

INCLUSIVE EDUCATION AND DISTANCE EDUCATION: THE CONTRIBUTIONS OF UNIVERSAL DESIGN FOR LEARNING IN *MOODLE* COMPOSTION

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Solange Cristina da Silva – Santa Catarina State University -
profsolangeudesc@gmail.com

Rose Clér Estivaleta Beche - Santa Catarina State University -
rose.beche@udesc.br

Geisa Letícia Kempfer Bock - Santa Catarina State University -
geisa.bock@udesc.br

Carla Peres Souza - Santa Catarina State University -
cperessouza@yahoo.com.br

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ABSTRACT

This article refers to an ongoing research on Universal Design for Learning-UDL and accessibility in virtual learning environments. The research aims to verify, from the chosen benchmark, accessibility in the virtual learning environment Moodle organized to study the disciplines of a graduation distance course. From a theoretical survey, we intend to develop a theoretical and practical reference, embracing the UDL guidelines as a basis to subsidize the creation of learning environments accessible to all students of the course. It is believed here that creating accessibility, offering cozy educational environments thought by a logic that considers diversity among people, is to promote inclusive education, where all have their rights respected.

Key Words: Universal Design; Accessibility; Inclusive Education; Distance Education.

1. Introduction

Nowadays it is guaranteed by law that people with disabilities have equal access to information. To this end, the various social spheres should seek ways to promote this access. From this perspective, the educational sphere should employ tools that can facilitate schooling process and consequent qualification of these citizens.

In Distance Education (DE), offered by universities in cooperation agreements with the Open University of Brazil, one of the main resources used in the teaching-learning process is the virtual environment Moodle. In it, students have access to the content of each discipline offered in the course, making contact with teachers through text messaging, forums and chats, as well as performing the tasks proposed for the disciplines.

This type of education meets a growing student demand, therefore, has numerous characteristics, needs and potentials. To provide knowledge to all this public, in a satisfactory manner, it is needed to develop more accessible and universal resources. The construction of virtual learning environments with these characteristics requires expertise and basic notions on the fundamentals of inclusion. In this sense, it becomes necessary to develop research, aiming to obtain elements for the elaboration of theoretical and practical bases for the development of more adequate resources to this demand.

Therefore, the present research is justified, with the main points found so far presented here. Through it, we seek to identify the main features of the theoretical framework chosen, the Universal Design for Learning - UDL and use them to analyze the existing virtual environment, building parameters for the development of a theoretical and practical contribution adequate to the reality of the Distance Education Pedagogy Course CEAD / UDESC, to assist in fitting the Moodle virtual learning environment for this course, promoting the inclusion of all students enrolled.

2. Distance Education: Technologies and accessibility

Since antiquity it is possible to note humanity's initiatives to socialize information and advice, promoting the exchange between people. Today, with

advances in information and communication technologies, called ICT's, this knowledge socialization movement was strengthened. Today, knowledge becomes accessible quickly, to an increasing number of individuals. These changes in information dissemination promote autonomy and independence in learning and / or deepening of different knowledge areas.

However, it is noteworthy that for technological means employed to be accessible to "all" individuals, regardless of their conditions and abilities, there should be the concern about their suitability. In societies that seek to include all individuals, in various ways, through technology, it is essential to be aware of existing social needs, so they can fully meet the objectives for which they were developed. In this context, emerges a discussion about the accessibility of services and knowledge through the use of technologies by people with a disability or limitation. Sabaté^[1], referring to people with a visual impairment and systems using new technologies, emphasizes that

[...] the wish that the same new technologies do not become a new barrier of communication for the blind and visually impaired is a constant struggle. If, for example, the new ticket shippers, digital TV or new computer systems are not "designed for all" or if we fail to adapt them for our use, we find ourselves in a future in which we won't be able to do alone tasks that we now carry out with independence and autonomy.

Decree 5296/2004 ^[2], in his chapter VI - access to information and communication - calls, in Article 4, that within twelve months from the date of publication of the decree,

[...]accessibility will be mandatory in electronic portals and sites of public administration in the World Wide Web (Internet), for use by visually impaired people, providing them full access to the information available.

However, in practice, sometimes this does not happen, apparently some sites and portals do not offer all the necessary accessibility features. This violates the criteria of usability, which is the ability of a product being used by specific people to achieve specific goals efficiently. According to Torres and Manzoni^[3]

The usability of a product can be measured formally and understood intuitively as the degree of ease of use of this product to a user that is not already familiar with it. The ISO defines usability as a function of efficiency, effectiveness and satisfaction which users can reach their

goals in specific environments, when using a particular product or service.

Distance education arises in this development and dissemination of ICTs context, as a further possibility of knowledge socialization. Among the public seeking this educational alternative are people with some sort of disabilities. According Santarosa ^[4], with the internet widens, also, possibilities of distance education, not only for knowledge and information access, but mainly because it enhances the creation of methodological alternatives for pedagogical intervention. As it opens a window for opportunities, especially for people whose learning patterns do not follow the typical framework of development. According to Census Br/2010 DL ^[5]

Since the beginning of this decade, the numbers of distance education (DE) in Brazil have shown, through surveys a significant increase related to the country's economic growth. The Ministry of Education (MEC) has announced, based on surveillance carried out in the first half of 2009, which was, at the undergraduate level, an estimated growth of more than 90% in the number of students in 2008.

It is clear, then, that the growth of distance education in Brazil is high. Annually, it is becoming stronger and reaching more space, with its institutionalization. So that all students have access to knowledge in a satisfactory manner in this context, without differences, the quality of resources offered is essential. Miranda ^[6] states

[...] there are many situations in which the technologies that support this type of education are not accessible to all people, especially those with a specific disability. As an example may be mentioned the web pages that use images without textual equivalents. Pages with these features prevent users with visual limitations the access to information in a comprehensive manner. Still about images, another example that prevents the accessibility of distance learning courses via Web is when the equipment used has very low resolution, which prevents also the access to information.

According to Article 8 of Decree 5296/2004 [2], already mentioned, accessibility is

[...] condition for use with security and autonomy, total or assisted, in urban spaces, furniture and equipment, buildings, transport services and devices, systems and means of communication and information for people with disabilities or reduced mobility.

Thus, available technological resources accessibility is intrinsically linked to inclusion. However, both should not be considered as ways of granting

minority groups, it is everyone's right. In Vivarta^[7] consonant with Sasaki a society is only accessible when contemplates six basic requisites, namely:

- a) Architectural Accessibility: when there is no physical environmental barriers [...];
- b) Communication Accessibility: when there are no barriers in interpersonal communication, written and virtual;
- c) Methodological Accessibility: when there are no barriers in the methods and techniques of study [...];
- d) Instrumental Accessibility: when there are no barriers in the instruments, utensils and tools of study, [...];
- e) Programmatic Accessibility: when there is no invisible barriers embedded in public policies and or regulations and standards;
- f) Attitudinal Accessibility: when there are no prejudices, stigmas, stereotypes and discrimination.

So that access to the information available in the digital environment is assured, users with disabilities use specific tools and software, which are known as Assistive Technologies. According to the Committee on Technical Assistance, presented by ITS Brazil^[8], Assistive Technology

[...] is an area of knowledge, characterized by interdisciplinary features, which includes products, resources, methodologies, strategies, practices and services that aim to promote the functionality related to the activity and participation of people with disabilities, limitations or reduced mobility, seeking autonomy, independence, quality of life and social inclusion.

In distance education it is necessary to use and even develop Assistive Technology resources, in order to promote accessibility for all learners. The virtual learning environments should enable adjustments, offering some of these resources so that everyone can have the same learning opportunities.

3. Contributions of Universal Design for Learning in the composition of inclusive virtual environments

To think about Inclusive Education in Distance Education means thinking about education for all, with unrestricted access, not only for people with disabilities, guaranteeing to all learning opportunities equality. This education is based on a conception of human rights, where it should be guaranteed to all equal opportunities. While composing virtual learning environments the multidisciplinary team should think about organizing the content to be worked so

it is accessible to anyone. Thus, it should provide, whenever possible and necessary resources to support people with disabilities. However, the construction of an accessible virtual environment requires specific knowledge and understanding of accessibility, not always present in this group. The research that is being conducted seeks to build a theoretical and practical reference to guide the organization of the virtual learning environment Moodle, used in the Distance Education Pedagogy Course CEAD / UDESC in order to make it more accessible. Moreover, takes into account the reality of distance education of the sponsor institution and proposes the use of the technological resources available. The purpose of the developing reference will be to support the work of education professionals and technicians involved in the subjects' virtual environment construction of the mentioned course.

To do so, the Universal Design for Learning will be considered as a theory base. It presents issues that should be considered for monitoring the accessibility of the environment composition and form of the posted content presentation. The Universal Design presents as basic principles^[9]: Equivalence of using possibilities, use flexibility; simple and intuitive use; collection of information, error tolerance; minimal effort, size and space for use and interaction. In Bersch^[10] it is stated, according to Rose and Meyer, that

Universal Design is a fairly recent issue in Brazil and there are still very few applications, especially in academia. Universal Design for Learning - UDL is a set of principles for curriculum development that provides all individuals equal opportunities to learn. The guiding principles of UDL are: providing multiple display modes, providing multiple modes of action and expression and providing multiple modes of self involvement. The principles of universal design are based on brain research and media to help educators reach all students from the adoption of appropriate learning objectives, selecting and developing efficient materials and methods [...].

The purpose of Universal Design for Learning is to build resources, materials and flexible learning spaces for all the students considering the different ways of learning and different learning rhythms. In this sense, this theory allows one to conceive a virtual environment for all. When you create opportunities to meet all of these specific education needs you will be expanding the group of users, covering not only people with disabilities. Thus, if the respect for differences is a constant factor in virtual environments

development for distance learning courses, inclusion will be not only possible but also effective in this context.

4. Conducting the research: some results

The research is organized in three stages: gathering information among in the theoretical reference relevant to the chosen theme for the analysis of the Moodle virtual environment used in the CEAD/UDESC Pedagogy course; theoretical-practical reference development, adopting UDL guidelines adapted to the reality of the ongoing CEAD / UDESC course and, finally, training of the professionals involved in the teaching resources elaboration to subsidize the creation of learning environments accessible to all students.

Here are presented the results found during the execution of the first stage, where it was possible to organize a list of categories that will allow the development of the rest of the work. From the information found it became possible to elaborate the following categories table:

CATEGORIES	SUBCATEGORIES
1. Providing Multiple Display Modes	1.1) Providing perception options
	1.2) Offering language use options, mathematical expressions and symbols
	1.3) Offering comprehension alternatives
2. Providing Multiple Action and Expression Modes	2.1) Providing physical activities
	2.2) Offering expression and communication options
	2.3) Offering executive functions options
3. Providing Multiple Self Involvement Modes	3.1) Providing options to increase interest
	3.2) Offering options to support effort and persistence
	3.3) Offering options for self regulation

Table 1 – Categories for the analysis of pedagogical notebooks^[11]

The three main categories listed above, along with others that may arise during the study may provide insight to the development of more inclusive virtual environments for distance education. However, this research seeks to understand which of these features are present in the already built environment, to verify preexisting reality and other possible non covered features by the above categorization. The major categories presented are listed below:

- **Category 1.** Provides Multiple Display Modes: seeks what kind of information display resources are offered in Moodle, what options students have for understanding and also what adaptation opportunities are offered.
- **Category 2.** Provides Multiple Action and Expression Modes: seeks how the virtual environment is organized, to verify the reading alternatives

offered, contemplates usability issues, seeks to understand what are the action and expression possibilities offered.

- **Category 3.** Provides Multiple Self Involvement Modes: detects different resources utilizes in the environment that can involve the students affectively, motivating resources or that have meaning, interaction forms, checking presented possibilities, in quality and quantity.

For the analysis of the virtual environment under study, Qualitative Textual Analysis ^[12] was considered, from which evidence will be collected from each of the categories formulated a priori. This methodology allows, through the process, to identify variables that may arise, allowing the emergence of other categories relevant to the study. This provides an opportunity to understand the educational materials from the base theory, UDL, and verify information that may be relevant for achieving the proposed objectives for the research. The operationalization of this method beholds basically three distinct stages, namely: the removal of materials, Moodle information, relationships establishment with categorization; and new emerging capture with the construction of understanding metatext of the whole set of information.

For the first moment operation will be collected fragments of text, or descriptions of graphic components that match subcategories of each category determined previously by UDL. In this moment will be checked those that do not apply to materials that compose Moodle and will be pointed out relevant variables that may arise. In the next moment will be constructed summaries of the data recorded, and, currently, there may be emerging categories. In the third and last moment, will be prepared summaries of what was found for each subcategory, forming an analytical text for each category of analysis. From these last texts synthesis becomes possible to build the metatext as a result of the whole analysis process, which allows us to understand the phenomenon under study from the chosen basis.

With the result that will be achieved it will become possible to develop guidelines that will enable the training of the agents involved in the development of CEAD / UDESC's virtual environments.

5. Concluding Remarks

Thinking from the perspective of inclusion is to be willing to experience new paradigms, especially when the focus is the educational space, assuming new conceptions. Distance education reaches some people that in person, could not be students, considering, for example, geographical location. In this sense, this type of education could be regarded as fundamentally inclusive. However, some experiences in working with this form to indicate that the effectiveness of this inclusive principle only happens when the different agents involved are available to overcome their prejudices, conceiving other ways of learning and teaching. To this end, it becomes necessary to seek references that support the design of inclusive virtual environments. The research in question intends to create opportunities precisely in the construction of this type of environment, where individual differences are respected. Therefore, seeks to guide educational settings to be adopted in the Pedagogy Distance Education Course in CEAD / UDESC, minimizing thus the mechanisms of exclusion that may exist.

Thus, to think about a virtual learning environment considering the assumptions of Universal Design for Learning is to think of a virtual environment accessible to all, contributing to inclusion in Distance Education.

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