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From principles to practice: an online learning experience on designing at a brazilian university

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Dos princípios à prática: uma experiência de aprendizagem on-line sobre concepção numa universidade brasileira

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De los principios a la práctica: una experiencia de aprendizaje en línea sobre diseño en una universidad brasileña

Mônica Garbin[1]
Agnaldo Arroio[2]

Resumo: The Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) virus affected the year 2020 causing the migration of educational curricula developed in the face-to-face mode for Emergency Remote Education (ERE). `public university in the State of São Paulo (Brazil), in two periods in 2020: June 22 to July 31; September 3 to October 14, for about 260 graduate students. The course aimed to contribute to improving the training of graduate students with a focus on teaching in higher distance education, supported by digital information and communication tools that enable pedagogical mediation. This paper aims to present the pedagogical project of the developed course, as well as the experience of using methodologies and pedagogies focused on remote education in higher education. The collected data shows that the course allowed for a growth in the academic training of future teaching trainees at the University.

Palavras-chave: COVID-19. Higher Education. Online Education. Technologies.

Abstract: *O vírus da Síndrome Respiratória Aguda Grave Coronavírus 2 (SARS-CoV-2) afetou o ano de 2020 causando a migração dos currículos educacionais desenvolvidos na modalidade presencial para Educação Remota Emergencial (ERE). Durante 2020, o curso de pós-graduação "EDM 5188 - Preparação Pedagógica PAE: mediação pedagógica" ministrado em uma universidade pública do Estado de São Paulo (Brasil), em dois períodos em 2020: 22 de junho a 31 de julho; 3 de setembro a 14 de outubro, para cerca de 260 alunos de pós-graduação. O curso teve como objetivo contribuir para a melhoria da formação de pós-graduandos com foco na docência no ensino superior a distância, apoiado em ferramentas digitais de informação e comunicação que possibilitem a mediação pedagógica. Este trabalho, portanto, tem como objetivo apresentar o projeto pedagógico do curso desenvolvido, bem como a experiência de utilização de metodologias e pedagogias voltadas à educação a distância no ensino superior. A base para o desenvolvimento deste artigo são os dados coletados junto aos estudantes das duas ofertas, bem como a própria metodologia adotada pelos professores. Os dados coletados mostram que o curso possibilitou um crescimento na formação acadêmica dos futuros estagiários de magistério da Universidade.*

Keywords: *COVID-19. Educação online. Ensino superior. Tecnologias.*

1 Doutora em Educação, Docente na Universidade Virtual do Estado de São Paulo (UNIVESP) e no Programa de Pós-Graduação da Universidade de São Paulo (USP).
2 Doutor em Ciências (Físico-Química), Pós-doutorado em Educação, Livre-docência em Ensino de Ciências, Docente na Universidade de São Paulo (USP) e no Doutorado Interinstitucional em Educação (DINTER/UFPI/FEUSP).

Resumen: *El virus del Síndrome Respiratorio Agudo Severo Coronavirus 2 (SARS-CoV-2) afectó el año 2020 provocando la migración de los currículos educativos desarrollados en la modalidad presencial para Educación a Distancia de Emergencia (ERE). Durante 2020, se impartió el curso de posgrado "EDM 5188 - Preparación Pedagógica PAE: mediación pedagógica" impartido clases en una universidad pública del Estado de São Paulo (Brasil), en dos períodos en 2020: del 22 de junio al 31 de julio; 3 de septiembre al 14 de octubre, para unos 260 estudiantes de posgrado. El curso tuvo como objetivo contribuir a mejorar la formación de los estudiantes de posgrado con enfoque en la docencia en la educación superior a distancia, apoyados en herramientas digitales de información y comunicación que posibilitan la mediación pedagógica. Este trabajo tiene como objetivo presentar el proyecto pedagógico del curso desarrollado, así como la experiencia del uso de metodologías y pedagogías enfocadas en la educación a distancia en la educación superior. Los datos recopilados muestran que el curso permitió un crecimiento en la formación académica de los futuros docentes en formación de la Universidad.*

Palabras-chave: COVID-19. Enseñanza superior. Educación virtual. Tecnologías.

INTRODUÇÃO

Taking into account the COVID-19 pandemic, since World War II, there has been no common event capable of forcing countries around the planet to close schools and universities at the same time. According to the United Nations Educational, Scientific and Cultural Organization, UNESCO, the situation is experienced by 826 million students currently paralyzed outside classrooms due to the covid-19 pandemic do not have access to a computer at home. The number corresponds to half of the total number of students in this situation, more than 1.5 billion students and 63 million primary and secondary teachers (UN, 2020).

The covid-19 pandemic has pushed educational institutions around the world to suddenly use long-standing technological tools to create content and remote learning experiences for students. There are different ways to stimulate learning remotely and, if well structured, educational activities can fulfil more than a purely academic function (Arroio, 2020).

As it was mentioned previously all levels of education had been impacted by the pandemic context, but the focus of this discussion is towards Higher Education.

The University was created in 1934 and is a public university, maintained by the State of São Paulo. Its undergraduate consists of 183 programs, dedicated to all knowledge areas, distributed in 42 teaching and research units, with more than 58,000 students. The graduate program is made up of 239 programs, with around 30,000 students enrolled.

The SARS-CoV-2 virus affected the year 2020 causing the migration of educational curricula developed in the face-to-face mode for Emergency Remote Education (ERE) (Garbin & Oliveira, 2021) and at the university it was not different. During the first semester of 2020, all undergraduate and graduate programs took place online due to lockdown at university. As it was not possible to return to activities on campus because there was no vaccine available, the university decided to continue with the ERE in 2020. Understanding that the second semester would continue to be offered in this modality, the course EDM 5188 - Pedagogical Preparation PAE: pedagogical mediation" was created and offered in two periods in that year: June 22 to July 31 and September 3 to October 14, for about 260 graduate students.

The course aimed to contribute to improving the training of graduate students with a focus on teaching in higher distance education, supported by digital information and communication tools that enable pedagogical mediation. Furthermore, it was offered to graduate students who would perform as interns in the following semesters under professor's supervision in the undergraduate programs at the University. In order to contribute to the training of these graduate students and to the university, it was proposed as a final task for assessment the organization of lesson plans according to their choices to be developed in the distance learning modality during their internship.

In this scenario, the graduate students had to choose the contents, organize the first subject, create an introductory video and, for that, take into regard aspects such as course workload, quantities and relevance of the selected didactic material, as well as your target audience. The course program was carried out during 6 weeks, remotely. Students were supported by a Virtual Learning Environment (Makumane, 2021), on the Moodle, organized into six different subjects and contents:

a) The PAE Program (Teaching Improvement Program) presents as main themes the guiding principles and expectations of teacher education and proposals on teaching practices in higher education. This subject has two essential objectives: a) Understand the PAE program. b) Recognize the need for training for teaching in Higher Education.

b) Collective knowledge construction addresses as thematic: collaborative learning, virtual learning communities, collaborative teaching and learning strategies. This subject has three objectives: Understand the collective construction process; Conceptualize virtual learning communities; Recognize the specificity of the teaching modality.

c) Educational technologies and resources discuss issues related to the development of content and teaching materials, which are very important in the form of non-presential teaching. This subject has two essential objectives: Recognize the specifics of different resources; Establish relationships between resources and content.

d) Theories of learning in the virtual environment presents as main themes two theories, the Cognitive Theory of Multimedia Learning and the Learning Style theory that can support the teacher in the process of selection and choice of different media to compose a Virtual Learning Environment (VLE). This subject has two essential objectives: Introduce theoretical contribution of Learning Styles and relationships with distance learning; Introduce the theoretical contribution of Cognitive Learning of Multimedia Learning and relations with EaD:

e) Student service presents as main themes in technology-mediated teaching: interactivity and learning, as well as resources for remote teaching and learning. Both become essential in the mediation process in the distance modality. This subject has two essential objectives: Understand the role of the mediator in distance education modality; Identify pedagogical-communication strategies.

f) Assessment discusses assessment from two perspectives: instruments for learning assessment and for course monitoring. This subject has two essential objectives: Understand the learning assessment process in the specific context of Distance Education; Distinguish learning assessment and educational assessment.

The course didactic content consisted of video classes and texts, in addition to other interactive resources according to the topic. Also, once a week there was a synchronous meeting in Google Meet between students and professors of the course. At each meeting on Google Meet, the resources of that subject were discussed by the teachers. Considering that the entire educational process was transferred to Emergency Remote Education (ERE), this course aimed to demonstrate to students the possibilities of the online education or for the distance learning modality. In this way, the resources were explored at different times, proposing different activities to students. As a final activity, as mentioned, students should choose an undergraduate course offered by the university and propose a teaching plan, considering the offer of the course in the ERE modality. It is noteworthy that there were students from different graduate programs offered by the University, although the unit to which the discipline is linked is the Faculty of Education. Thus, students should organize a didactic plan, including elements for the ERE to take place according to the themes and discussions proposed by the course. At the end, they should also record a video in order to present the course organization, as well organize the content from one of the subjects in the format of a didactic sequence or as a study guide.

The training of teachers who work in basic education in Brazil is carried out through teacher training programs developed in colleges and universities, the licentiate degrees. Howe-

ver, for the training of professors who will work in higher education, a master's or doctoral degree is enough, depending on the institution's requirements, according to Brazilian Educational law 9394, from 20 December 1996 (ARRIO et al., 2006). In this way, what will define the training of higher education's teachers are the courses and the type of training received during their graduate program.

Teacher education for higher education can be seen as a field in which there is much to be done in terms of research and practices. When there is any possibility of training for teaching at this level of education, it is limited to "a course of Higher Education Methodology, during graduate studies", but which is not mandatory for all students. So this type of experience in a course, like this one reported in this paper, becomes very relevant in the training process for teaching in higher education, since, many times, the references and theoretical foundation for university professors to work in the classroom will take place in these courses.

Unfortunately, it is possible to observe unpreparedness and even a lack of scientific knowledge about the teaching and learning process for which these future teachers of higher education will be responsible.

The Brazilian educational system has undergone significant changes and the introduction of digital technologies is seen as one of the main drivers of these transformations, being a continuous and irreversible process. The introduction of technologies in the current network society (Castells, 2009) encouraged the emergence of a new educational model. This new model challenges the traditional system, which emphasized a technical approach to teaching. Garbin & Oliveira (2021) believes that the use of digital technologies can help teaching, allowing it to be the connection between knowledge and students, highlighting in this process, the teacher's role as a mediator in the use of these elements for learning. In this sense, technologies can allow the demonstration of concepts, streamlining classes, as well as arousing students' curiosity and interest in certain subjects.

Sailer, Schultz-Pernice and Fischer (2021) believe the Technological Pedagogical Content Knowledge (TPACK) framework brought by Koehler and Mishra (2005, 2008) corroborates to this idea. In this framework, the importance of the teacher having technological skills was added to the other knowledge initially recommended in the model developed by Shulman (1986, 1987). In Shulman' model teacher should have two important knowledge: pedagogical practices and about the subjects taught. So, in the TPACK, the teacher needs from a specific context, to have knowledge about the subject he will teach, about his students and from there design the best practices with the use of available technologies.

Although the discussion about the importance of teacher training for the intentional use of technologies is not something new, in Brazil, this discussion has been more relevant in recent years. In december 2019, the National Education Council (CNE, 2019), through resolution number 2, defined the National Curriculum Guidelines for Basic Education Teachers, establishing the National Base Common for the Basic Education Teachers (BNC-Training). In such device, ten general competences were established and we can find references to digital technologies in three of them. In the previous reference documents, what is noticed is a discreet mention of the digital tools. However, as mentioned for higher education there is any kind of regimentation about teaching.

Sailer, Schultz-Pernice and Fischer (2021) believe that like students, higher education' teachers need to have basic digital skills so there is an effective contribution to the education of their students. In this sense, we can see how it is important to have courses like the authors offered to discuss the use of technologies and the distance learning model. Cicha, Rizun, Rutecka and Strzelecki (2021) in recent research indicate that the students' pleasure in study in the distance learning model and the sense of self-efficacy is the most important factor for them to be convinced to adopt the distance learning model.

Maphalala and Adigun (2021, p. XX) indicates that for an adoption of the distance education model the planning must go through the themes: "[...] technical support and training

for e-learning; Information Communication Technology infrastructure and internet accessibility; uptake of e-learning and the use of the Learning Management System; content development for e-learning; and evaluation of teaching effectiveness using e-learning".

Based on this scenario, this paper aims to present the pedagogical project of the developed course at the university, as well as the experience of using methodologies and pedagogies focused on remote education in higher education. Initially, data would be brought that contextualize the scenario of development of the course, as well as its participants, their difficulties and challenges for this modality, data supported by the diagnostic survey. Then, the evaluation survey would bring data that allow researchers to understand, in the students' view, the pedagogical advances promoted through the adopted dynamics in the COVID-19 context. As well as changes in graduate students' perceptions about distance education, higher education, and pedagogical mediation via technology. Furthermore, this was the first graduate course taken remotely on the training for teaching in higher education by the participants.

2 THEORETICAL/CONCEPTUAL FRAMING

This paper aims to present the pedagogical project of the developed course, as well as the experience of using methodologies and pedagogies focused on remote education in higher education.

Biggs (2012) highlights that the teacher can influence the learning context, making it favourable, encouraging students to carry out learning activities so that they can reach high levels of understanding, and in the assessment tasks, showing students what the activities that are necessary to achieve the learning objectives. Therefore, a framework was chosen that could centralize student learning and make them protagonists. As stated above, in the Brazilian context, courses like this one in the graduate program can be the only formative experience for students who will work in higher education.

Therefore, the principles of David Merrill's research were used in the course layout, adapted for remote learning context. Merrill's model's works with five fundamental pillars for the instructional design of a program, practice or activity: 1) Students are engaged in solving real world problems. 2) The knowledge that the student already has is activated and the basis for the production of new knowledge. 3) New knowledge is developed by the student. 4) This new knowledge is applied by the student. 5) New knowledge is integrated into the student's world (MERRILL, 1994; MERRILL et al., 1996; MERRILL, BARCLAY , VAN SCHAAK, 2007)

The choice of this model by David Merrill to support this course proposal is due to the centrality of the key principles for educational planning, as considering that graduate students come from different areas of knowledge, it would be important to have a more fundamental approach that could be common to all and could allow exchanges between the participants. Thus, the course presents a problem common to all enrolled students, the elaboration of a teaching plan for teaching internships in Higher Education. Then we have the first principle of the model (Problem-centred Principle), we are based on a problem in which students need to plan and seek a solution. Thus, they need to get involved with the situation presented according to their different contexts in the area of knowledge, in order to creatively elaborate a teaching plan.

However, as already mentioned, students come from different graduate programs that do not have courses on education, so it is necessary to provide situations in which students can activate their knowledge and previous experiences about the situation so that they could articulate with the new ones, knowledge that would be developed. Therefore, this principle highlights the importance of activating prior knowledge so that, in a way, it can anchor new knowledge.

To carry out the teaching planning activities, a model/template was suggested so that students could be guided towards alignments in different areas of knowledge, but also material that could support, above all, those students in the areas of Health, Engineering

and other technical areas. Furthermore, the number of students was higher when compared to on-site courses, and the use of video to demonstrate the model/template proposal was necessary. The demonstration principle supports the instructional video in the sense that students could visualize a ready-made plan enabling them to acquire knowledge that would help them to solve the proposed problem, the elaboration of a teaching plan.

Afterwards, the course presented the opportunity for students to correlate theory with practice, in planning activities, according to the principle of application; graduate students were able to use new knowledge in preparing the teaching plan. With the articulation of prior knowledge with new knowledge and with the support of the demonstration (demonstration video) so that they could give meaning to the knowledge in the production of new knowledge during the solution of the problem, the preparation of the teaching plan.

Complementing the principles, the Integration was considered in the proposition of the video elaboration activity. Graduate students needed to produce a short video of no more than 15 minutes in length, in which they would present the proposed teaching plan they had developed. In this way, they could integrate new knowledge, but also their media skills to deal with information and communication technologies, especially because the internship activities are carried out remotely. According to the principle, this activity would enable them to demonstrate the new knowledge acquired and redefine the previous knowledge during the course, creating and innovating with the support of technological resources teaching in higher education.

3 RESEARCH DESIGN AND METHODS

This paper aims to present the pedagogical project of the developed course, as well as the experience of using methodologies and pedagogies focused on remote education in higher education, given the pandemic world scenario. During 2020, the graduate course "EDM 5188 - Pedagogical Preparation PAE: pedagogical mediation" provided at the University (Brazil), was offered in two periods: june 22 to july 31; september 3 to october 14, for about 260 graduate students.

Data collection was performed using an electronic survey made by the authors, from semi-structured questions entered in Google Forms (WHO, 2020b), with the two course classes. The first survey investigated central factors that guide the objective of this work, such as: the main technologies used; difficulties encountered and the students' previous experience in the distance education modality, aiming to obtain data that would indicate if the domain in the use of digital tools and software, during remote teaching, facilitated or hindered their learning. The second survey sought to investigate how course design helped participants in their learning process, as well as to become faculty interns in the following semester.

The first survey was answered by 90 students referring to the first offer and 150 to the second offer. The second survey was answered by 93 students referring to the first offer and 90 to the second offer.

The collected data were coded and edited to be analysed using simple descriptive statistics obtained directly by the Google Forms tool, which provides a report with all measured data. The analysis of qualitative data, as indicated by Creswell (2007, p. 194) "involves preparing the data for analysis, conducting different analyses, going deeper and deeper into the understanding of the data, representing the data and interpreting the meaning of a wide range of data". According to the author, the qualitative data from this research were used to complement the quantitative data brought.

Initially, data from the first survey would be brought to contextualize the scenario of the course development, as well as its participants, their difficulties and challenges for this modality, data supported by the diagnostic survey. Then, the final survey brings data that allows us to understand, in the students' view, the pedagogical advances promoted through the adopted dynamics in the COVID-19 context. As well as the changes in graduate students' perceptions about distance education,

higher education, and pedagogical mediation via technology.

4 THE SCENARIO

The data used to describe the scenario comes from the diagnostic survey answered by the students in the beginning of the course. It was answered by 90 referring to the first offer and 150 to the second offer. In general, there were almost 260 participants in the course in 2020, mostly doctoral students, as can be seen in table 1, coming from the various graduate programs offered by the University.

Table 1- Type of students' graduation program enrolled to the course

Master	June/July	Sep/Oct
PhD	40 (44,5%)	74 (49,3%)
	50 (55,5%)	76 (50,7%)

Note: Data extracted from the initial course evaluation survey

As expected, the vast majority of students have a notebook and cell phone, and in some cases they also have a tablet. The digital device most used by students to access the Internet is the notebook (Table 2), but the activity most often performed by them on cell phones is the exchange of instant messages through the WhatsApp application, and it is interesting to mention that cell phones are rarely used for calls, as you can be seen in table 3. Also, among all respondents, only one reported accessing the internet weekly, all the others access it daily.

Table 2- Main tool used by students to access the Internet

	June/July	Sep/Oct
Cell phone 3G	8 (8,8%)	8 (5,3%)
Cell phone 4G	28 (31,1%)	70 (46,7%)
Notebook	55 (61,1%)	80 (53,3%)
Tablet	2 (2,2%)	1 (0,7%)

Note: Data extracted from the initial course evaluation survey

Table 3- Main activity performed on cell phones

	June/July	Sep/Oct
E-mail	8 (8,8%)	4 (2,7%)
WhatsApp	47 (52,22%)	87 (58%)
Apps	37 (41,1%)	68 (45,3%)
Call	1 (1,1%)	0

Note: Data extracted from the initial course evaluation survey

Regarding their fluency in the use of technologies to perform daily tasks, the result can be seen in table 4. Students demonstrate knowledge to use technology in their daily activities. Some of these activities are part of activities that would be carried out in the course. This information corroborates with Sailer; Schultz-Pernice & Fischer (2021) when they affirm that higher education' students need to have basic digital skills, and this can make studying online easier.

Table 4- Situations in which you feel comfortable

	June/July	Sep/Oct
Installing an app on mobile	90 (96,8%)	153 (96,2%)
Searching on web	88 (94,6%)	158 (99,4%)
Using Whatsapp	92 (98,9%)	158 (99,4%)
Using Social Media	79 (84,9%)	146 (91,8%)
Finding a video on Youtube	92 (98,9%)	156 (98,1%)
Using the Google Tools	82 (88,2%)	149 (93,7%)
Record a video	61 (65,6%)	110 (69,2%)
Editing a video	23 (24,7%)	43 (27%)
Recording an audio	73 (78,5%)	127 (79,9%)
Editing an audio	25 (26,9%)	32 (20,1%)

Note: Data extracted from the initial course evaluation survey

Another question raised to the students was whether they had ever taken a distance learning course or program. As we can see in table 5, the vast majority have already studied in this modality.

Table 5- Have you ever studied in a distance learning course?

	June/July	Sep/Oct
Yes	58 (73,1%)	115 (72,3%)
No	25 (26,9%)	44 (27,7%)

Note: Data extracted from the initial course evaluation survey

In addition, they were also asked about possible difficulties faced with this modality. The majority of difficulties pointed out regarding the course design: available materials (very long videos or inaccessible texts), the organization of content on the platform in a less didactic way, the lack of feedback or even difficulties related to few possibilities of interaction. Some students also pointed out personal difficulties for studying in this modality, related to the organization of time and space, as well as the technological structure for the study. We can see some of those answers bellow:

> *In the beginning, the biggest problem was to define strategies to be able to control the dedication to the activities of these courses and, only later, build a routine that made sense and enhance my learning. At times the internet was an obstacle, lack of connectivity or network oscillations. (Student from second offer).*

> *Lack of didactics, complicated virtual environment, superficial bibliography. (Student from first offer).*

> *I believe that the interaction between participants is less intense, as well as technological resources and access can make participation difficult (Student from first offer).*

This data collaborates with Maphalala and Adigun (2021), when they indicate that for an adoption of the distance education model the planning must go through the themes: "[...] technical support and training for e-learning; Information Communication Technology infrastructure and internet accessibility; uptake of e-learning and the use of the Learning Management System; content development for e-learning; and evaluation of teaching effectiveness using e-learning".

With the impossibility of face-to-face activities at the University, the course's professors also questioned the students about their study

organization following the adoption of the ERE. Most students point out important changes in their routine, both for study and research. In the students' answers, we could observe the readjustment of study spaces, changes in the research initially designed or even a reorganization of domestic, family and study activities. The following accounts can exemplify the students' responses to this question.

> *I changed my routine, initially, reducing my visits to units within the university. Later, I returned to my city, outside the state of São Paulo. At the moment, I am with a discipline that is trying to maintain online discussions and after group discussions. Unfortunately, I no longer have access to the thesis writing library (Student from first offer).*

> *It's been a very difficult process, as I've always used study rooms and libraries to study, access the internet and, mainly, consult books. I've only recently gotten less unstable internet access, but I haven't been able to consult most of the books I need. The environment I'm using to study is very small and without much physical structure (Student from first offer).*

> *My personal organization was totally changed due to the pandemic and had to be reorganized so that I could meet the demands of family and work. And from this new organization, academic activities have been organized. For example, the hours of sleep, use of the television at home, use of the internet and computer use needed to be defined based on my and my partner's demands, establishing times according to activities and deadlines that both of us have to meet (Student from second offer).*

It is important to distinguish ERE from Distance Education. Arruda (2020, p. 265) states that: "[...] remote digital online education differs from Distance Education by the emergency character that proposes uses and appropriations of technologies in specific circumstances of care where in the past there was regular education". In addition, it adds:

> *Serving, through digital technologies, students affected by the closing of schools is not the same thing as implementing Distance Education, even though technically and conceptually it refers to the mediation of teaching and learning through technologies. Distance Education involves prior planning, consideration of student and teacher profile, medium and long-term development of teaching and learning strategies that take into account the synchronous and asynchronous dimensions of EaD, involves the participation of different professionals for the development of products that have, in addition to pedagogical quality, aesthetic quality that is elaborated by professionals who support the teacher in the editing of different materials (ARRUDA, 2020, p. 265)*

In this context, the course design sought to follow the framework developed by Merrill with five fundamental pillars for the instructional design: 1) Students are engaged in solving real world problems. 2) The knowledge that the student has already been activated and the basis for the production of new knowledge. 3) New knowledge is developed by the student. 4) This new knowledge is applied by the student. 5) New knowledge is integrated into the student's world (MERRILL, 1994; MERRILL et al., 1996; MERRILL, BARCLAY , VAN SCHAAK, 2007). Searching for a scenario known by the students, as well as considering their needs and abilities, was essential for the design of the course.

5 FINDINGS AND DISCUSSION

The course aimed to contribute to improving the training of graduate students with a focus on teaching in higher distance education, supported by digital information and communication tools that enable pedagogical mediation. Furthermore, as already mentioned, the course has six subjects: a) the Teaching Improvement Program (PAE); b) collective knowledge construction; c) educational technologies and resources, d) theories of learning in the virtual environment; e) student service; f) assessment.

Students were also asked the main reason why they chose this course. The student's report below summarizes the vast majority of responses, which involve the need to carry out the internship, teacher training and be in contact with knowledge about the use of technologies in education.

> *I chose to take this course because I am interested in teaching Distance Learning classes. I've been traveling a lot and I end up working remotely with research. I have been a student of distance learning courses for many years and I have already enrolled in super outstanding courses, with objective menus and great results; however, I have had many frustrating experiences as well. (Student from first offer).*

Considering the framework used to organize the course, the Merrill' principles, a real problem was presented for the students who participated. As they had indicated the reasons for choosing the course related to higher education practice, the problem was to develop a teaching plan to mobilize engagement in activities (Merrill, 1994).

Also according to Merrill's principles, students were asked to prepare a short essay on the uncertainties present in the current scenario in relation to Higher Education. Then they could reflect and rescue their knowledge about higher education, even in the perspective still as students. But these activities were intentionally planned so that they could mobilize previous knowledge on the subject, so that they could relate to the new knowledge that would be introduced according to the aforementioned program.

As a final task, students should choose an undergraduate course offered by the university and propose a teaching plan, considering the ERE modality. Thus, students should organize a didactic plan, including elements for the ERE to take place according to the themes and discussions proposed by the course. At the end, they should also record a video in order to present the course proposal, as well organize the content from one of the subjects in the format of a didactic sequence or as a study guide.

By carrying out the activity of elaborating a didactic plan for an undergraduate course, students had the opportunity to apply the new knowledge that had been introduced. Thus, students were able to make sense of new knowledge according to their demands and needs. As the proposed course organization considered a real problem in the students' lives, in this moment of making meaning during the application of new knowledge, it met Merrill's fourth principle.

The course design was thought precisely to train students who will be interns in the following semesters and which will possibly take place in the ERE modality. In this scenario, the topics covered throughout the course proposed a discussion on important themes of distance education and the intentional use of technologies in Education. Students could problematize the subjects, based on their experiences of using technologies in educational contexts.

Merrill's fifth principle was contemplated in carrying out the video production activity for the presentation of the course proposal. At this moment the students were able to integrate the knowledge acquired in the discipline into their lives. To produce the video, it was possible to relate the knowledge to the solution of a real problem, which had indicated the need for training to carry out the teaching internship in higher education. In addition, in the context of the pandemic, the internship should be carried out remotely due to the impossibility of carrying out face-to-face activities. In this way, the students were able to integrate into their lives the video they were asked to produce because they could use it during the internship (MERRILL, BARCLAY , VAN SCHAAK, 2007).

In this sense, students were asked if the way they thought about the ERE was modified from their experience in the course. Some of their answers can be seen bellow:

> *I started the course full of prejudices in relation to remote learning, however, the course's approach surprised me for not starting with tools and techniques, but taking them as means in favour of an educational circumstance. The articulation*

between theoretical studies and work experiences presented some fundamentals of remote learning that situated me and, mainly, encouraged me to think about the possibility of experimentation (Student from first offer).

The course broadened my view of remote learning, bringing practical and theoretical perspectives to support practice at that time. It was a discipline that made me grow as a teacher, challenged me to study more on the topic and deepen my knowledge of technology-mediated learning (Student from first offer).

Learning the pedagogical structure and didactic procedures of distance education radically changed my way of thinking about teaching and my own practices. An example is the presentation of evaluation criteria, competences and instruments, which have always been quite abstract in my view, but with the course of the discipline there was a change in perspective and importance for these aspects (Student from second offer).

I realized how much intention and concern there must be for learning to be stimulated and cultivated by students. Today I see that a distance learning discipline is more work than I imagined, but it can result (has potential) in effective learning more than I imagined if we pay attention to all the fundamental concepts worked on in each module (Student from second offer).

The didactic plan that students should build sought to help them think about how it would be to design a course in the ERE, as well as the construction of a video aimed to demonstrate how to construct a video class, which would convey a clear message and, finally, the subject construction was essential to put all the didactic design thought into practice. Bellow we can see a return from a student:

The subjects were built in a way that allowed my learning and reflection on the themes; in my perspective all the resources provided a new understanding of teaching in Higher Education. The synchronous meetings were opportunities to deepen what we were studying in each subject. The way the course was built was fully in line with everything we were studying, creating a virtual learning community about how to teach and learn by digital means. The selected contents are extremely relevant for teacher training in higher education, leading to a deepening and reflection on the theories of learning in the virtual environment and how to evaluate in this environment. Every week my learning became visible and I sought to materialize this in the preparation of the didactic matrix and the video (Student from second offer).

The final evaluation of the course was laborious but very relevant for the application of the concepts discussed during the course. I ended up reflecting on the course a lot at the time of setting up my didact plan and the content of the subject, and I believe that this has settled several themes worked on. (Student from second offer).

Those reports demonstrate the importance of the practice from theory. The table 6 demonstrates the students' assessment of the Program, Resources and Subjects used in the course. The question asked to the students had a 5-point scale, with 1 being the lowest possible assessment and 5 the highest. When analysing the students' answers, we noticed that most of them rate the items with 4 or 5 points.

Table 6- Evaluation of course design by students

	June/July			Sep/Oct		
	Program	Resources	Subjects	Program	Resources	Subjects
1	0	1 (1,6%)	0	1 (1,1%)	1 (1,1%)	0
2	0	0	1 (1,6%)	1 (1,1%)	0	3 (3,3%)
3	2 (3,1%)	3 (4,7%)	3 (4,7%)	5 (5,6%)	1 (1,1%)	2 (2,2%)
4	8 (12,5%)	17 (26,6%)	12 (18,8%)	24 (26,7%)	29 (32,2%)	25 (27,8%)
5	54 (84,4%)	43 (67,2%)	48 (75%)	59 (65,6%)	59 (65,6%)	60 (66,7%)

Note: Data extracted from the final course evaluation survey

Furthermore, in table 7 it is possible to see that the themes 5) Student service and 6) Assessment were the most mentioned by students as relevant and important for their education. When asked about the difficulties faced by students in distance education courses held previously, as mentioned above, the issues raised by them were related to the course design: available materials (very long videos or inaccessible texts), the organization of content on the platform in a less didactic way, the lack of feedback or even difficulties related to few possibilities of interaction. When analysing the evaluations of modules 5 and 6, we can see that they are related to the difficulties mentioned by the students. These modules dealt with the possibilities of serving students (interaction) and assessment in online education.

Thus, it is noted that the course design somehow contributed to the training of students, future teachers, contributing to the development of knowledge about remote education.

Table 7- Contribution of course subjects to enrich my knowledge by students

	1	2	3	4	5
June/July					
1) The PAE Program	2	3	9	14	36
2) Collective knowledge construction	3	0	10	17	34
3) Educational technologies and resources	1	2	8	11	42
4) Theories of learning in the virtual environment	1	2	9	18	34
5) Student service	2	1	5	12	44
6) Assessment	2	2	6	15	39
Sep/Oct					
1) The PAE Program	4	4	11	30	41
2) Collective knowledge construction	3	4	17	28	38
3) Educational technologies and resources	2	1	10	32	45
4) Theories of learning in the virtual environment	2	1	10	32	45
5) Student service	1	1	7	28	53

Note: Data extracted from the final course evaluation survey

According to the results presented, it can be noted that the organization of the course proposal according to Merrill's principles for planning proved to be adequate. Even with a heterogeneous class profile, as the participating students came from different graduate courses, what they had in common was the need for training to carry out the teaching internship in higher education. In this sense, the principles are broad enough to encom-

pass different areas of knowledge, since they propose the organization from a real problem, regardless of the area of knowledge and its respective specificities. Perhaps if a different framework were chosen, it could better serve a group of courses than other courses in different areas, but this choice of this framework on screen proved to be very adequate as they are planning principles without being restricted to very particular issues of different courses.

However, the specifics of teaching related to the courses could be discussed in small groups when they carried out discussion and interaction activities among the students. In this way, they were able to exchange experiences and share specific problems depending on the undergraduate subjects they chose to develop the didactic plan.

6 CONCLUSION

The SARS-CoV-2 virus affected the year 2020 and 2021 causing the migration of educational curricula developed in the face-to-face mode for Emergency Remote Education (ERE), for the first time the graduate program in Education developed an online course for students. Even though the distance learning subject existed before the pandemic this kind of practice was not used at the institution.

The course EDM 5188- Pedagogical Preparation PAE: pedagogical mediation" was created and offered in two periods in that year: june 22 to july 31 and september 3 to october 14, for about 260 graduate students from university. According to this practice graduate students were looking for this kind of experience and subjects as it was highlighted by the large number of enrolled students. It is possible to notice that students from different campuses were able to attend this course due to the remote approach, otherwise it would not be possible for them due to the distance.

The course aimed to contribute to improving the training of graduate students with a focus on teaching in higher distance education, supported by digital information and communication tools that enable pedagogical mediation. This paper aimed to present the pedagogical project of the developed course, as well as the experience of using methodologies and pedagogies focused on remote education in higher education.

The principles of David Merrill's design were used in the course layout, adapted for remote learning context. Merrill's model's works with five fundamental pillars for the instructional design of a program, practice or activity: a) students are engaged in solving real world problems; b) the knowledge that the student already has is activated and the basis for the production of new knowledge; c) new knowledge is developed by the student. 4) this new knowledge is applied by the student; d) new knowledge is integrated into the student's world. According to results the framework chosen was adequate to problematize the graduate students introduction to educational design as an important contribution to their training to Higher Education Teaching and Learning Knowledge.

Furthermore, as already mentioned, the course has six subjects: a) the Teaching Improvement Program (PAE); b) collective knowledge construction; c) educational technologies and resources; d) theories of learning in the virtual environment; e) student service; f) assessment. And, as a final task, students should choose an undergraduate course offered by the university and propose a teaching plan, considering the ERE modality, record a video and create one of the subjects of the course, selecting content for the ERE modality.

For this paper, two surveys were used: an initial one - diagnosis - and a final one, so that the students' expectations were evaluated before and after completing the course. The data collected shows that the course allowed for a growth in the academic training of future teaching trainees at the university.

In this sense, the university should consider the possibility to promote courses about Teaching and Learning in Higher Education also considering the remote access for those students that have any opportunity to attend in a face-to-face modality. Also the subject about Distance education and on should be considered to be included in the graduate program of Education.

REFERENCES

ARROIO, Agnaldo. The value of education in the context of Covid-19 pandemic. **Problems of Education in the 21st Century**, v. 78 n. 3, p. 309-313, 2020. Disponível em: https://doi.org/10.33225/pec/20.78.309. Acesso em: 6 dez. 2021.

ARROIO, Agnaldo, RODRIGUES FILHO, Ubirajara Pereira, DA SILVA, Albérico Borges Ferreira. A formação do pós-graduando em química para a docência em nível superior. [The training of graduate students in chemistry for teaching at a higher level]. **Química Nova**, 29, p. 1387-1392, 2006. Disponível em: https://doi.org/10.1590/S0100-40422006000600040. Acesso em: 6 dez. 2021.

ARRUDA, Eucídio Pimenta. Educação remota emergencial: elementos para políticas públicas na educação brasileira em tempos de Covid-19 [Emergency remote education: elements for public policies in Brazilian education in Covid-19]. E**mRede - Revista De Educação a Distância**, n. 7, v. 1, p. 257-275, 2020. Disponível em: https://www.aunirede.org.br/revista/index.php/emrede/article/view/621. Acesso em: 6 dez. 2021.

BIGGS, John. What the student does: teaching for enhanced learning. **Higher Education Research & Development**, n. 31, v, 1, p. 39-55, 2012.

CASTELLS, Manuel. The Rise of the Network Society: **The Information Age**: Economy, Society, and Culture. Wiley-Blackwell, 2009.

CICHA, Karina; RIZUN, Marilia; RUTECKA, Paulinia; STRZELECKI, Artur. COVID-19 and Higher Education: First-Year Students' Expectations toward Distance Learning. **Sustainability**, n. 13, v. 4. MDPI AG, 2021. Disponível em: http://dx.doi.org/10.3390/su13041889. Acesso em: 30 maio. 2022.

Conselho Nacional de Educação (CNE). **Define as Diretrizes Curriculares Nacionais para a Formação Inicial de Professores para a Educação Básica e institui a Base Nacional Comum para a Formação Inicial de Professores da Educação Básica (BNC-Formação)** [Defines the National Curriculum Guidelines for Initial Teacher Training for Basic Education and institutes the Common National Base for Initial Basic Education Teacher Training (BNC-Training)], 2019.Disponível em: http://portal.mec.gov.br/escola-de-gestores-da-educacao-basica/323-secretarias-112877938/orgaos-vinculados-82187207/12991-diretrizes-curriculares-cursos-de-graduacao. Acesso em: 6 dez. 2021.

CRESWEL, John. W. **Projeto de pesquisa: métodos qualitativo, quantitativo e misto** [Research project: qualitative, quantitative and mixed methods], 2007. Artmed.

GARBIN, Monica Cristina; OLIVEIRA, Édison Trombeta De. Tecnologias, múltiplas linguagens e práticas pedagógicas na formação superior a distância [Technologies, multiple languages and pedagogical practices in distance higher education]. **ETD - Educação Temática Digital**, n. 23, v.1, p. 44–63. Disponível em: https://doi.org/10.20396/etd.v23i1.8656122. Acesso em: 6 dez. 2021.

GARBIN, Monica Cristina; OLIVEIRA, Édison Trombeta De. Por uma nova formação docente: por que é importante aprender a usar tecnologias no processo formativo? [For a new teacher training: why is it important to learn to use technologies in the training process?]. **EaD Em Foco**, n. 11, v. 2, 2021. Disponível em: . Acesso em: 6 dez. 2021.

KOEHLER, Matthew; MISHRA, Punya. What happens when teachers design educational technology? The development of technological pedagogical content knowledge. **Journal of Educational Computing Research**, v. 32, n. 2, p. 131-152, 2005.

KOEHLER, Matthew; MISHRA, Punya. Introducing TPCK. In: **AACTE. Handbook of Technological Pedagogical Content Knowledge (TPCK) for Educators**. Routledge, p. 3-30, 2008.

MAKUMANE, Makhulu. A Makumane. Students' perceptions on the use of LMS at a Lesotho university amidst the COVID-19 pandemic. **Computers in Human Behavior**, n. 121, 2021. Disponível em: https://doi.org/10.1080/14725843.2021.1898930. Acesso em: 6 dez. 2021.

MAPHALALA, Mncedisi Christian; ADIGUN, Olufemi Timothy. Academics' Experience of Implementing E-Learning in a South African Higher Education Institution. **International Journal of Higher Education**, n. 10, v. 1, p. 1-13, 2021. Disponível em: https://doi.org/10.5430/ijhe.v10n1p1. Acesso em: 6 dez. 2021.

MERRILL, Marriner David. **Principles of Instructional Design**. Englewood Cliffs, Educational Technology Publications, 1994.

MERRILL, Marriner David; Drake, Laston; Lacy, Mark. J.; Pratt, Jean; ID_2 Research Group. Reclaiming Instructional Design. **Educational Technology**, n. 36, v. 5, p. 5–7, 1996. Disponível em: http://www.jstor.org/stable/44428356. Acesso em: 6 dez. 2021.

MERRILL, Marriner David BARCLAY, Matthew; VAN SCHAAK, Andrew. Prescriptive principles for instructional design. In J. M. Spector, M. D. Merrill, J. J. G. van Merriënboer, & M. P. Driscoll (Eds.). **Handbook of research on educational communications and technology**. Routledge, Taylor & Francis Group, p. 173-184, 2007. Disponível em: https://spip.teluq.ca/ted6210_v3/IMG/pdf/Merrill_2007.pdf. Acesso em: 31 mai. 2022.

SAILER, Michael; SCHULTZ-PERNICE, Florian; FISCHER, Frank. Contextual facilitators for learning activities involving technology in higher education: The C-model. **Computers in Human Behavior**, n. 121, 2021. Disponível em: https://doi.org/10.1016/j.chb.2021.106794. Acesso em: 6 dez. 2021.

SHULMAN, Lee. Those who understand: knowledge growth in teaching. **Educational Research**, n. 15, v. 2, p. 4-14, 1986.

SHULMAN, Lee. Knowledge and Teaching Foundations of the New Reform. **Harvard Educational Review**, n. 57, v, 1, p 1-22, 1987.

UNITED NATION NEWS. **Metade dos alunos fora da escola não tem computador em casa** [Half of students out of school do not have a computer at home], 2020. Disponível em: https://news.un.org/pt/story/2020/04/1711192. Acesso em: 6 dez. 2021.

WORLD HEALTH ORGANIZATION (WHO). Regional Office for Europe. S**urvey tool and guidance: rapid, simple, flexible behavioural insights on COVID-19**, 2020. Disponível em: https://apps.who.int/iris/handle/10665/333549. Acesso em: 6 dez. 2021.

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