in schools, most responses ranged between partial and full agreement.

## Conclusions

The teachers who answered the questionnaire, in approximate proportional numbers, in the same way that they assumed to perceive the signs of difficulties for learning in the classrooms, also pointed to the obstacles generated by the social and health crisis, considering, in this study, social isolation, and the emergency remote teaching model. This alerts us to several tensions that unfold in the Brazilian educational context, as well as to possible aggravating factors in the resumption of face-to-face education, given that, in conventional models of coexistence and relationships at school, exclusion, stigmas and situations in which these students considered as a “problem” are submitted, generate a framework of children and adolescents placed on the sidelines of a quality education or that at least corresponds to their needs and neurodevelopment.

Thus, the alert about this phenomenon is accentuated, after this hiatus imposed by the pandemic that caused the emergency remote teaching model. Descriptive studies such as this one will contribute to a broader discussion and reflection about this phenomenon that



affects the student population and the consequences in the school environment, as well as to emphasize the need to adopt methods based on evidence in the various educational practices and in teacher training, considering the areas involved in the study of human learning phenomena in favor of an inclusive school environment that considers each subject as a human being capable of learning.

## References

- American Psychiatric Association (2014). *Manual diagnóstico e estatístico de transtornos mentais: DSM-5* [Diagnostic and statistical manual of mental disorders: DSM-5]. Porto Alegre: Artmed. [In Portuguese]
- Benedetti, M. D., Bezerra, D. M. M., Telles, M. C. G., & de Lima, L. A. G. (2018). Medicalization and education: Analysis of service processes in school complaints. *Psicologia Escolar e Educacional*, 22(1), 73–81. [In Portuguese]. <https://doi.org/10.1590/2175-35392018010144>
- Borsa, J. C. (2007). O papel da escola no processo de socialização infantil [The role of the school in the child socialization process]. *O Portal dos Psicólogos*. [In Portuguese]. Retrieved from <https://www.psicologia.pt/artigos/textos/A0351.pdf>
- Cardoso, M. A., & Queiroz, S. L. (2019). As contribuições da neurociência para a educação e a formação de professores: um diálogo necessário [The contributions of neuroscience to teacher education and training: A necessary dialogue]. *Cardenos da Pedagogia*, 12(24), 30–47. [In Portuguese]
- Carvalho, F. B., Crenitte, P. A. P., & Ciasca, S. M. (2007). Distúrbios de aprendizagem na visão do professor [Learning disorders in the teacher's view]. *Revista Psicopedagogia*, 24(75), 229–239. [In Portuguese]
- Consenza, R. M., & Guerra, L. B. (2011). *Neurociências e Educação: como o cérebro aprende* [Neurosciences and education: How the brain learns]. Porto Alegre: Artmed. [In Portuguese]
- Fontelles, M. J., Simões, M. G., Farias, S. H., & Fontelles, R. G. S. (2009). Metodologia da pesquisa científica: diretrizes para a elaboração de um protocolo de pesquisa [Scientific research methodology: Guidelines for the elaboration of a research protocol]. *Revista Paraense de Medicina*, 23(3), 69–76. [In Portuguese]
- Fülle, A., Cardoso, F. B., Russo, R. M. T., & Heck, B. M. (2018). Neuropsicopedagogia: Ciência da aprendizagem [Neuropsychopedagogy: Science of learning]. In R. M. T. Russo (Ed.), *Neuropsicopedagogia Institucional* (1st ed., pp. 25–34). Curitiba: Juruá. [In Portuguese]
- Luria, A. R. (1979). *Curso de psicologia geral* [Course of general psychology]. Rio de Janeiro: Civilização Brasileira. [In Portuguese]
- McClelland, J. A. G. (1976). *Técnica de questionário para pesquisa* [Questionnaire technique for research]. Brazil: IFUFRGS. [In Portuguese]
- Resolution of Brazilian Society of Neuropsychopedagogy (SBNPp). No. 05 (2021): Technical-professional advice. [In Portuguese]
- Souza, A. C., & Novaes, A. O. (2021). O professor e o “aluno-problema” — um fenômeno social [The teacher and the “problem student” — a social phenomenon]. *Revista Mbianteeducação*, 14(1), 57–69. [In Portuguese]



- Stevanin, L. F. (2020). Exclusão nada remota: desigualdades sociais e digitais dificultam a garantia do direito à educação na pandemia [Exclusion not remote: Social and digital inequalities make it difficult to guarantee the right to education in the pandemic]. *RADIS: Comunicação e Saúde*, 215, 10–15. [In Portuguese]
- Vygotsky, L. S. (1984). *A formação social da mente* [The social formation of the mind]. São Paulo: Martins Fontes. [In Portuguese]

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