Development and Initial Validity Tests of the Scale of Experiences Associated with Remote Instruction

Danielle Mello Ferreira https://orcid.org/0000-0002-2285-5400
Luciana Mourão https://orcid.org/0000-0002-8230-3763
Lara Barros Martins https://orcid.org/0000-0002-3175-6324

ABSTRACT

In the Covid-19 Pandemic, many higher education institutions adopted remote classes to maintain social distance and ensure the continuity of studies during this period. This article presents the development process and initial evidence of the validity of the Scale Experiences Associated with Remote Instruction, which had three steps: 1) construction of 20 items derived from interviews and adaptation of a scale of mastery of skills to use new technologies. After evaluation by judges, the scale had 15 items distributed in two dimensions (self-discipline and technological mastery); 2) application of the scale to 971 university students, from 17 public and private institutions, enrolled in face-to-face courses that adopted remote classes during the pandemic. Exploratory and confirmatory factor analyses indicated a two-factor structure with 10 items and good psychometric and fit indicators; 3) test of the measure's relationship with the constructs of attitudes towards distance education and professional development; and comparison between groups of students with or without previous experience in e-learning. A positive relationship with both variables was confirmed, in addition to identifying higher scores of adaptation to remote instruction among students who already had some experience with e-learning. The results allow recommending the use of the developed scale, with indications of possible theoretical and practical contributions from the adoption of the measure.

KEYWORDS

Self-discipline. Technological mastery. Remote instruction. Higher education. Scale.

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Corresponding to Authors

Danielle Mello Ferreira
E-mail: danimellof@gmail.com
Universidade Salgado de Oliveira
CV Lattes
http://lattes.cnpq.br/0652796903721315

Luciana Mourão
E-mail: mourao.luciana@gmail.com
Universidade Salgado de Oliveira
CV Lattes
http://lattes.cnpq.br/2558400549506524

Lara Barros Martins
E-mail: l_bmartins@hotmail.com
Universidade Loyola da Andaluzia
CV Lattes
http://lattes.cnpq.br/6583735772035362

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Desenvolvimento e Testes Iniciais de Validade da Escala de Experiências Associadas ao Ensino Remoto

RESUMO

Na Pandemia da Covid-19, muitas instituições de ensino superior adotaram aulas remotas para manter o distanciamento social e garantir a continuidade dos estudos nesse período. Este artigo apresenta o processo de desenvolvimento e as evidências iniciais de validade da Escala Experiências Associadas ao Ensino Remoto, que contou com três etapas: 1) construção de 20 itens derivados de entrevistas e da adaptação de uma escala de domínio de habilidades de uso de novas tecnologias. Após a avaliação por juízes, a escala contou com 15 itens distribuídos em duas dimensões (autodisciplina e domínio tecnológico); 2) aplicação da escala a 971 universitários, de 17 instituições públicas e privadas, matriculados em cursos presenciais que durante a pandemia adotaram aulas remotas. As análises fatoriais exploratória e confirmatória indicaram uma estrutura bidimensional com 10 itens e bons indicadores psicométricos e de ajuste; 3) teste da relação da medida com os construtos de atitudes frente à educação a distância e desenvolvimento profissional; e comparação entre grupos de estudantes com ou sem experiência prévia na EaD. Tal relação positiva com ambas as variáveis foi confirmada, além de terem sido identificados escores mais elevados de adaptação ao ensino remoto entre os discentes que já tinham alguma experiência com a modalidade a distância. Os resultados permitem recomendar o uso da escala desenvolvida, com indicações de possíveis contribuições teóricas e práticas a partir da adoção da medida.

PALAVRAS-CHAVE

Autodisciplina. Domínio tecnológico. Ensino remoto. Ensino superior. Escala.

Desarrollo y Pruebas de Validez Inicial de la Escala de Experiencias Asociadas a la Enseñanza Remota

RESUMEN

En la Pandemia de Covid-19, muchas instituciones de educación superior adoptaron clases remotas para mantener la distancia social y asegurar la continuidad de los estudios durante este período. Este artículo presenta el proceso de elaboración y las evidencias iniciales de validez de la Escala de Experiencias Asociadas a la Enseñanza Remota, que contó con tres etapas: 1) construcción de 20 ítems derivados de entrevistas y adaptación de una escala de dominio de habilidades para el uso de nuevas tecnologías. Tras la evaluación por parte de los jueces, la escala contó con 15 ítems distribuidos en dos dimensiones (autodisciplina y dominio tecnológico); 2) aplicación de la escala a 971 estudiantes universitarios, de 17 instituciones públicas y privadas, matriculados en cursos presenciales que adoptaron clases a distancia durante la pandemia. Los análisis factoriales exploratorios y confirmatorios indicaron una estructura bidimensional con 10 ítems y buenos indicadores psicométricos y de ajuste; 3) prueba de relación de la medida con los constructos de actitudes hacia la educación a distancia y el desarrollo profesional; y comparación entre grupos de estudiantes con o sin experiencia previa en educación a distancia. Se confirmó tal relación positiva con ambas variables, además de identificarse mayores puntajes de adaptación a la enseñanza remota entre los estudiantes que ya tenían alguna experiencia con dicha modalidad. Los resultados permiten recomendar el uso de la escala desarrollada, con indicaciones de posibles aportes teóricos y prácticos a partir de la adopción de la medida.

PALABRAS CLAVE

Autodisciplina. Dominio tecnológico. Enseñanza remota. Educación superior. Escala.

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Introduction

Due to the Covid-19 pandemic that spread throughout the world, social distancing measures were immediately implemented in most countries as one of the restrictive prophylactic strategies recommended to contain the contagion. The area of education was particularly affected, and, in Brazil, there was a decision to interrupt classroom activities in all teaching institutions. Due to this scenario, most schools and universities began using digital technology, which most often came from the Distance Education modality - DE (CAMACHO et al., 2020), to continue their studies remotely, called Emergency Remote Learning (ERL). In that same period, the Brazilian educational policy was encouraging and expanding the possibilities of DE in Higher Education Institutions (HEI) (FERREIRA; MOURÃO, 2020), which with the circumstances established by the pandemic accelerated the already existing trends for the validity of the modality in higher education courses.

In other countries, educational strategies were also developed to enable higher education during the pandemic. In India, several HEIs had already started this process of adopting remote learning on a voluntary basis earlier, and the initiatives were intensified during the health crisis. China created an online class program (school's out, class's in) to ensure continued learning even without face-to-face classes. In the United States, free courses were made available through large platforms (e.g., Massive Open Online Courses - MOOCs). In Portugal, the government created a website (https://apoioescolas.dge.mec.pt/) to offer free online teaching tools to teachers (CHAKRABORTY et al., 2021).

To regulate educational measures in Brazil, the Ministry of Education (MEC) published Ordinance No. 343 on March 17, 2020, which authorized the replacement of face-to-face classes with classes in digital media for the duration of the pandemic situation. This measure worked as a recognition by the government of the need for alternatives to supply the teaching and learning process that used to take place in the classroom. Technology, which at times was seen as something that could reduce the degree of social interaction, became, during the Covid-19 pandemic, a way to expand social encounters and allow the continuity of educational activities, favoring collectivity (SANTOS JÚNIOR; MONTEIRO, 2020).

However, while some HEIs adapted quickly to the implementation of the ERL, others opted for the interruption of classes, either because of difficulty accessing the Internet by students or because the change would require investments and a period of adaptation of teachers and technical staff. In this regard, studies point out that the ERL, in general, has proved challenging to teachers and students, especially in terms of competent performance in carrying out activities in this context (ADNAN; ANWAR, 2020; NAJI et al., 2020).

While the pandemic extended beyond the initial forecast, making it impossible to return to face-to-face classes in the short term, those HEIs that did not immediately adopt the ERL had to develop and apply new strategies, even considering the restrictions on some students' access to the Internet and technological equipment. In this sense, inequalities among

students were found, with some having an advantage in terms of availability, access, training, and use of digital technologies compared to others who did not have sufficient resources to follow the online classes (PASINI; PAULA; DEMENECH, 2021).

Despite the variability of pedagogical strategies adopted by the HEIs, all of them used virtuality to some extent in their teaching-learning processes and teacher-student interactions. It is worth noting that the new model adopted, the DE, is not configured as an expansion or variant of DE, but as an alternative to face an atypical historical period (HODGES, 2020; RONDINI; PEDRO; DUARTE, 2020). Thus, the ERL was defined as a teaching strategy that aims to allow access to curriculum content that would be developed face-to-face, being characterized as a temporary change in pedagogical strategies to meet circumstances of crisis (HODGES, 2020; RONDINI et al., 2020). The model differs from DE since it is considered a momentary solution, with educational strategies adapted to the conditions and resources available during this period.

An example of a difference between DE and ERL would be the synchronous interaction between teacher and student, which happens in most emergency education classes and is distinct from the pedagogical strategies of distance courses - mostly asynchronous (HODGES, 2020). In this sense, the ERL demanded from the teacher the constant use of interactive tools, the availability of internet connection, organization, and a critical reflective sense about their performance (CAMACHO et al., 2020). With this instantaneous transformation of the teaching methodology, even those who already had skills with the technology needed to be trained to work with the new tools (BARBOSA; VIEGAS; BATISTA, 2020).

The ERL also demanded continuous dedication from the students since the space-time dynamics of the virtual classroom require a certain technological mastery and self-discipline. As happened with some teachers, part of the students was also not prepared for this change, presenting adaptation difficulties (ABMES, 2020), because they were used to face-to-face teaching, which has stability, prediction, time, and demarcated place (BEHAR; SILVA, 2012). Many of them also had to invest in developing self-discipline to keep up with the new pace of studies and adapt to the environmental conditions in which the classes took place (SOUZA et al., 2021).

Despite the initial discomfort, the ERL brought, in addition to the opportunity to continue the formative process, new experiences and learning (GOEDERT; ARNDT, 2020; SANTOS JÚNIOR; MONTEIRO, 2020), such as the use of different learning strategies and technological tools (ANTONELLI-PONTI; VERSUTI; LOBO, 2020). In most HEIs, the classes took place via digital platforms and resources, more often synchronously, at the time of classes that were previously face-to-face (SANTOS JÚNIOR; MONTEIRO, 2020).

Given this context, even teachers and students who already had some technological domain needed to adapt and develop new skills and attitudes (BARBOSA et al., 2020). This

domain is fundamental to the performance of those who study or work using this type of tool (ABBAD et al., 2015), in the same way that students' attitudes in relation to distance learning are also decisive for the learning process.

Thus, the pedagogical strategies arising from remote learning - almost always anchored on platforms and digital resources and with a model of synchronous classes - contributed to the development of skills and attitudes of university students (SANTOS JÚNIOR; MONTEIRO, 2020). It is understood that skills refer to cognitive, motor, and technical processes related to the productive application of knowledge, that are related to the productive application of knowledge, being built through practice (ABBAD et al., 2015; BEHAR; SILVA, 2012). On the other hand, attitudes function as a state of readiness, being organized by experience and exerting a directive and dynamic influence on people's responses to certain stimuli (ALLPORT, 1935). They can also be defined as relatively stable evaluative responses given by people to entities or situations or as perceptions of the individual that can influence their behavioral intentions and behaviors (POMPÊO et al., 2015).

Thus, in the context of the ERL, we highlight among the skills to be developed in students: self-discipline and technological mastery. Self-discipline was considered a key competence to cope with this period, with reflections not only for the academic context, but also for work motivation and the achievement of effectiveness and well-being (WANG et al., 2021). Similarly, mastering the skills of using new technologies has been shown to be fundamental to the performance of those who study remotely. Thus, many students who had not previously experienced online disciplines had to invest, on the one hand, in the development of self-discipline to keep up with the new pace of studies and adapt to the environmental conditions in which the classes occurred (SOUZA et al., 2021), and on the other, attend classes, previously face-to-face, via platforms and digital resources, synchronously (SANTOS JÚNIOR; MONTEIRO, 2020).

The domain of such skills is intertwined with the attitudes of learners in relation to distance learning, with potential influence on the learning process (ABBAD et al., 2015). Such attitudes are influenced by the perceived both usefulness and ease of use of technologies (POMPÊO et al., 2015). Thus, even though RRE has distinct characteristics from the distance modality, attitudes towards DE may influence undergraduate students' experiences with remote learning, which also requires some openness to technology-mediated learning (CARNEIRO et al., 2020; MOURÃO et al., 2020; SANTOS JÚNIOR; MONTEIRO, 2020). Therefore, those who can visualize greater usefulness in DE and also have greater technological mastery, tend to have a more favorable attitude to this type of education and a behavioral intention that favors the modality (POMPÊO et al., 2015) and, consequently, its results.

Of the undergraduate students who had remote classes during the Covid-19 pandemic, it is expected that their experiences associated with the ERL are positively linked to their perception of professional development, favoring it (BARBOSA et al., 2020; GUSSO et al.,

2020; WANG et al., 2021). Such development can be understood as an intentional and continuous process of acquisition and improvement of competencies, present in the trajectory of different work occupations, which keeps a relationship with personal experiences, with identity transformations and with performance improvements (FERNANDES; MOURÃO; GONDIM, 2019).

Given that the experiences lived during graduation can favor or hinder the professional development process of students (MOURÃO et al., 2020) and considering such innovative experiences experienced during the pandemic, propitiating the development of new competencies, the context of the ERL then revealed the need for scales that could measure both self-discipline and technological mastery. These dimensions should be better investigated, enabling diagnostics on the level of preparedness of students, according to these skills, to benefit from remote education (emergency or not).

Thus, the purpose of this study was to present the development process and initial evidence of the validity of the Scale of Experiences Associated with Remote Learning (SEARL). As a complementary part of the validity evidence, we tested relationships with external variables, namely: attitudes towards DE and professional development, because they are expected effects of exposure to the emergent modality related to the new skills of interest. For this, we present below the method adopted and the results obtained in the different stages of the process: construction and theoretical validation of the scale, definition, and confirmation of the empirical structure of the scale, the relation of the scale with external variables and comparison between groups of students.

Method

The method of this research involves three successive steps: (i) the construction and theoretical validation of the scale; (ii) the definition and confirmation of the factor structure of the scale; and (iii) the relationship of the scale with external variables and comparison between groups of students. The creation of the items was derived from two sources. The first was the adaptation of some items from the Scale of Mastery of Skills for Use of New Information and Communication Technologies in Organizations (ABBAD et al., 2015). The second source was interviews with teachers (n = 8) and students (n = 12) of distance undergraduate courses. The purpose of these interviews was to identify resources and strategies, respectively, for teaching and learning (e.g., creating groups on apps such as WhatsApp and Telegram; seeking help through technological resources such as emails and chat) adopted as an adaptation to remote teaching during the Covid-19 pandemic.

We also analyze the constitutive definition of the core concepts present in the measure. It contributes to its theoretical understanding and allows a more consistent discussion of the results for when the scale is applied. The core concepts considered for constructing the scale items were: self-discipline and technological mastery. Self-discipline can be defined as the control of one's own willpower to accomplish what is considered

desirable and avoid what is considered undesirable, or to postpone a reward (KOHN, 2008). The technological domain is associated with digital literacy and the ability to understand and use information in multiple formats, in an extensive range of digital sources presented by computers and other equipment (GOMEZ, 2004). In the present research, this domain refers to some technological competencies specifically focused on equipment and resources directed toward the teaching and learning process and interpersonal communication.

The identification of the constitutive definitions (GOMEZ, 2004; KOHN, 2008) and the scale that inspired some items (ABBAD et al., 2015) refers to the theoretical support of this study, which is a fundamental aspect to assess the content validity and the internal structure of the measure, considered the most important property of a scale (SCHWEIZER, 2011). In addition, the interviews conducted with teachers and students refer to the empirical support of the measure, in the sense of listening to people who were experiencing, at that moment, remote teaching and who, therefore, could legitimately describe their experiences.

Table 1 presents the 20 items included in the first version of the scale, based on the central concepts defined for the measure (self-discipline and technological mastery), identifying the items that were adapted from the Scale of Mastery of Skills for Use of New Information and Communication Technologies in Organizations (ABBAD et al., 2015) and those that came from the interviews.

Table 1. Initial version of the Scale of Experiences Associated with Remote Learning (SEARL)

Dimensions	Items	Item Origin
Self-discipline	1. I quickly adapted to the technological tools used for distance learning	Adapted from ABBAD et al., 2015
	2. I organized my time so that I could study at a distance	Interviews
	3. I tried to plan my study time	Interviews
	4. I created strategies to keep my attention on my studies when I felt disinterested	Interviews
Technological Domain	5. I easily accessed the virtual environments used for academic activities	Adapted from ABBAD et al., 2015
	6. I had no difficulties using the functions of the applications/tools used in the academic activities	Adapted from ABBAD et al., 2015
	7. I was able to send files that were requested in the academic activities	Adapted from ABBAD et al., 2015
	8. I was able to access the documents/materials made available for the academic activities	Adapted from ABBAD et al., 2015
	9. I was able to locate videos indicated by the professor	Adapted from ABBAD et al., 2015
	10. I was able to share my computer screen easily to present papers	Interviews
	11. I was able to participate in video calls using features such as camera and microphone	Adapted from ABBAD et al., 2015
	12. I was able to download applications that helped me in the process of studying at a distance	Adapted from ABBAD et al., 2015

13. I was able to use resources and tools to exchange messages with colleagues and/or teachers	Adapted from ABBAD et al., 2015
14. I was able to access the documents/materials made available for the academic activities	Adapted from ABBAD et al., 2015
15. I was able to use technological resources to do group work	Interviews
16. I was able to create links to virtual meetings with colleagues and teachers	Interviews
17. I was able to save the files and documents I typed on my computer into folders	Adapted from ABBAD et al., 2015
18. I converted the files to PDF where necessary	Adapted from ABBAD et al., 2015
19. I easily created groups in chat applications (WhatsApp and Telegram)	Interviews
20. I sought help from the teacher during class through technological resources (e-mails, chat, message center)	Interviews

Source: the authors.

After choosing the items, judges performed the theoretical validation of the scale. Two researchers with more than 15 years of experience in DE participated in this stage, and analyzed the items proposed in the first version. The experts judged the degree of pertinence (1 - Not at all pertinent to 5 - Totally pertinent) of the item to the theoretical dimension with which it was associated (self-discipline or technological mastery). Only the items that received maximum scores by both judges in terms of pertinence and whose classification in the respective dimension was consensual were kept on the scale.

Thus, of the 20 items initially proposed, 15 items remained for the following steps, and items 08, 17, 18, 19, and 20 were excluded. In some cases of excessive similarity, the judges reported having considered as "totally pertinent" the most appropriate item to remain on the scale. They also chose to recommend the removal of the item "I sought help from the teacher during classes through technological resources (e-mails, chat, message center)" because they evaluated that this strategy would not always be applicable, since the dynamics of using this type of resource to access teachers depends not only on the student, but also on the dynamics agreed upon by the teachers.

In addition, the judges also evaluated that items that concerned actions that were very frequent in face-to-face teaching would not need to remain, since the Scale of Experiences Associated with Remote Teaching was specifically aimed at this new context. In this sense, they chose to remove four items related to actions that were very frequent in face-to-face teaching, namely: accessing documents/materials made available for academic activities; saving files and documents typed on the computer in folders; converting files to PDF format; and creating groups on chat applications such as WhatsApp. The logic adopted by the judges was that many students who had not experienced online disciplines had to adapt to current technological tools and learning strategies to continue their educational process (BARBOSA et al., 2020; CARNEIRO et al., 2020).

To define the empirical structure of the scale, the exploratory factor analysis (EFA) was performed, followed by the confirmation of the structure by the confirmatory factor analysis (CFA). To perform these analyses, the scale was applied to 971 college students enrolled in undergraduate courses who were in emergency remote education due to the Covid-19 pandemic. The total sample included students from different undergraduate courses, offered in 17 public and private institutions in the states of Amazonas, Bahia, Goiás, Minas Gerais, Pernambuco, Paraná, Rio de Janeiro, and Rio Grande do Sul, besides the Federal District, with a predominance of the Southeast region (94.9%).

The age of the participants ranged from 18 to 61 years, with a mean of 28.6 years (standard deviation = 9.2) and a median of 25 years. Most were female (66%), single (63.5%), and had a family income of one thousand to three thousand reais (55%). Regarding the academic trajectory: 18% were in the initial phase of the course (up to the 3rd period), 39% were in the intermediate phase (4th to 6th) and 43% at the end of the course (from the 7th period on).

The EEAER contained 15 items, subdivided into the theoretical dimensions: Self-Discipline (4 items) and Technological Mastery (11 items), which assess adaptation to the ERE. The items were answered by a Likert-type agreement scale ranging from strongly disagree (1) to strongly agree (5). The questionnaire allowed the student to mark the option "not applicable" if he or she had not experienced some of the situations described (for example: "I was able to send files that were requested in the academic activities"). This was important, because not all students were exposed during the ERL to all the situations described in the measure.

Data collection was conducted online, with the survey being disseminated through emails, social networks, and messaging applications, in the period from September 2020 to February 2021. The participants initially had access to the Informed Consent Form - ICF, and only those who agreed with the research conditions were directed to answer the questions.

Initial analyses were performed with support from Statistical Package for Social Science (SPSS, version 23.0) software to verify factor loadings and reliability index of the scales used in this study (described further in Step 3). There was no need to analyze the distribution of missing cases, because the items were mandatory responses in the online data collection. Next, the EFA and the AFC were performed with the support of Jamovi software, version 1.6.3.

In the EFA, the Kaiser-Meyer-Olkin (KMO) criterion was used to analyze the factorability of the data matrix. Although Bartlett's Test of Sphericity was significant ($p < 0.01$), it does not allow such an accurate evaluation, since larger samples - such as the one in the present study - tend to generate significant results in this type of test. We also analyzed the correlations in the data matrix, which were quite frequent and high. In terms of the

factorial loadings, in the EFA, the value of 0.40 was adopted as a cutoff point (HAIR et al., 2019).

In the AFC, the estimation method was the ML (Maximum Likelihood). Cronbach's Alpha (α) and McDonald's Omega (ω) were used as reliability indices (LUCKE, 2005). The ranges of these parameters were classified as follows: < 0.60 = inadequate; 0.60 to 0.69 = marginal reliability; 0.70 to 0.79 = acceptable; 0.80 to 0.89 = good; and 0.90 or more = excellent (HAIR et al., 2019). For model fit analysis, the following criteria were adopted: CFI (> 0.90), TLI (> 0.90), RMSEA (< 0.08), and SRMR (< 0.08) (BROWN, 2015).

For the third stage of the scale's relationship with external variables and comparison between student groups, the relationship of the Scale of Experiences Associated with Remote Learning - in its dimensions of self-discipline and technological mastery - with the constructs of attitudes towards DE and professional development was tested. The choice of this external variable was because we believe that technological skill is directly related to students' attitudes toward DE, since they are influenced by the perception of usefulness and ease of use (POMPÊO et al., 2015). Thus, those who can visualize greater usefulness in DE, can have more self-discipline and have greater technological mastery, would tend to have a more favorable attitude toward this type of education and a behavioral intention that favors the modality (POMPÊO et al., 2015; SOUZA et al., 2021).

Similarly, one would expect that, as the experience in the pandemic period was very innovative, it sparked the development of new skills, especially related to the use of digital tools, which can contribute to the professional development of university students. Moreover, the professional development model itself has training as one of its main elements, present in the trajectory of different labor occupations (FERNANDES et al., 2019). In this sense, the experiences experienced during graduation can favor or hinder the process of professional development of students (MOURÃO et al., 2020), which is why we consider it relevant to evaluate the relationship between the Scale of Experiences Associated with Remote Teaching and the Scale of Perception of Professional Development.

In methodological terms, the same sample described above was used and, therefore, the same data collection procedures. The data collection instruments included not only the EEAER, but also the measure related to attitudes about DE and the measure related to professional development, both described below.

The Attitudes about Distance Training Scale (POMPÊO et al., 2015) is a single-factor scale, composed of nine items, associated with a Likert scale of agreement (1 = strongly disagree and 5 = strongly agree). The original version had a Cronbach's Alpha of 0.90, with factor loadings ranging from 0.43 to 0.79, while in the present research the Alpha was 0.76 and the factor loadings ranged from 0.50 to 0.74. Considering the nature of the target audience - students in emergency remote education - adaptations were made in the text of some items, since they were aimed at training conducted at a distance. For example, the item

"I consider myself skilled as a participant in distance learning courses" was changed to "I consider myself skilled as a participant in distance learning courses or subjects".

The Evolving Perceptions of Professional Development Scale - EPPDS (MOURÃO et al., 2020) is unifactorial and contains 13 items associated with a Likert scale ranging from 1 (Not at all prepared) to 5 (Fully prepared). The original study presents a degree of reliability measured by Cronbach's Alpha of 0.94 and factor loadings between 0.62 and 0.84. In the present study, a reduced version of six items was adopted, which obtained a Cronbach's Alpha of 0.91 and factor loadings ranging from 0.80 to 0.86. An example of an item is "Propose improvements for my professional activities".

Furthermore, some complementary analyses were carried out to compare the scores of students who had or had not had previous experience with DE, to verify whether those already exposed to previous experiences of studying online, in a planned and voluntary way, could present an easier adaptation to the ERE. To this end, Student's t-tests were performed, with prior analysis of the assumption of homogeneity of variance (Levene's test) and analysis of the effect size by Cohen's d (ESPÍRITO SANTO; DANIEL, 2017). With regard to the relationship with the other external variables, Pearson correlations (r) were performed ($p < 0.01$).

Results

The data matrix indicated a good correlation between the items, with a high KMO value (0.89). The indication of the number of factors confirmed the theoretical structure initially proposed, since both the Kaiser method (eigenvalues greater than 1) and the parallel analysis method (DAMASIO, 2012) indicated the existence of two factors: Self-discipline and Technological Domain. In this stage of the EFA, all 15 items were retained, and 45% of the variance was explained. Table 2 exposes the factor loadings of the items, which ranged from 0.57 to 0.85 in the Self-discipline dimension ($\alpha = 0.80$) and from 0.44 to 0.74 in the Technological Mastery dimension ($\alpha = 0.79$).

Table 2. Factorial loadings on the AFE of the items of the Experiences Associated with Remote Learning Scale

Factor	Items	Factorial Load
Self-discipline	I quickly adapted to the technological tools used for distance learning	0,57
	I organized my time so that I could study at a distance	0,65
	I tried to plan my study time	0,85
	I created strategies to keep my attention on my studies when I felt uninterested	0,73
Technological Domain	I easily accessed the virtual environments used for academic activities	0,68
	I had no difficulties using the functions of the applications/tools used in the academic activities	0,70

I was able to send files that were requested in the academic activities	0,71
I was able to locate videos indicated by the teacher	0,65
I was able to share the computer screen easily to present assignments	0,60
I was able to participate in video calls using resources such as camera and microphone	0,54
I was able to download applications that helped me in the process of studying at a distance	0,44
I was able to use resources and tools to exchange messages with colleagues and/or professors	0,67
I was able to access the documents/materials made available for academic activities	0,74
I was able to use technological resources to carry out group work	0,65
I was able to create links for virtual meetings with colleagues and professors	0,59

Source: the authors.

In the second moment, the confirmatory factor analysis - CFA was performed. Among the 15 items arising from the SFA, only one was excluded before the CFA, because it did not meet the minimum cut-off point (cutoff of 0.50) recommended for the CFA (HAIR et al., 2019). The excluded item was "I was able to download applications that helped me in the distance study process" (technological domain), possibly its factor loading may have been lower due to the fact that many students did not present this need to download applications, since many times the platforms used were those offered by the institution itself.

The first model with the 14 items did not present satisfactory indexes (TLI = 0.886; CFI = 0.908; RMSEA = 0.080), being necessary to perform the next step, which was an analysis of the correlation between the items' errors, pointed by the Modification Index (MI). This analysis did not show cross-loadings between the items of the two dimensions but indicated a high correlation in the errors of four pairs of items. As a general rule, we chose to keep the item with the highest factor loading.

Thus, in the pair "I used without difficulty the functions of the applications/tools used in the activities" and "I easily accessed the virtual environments used for the academic activities" (MI = 373.2); the second item remained. Among the pair "I was able to create links for virtual meetings with classmates and/or professors" and "I could easily share the computer screen to present assignments" (MI = 95.9), the first item was deleted. In the pair "I was able to send the files that were requested in the academic activities" and "I was able to access the documents/materials made available for the academic activities" (MI = 92.6), the second item was excluded. Finally, between the pair "I was able to share the computer screen easily to present assignments" and "I was able to use technological resources to carry out group work" (MI = 68.0), the second item was deleted.

After removing these four items, all belonging to the Technology Mastery dimension,

we obtained a model that signals a good fit of the data to the hypothesized model. The chi-square remained significant, which was already expected due to the high sample size ($\chi 2/gl$ = 4.67), but the TLI and CFI indicators showed satisfactory values of 0.942 and 0.956, respectively. The RMSEA also confirmed that the second model is more parsimonious 0.071 (Table 3).

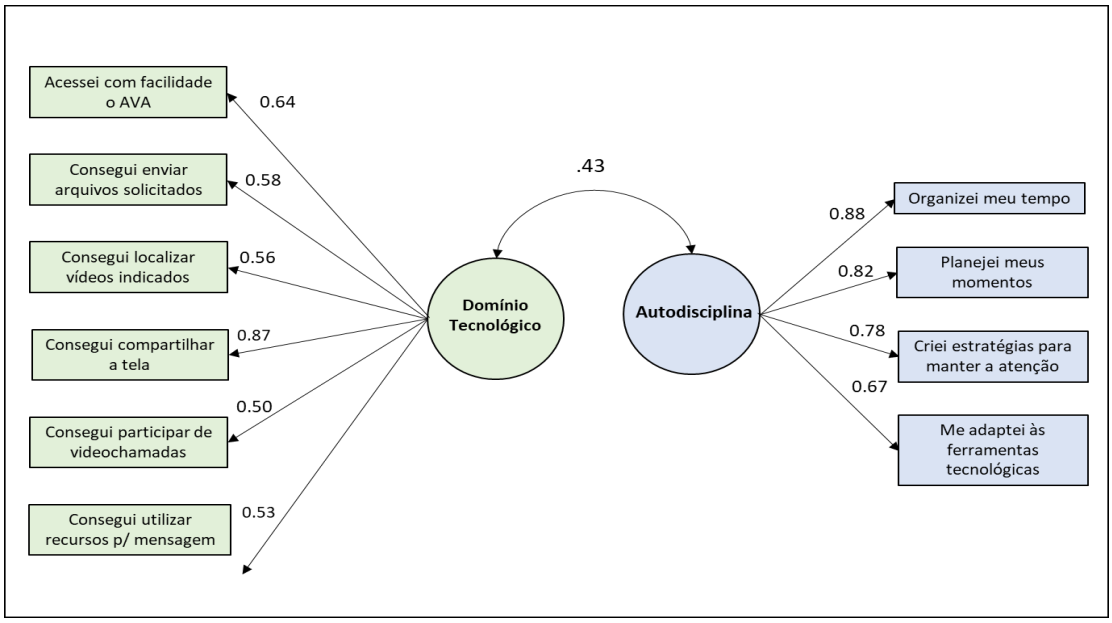
Table 3. Analysis of rival models of latent variables for testing the hypotheses

MODELS	χ^2	gl	χ^2/gl	TLI	CFI	RMSEA (IC -90%)
Model 1 (14 items)	410	53	7,73	0,886	0,908	0,080 (0,076-0,091)
Model 2 (10 items)	159	34	4,67	0,942	0,956	0,071(0,052-0,071)

Source: the authors.

The correlation between the Self-discipline and Technological Mastery dimensions was 0.43 and their factor loadings were above 0.50 for all items (Figure 1). The reliability of the measure was measured by Cronbach's Alpha and McDonald's Omega, whose values were identical (0.80) for the Self-discipline dimension and for the Technological Mastery dimension (0.87). Thus, the final version of the scale presents a bifactor structure and 10 items.

Figure 1. Final result of the Confirmatory Factor Analysis of the Experiences Associated with Remote Learning Scale



Source: the authors.

The results of the analyses of the relationship of the scale with external variables indicate that the correlations of the dimensions of self-discipline and technological mastery with attitudes toward DE are significant, but of low magnitude, respectively, r = 0.18 and r = 0.21. Such a result reinforces the idea that DE and ERL are distinct and that the dimensions of

experiences associated with remote learning in the health crisis period have a low connection with attitudes toward DE. The correlations between self-discipline and technological mastery with professional development (r = 0.31 and r = 0.24, respectively), on the other hand, indicate a positive connection of experiences associated with ERE with student development.

The results of t-tests comparing college students who were experiencing remote tutoring for the first time and those who had prior experience with DE indicated a significant difference in the means of attitudes toward DE ($t(429) = 2.38$; $p < 0.05$), as well as in the self-discipline ($t(429) = 4.34$; $p < 0.01$) and technological mastery ($t(356) = 3.60$; $p < 0.01$) dimensions. The effect sizes measured by Cohen's d for self-discipline and technological mastery were high (d = 0.55 and 0.45, respectively), indicating that previous experience with DE was decisive for adaptation to ERE during the pandemic.

Final Considerations

This study aimed to present initial evidence of validity of the Scale of Experiences Associated with Remote Learning - SEARL. The measure was developed from the adaptation of an instrument already existing in the literature and the survey of information from the main actors exposed to the ERL during the pandemic, in order to assess self-discipline and technological mastery of those who were living academic experiences in this period. We also tested the relationship of this scale with external variables (attitudes toward DE and evolving perception of professional development of university students during the pandemic). The work was developed in three successive stages, from the construction of the scale, through the EFA and CFA, to the testing of its relationship with the variables mentioned.

The objective of the present study was achieved, since the factorial structure of the scale was consistent with the theoretical contributions adopted (ABBAD et al., 2015; BARBOSA et al., 2020; GOMEZ, 2004; KOHN, 2008; POMPÊO et al., 2015; SOUZA et al., 2021) and its psychometric qualities were adequate (internal consistency > 0.80 and factor loadings > 0.50) (HAIR et al., 2019). Moreover, the relationships with external variables confirm the initial evidence of validity of the measure, since the SEARL correlated with both attitudes toward DE and professional development (FERNANDES et al., 2019; MOURÃO et al., 2020).

Thus, the model with better psychometric properties and theoretical consistency was found through exploratory and confirmatory data analysis techniques that present a short scale (10 items) that allows measuring self-discipline (4 items) and technological mastery (6 items) in the context of remote teaching - emergency or not, since the items allow analyzing the degree of adaptation and preparation of students to study mediated by digital technologies, considering a set of fundamental skills to ensure a good performance during the course and academic achievement.

Throughout the data analysis process, some items were removed for having presented

high similarity value with other items, which entailed a not very parsimonious model, as indicated by the model fit indices (HAIR et al., 2019). The decision of which item would remain considered the value of the factor loading, in which we opted for those that presented higher loading and, therefore, a greater contribution to the stability of the measure in future applications. But beyond the statistical indicators, the removal of these items also considered theoretical or practical issues, as discussed below.

The item "I had no difficulties using the functions of the applications/tools used in the activities" was removed due to the high similarity with the item "I easily accessed the virtual environments used for academic activities". Both items addressed the degree of ease/difficulty of use of technological resources to perform academic activities, however, the second item, besides having a higher factorial load, had the advantage of referring to virtual environments, which is consistent with the data that 78% of private HEIs used remote teaching strategies to give immediate continuity to undergraduate courses at the beginning of the pandemic, adopting virtual environments until then used only by DE modality (ABMES, 2020).

The data analysis also identified a high correlation of the item "I was able to share the computer screen easily to present work" with both the item "I was able to create links for virtual meetings with classmates and/or professors" and the item "I was able to use technological resources to carry out group work".

In this case, the option was to keep the item referring to computer screen sharing, because in the interviews conducted with students and teachers, this was an aspect that was often raised. Many reported that they had no experience with this and that, during class, they had difficulties when they needed to share their screens. This difficulty had two main reasons, namely: (i) there are different ways of sharing (e.g., all computer screens, only the screen in use, or a specific screen among all the open ones) and (ii) the platforms for remote classes adopt different systems - some allow all present to share their screens and, in others, sharing depends on the release of the person who is responsible for the virtual room (host). The creation of links to virtual meetings was reported as something less frequent and also easier to manage because the platforms present simpler ways to create such links. And the use of technological resources to do group work was something that most students already used, even when the courses were in the face-to-face format.

Finally, in the pair "I was able to send the files that were requested in the academic activities" and "I was able to access the documents/materials made available for the academic activities", we kept the first item because in the interviews with students and professors, both reported that the download process is usually better known by people than the upload process, which is less frequent in the academic daily life, especially for those who study in the face-to-face modality. In this sense, as the scale focuses on an adaptation to the context of remote learning, it is important that it remains the item that requires greater adaptation by students, since non-face-to-face learning requires adaptation and different strategies (ANTONELLI-

PONTI et al., 2020).

The fact that the scale is short facilitates its application along with other measures and also meets a prerogative of faster and less tedious data collection, according to a trend of using smaller instruments (ROMERO et al., 2012; SCHWEIZER, 2011). Moreover, it allows and encourages the realization of quick and reliable diagnoses for decision making in the educational area, with the purpose of offering support to students, in a personalized way, to benefit from studies in the remote modality, as in the provision of specific training to develop the required skills indicated from the application of the SEARL.

Considering the final version of the measure, the psychometric indicators were quite favorable, with high factor loadings and satisfactory internal consistency (both Cronbach's alpha and McDonald's Omega). It is worth noting that the exclusion of four items, supported by statistical criteria, does not violate the adequacy of the proposed measure, since such competencies must have been less required of students (such as performing group work or creating links to virtual meetings with classmates or teachers) or were already contemplated in the items retained in the scale.

The indicators CFI, TLI, RMSEA and SRMR suggested a parsimonious model and a good fit of the data to the hypothesized model. In addition, the relationship of the scale with external variables indicated that the dimensions of self-discipline and technological mastery tend to present higher scores among students who already had some experience with DE, which is supported by the literature in the area (ABBAD et al., 2015; POMPÊO et al., 2015; SOUZA et al., 2021) and extends the validity of the EEAER. Still about the relationship with external variables, self-discipline and technological mastery showed a positive relationship with attitudes toward DL (ABBAD et al., 2015; POMPÊO et al., 2015) and students' perception of professional development (FERNANDES et al., 2019; MOURÃO et al., 2020). Thus, the results allow recommending the use of the scale that was developed.

The application of the scale allows a self-assessment of the student about both his technological domain for remote teaching situations, as well as his ability to organize and maintain strategies that allow him to make good use of this form of teaching. In addition, the application of the EEAER allows managers and teachers to assess the students' skills and attitudes towards remote learning, enabling the development of more effective strategies, both in terms of pedagogy and in terms of the infrastructure offered by the HEIs. Thus, teachers and managers can adapt learning strategies to the reality of their students and stimulate experiences that provide technological mastery and self-discipline. Investigations using this scale gain greater relevance in the post-pandemic context, in which there is a tendency to increase hybrid education in undergraduate courses, especially considering the experiences and learning that occurred during the RRE. Moreover, the use of the scale will also allow researchers of this theme to develop new studies and expand the theoretical discussions about the experiences associated with remote teaching.

Even in the face of the positive results that allow recommending the use of the EEAER, there are limitations to be reported. A large part of the sample was made up of students from the Southeast region, which usually has better access to the Internet, when compared to other Brazilian regions. This issue is relevant especially because, among the difficulties in adapting to the ERE, part of the students indicated low internet coverage and lack of access to their own technological resources. In the same sense, the findings that indicate students with previous experience with DE as more able to benefit from the ER show the importance, in addition to the availability and access to technological resources, of exposure and familiarity in the use of these tools, which acts as a facilitator at the time of study and can impact the learning results. In sum, the experiences associated with RES refer both to the possession of adequate resources, as well as training and mastery in their use and management, combined with strategies appropriate to the new conditions, i.e., studying and learning mediated by technologies.

Thus, we suggest that future studies should expand the sample in other Brazilian regions, if possible, establishing a comparison between them. It would also be important to carry out studies that continue to test the validity of this measure, for example, analyzing the invariance of the measure for students who are in the initial or final semesters of their undergraduate programs. Finally, we also recommend research that uses the scale to evaluate other contexts of remote teaching and not only those linked to emergency strategies to deal with the health crisis caused by the pandemic.

References

ABBAD, G.; MOURÃO, L.; ZERBINI, T.; CORREIA, D. Domínio de habilidades de uso de novas tecnologias da informação e comunicação em organizações. *In:* PUENTE-PALACIOS, K.; PEIXOTO, A. **Ferramentas de diagnóstico para organizações e trabalho:** um olhar a partir da psicologia. Porto Alegre: Artmed, pp. 284-301, 2015. ISBN: 9788582712245

ASSOCIAÇÃO BRASILEIRA DE MANTENEDORAS DE ENSINO SUPERIOR (ABMES). **Desemprego acelera projeção para crescimento do EAD no ensino superior.** Brasília: ABMES, 2020. Disponível em: https://abmes.org.br/noticias/detalhe/3811/desemprego. Acesso em: 08 nov. 2021.

ADNAN, M.; ANWAR, K. Online Learning amid the COVID-19 Pandemic: Students' Perspectives. **Journal of Pedagogical Sociology and Psychology,** Turquia, v. 2, n. 1, pp. 45-51, 2020. Disponível em: https://doi.org/10.33902/JPSP. 2020261309. Acesso em: 15 nov. 2021.

ALLPORT, G. Attitudes. *In:* MURCHISON, C. **Handbook of Social Psychology.** Worcester: Clark University Press, pp. 798–844, 1935. ISBN 9780598977465

ANTONELLI-PONTI, M.; ANDRADE, R.; VERSUTI, F.; LOBO, C. Uso de estratégias de aprendizagem em cursos oferecidos à distância. **Revista Psicologia**. v. 34, n. 1, pp. 392-398, 2020. Disponível em: http://dx.doi.org/10.17575/psicologia.v34i1.1681. Acesso em: 15 dez. 2021.

BARBOSA, A.; VIEGAS, M.; BATISTA, R. Aulas presenciais em tempos de pandemia: relatos de experiências de professores do nível superior sobre as aulas remotas. **Revista Augustus**, Rio de Janeiro, v. 25, n. 51, pp. 255-280, 2020. Disponível em: https://doi.org/10.15202/1981896.2020v25n51p255. Acesso em: 02 dez. 2021.

BEHAR, P.; SILVA, K. Mapeamento de competências: um foco no aluno da educação a distância. **RENOTE: Revista Novas Tecnologias na Educação**, Porto Alegre, v. 10, n. 3, pp. 1-11, 2012. Disponível em: https://doi.org/10.22456/1679-1916.36395. Acesso em: 12 nov. 2021.

BROWN, Timothy A. **Análise fatorial confirmatória para pesquisa aplicada**. Publicações Guilford, 2015. ISBN 8532800106. 2.

CAMACHO, A., JOAQUIM, F., DE MENEZES, H., SANT'ANNA, R. A tutoria na educação à distância em tempos de COVID-19: orientações relevantes. **Research, Society and Development,** São Paulo, v. 9, n. 5, 2020. Disponível em: https://doi.org/10.33448/rsd-v9i5.3151. Acesso em: 14 jan. 2022.

CARNEIRO, L., RODRIGUES, W., FRANÇA, G., PRATA, D. Uso de tecnologias no ensino superior público brasileiro em tempos de pandemia COVID-19. **Research, Society and Development,** São Paulo, v. 9, n. 8, 2020. Disponível em: http://dx.doi.org/10.33448/rsd-v9i8.5485. Acesso em: 14 jan. 2022.

CHAKRABORTY, P., MITTAL, P., GUPTA, MS, YADAV, S., ARORA, A. Opinion of students on online education during the COVID-19 pandemic. **Human Behavior & Emerging Technologies,** v. 3, n. 3, pp. 357-365, 2021. Disponível em: https://doi.org/10.1002/hbe2.240. Acesso em: 10 dez. 2021.

DAMÁSIO, Bruno Figueiredo. Uso da análise fatorial exploratória em psicologia. **Avaliação Psicológica**, v. 11, n. 2, p. 213-228, 2012. Disponível em: https://www.redalyc.org/articulo.oa?id=335027501007. Acesso em: 10 dez. 2021.

ESPÍRITO SANTO, H.; DANIEL, F. Calcular e apresentar tamanhos do efeito em trabalhos científicos (2): Guia para reportar a força das relações. **Revista Portuguesa de Investigação Comportamental e Social**, Coimbra, v. 3, n. 1, pp. 53-64, 2017. Disponível em: https://doi.org/10.7342/ismt.rpics.2017.3.1.48. Acesso em: 01 fev. 2022.

FERNANDES, H.; MOURÃO, L.; GONDIM, S. Professional Development: Proposition of a Trans-occupational Model from a Qualitative Study. **Paidéia**, Ribeirão Preto, v. 29, 2019. Disponível em: https://doi.org/10.1590/1982-4327e2916. Acesso em: 03 fev. 2022.

FERREIRA, D. M.; MOURÃO, L. Panorama da Educação a Distância no Ensino Superior brasileiro. **Revista Meta: Avaliação**, Rio de Janeiro, v. 12, n. 34, pp. 247-280, 2020. Disponível em: http://dx.doi.org/10.22347/2175-2753v12i34.2318. Acesso em: 05 nov. 2021.

GOEDERT, L; ARNDT, K. Mediação pedagógica e educação mediada por tecnologias digitais em tempos de pandemia. **Criar Educação**, Criciúma, v. 9, n. 2, pp. 104-121, 2020. Disponível em: http://dx.doi.org/10.18616/ce.v9i2.6051. Acesso em: 16 dez. 2021.

GOMEZ, M. Educação em rede: uma visão contemporânea: guia da escola cidadã. **Instituto Paulo Freire**, São Paulo, v. 11, 2004.

GUSSO, H.; ARCHER, A.; LUIZ, F.; SAHÃO, F.; LUCA, G.; HENKLAIN, M.; GONÇALVES, V. Ensino superior em tempos de pandemia: diretrizes à gestão universitária. **Educação & Sociedade**, Campinas, v. 41, 2020. Disponível em: https://doi.org/10.1590/ES.238957. Acesso em: 12 jan. 2022.

HAIR, J.; BLACK, W.; BABIN, B.; ANDERSON, R. **Multivariate Data Analysis**. Upper Saddle River: Pearson Education *USA*, ed. 8, 2019. ISBN-10:1473756545

HODGES, C.; MOORE, S.; LOCKEE, B.; BOND, A. As diferenças entre o aprendizado online e o ensino remoto de emergência. **Revista da Escola, Professor, Educação e Tecnologia**, Recife, v. 2, 2020. Disponível em: https://escribo.com/revista/index.php/escola/article/view/17. Acesso em: 11 nov. 2021.

KOHN, A. Por qué está sobrevalorada la autodisciplina. **Arlington: Phi Deltaa Kappan**, 2008. Disponível em: https://www.alfiekohn.org/espanol/por-que-esta-sobrevalorada-la-autodisciplina/. Acesso em: 22 nov. 2021.

LUCKE, J. "Rassling the hog": The influence of correlated item error on internal consistency, classical reliability, and congeneric reliability. **Applied Psychological Measurement**, v. 29, n. 2, pp. 106-125, 2005. Disponível em: https://doi.org/10.1177/0146621604272739. Acesso em: 22 dez. 2021.

MOURÃO, L.; CARVALHO, L.; MONTEIRO, A. Planejamento do desenvolvimento profissional na transição entre universidade e mercado de trabalho. *In:* SOARES, A.; MOURÃO, L.; MONTEIRO, M. (Orgs.). **O estudante universitário brasileiro: saúde mental, escolha profissional, adaptação a Universidade e desenvolvimento de carreira**, pp. 255-272. Curitiba: Appris, 2020. ISBN: 978-65-5820-017-8

NAJI, K. et al. Engineering students' readiness to transition to emergency online learning in response to COVID-19: Case of Qatar. **EURASIA Journal of Mathematics, Science and Technology Education,** v. 16, n. 10, 1886. Disponível em: https://doi.org/10.29333/ejmste/8474. Acesso em: 03 fev. 2022.

PASINI, J.; PAULA, F. de; DEMENECH, F. Quando as escolas fecharam! Lugar da docência a partir dos relatos das professoras aos grupos na universidade. **Devir Educação**, pp. 363-383, 2021. Disponível em: https://doi.org/10.30905/rde.v0i0.459. Acesso em: 02 nov. 2021.

POMPÊO, F.; ABBAD, G.; ZERBINI, T.; MOURÃO, L. Atitudes sobre treinamento a distância. *In:* PUENTE-PALACIOS, K.; PEIXOTO, A. **Ferramentas de diagnóstico para organizações e trabalho: um olhar a partir da psicologia**, pp. 22-35, Porto Alegre: Artmed, 2015. ISBN: 9788582712245

ROMERO, E.; VILLAR, P.; GÓMEZ-FRAGUELA, J.; LÓPEZ-ROMERO, L. Measuring personality traits with ultra-short scales: A study of the Ten Item Personality Inventory (TIPI) in a Spanish sample. **Personality and Individual Differences**, v. 53, n. 3, pp. 289-293, 2012. Disponível em: https://doi.org/10.1016/j.paid.2012.03.035. Acesso em: 23 jan. 2022.

RONDINI, C.; PEDRO, K.; Duarte, C. Pandemia do Covid-19 e o ensino remoto emergencial: Mudanças na práxis docente. **Interfaces Científicas-Educação**, v. 10, pp. 41-57, 2020. Disponível em: https://doi.org/10.17564/2316-3828.2020v10n1p41-57. Acesso em: 03 dez. 2021.

SANTOS JÚNIOR, V.; MONTEIRO, J. Educação e Covid-19: as tecnologias digitais mediando a aprendizagem em tempos de pandemia. **Revista Encantar-Educação, Cultura e Sociedade**, Bahia, v. 2, pp. 01-15, 2020. Disponível em: https://www.revistas.uneb.br/index.php/encantar/article/view/8583. Acesso em: 06 nov. 2022.

SCHWEIZER, K. Some thoughts concerning the recent shift from measures with many items to measures with few items. **European Journal of Psychological Assessment**, v. 27, n. 2, pp. 71-72, 2011. Disponível em: https://doi.org/10.1027/1015-5759/a000056. Acesso em: 17 nov. 2021.

SOUZA, G.; JARDIM, W.; MARQUES, Y.; JUNIOR, G.; DOS SANTOS, A.; DE PAULA LIBERATO, L. Educação Remota Emergencial (ERE): Um estudo empírico sobre Capacidades Educacionais e Expectativas Docentes durante a Pandemia da COVID-19. **Research, Society and Development**, v. 10, n. 1, 2021. Disponível em: e37510111904-e37510111904. Acesso em: 11 fev. 2022.

WANG, B.; LIU, Y.; QIAN, J.; PARKER, S. Achieving effective remote working during the COVID-19 pandemic: A work design perspective. **Applied Psychology**, v. 70, n. 1, pp. 16-59, 2021. Disponível em: https://doi.org/10.1111/apps.12290. Acesso em: 05 fev. 2022.