INTERDISCIPLINARITY OF DISTANCE EDUCATION ON THE INTERNET: CONTEMPORARY STUDIES

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College Education

Macro Level – Systems and Theories of Distance Education

Theories and Models

Research Report

Scientific Investigation

Summary

This article aims the investigation of interdisciplinary development of the Distance Education (DE) on the internet. Its goal consists on verifying how elements of the digital culture, the emerging Technologies, the language applied in the teaching-learning process through distance, and the human factor corroborate in knowledge production. The methodology used is constituted as exploratory and theoric, that is, it is structured from the description of scenarios and variables, with relating market referentials and practices in an interdisciplinary mode. It presents, as a starting point, the existing bibliography about the theme, with a focus on the contemporary, using scientific texts, specialized magazines and researches on the internet. To this practice, it was added a lifting, non probabilistic sampling, quantitative and qualitative research done by internet with teachers/tutors who work with DE in order to identify how the teacher visualizes and interacts with interdisciplinarity. Here, the reflection is embraced by the importance of the relatioship between information technology and language, interactivity and culture of the involved, when evidencing interdisciplinarity and DE on the internet. The result of the research points towards the application of interdisciplinarity in DE courses and signals the strategies employed in this process of distant teaching-learning.

Keywords: distant education, interdisciplinarity, internet.

Introduction

This research aims to investigate how interdisciplinarity develops in distant education (DE) mediated by the internet. From this interdisciplinary thinking, based on contemporary studies, it passes through updating, reading and re-reading the object and the context of the descriptive mode.

The internet becomes here the main element that bases and contextualizes this study and it is defined as the group of interconnected computers through the complex conglomerate of the global web, which uses the *TCP/IP – Transmission Control Protocol,* and the IP - *Internet Protocol,* – which represents the group of communication protocols between network computers.

This process allows different information accesses, besides data transfer, when loading a large variety of resources and services that connect documents, files and people through the *World Wide Web* (www) and the infrastructure to support e-mails and interactions through interconnected computers (SAWAYA, 1999).

Distant Education

According to Carmen Maia and João Matar, "DE is a model of education where teachers and students are separated, it is planned by institutions that use different communication technologies" (MAIA and MATTAR, 2007, page 6). That is, these authors define DE as a form of education organized by institutions, where students and teachers are not physically present and ratify the use of information and communication technologies (ICTs) as a way. That is what is known nowadays as Distant Education – DE.

So, as the authors say, the DE uses, as a viable axis, the communication technologies, and it stands out the role of the institution as the agent that makes the planning of this teaching-learning process through distance. In this case, the information technology, students and teachers – even physically separated – can develop the teaching-learning process as a planned and viable way with the use of ICTs.

The technology shows itself as an ally of DE, which maximizes the possibilities of distant education by breaking barriers and geographical frontiers. The DE, in its turn, consists on the teaching-learning process carried out through distance, where two or more users-interactors, in different locations,

connect to the same network. This educational strategy enables the human development, regardless of physical presence in the classroom, to be held at different times. Without the need of setting fixed times, this form of interaction offers greater flexibility for the students to study at different times, while simplifying the logistics matter, since the student does not need to go to the classroom. As for the subjects and the class materials, those are available and accessible full time to the students, which facilitates the access and optimizes time management. Thus, it emphasizes the usefulness of the DE to an increasing number of people.

Interdisciplinarity

The proposal of this study consists on describing and reflecting upon DE in an interdisciplinary mode, that is, from an integrative, pragmatic and contemporary perspective. According to Heloisa Lück: Interdisciplinarity, in the science field, corresponds to the necessity of overcoming the fragmented view of knowledge production, as well as articulating and producing coherence among multiple fragments in the knowledge patrimony of mankind[6].

The author reveals the necessity of overcoming the fragmented view of knowledge and rescues the relevance of interdisciplinarity as a way to articulate the fragments of human knowledge. Interdisciplinarity comes to reconnect dispersed science knowledge, when thinking of knowledge in a wide and integrative way, that is, when developing a converging and integrative thinking.

As it happens in technology convergence, the convergence between knowledge and project elaboration in DE can be thought, that is, to plan ways for weaving a conductor wire that (re)links the sciences.

To Ivani Arantes Fazenda: Interdisciplinarity is an intersubjectivity, it does not intend to construct of a super science, but a change of attitude towards the knowledge problem, a substitution of the fragmentary conception to the unitary one of the human being[2].

Interdisciplinarity emerges in the sense of (re)thinking a integrative, collaborative and widening education, a posture that has been the center of concerns, especially in institutes of higher education – IHE - that are trying to introduce it the their courses to provide their students a more contemporary and realistic view of education and the marketplace.

In this context, A complex perspective of the elements based on the works of Edgar Morin, who stands as a contemporary thinker of the complexity theory, is considered and, according to, "Complexity is a fabric (complexus: woven together) of heterogeneous constituents, inseparably linked: it places the paradox of the one and the multiple"(MORIN, 1990, p. 20).

The axis of complexity allows the consideration over the theme interdisciplinarity of DE on the internet in a complex manner. That considers not only the process of teaching-learning through distance or its interdisciplinarity, but its relations and tensions that connect variables of the scenario such as cultural, technologic, linguistic and educational elements with plural perspective. It also allows to (re)think the theme over many perspectives, with the purpose of a comprehensive and contemporary reading.

Research Plan

The study focus on data raising regarding the practices made on DE, when identifying how interdisciplinarity has been seen and developed by teachers/tutors who work on the learning-teaching through distance process. In this context, it is also observed how the elements of the research relate to themselves regarding interdisciplinarity, as well as to the information and communication technology, education, internet and the involved people.

The investigation of this sample is based on Quali-Quanti classification method, that is, qualitative and quantitative, as it is explained by Marina de Andrade Marconi and Eva Maria Lakatos; Quantitative: it focus in terms of size or amount of the present factor in a situation. The characters have numeric values, that is, they are expressed in numbers. Examples: weight, size, cost, production, prints, number of children. Qualitative: based on the presence or absence of some quality or characteristic, and also in the classification of different types of priority. Examples: skin color, race, nationality, marital status, occupation, gender etc [8].

For the authors, the method allows to study the data from a quantitative perspective, that is, in a quantifiable mode, translating into numbers the data collected for reading and categorization. In what refers to the qualitative aspect, the views of respondents and their daily practices related to interdisciplinarity

are investigated, when performing a reading of the phenomena with the attribution of results.

The research was made as a survey, that is, a query; its application is configured as field research. According to Manolita Correia Lima, "a field research involves the understanding of facts /investigated variables, exactly at where, when and how they occur" (LIMA, 2004, p. 51).

The approach is developed and structured to investigate the participants in order to characterize them and identify their intentions, beliefs and actions against the research problem, which consists on verifying how interdisciplinarity is made possible in DE courses on the Internet.

The sampling focuses on teachers and tutors who work on distance education, which is justified because they are the conducting subjects of the teaching-learning process and also act as liaison between the students and the educational institutions. Another factor explaining the choice of teachers as subjects of this research is the fact that they are the element that possess the knowledge of the theme - interdisciplinarity - unlike the student body, which could represent a bias in the survey, since it does not hold conceptual and philosophic knowledge of what comes to be and how interdisciplinarity is applied in DE.

As a proposed qualitative reading of the perception of the respondents, an open question of interdisciplinarity in distance education via the Internet was inserted. The obtained data were used as the basis for studying the relationships and tensions between the involved elements in the teaching-learning process through distance on the Internet.

The application of the research was done in digital format by sending questionnaires via the Internet to teachers and tutors involved in DE. Methodologically, the research was developed in a period of sixty days, from early July 2010 through August 2010. The way used was the internet by the Qualtrics tool, available at: (<http://www.qualtrics.com>). That permitted to conduct the research via Survey method, based on examination/questionnaire. This tool was made available through the *link* (<http://qtrial.qualtrics.com/SE?SID=SV_8BNbOX1mdyqZRC4>).

The questionnaire, composed of seventeen questions, presents sixteen of them closed and a semi-opened multiple choice one. The first five qualified

the respondent on questions of fact, while the others were intended to raise opinions, intentions and identify behaviors.

It should be noted that this 'model' adopted in this study has no conclusive character, and the reading of the obtained data can not be extrapolated to the universe, since its approach is not probabilistic, so its result does not become conclusive.

The publicizing procedure occurred via e-mail to about sixty teachers-tutors who, in turn, were motivated to pass the email to their peers. A disclosure through the electronic discussion group from the Brazilian Distant Education Association (Associação Brasileira de Educação a Distância – ABED) was also done. (Available at:

<http://groups.google.com.br/group/eadbr/browse_thread/thread/8ea0fbaccc00 d140>).

Results

With a sample of 98 interviewees, it was possible to draw the profile of the respondents:

Gender	45% men and 55% women
Age	68% are between 29 and 49 years old
Graduation level	52% have or are pursuing masters degree

Table 1. Summarized profile of the respondents

As evidenced in table 1, the summarized profile of the respondents, , it approached the national reality indicated by the Census of the Brazilian Institute of geography and statistics – IBGE[3] (Instituto Brasileiro de Geografia e Estatística) regarding gender. According to data, nearly 49.22% of the population are men and 50.78% are women. It also shows proximity with the national population data, in which 64.55% are between 15 and 64 years old.

The question 9 aimed to identify the level of integration of disciplines through the question that dealt with the development of the proposed work in the course of DE where the interviewees worked.

Description	Answers	%
The disciplines are highly integrated	15	28%
The disciplines are averagely integrated	22	41%
There's little discipline integration	11	20%
No integration, there is no discipline integration	5	9%
Do not know if discipline integration occurs	1	2%
Total	54	100%

Table 2. Integration level in works proposed in DE course.

The table 2 shows that 28% considered that the disciplines were highly integrated; 41% stated that the level was medium; for 20% the integration was little; only 9% believed there was no integration; just 2% did not know how to answer the question. That is, 69% of respondents mentioned having high or medium level of integration between disciplines - data that indicate possibilities of development of interdisciplinarity in DE.

The question 12 showed the relation between the course project and interdisciplinarity.

Description	Answers	%
High level of interdisciplinarity	15	28%
Medium level of interdisciplinarity	27	50%
Low level of interdisciplinarity	5	9%
There is no interdisciplinarity	4	7%
Do not know how it is/was developed the interdisciplinarity in the course.	3	6%
Total	54	100%

Table 3. The course project and the interdisciplinarity.

According to the obtained data, the survey showed that: 78% of the projects developed for DE are interdisciplinary; regarding the course quality, 28% of the interviewees considered the course level high, 50% considered it average and only 9% considered it low. 7% stated there was no interdisciplinarity and 6% did not know how to say if there was interdisciplinarity in the course they work.

The question 13 identified the existence of interdisciplinary projects in the courses the interviewees work:

Description	Answer	%
Yes, and I take part as much as I can	24	44%
Yes, I eventually take part	11	20%
Yes, but I do not take part	2	4%
No	11	20%
Do not know	6	11%
Total	54	100%

Table 4. DE course projects and the interdisciplinarity

The data on table 4 showed that 68% of the courses have interdisciplinary projects. 44% of the interviewees confirmed the existence of interdisciplinary projects, from which, they participate as much as they can, and 20% confirmed the use, although they only sporadically participate. Only 4% confirmed the existence of this type of projects; however, they do not participate

on them. Around 20% of the interviewees informed that the courses do not offer interdisciplinary courses and 11% did not know how to answer.

The last question presented is aligned with the problem of this research, to investigate how an interdisciplinary approach is developed in the Internet-mediated DE. The two-way question asked the interviewee to explain what interdisciplinarity is, then point out how it develops, besides indicating the problem(s) found in its application. Out of a hundred, fifty four answered:

Interdisciplinarity occurs when, while in the development of an activity, knowledge and resources from different areas of knowledge are used. We develop interactivity when we use it in the discipline that aims to identify and utilize media resources, the virtual learning environment that guides the development of posters and transparencies (studying resources) with emerging issues such as global warming or personal hygiene (Responder 1).

According to Responder 1, interdisciplinarity is linked to the development of activities that require knowledge of several areas of knowledge and highlights its use by means of transversal themes such as global warming, for example. That implies developing educational strategies in which several disciplines act in a converging way towards to the proposed theme.

Still related to the perception of Interdisciplinary research:

Interdisciplinarity is the integration of two or more disciplines that seek to "weave" the contents, so that one complements and follows to the other. Interdisciplinarity is tied to the integration of disciplines in a complementary and sequential mode (Responder 5).

It is noted that that this statement is close to the ones supplied by some of the responders, such as responder 14: "Integration of the areas of knowledge. It is developed when proposed by the teacher as a methodology of his discipline" and responder 16: "It is an integrated relationship of a discipline to the other" or still, from responder 25: "integration among various disciplines by developing or studying the same subject and providing different approaches". And also from responder 36: "I understand that interdisciplinarity, in a nutshell, is the integration of knowledge across many areas".

For most respondents, interdisciplinary is based on the knowledge integration of the disciplines, which expands the possibilities of connectivity and convergence of technologies. Those can serve as a conduit to facilitate, enhance and organize knowledge, to serve as bridges between disciplines to produce contemporary knowledge.

Final Considerations

The questionnaire showed that teachers and involved professionals have the knowledge about interdisciplinarity and seek to put it into practice. It is added that the DE projects have come to be designed in a way to consider interdisciplinarity, and the established communication in the digital environment. From the viewpoint of those surveyed, interdisciplinarity presents itself as satisfactory and, as a contribution, it is thought to integrate DE to new and existing technologies, because, as noted in the survey, the most frequently used features so far are only the e-mail and the forum, with 80% and 81% respectively.

The encounter of information technology and education, especially of the internet based DE, is justified in sense of setting itself up as a viable opportunity to foster the integration of science and knowledge production, since the Internet has a high ability to connect, integrate, track and manage information. It shows, rich ground to cultivate interdisciplinarity, by subsidizing ways to promote the link, connectivity, and especially the correlation of Sciences, which fosters the three degrees of interdisciplinarity: the degree of implementation, the epistemological degree and the generation of new disciplines (NICOLESCU, 2010).

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