

Contributions of the Universal Design for Learning to Distance Education

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ABSTRACT – Contributions of the Universal Design for Learning to Distance Education. Sensitive and welcoming human variation practices are necessary in education. This study was designed to identify if students in the course recognize the contribution of the resources made available and organized through the Universal Design for Learning *framework* in their agency participation, permanence and engagement processes in a distance education course. The theoretical-methodological perspective was based on the *Disability Studies* and the data was collected from three techniques: Personal Diaries, Behavioral Mapping and Environmental Traces, with subsequent content analysis. The results showed that when a course plan is based on the DUA *framework*, many of the needs of students with disabilities are covered and the remaining barriers are common to most of the learners.

Keywords: Distance Education. Universal Design for Learning. Disability.

RESUMO – Contribuições do Desenho Universal para Aprendizagem à Educação a Distância. Práticas sensíveis e acolhedoras à variação humana são necessárias na educação. Neste estudo objetivou-se identificar se cursistas reconhecem a contribuição dos recursos disponibilizados e organizados a partir do *framework* do Desenho Universal para Aprendizagem em seus processos de participação com agência, permanência e engajamento em um curso de educação a distância. A perspectiva teórico-metodológica pautou-se nos *Disability Studies* e os dados foram coletados a partir de três técnicas: Diários Pessoais, Mapeamento Comportamental e Vestígios Ambientais, com posterior análise de conteúdo. Os resultados apontaram que, quando um curso é planejado com base no *framework do DUA*, muitas das necessidades dos estudantes com deficiência são contempladas e as barreiras restantes são comuns à maioria dos aprendizes.

Palavras-chave: Educação a Distância. Desenho Universal para Aprendizagem. Deficiência.

Introduction

There is a lot to be said when the subject is disability, inclusive education or accessibility. In higher education, this is also evident, particularly when addressing accessibility to knowledge in undergraduate, graduate and continuing education. Normally, when dealing with the question of accessibility in educational contexts, whether in the area of research or in the construction of professional practices, there is a preponderance of a focus geared towards the search for strategies to afford students with disabilities their right of access to expanded knowledge. However, researchers such as Böck; Gesser and Nuernberg (2018) have identified the need to expand inclusive practices to all students, in the context of higher education, through ethical, thoughtful and intentional choices on the part of teaching staff, in order to appreciate the diversity of characteristics in learners and break free from the normality/disability binarism.

In distance education, it is important to reflect on the paths for implementing a practice that is sensitive to accepting the variability of students' learning profiles. In their study of expectations that Distance Education course participants have regarding accessibility, Böck; Gesser and Nuernberg (2019) identified that the Universal Design for Learning (UDL) framework included the voices of participants, proving suitable for application in the planning and offer of courses aimed to be accessible, considering, *a priori*, the existence of people with different characteristics for participation and permanency on distance education courses.

There are considerable differences between the courses proposed with accessibility for students with disability and those organized using the UDL framework. Edyburn (2010) suggests that the main distinction is in the initial design of the course projects. On courses with accessibility for the disabled student, the resource to be implemented is proposed based almost exclusively on the impairment, that is, the biological mark on the subject, for example, the option of audio description is provided when a blind person enrolls on the course, so the audio is intended for his/her use, among other situations. In courses designed using UDL, the resources, strategies, methodologies and evaluations are prepared with the aim of expanding access to everyone. As such, the audio used would be for anyone wishing to access the information and learning through listening and, in this manner, there is an extensive provision of resources and materials, which enable students to make choices during their learning process, strengthening the proactive characteristic of Distance Education. In this sense, any student may view the proposed resource as usable and feel catered for in his/her mode of learning.

With the aim of boosting the participation and agency of students in different learning spaces, UDL guidelines widen the spectrum of accessibility beyond the common centrism on the impairment. As per Rose et al. (2006), UDL embodies an accessible pedagogy in three specific and central considerations of teaching/learning: the manner

in which students recognize and represent information (principle of representation); the way they express and work with what they know (principle of action and expression); and the means of engaging in the learning (principle of engagement). To this end, it is important to pay attention to the three neural networks in which the principles are supported, namely: recognition networks (gathering and categorizing what is seen, heard, and read); strategic networks (organizing and expressing ideas); and affective networks (linking the learning experience to an emotional background, determining involvement and motivation). Based on these networks and principles, the curricula, activities, and methodologies are designed to cater for the individual differences of students in the process of relating to knowledge, beyond the diagnostic.

Although there have been thirty years of research on UDL in different countries, records of studies carried out by Brazilian researchers are quite recent. Zerbato (2018), concerned with “how to teach teachers to plan education thinking of the UDL strategy”, focused on studies in the development and assessment of a UDL teacher training program and puts forward a review identifying some publications that are discreetly appearing in Brazil, the first being in 2013. The study by the above-mentioned researcher showed the absence of applied experimental research in the field of distance education. Many of the studies used UDL exclusively as theoretical base.

Another theoretical researcher, Edyburn, had an article published in an internationally renowned magazine in the field of disability, in 2010, with a provocative title – *Would you Recognize Universal Design For Learning If You Saw it? Ten Propositions for New Directions in the Second Decade of UDL*. In the article, the author claims that we need to understand what it means to implement UDL, “we need to understand how to measure UDL results. Finally, we must renew our compromise to provide equality to all students in the event of efforts in UDL falling short” (Edyburn, 2010, p. 40.). This publication increased interest in the topic and elicited other questions for research.

The premise of this study is that there is a need to strengthen studies and practices aimed at the realization of UDL in learning contexts within Brazil’s reality, with a focus on distance education. As such, research was carried out with the goal of identifying if course participants recognize the presence and contribution of resources made available and organized based on the Universal Design for Learning in their participation processes in relation to agency, permanency and engagement in a distance education course. Different queries pervade the study, such as: what expressions of this framework would be identified as resources in accessibility to knowledge? Moreover, would there be an understanding of the use of facilitators as something common to all? Would the accessibility proposed in the course be seen as something to widen the participation and engagement of all participants in the course?

The constructs of the UDL link with the principles and purposes of the *Disability Studies in Education* (DSE) field, set out by David J. Con-

nor on the *American Educational Research Association* web page in 2008. An approximation with this field took into account the comprehension of disability from the second generation social model (Diniz, 2007), with the contribution of feminist theorists, who reject the models based on deficit, lack or as something to be corrected, rather defending the idea of disability as a human experience, singular and relational with social contexts (Gomes; Lopes; Gesser; Toneli, 2019; Gesser; Nuernberg, 2017). The feminist perspective also highlights the need for an ethics of care at the public level and the removal of barriers to ensure participation. Moreover, the voices of people who experienced disability in research planning were respected and the promotion of social justice was sought in the context of learning based on inclusive opportunities (Connor; Gabel; Gallagher; Morton, 2008).

It is worth noting the concept of disability that pervaded and sustained the choices throughout the study, since “[...] far from being irrelevant, the manner in which we view disability is essential to the manner we define problems and map out solutions” (Martins et al., 2017, p. 54). With DSE there is a commitment to adopting practices and understandings based on inclusive education principles. Furthermore, the field of Disability Studies affirms that disability must not be considered a fatality or a tragedy that impacts one specific group alone nor can it be viewed as a difference. “Good societies allow people to deal with this situation, removing barriers, providing support and understanding of disability as part of human variation, instead of an abnormality to be discarded” (Shakespeare, 2017, p. 22).

With the aim of combating normocentric¹ and ableist² research practices, which exclude and disregard the different modes of participation, this study attempted to use planning and the choice of data collection, analysis, resources and theoretical approach techniques to perform an ethical, emancipatory exercise founded on the UDL framework. We believe that to recognize UDL, conceptions about accessibility need to change, exposing the myth of normality and the independent subject, recognizing their own vulnerabilities and viewing learning as a singular process that may take place via the use of different senses.

Methodology

This research was inspired by the perspective of Emancipatory Research, in which there is a rupture with subject/object duality. In this sense, Barnes (2003) suggests the political commitment of the researcher to the subject investigated and, moreover, that this research disassociates itself from the positivist model that regulates, imprisons, silences and marginalizes people with disabilities. Emancipatory Research, linked to the affirmation of the social model of disability, means “a recognition by academia of the terms in which scientific production has been complicit – through action or omission – with social frameworks that oppress people with disabilities” (Martins; Sources; Hespanha; Berg, 2012, p. 56). These oppressive situations in the context of

research are easily recognizable, whether through the use of research instruments that are sometimes constructed and based on a normocentric logic that excludes certain people from participating with agency, or through the return of poorly accessible results in their disclosure to the researched groups.

Online qualitative research (Flick, 2009) was deemed appropriate since it corresponds to the context in which the research was performed. Research took place on the continuing training course in Disability Studies, offered in the distance education mode on the Moodle platform by the *Universidade Federal de Santa Catarina* Center for Disability Studies (NED/UFSC). The course was planned taking into account UDL guidelines and principles, both in the structure of the virtual learning environment and in the strategies, resources and activities offered. Textual resources had auditory equivalents, videos contained audio description, subtitles and LIBRAS (Brazilian sign language) and all activities were made available on different media (podcast, LIBRAS and subtitles) accompanied by textual equivalence.

Group composition was designed and course participants had to meet certain criteria: be higher education students and/or professionals active in the area of disability (with or without a disability) and have internet access. All research course participants received an invitation in writing, audio and LIBRAS³.

In this edition of the course, 100 places were offered and enrollment was through the university's own virtual system. The course was filled in the first few days and there was a waiting list of over 300 people. Of the 100 participants, 40 of them signed an Informed Consent Agreement confirming their availability to take part in the research. However, only 24 completed the proposed stages, those being 22 women and 2 men. Among those, 18 stated that they were professionals who work in different areas and 5 were active students (2 graduate students and 3 undergraduates). One participant was a no-show.

In data collection, a triangulation of strategies was used. The first technique consisted of the research subject keeping a Personal Diary in response to a research request. This technique was chosen bearing in mind that they would respect their time and manner of participation. As such, records could be made using writing, voice recording or LIBRAS, as well as allowing for the inclusion of images, videos, etc. Among the advantages of this technique is that it "provides the possibility for recording an experience lived by the individual at the time it occurs, without the presence of research team members, and with little or no (indirect) researcher influence" (Pinheiro, 2008, p. 287). Throughout the course's topics, a reflexive question was inserted in the research space to guide participant reflection and recorded for subsequent analysis. All personal diary and forum entries were transposed to AtlasTi8.0 software for analysis and categorization.

The second technique enabled analysis of Environmental Traces left by course participants in the Virtual Learning Environment (VLE).

The choice of this technique was due to many of people's relationships with their environment going unnoticed by them. Besides this, techniques based on self-reporting "are usually influenced by what individuals think they should be or do, what they would like to be or do, or even what they thought they were or what they thought they did" (Pineiro, 2008, p. 75). According to Pineiro (2008), there are two categories to be observed through the environmental trace technique, those being *deposition* (or accumulation) – in the case of Distance Education these would be the works and activities posted, as well as the comments made on the forums, and the category of *erosion*, in which everything the participant takes from the Virtual Learning Environment is considered, such as downloads of texts, videos, etc.

Along with these two techniques, a Behavioral Map, an indirect observation technique, was also used as it facilitated understanding of the use of space by people, provided clues as to the reason certain locations are more occupied and others avoided, a reality which is also present in virtual environments. Understanding the spaces that the subjects use in a DE course provides us with pointers to broaden participation and minimize dropout.

In analyzing information, it was decided to work with categories *a priori*, as the principles of UDL: Representation, Action and Expression, and Engagement. Questions prompting the personal diary writing were organized based on these categories in order to guide reflection and subsequent recording. Using UDL principles as analysis categories was aimed at enabling a greater generalization of this study and also helps broaden the dialogue with researchers who dedicate themselves to this topic on national and international scenes.

Results and discussion

Results emerged from the treatment of data obtained from the use of triangulation collection techniques. Through the analysis of environmental traces, there was evidence of erosion, that is, the removal of elements from the virtual platform, to a greater degree than deposition. Many course participants used this space to collect information, download texts and watch videos, but remained almost anonymous in the space, not posting activities or comments on the forums, demonstrating that courses of the MOOC (*Massive Open Online Course*) type would be more suitable for this profile of user.

In general, course participants were aware of the proactive aim of this proposal put together with the support of the UDL framework and recognized that their needs were catered for from the beginning of the course, through the anticipation of possible disadvantageous situations, removal of barriers and implementation of facilitators. This relational autonomy, afforded by the intentional choices of the course's pedagogical team, which were based on UDL, prompted some significations and sentiments on the part of course participants. In the personal

diary records, there appeared expressions such as respect, privilege, freedom, tranquility, ease, welcome, realization and a feeling of willingness in the definition of this recognition, as per the testimony of Wilma Pearl Mankiller⁴: “I found the course to be very accessible, respecting possible differences that certainly exist among the group members [...] I felt fully included. Therefore, I can only give thanks for the opportunity given to me”⁵.

Another relevant discovery was that all UDL principles are interlinked. Course elements were assessed from different perspectives, with different frameworks and, at times, incorporating the three principles, such as videos, readings, activities, forums, among others, which demonstrated comments on access to information, recognition network, and how these resources boosted engagement. As such, results indicated that it is inadvisable to perform research that does not consider the totality of the UDL framework.

Another important observation regarding the records is the difference of experiencing throughout the training process that which on other courses is merely spoken. This highlights the relevance of investment in studies on the immediate applicability of UDL so that realities are modified in initial and continuing training. Comments by Bertha Galeron de Calonne represent this premise:

I know the theme of the project is this and if we stop to think about it, we could say that if it were in fact different, it would sound inconsistent; however, this serves as an example, since it is indeed possible and fundamental that not only the attendance based or virtual learning space, but all digital platforms and social networks, all services should provide free access to everyone.

As shown in the above assertion, there is a need for the courses offered on the theme of disability to be accessible, not only so that people with different functional variations are able to participate on equal terms in the various contexts, but furthermore, in order for the learning on the topic in question to be experienced through accessible virtual environments.

The reports and records demonstrated participants’ recognition that the course was founded on a perspective related to the ethics of care, interdependence and representativeness, essential categories for feminist disability studies. Eva Kittay suggests that the ethics of care presumes dependence as a central characteristic of human life and that interdependence, rather than independence, should be the goal to be achieved (Kittay, 2005. p. 453).

It must be remembered that people participate in social spaces differently, according to their forms of being in the world and, as such, it’s not possible to have just one form of making knowledge available in Distance Education that restricts students to one mode of participation. Beyond the category of care, participants also talked of interdependence and representativeness. It is worth mentioning the following: Helen Adams Keller – “It’s the first course I’ve done which provides so

many means of accessing a single topic and allows me to learn in a manner I consider most appropriate”; Christy Brown – “the course is meeting my needs in terms of receiving information and has opened up possibilities for me to express myself in an easier way”.

Therefore, according to the testimony presented, the Distance Education course put together based on the UDL catered for the different modes of accessing and expressing knowledge. Using the analysis of information, discussions will be presented below on the principles of Representation, Action and Expression, and Engagement.

Category 1 – Principle of Representation – Network of Recognition

People access information using different sensory channels. Preferences in the use of these senses depend on diverse factors, among which are individual skills. For example, a blind person will probably choose to access information through the tactile or auditory channel. Beyond situations of impairment, people make choices according to commonly used senses, although society continues to perpetuate visual centrism (Martins, 2013), since the greater part of information, educational resources and advertising is provided through the visual channel. However, in Distance Education, there is a need to make available resources that allow students to employ different senses to consolidate learning and, according to researchers from CAST (2011), the transfer of learning occurs when multiple means of representation are used, because they allow each person to make connections between the concepts by choosing the resources that best meet their needs. Founded on the knowledge produced by UDL, initial planning for the Distance Education course, on which research was carried out, used different alternatives in presenting information. This item was highlighted by course participants who recognized the different media used to access information. Analysis of traces showed that course participants accessed media in the different formats mentioned to obtain the same information, namely the textual resources, videos covering course topics and/or podcast (with audio, subtitles and LIBRAS). However, reading is listed as the main resource and the other resources appear as complementary, whether as initial familiarization with the topics or subsequent use to supplement knowledge gained from reading.

Research subjects reported having learned to use the different senses over their lifetimes, for example, concentrating on voice feedback from audio-books or adapting their hearing and touch after losing sight. This demonstrates the possible changeability of interests from the learning of new skills and the importance of providing access to different learning resources. This variability of interest in different media does not only derive from situations concerning the disability experience, but due to the daily routine of people, such as accessing course audio or texts on public transportation on the way to work.

The icons used in VLE used text alternatives to the reference image, as well as voice feedback. These elements were identified as helpful in navigating this environment and contributed to establishing an identity for each resource and space. Nevertheless, one of the course participants commented that the excess of icons hampered the search for information somewhat.

The provision of weekly guidance and course activities with podcasts and videos (voice feedback, subtitles and LIBRAS) was seen as a thoughtful and respectful action by the team in relation to the diversity of learners. Course participants also noted the range of articles and texts on the same topic, which enabled them to choose their sources in preparing their output. The availability of material in which different authors approach the same theme allowed course participants to access that language and type of writing, ensuring a better understanding in relation to each profile, as expressed by Ruth Benedict:

It is worth highlighting that whenever I am able to access various texts that address the same subject, I learn better. At certain times, an author may not be very clear when explaining a concept, while another author may deal with the same subject in a manner that allows me to understand better. I don't know whether the Course team intended it, but making more than one text available on the same topic from different authors contributed to my learning. I particularly like written texts.

Participant records revealed positive feedback on guidelines in processing information, suggesting the procedural release of course modules helped in the selection and categorization of information. The use of reflexive questions by the pedagogical team on the forums was recognized as a strategy that facilitated the identification of the principal ideas and connections between topics, and was useful in directing reading and accessing the essential points in each of them. In addition, participants reported that being able to control the time they accessed the course, how long they stayed on the platform, reading and rereading texts as often as needed, as well as watching videos at their discretion were significant elements in relation to the network of recognition, as shown by Wilma Pearl Mankiller:

I don't know whether it's because of my low sight or attention deficit, but the presentation of written texts helped me to absorb content better, since I can read and reread them as often as needed and this facilitates my understanding a lot.

Regarding the handling of materials, one aspect that appears in the majority of records is the availability of resources in formats that may be altered by course participants themselves. This was considered an important differential, since the possibility of amplifying images on the computer monitor, changing letter size, file format, contrast, using screen reader software, as well as printing and making notes, and setting reading speed and time to process the information acquired.

The examples given on how to perform activities, or examples of concept applicability were identified by course participants as relevant

to comprehension. As such, the extension course and its organization based on UDL, became a necessary example through which course participants experienced the opportunity to avail of some opportunities for inclusive practices.

Course activities were also positively evaluated in the sense of connecting the learned content with practice, incorporating new ideas to familiar situations, in addition to allowing for time to reflect on the topic and apply certain knowledge to everyday life. Some research participants are from the area of Education, teaching at different levels and modalities, and they noted the opportunity to transfer strategies experienced on the course to practices with their students. Anita Catarina Malfatti remarked that “the methodology used on the course is quite interesting, also contributing to a (re)thinking of my pedagogical practice, that is, proposing strategies and resources to my students that address the specificities (and differences) of all learners.”

Therefore, the data obtained showed that making available multiple manners of accessing information is essential in achieving the other principles and guidelines of UDL. In the initial teaching planning choices, the experiences to be had in Distance Education may be defined. It is in the recognition of learning as interdependent process and in the offer of content, through which all are represented in their modes of accessing it, that a policy of difference will be implemented in teaching practices, which strengthens participation with agency. It is in the recognition of difference as a reality present in any learning space that practices that cater for all are reinforced.

Category 2 – Principle of Action and Expression – Strategic Network

The manners through which students express what they know are very different and, as the ability to capture information may be learned and modified throughout life, the ability to express oneself is also built on the experiences of each one. In order for everyone to be included, in relation to their characteristics for demonstrating or sharing their learning, it is important to provide them with options to make choices. The standardization required in different teaching situations is exclusionary, whereby it is not enough to provide accessible resources if there is no individual choice consistent with people's desires and skills. An example would be the option for course participants to choose between completing activities through the recording of audio, LIBRAS or in written Portuguese. This principle is what fosters the participation and agency of the student since in order for many people to participate it is logical to provide them with equality of opportunities, which should be tied to the right to choose given the characteristics of each one.

In general, research participants identified and understood the course's differential in providing alternatives for action and expression. Among the support technologies made available in the course were screen readers, voice recorders, computer screen recorders, alternative

communication software and others. However, none of these resources was used by course participants in the development of course activities. Despite some suggesting they had greater ability for expression in speech, the work handed in was mostly done in written text format, with the exception of one participant who completed the activities using audio recordings since this format fit her daily routine. Two course participants remarked that the ability for expression and communication is learned, that is, writing improves when it is practiced, as with speech. This prompts the question as to why most course participants opted to complete their activities and assignments in writing. Is this one of the skills most utilized throughout school life? Or is it because access to it is more universal? Or is it that this choice is related to the lack of technological mastery? These questions could be further investigated in other studies.

Another finding was related to agency, or the making of choices to participate throughout the process. The activities enabled different exercises, for example, in the third module when participants were requested to carry out an interview using audio, video or written material. The personal diaries reported on the great difficulty in making these autonomous choices on the course. This is possibly related to other educational experiences in which these student interaction choices were not offered.

One of the recommendations in UDL guidelines is to provide multiple media for communication. As such, in addition to the resources made available by Moodle (message, forums, message boards), a channel for communication by e-mail was set up from the initial stages of course disclosure. This could be used both for questions related to demands for access, administrative or educational queries, and for those that emerged during research participation. This e-mail was the first channel for dialogue with all, and apart from one participant who had difficulty finding a channel for communication with the team, all the rest reported their needs were met in this regard.

Course organization was evaluated from different perspectives. At this point, it is worth noting the relation of this organization in VLE and the support in the planning of development strategies, since in order for course participants to have agency in their paths of learning, and the ability to make more assertive choices to express themselves, support needs to be provided in the form of: spaces and time for reflection, mediation with different subjects and their distinct perspectives, as well as a checklist of activities to be developed, among others. The existence of a forum of content parallel to the development of the activity, in which the teacher would insert a reflective question on the topic, was identified as a facilitator in resuming the content studied during the activity requested in the module. Apart from this, the organization of course content into specific topics, the provision of various media to perform activities, the guidelines and manner in which they were presented, were recognized as being helpful in making course participants strategic in their output. For example, Wilma Pearl Mankiller remarked

that “all tasks were accessible, whether in the format they were in, or in the explanatory form that guidelines took, leaving no doubt”.

Some course participants viewed the adaptation period as a necessary support in the sequence of activities on the course. They highlighted that this enabled them to try out a space with less information, while in a structure that allowed them to become familiar with the icons, the availability of resources and types of media, when approaching subsequent module content. The participant, Anne Sullivan, assessed this as one of the facilitators necessary to participation, since appropriating the Distance Education system and environment is an essential point in participation.

Feedback was deemed essential in monitoring progress throughout the course, both in acquired learning and stages completed, and its absence was considered an obstacle. In a Collaborative Learning in Network proposal, feedback may be inferred by the pedagogical team and also by colleagues. The majority of study participants identified pedagogical team feedback as a strategy that organized thinking, as well as providing security by resolving doubts in the performance of activities, as commented by Helen Adams Keller, “Flexibility in relation to the mode of expressing myself and acquiring knowledge also made the difference without doubt, as well as the prompt feedback I received to the questions I had along the way”.

Timetables were cited as accessibility resources and some participants indicated the need for them to be more detailed to help set appropriate targets. On this course, out of respect for each person’s different rhythm, a calendar was provided with the forecast for each topic’s opening and the initial date for posting on work. However, topics did not close upon the opening of new ones, with the aim of accommodating the needs of those with less time to participate or who needed more time to get up to speed and systematize activities. Nevertheless, this facilitation became an obstacle for some who needed a deadline for activities, forums and topics to end, so that they could get organized, for example, participant Bertha Galeron de Calonne suggested clarifying the maximum deadline to interact in forums in order not to have to revisit them all the time.

Regarding the setting of targets, it was noted that course participants’ difficulty in choosing resources to access knowledge hindered the conclusion of each of the modules before the next one opened. There were many comments on the excess of material, even when they were advised they could choose between resources and that it wouldn’t be necessary to use all of them. Hence, it was shown that there is a need to broaden this information to ensure the agency of course participants in choosing the resources that meet their needs and skills, since possibly the majority of students are used to a unilateral approach that determines the resources to be used without choice. It is therefore necessary to denaturalize this mode of Distance Education organization.

In general, course participants understood that the course structure itself, the mode in which it was provided, the types of activities

presented, as well as the variety of resources to address the same concept and the guidelines on how to participate in each topic are viable examples for applicability in other contexts. They also identified that the different approaches, strategies, tutors and teachers with differentiated modes of support contributed to the quality of their expression in activities during the course. In the analysis of traces, it was evident that course participants attached greater importance to the posting of activities, which were evaluated and considered frequently in certification, than to building a genuine learning community through forum exchanges and debates. Many deemed debate to be of significant importance in learning, but the content forums, in which there were topical debates, were among the least active spaces throughout the course.

Category 3 – Principle of Engagement – Affective Network

Students' motivation to learn and remain involved in certain learning varies greatly. There is a direct relation with the affective network and other relevant factors, as highlighted by CAST (2011), among which are: culture, personal relevance, subjectivity, prior knowledge, etc. As such, some students come together in a more spontaneous manner, while others require greater external support, which means Distance Education needs to anticipate needs to boost the permanency and participation of all. Individual interests, which are directly related to the search for continuing training, differ among students from the same group, just as one subject changes them as new knowledge and skills are gained.

In a learning context, it is important that students' individual targets are covered in the educational proposals. Content, strategies, among others, must be relevant and have a certain authenticity that is engaging. One of the manners indicated by CAST (2011) is to highlight the usefulness and relevance of content and introduce meaningful activities. The integration of theory and practice in the activities introduced throughout the course was one of the points noted as substantial by course participants, as Christy Brown comments, "I thought the activities proposed by topics were really interesting and relevant. Integration of theory and practice was emphasized. This type of activity helps me to learn and bring the learned content into my own reality".

Certain situations linked by the CAST group (2011) to the principle of engagement were highlighted by participants, such as: course with culturally relevant and sensitive theme, socially relevant knowledge, course with authentic learning results suited to the different groups. The explanation for the permanency of course participants until the course's end was emphasized in the personal diaries. Among the highlights are professional and/or personal relevance. The latter appeared in reports from lives marked by the experience of disability. The comments below by Helen Adams Keller show this:

I've been on this voyage of understanding the social model of disability for quite a while, but with a lot of baggage in tow to make the path less tortuous. I learned a little, a lecture here and there, and I tried to put it together. In this stretch of the journey, in which I found this course, I constructed so much know-how, adding so many concepts and I feel so light now because I was carrying the weight of disability on my shoulders. At the end of the day, it was mine wasn't it?

The above testimony tallies with studies by Shakespeare (2017), which identifies the Social Model of disability as a theory that relieves the responsibility for the impairment from the person with the disability and unmasks disability as a form of oppression through social context. Based on this theory, people with disabilities feel empowered to demand a more inclusive society.

Undergraduates from different courses commented that the concepts addressed were notable for the absence of this theme in initial studies, complaining that the topic of disability continues to be restricted to specific disciplines, with well-defined limits. Even those who stated they had taken a subject in the area viewed it as insufficient. Moreover, masters' and doctorate researchers sought theoretical direction in the course to understand the theme of disability. Along this line, Johnnie Lacy points out that there are "very few licentiate courses in UFSC that address inclusive culture".

Applicability in professional practice was mentioned by different participants. They reported that the knowledge acquired during the course provided a certain re-signification which has immediate implications in the context of everyday practices, as pointed out by Helen Adams Keller "Knowledge that is so current and necessary and indeed transforms the manner in which we perceive the other and our surroundings and modifies the ways we act in our daily lives".

The comments by course participants indicate that when there is an inconsistency between the subjects addressed and everyday experiences, the learning makes less sense and becomes a hindrance. Just as course content must be adapted to the group, it is also not enough to provide different options for resources and materials. The dependence status of each student must be assessed to enable engagement. The majority who remained until the end of the study reported that the offer of resources, materials and strategies that tallied with their learning needs and the participation choices were considered relevant to their permanency, such as Bertha Galeron de Calonne, who said that "because of my routine I end up accessing material during my break-time, on the bus, and in other environments that often don't allow me to access videos. That is why my channel of access is reading".

Beyond the needs of participants regarding the disability experience, it is evident that the implementation of UDL catered better for the daily routine of course participants. As such, this was another positively evaluated reason, that is, being able to give spoken feedback, or access resources in text and with audio enabled this flexibility for participation, as Elizabeth Gertrude Suggs remarked:

Given the hectic pace of life, having the option to express yourself through voice recording has been really useful in facilitating my participation, because personally, it takes me a long time to put my ideas on paper and organize myself in writing. I'm very happy to have this option besides writing.

Students need a safe space, free of distractions to achieve improved learning, not only physical safety but also more subtle threats or excessive stimulus (CAST, 2011). Distance Education, with its asynchronous potential, caters for the need to organize time and also space to study. One of the situations identified by different research subjects, such as Johnnie Lacy, Patricia Neal and Stephen William Hawking, is the need for silent spaces for reading to maximize return. In addition to the silent spaces, the use of videos without ads, environments in which course participants are aware of how things work (forum, posting of activities) or resources that are intuitive in their use, are some of the facilitators recommended by participants. Johnnie Lacy remarks: "I didn't witness any situation during the course that caused me concern for my safety". As mentioned, the on-boarding held on Moodle was positively reviewed in minimizing insecurities in transit and using VLE resources.

Course participants demonstrated different motivations in remaining engaged with the course, which supports the UDL guideline to diversify the types of challenges in formative and evaluative activities and the complexity level of each of them, as well as varying the degrees of freedom for acceptable performance (CAST, 2011). Participants such as Wilma Pearl Mankiller, Helen Adams Keller and Bertha Galeron de Calonne, made comments regarding flexibility in the resolution of the activities proposed, in the level of advancement, the time for completion or in the manner (resources and strategies) used in the preparation of said activity.

Among the critical points, there are records of an excess in resources made available. The autonomy felt by course participants is relational to the learning space previously organized for the course. As such, it is not enough to make available resources and provide a certain flexibility to the process. As per Kittay (2011, p. 56), who stresses that "The ethics of care requires that what is offered can be occupied by the person cared for", it is worth noting that there is a need to materialize, publicize how these different levels of theoretical advancement or development of activities may be experienced.

The offer of the course in the format of modules was a situation that optimized motivation. On the opening page, there was a synopsis that course participants would find for each topic with the aim of learning, and this stimulated curiosity as shown in the personal diaries of Stella Jane Young – "the novelty of the resources and curiosity for the subject motivated me to continue" – and Ligia Assumpção Amaral – "the modules were organized in order to awaken curiosity about subsequent modules".

It is desirable that students, on the whole, be capable of collaborating and participating within a learning group, especially on Distance

Education courses that work on the proposal of Collaborative Learning. However, based on the analysis done, it may be stated that many of them are more like television viewers and not actors in the group learning process. With UDL, the structure of the Distance Education course, and definition of each one's attributes (tutors, teachers, course participants) boosts the consolidation of a learning community with similar intentions and interests, but the initial step is not enough; other strategies are necessary. Learning is a process of interdependence and it is in our relationship with others that we consolidate our understanding. Debates are identified by a portion of participants as being essential to the learning process and acting as motivation to continue and intensify studies. Comprehending the need for the other in the learning process means recognizing the dependence and incompleteness of each one of us. It is in the relations with pairs that the knowledge appropriation processes take place, with participation being a pivotal element in this process, as Bertha Galeron de Calonne comments:

We are social beings who are finite and limited; none of us can provide for all our needs alone, nor can we manage to live without the presence of a peer, not because we lack autonomy but because when we work together towards something, we are more likely to succeed. This serves for all aspects of human life, education, work, intimacy and others.

Identifying the motivation behind learning is essential, but self-knowledge is also required so that students integrate the ability to perceive their own needs and thus recognize one more facilitator in the resources and strategies provided instead of an obstacle. The research tied to the extension course was one of the reasons for engagement. Participants revealed that in the inserted research questions, there were situations for reflection that had not been previously posed and this allowed for an exercise in self-knowledge, apart from stirring the awareness of situations that occurred during the course that could have gone unnoticed, as evidenced by Christy Brown: "I would like to say how great it is to participate in the research and stop to look at my way of learning and sometimes draw a parallel with the possible modes of learning employed by others and particularly my patients".

Regardless of the demands that arise in the Distance Education spaces, it is important to break away from exclusionary practices and the silencing of certain voices that were considered less capable over the years. "It is only from the (re)cognition of differences as fundamental point of mediation and dialogue that we can effectively construct a pedagogical practice that is founded on autonomy, respect and is truly for all" (Vencato, 2014, p.53).

Final Considerations

Providing access to education while respecting the differences of all people at the highest levels of continuing education continues to be a challenge. Many students have found in Distance Education a chance

to access knowledge, however there is a need for a process that caters for people's different characteristics and abilities to learn. Going back to the article by Edyburn (2010), which led to this study, the promise of UDL is seductive and its growth indicates that it is an idea whose time has come. "However, it proved a lot easier helping the various interested parties to understand the potential of UDL than to implement it on a wide scale" (Edyburn, 2010, p. 40). We need to strengthen the understanding of what it means to implement UDL and how to gauge the results of its applicability in the reality of Brazilian education.

Among the questions that permeated the study, many were answered and others emerged. In order to recognize UDL, the premise that there is a need to change conceptions of accessibility, exposing the myth of normality and the independent subject, was reinforced. During the study, testimony was heard in which accessibility is tied to disability and, when information was cross-referenced, it became clear that this perception remains in those subjects that had an understanding of disability closer to the medical model, which views the impairment as the determining point of this experience.

It is also emerged that when a course is planned with UDL in mind, many of the specific needs of students with disability are covered and the remaining barriers are common to the majority of learners, prompting a reflection on the expansion of this logic of accessibility that promotes participation and engagement, such as the duration of the course offering in relation to the resources made available. The relation of time management to participation and how it contributed to the appropriation of content stood out in the testimony of participants, even though on enrollment they were all informed of the time to be invested in the course. This was also the main reason for the notified withdrawals from the course, that is, the incompatibility with other day-to-day activities.

The opportunity for feedback from different tutors and teachers, with different approaches and modes of displaying knowledge, made a difference in ensuring course quality. However, despite the maintenance of a pedagogical team during all stages of the process being a crucial element in the applicability of UDL principles and guidelines, it may be said that this was one of the weak points of the course's organization, which has research implications. Bearing in mind the meager financial resources available for making the course and research viable, it was necessary to rely on the participation of scholarship holders and volunteers, who dedicated their free time to taking part, which led to process fragmentation, distancing it from the application of an ideal proposal. This lack of resources is a quite common reality in the different educational spaces and could result in difficulties when incorporating UDL. Böck; Gesser and Nuernberg (2018, p. 153), in research carried out on UDL in other countries, identified situations that hindered implementation and which are similar to Brazil's precarious conditions. The authors suggest that this shouldn't be a motive for reducing the development of research nor applying UDL in practice.

In response to this need to boost the implementation of UDL and break away from normocentric practices, we must “construct alliances that help to redefine our values and bring new values into our relationships and public policies. To satisfy our need to ally ourselves with others in a different manner, we not only need an ethics of care, but also a policy of difference” (Kittay, 2005, p. 456). Bringing difference to the center, as something that in fact exists, acts as an impulse for practical changes. In education, it means understanding that in addition to those with disability, all students need experiences that are differentiated and welcoming of their characteristics; an interdependent education in which accessibility may be given new meaning and inclusive culture will play a part in educational contexts.

In conclusion, the study showed that the use of the UDL constructs is consistent with the principles and purposes of the Disability Studies in Education (DSE) field, since it offers elements and strategies aimed at embracing students who use different ways to access knowledge, breaking with normocentric and pathologizing perspectives that classify students into normal and deviant. Moreover, the study also showed that the organization of learning environments based on UDL, when coupled with a feminist positioning based on the ethics of care - to meet the needs that may still arise even after all the adjustments have been made to make the knowledge accessible according to the constructs of UDL - further increases its potential to ensure welcoming spaces for all expressions of human variation.

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Notes

- 1 The absolute constitutive centrality of the concept of norm as a regulating principle of discourses and practices produces normocentric practices. The naturalization of this normative standard of body and functioning promotes ableism.
- 2 Fiona K. Campbell (2001) defines ableism as a set of beliefs in which the disabled person, or all those who deviate from the norm, are deemed a diminished state of being. The most important thing here is to understand that ableism is structural and structuring, because we all practice it in some form, to a greater or lesser extent, and it is important to recognize and combat it.
- 3 In this study, as an ethical principle, the identity of participants was preserved while their names were changed to the names of people who played a part in the history of disability through their experience (in memoriam). Naming research participants after these people is one of the ways of paying tribute and recognizing the importance of their life stories in the strengthening of more inclusive and less normative practices in our Society.
- 4 Note that participant names were preserved and replaced with the names of people from history who experienced disability throughout their lives.
- 5 Report taken from Personal Diary supplied by research participants.

References

- BARNES, Colin. What a Difference a Decade Makes: reflections on doing 'emancipatory' disability research. *Disability & Society*, v. 18, n. 1, p. 3-17, 2003.
- BÖCK, Geisa; GESSER, Marivete; NUERNBERG, Adriano. Desenho Universal para a Aprendizagem: a produção científica no período de 2011 a 2016. *Revista Brasileira de Educação Especial*, Bauru, n. 1, v. 24, p. 143-160, jan./mar. 2018. Doi: <<https://doi.org/10.1590/S1413-65382418000100011>>.
- BÖCK, Geisa; GESSER, Marivete; NUERNBERG, Adriano. O Desenho Universal para Aprendizagem no Acolhimento das Expectativas de Participantes de Cursos de Educação a Distância. *Revista Educação Especial*, 2019. Doi: <<https://doi.org/10.5902/1984686X34504>>.
- CAMPBELL, Fiona. Inciting Legal Fictions: Disability's Date with Ontology and the Ableist Body of the Law. *Griffith Law Review*, London, v. 10, n. 1, p. 42-62, 2001.
- CAST. **Desenho Universal para Orientações de Aprendizagem versão 2.0**. Wakefield, MA, 2011.
- CONNOR, David; GABEL, Susan; GALLAGHER, Deborah; MORTON, Missy. Disability Studies and Inclusive Education – implications for theory, research, and practice. *International Journal of Inclusive Education*, v. 12, n. 5-6, p. 441-457, 2008.
- DINIZ, Débora. **O Que É Deficiência?** São Paulo: Brasiliense, 2007.
- EDYBURN, Dave. Would You Recognize Universal Design for Learning if You Saw it? ten propositions for new directions for the second decade of UDL. *Learning Disability Quarterly*, v. 33, n. 1, p. 33-41, 2010.
- FLICK, Uwe. **Introdução à Pesquisa Qualitativa**. 3. ed. Porto Alegre: Artmed Editora, 2009.
- GESSER, Marivete; NUERNBERG, Adriano Henrique. A Participação dos Estudantes com Deficiência Física e Visual no Ensino Superior: apontamentos e contribuições das teorias feministas da deficiência. *Educar em Revista* [online], v. 3, p. 151-166, 2017. Disponível em: <<https://doi.org/10.1590/0104-4060.52925>>.
- GOMES, Ruthie Bonan; LOPES, Paula Helena; GESSER, Marivete; TONELLI, Maria Juracy Filgueiras. Novos Diálogos dos Estudos Feministas da Deficiência. *Revista Estudos Feministas*, Florianópolis v. 27, n. 1, p. 1-14, 2019. Disponível em: <<https://doi.org/10.1590/1806-9584-2019v27n148155>>.
- KITTAY, Eva Feder. The Ethics of Care, Dependence, and Disability. *An International Journal of Jurisprudence and Philosophy of Law*, v. 24, n. 1, p. 49-58, 2011.
- KITTAY, Eva Feder; JENNINGS, Bruce; WASUNNA, Angela. Dependency, Difference and the Global Ethic of Long Term Care. *Journal of Political Philosophy*, v. 13, n. 4, p. 443-469, 2005.
- MARTINS, Bruno Sena. Pesquisa Acadêmica e Deficiência Visual: resistências situadas, saberes partilhados. *Revista Benjamin Constant*, v. 19, edição especial, p. 55-66, 2013.
- MARTINS, Bruno Sena; FONTES, Fernando; HESPANHA, Pedro; BERG, Aleksandra. A Emancipação dos Estudos da Deficiência. *Revista Crítica de Ciências Sociais*, Coimbra, v. 98, p. 45-64, 2012.
- MARTINS, Bruno Sena; FONTES, Fernando; HESPANHA, Pedro; BERG, Aleksandra. Investigação Emancipatória da Deficiência em Portugal: desafios e re-

Contributions of the Universal Design for Learning to Distance Education

flexões. In: MORAES, Marcia. et al. (Org.). **Deficiência em Questão**: para uma crise da normalidade. 1. ed. Rio de Janeiro: Nau, 2017. P. 51-76.

PINHEIRO, José; GÜNTHER, Hartmut (Org.). **Métodos de Pesquisa nos Estudos Pessoa-Ambiente**. São Paulo: Casa do Psicólogo, 2008.

ROSE, David; HARBOUR, Wendy; JOHNSTON, Catherine Sam; DALEY, Samantha; ABARBANELL, Linda. Universal Design for Learning in Postsecondary Education: reflections on principles and their application. **Journal of Postsecondary Education and Disability**, v. 19, n. 2, p. 135-151, 2006.

SHAKESPEARE, Tom. **Disability: the basics**. London: Routledge, 2017.

VENCATO, Anna Paula. Diferenças na Escola. In: MISKOLCI, Richard; JUNIOR, Jorge Leite (Org.). **Diferenças na Educação**: outros aprendizados. São Carlos: EdUFSCar, 2014. P. 19-56.

ZERBATO, Ana Paula. **Desenho Universal para Aprendizagem na Perspectiva da Inclusão Escolar**: potencialidades e limites de uma formação colaborativa. 2018. 298 f. Tese (Doutorado em Educação Especial) – Programa de Pós-Graduação em Educação Especial, Centro de Ciências Humanas, Universidade Federal de São Carlos, São Carlos, 2018.

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