The Cyberculture Theories and Teacher Preparation at the LIFE-UFC Project in Brazil

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ABSTRACT

This paper analyses the experience of pre-service teachers enrolled in a course at a Brazilian university that was guided by three Cyberculture Laws formulated by Lemos (2004) – which entail "transmitting connecting and reconfigurating" information and practices – and by Connectivism's concept of "relevance" (Siemens, 2004). They interacted with a high school class as they collaborated to develop networked learning materials based on quality resources gathered on the internet on a topic of the students' choice. Pre-service teachers worked in teams and searched, selected and customized online resources and developed related technology-based learning materials and activities. These materials were made available on a online web interface. Instructor facilitation was a key element of the process as it helped pre-service teachers develop a better understanding about cyberculture as they applied it to teaching and learning guided also by the interests and feedback provided by school students. This experience indicated the importance of instructor's explicit guidance to help pre-service teachers incorporate cyberculture laws in their teaching in meaningful ways, i.e. how to engage in dialogue with their students, how to select quality learning resources from the internet and how to transform them to develop learning materials that are appealing to the students.

Keywords: Cyberculture, Pre-Service Teacher Preparation, Digital Learning Materials.

INTRODUCTION

The experience presented in this article was developed along one semester at a federal university in the northern coast of Brazil. It involved the participation of a university professor, as the class instructor, students from the university teacher-preparation track and students from a high school close to the university campus. The course taught is named Cyberculture and Education and it aims to expand teacher preparation beyond the some how limited perspective of the infusion of technology into the curriculum and into teaching practices. This means that pre-service teachers enrolled in this course participated in a learning process in which they were guided to bring key elements from cyberculture into the ways they envisioned their teaching in close dialogue with their students, as it will be detailed along this paper. This was important because it brought them closer to some of the new ways of being and learning that are taking place on the internet but that are often bypassed at school. Since this approach is a new one in the field of teacher preparation, it is important to document and to reflect upon the learning process entailed to it, particularly taking into consideration pre-service teachers' perspectives about it to achieve a better understanding about the possibilities and the difficulties involved in this new approach to teacher preparation and cyberculture nowadays.

FRAMEWORK

Cyberculture covers a wide field of studies that include many theories and scholars addressing

issues and questions related to cyberspace (a complex congregation of virtual networks) and the social, cultural and political phenomena that it holds. An important aspect of the cyberculture studies deals with how people act in cyberspace in relation to information and knowledge. On this topic, Lemos (2004) formulated the Cyberculture Laws, which entail transmitting, connecting and reconfigurating information and communication practices. By transmitting, the author indicates the growing practice of "do it yourself" embodied in authentic contents or remixed ones generated by internet users and posted on various web interfaces. In turn, these interfaces aggregate and display comments and various contributions from other users. This represents an unprecedented democratization of the publisher's role, allowing many publishing for many. The second law relates to the connection principle. Lemos (2004) articulates that it is not enough to just produce content, as they gain new meanings and expand their reach when they are shared over networks such as the internet. The exponential expansion of publishing and transmition, and the network diffusion of information, lead to the third law of the cyberculture, which is the reconfiguration of social practices, institutions and media arrangements. This reconfiguration translates into new forms of consumption of cultural goods, revised formats of symbolic goods' production and new perspectives on the sense of ownership and authorship.

These changes, which occur in the context of the cyberculture, indicate a higher level of social complexity that takes place in the intersection between the user and the cyberspace. It constitutes then the creative appropriation that, according to Lemos, is

> at the same time, a new way to use resources, a new way to learn and a new technical field, as well as a form of deviation (deviance) in relation to the operating instructions, a space completed by the user in the gap not programmed by the producer/inventor. (2004, p. 239, translated from Portuguese)

Lemos' (2004) Cyberculture Laws are closely related to the authorship principle incorporated into the Conectivism learning perspective proposed by Siemens (2004). The author formulates that learning is a process of connecting specialized nodes or information sources and that the ability to learn is more important than what one knows at a given moment. Also, it is necessary to know how to select and to nurture information sources as well as to establish connections among diverse areas, ideas and concepts. All these requirements puts forward the active role of the learner, who articulates, transforms and contributes to the knowledge flows taking place in cyberspace. In the context of the production of online learning materials, Siemens formulation articulates that the creation of educational materials on networks such as the internet is put forward by joining knowledge from diverse areas such as knowledge concerning the publication of materials, knowledge about subject matter, and pedagogical knowledge. It also entails knowledge related to graphic web design, searching for new sources of information and copywriting. Unlike content published in other media and developed from rigid and hierarchical roles, the collaborative, active work of online learners allows everyone to take advantage of the abilities and activities developed by each learner.

Following the practical application of these theoretical ideas will be presented along the project developed at the Laboratório Interdisciplinar de Formação de Educadores da Universidade Federal do Ceará (LIFE-UFC)[1].

DESCRIPTION OF PRACTICAL APPLICATION

The LIFE-UFC is based in a computer lab sponsored by the Brazilian Federal Government at the Universidade Federal do Ceará. The lab is open to students from all teaching preparation tracks across the university. Various projects targeting teacher preparation have been developed at

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[1]   The name of the lab translates as Interdisciplinary Laboratory for Teacher Preparation.

LIFE-UFC. This particularly paper focuses on the MDCR Project (which in Portuguese stands for Materiais Digitais Colaborativos em Rede), which translates to Networked Collaborative Digital Materials (NCDM).

The term "networked" is employed as most resources used to develop the learning materials are already available online and students will connect these resources to the new web interface they develop. Also, pre-service teachers spend time working online through learning spaces they define themselves – usually a private group at a social network – as a way to increment their interaction along the project besides the regular class meetings. "Collaborative" refers to the manner in which the materials are developed by pre-service teachers. They work in teams and all of them contribute to the construction of the materials as they exchange and build on their knowledge and skills to help other team members to accomplish the task.

The NCDM Project has been developed as a semester-long, 300-level, undergraduate course that is open to pre-service teachers from all teaching preparation tracks across the university. Each semester, 10 to 20 students enrol in the course. During the course, students work in partnership with a class from a high school near the university campus. These students help the pre-service teachers to develop new learning and teaching materials. The pre-service teachers engage with the high school students and encourage them to exchange ideas about the materials that better suit their interests and areas of study. The pre-service teachers also learn about how to bring cyberculture theoretical elements to their teaching, i.e., how to build new ways of teaching and how to apply such knowledge to the materials they are developing during the semester. University students conduct regular monthly visits to the high school to present their materials and learning activities as they evolve. The high school students provide feedback. and produce materials, such as videos, picture collages and online surveys, that are incorporated into the materials.

At the LIFE-UFC, pre-service teachers explore resources and activities to use in the materials in line with learning theories they think that better suit their learning objectives. They also choose and design the web interface where their learning materials will be made available online. Thus, the materials become open resources to the high school students and to anyone else interested to learn about the chosen themes. Students work in teams to search for online resources about a chosen theme based on the principle of relevance (Siemens, 2004) and create tech-rich activities aiming to help school students to acquire knowledge, to learn concepts and to expand their experiences with technologies. These activities have taken place in a way similar to what Anderson refers to as the collaborative production of knowledge in which "content is augmented, annotated, enhanced, and, in some cases, displaced by content created by the end users themselves. Increasingly, ways are being developed to have content harvested, filtered, repurposed, and transformed" (Anderson, 2008, p. 63).

For example, fiction or documentary movie excerpts were connected to animated websites and traditional reading materials to encourage students to think critically about power relations during the Cold War. Searches were conducted for cartoons and essays about uneven power relations in society and why these patterns tend to endure today. In another NCDM, students learned about what it means to be a good professional. They were required to find an online profile of a professional they admired, interview the individual via video chat and then post the video on a designated space at the NCDM. They were also required to highlight the ways by which people damage the environment.

The NCDM Project has adopted the concept of the web interface as a network of resources that are connected to promote learning. Latour proposes that a network

> *is defined by the series of little jolts that allow the inquirer to register around any given substance the vast deployment of its attributes. Or, rather, what takes any substance that*

> *had seemed at first self-contained (...) and transforms it into what it needs to subsist through a complex ecology of tributaries, allies, accomplices, and helpers. (2011, p. 799)*

Pre-service teachers engage with the collaborative design of the web interface and they learn about cyberculture and about teaching as they help develop it. The internet becomes an environment that provides various opportunities for them as they help build the "complex ecology" indicated by Latour. The work around the web interface provides opportunities to "plunge ever deeper into knowledge resources, providing a near limitless means for them to grow their knowledge and find their own way around the knowledge of the discipline, benefitting from its expression in thousands of formats and contexts" (Anderson, 2008, p. 49), as well as to create their own ways to teach.

According to Luckin's (2010) proposition that in ill-defined domains, such as cyberculture, "learners will need to understand how these constituent knowledge concepts have been formed and justified in order to understand more generally the nature of knowledge and the knowledge construction process" (p. 33). Therefore, as students participate in these activities they start to understand better the field of study in a process in which "the culture emerges from the environment—and grows along with it [given that in this] new culture of learning, the classroom as a model is replaced by learning environments in which digital media provide access to a rich set of original materials" (Thomas & Brown, 2011, p. 37). In other words, the process of collaborative design, which includes searching and selecting resources on the internet, is mediated by the course instructor. The instructor provides guidance along pre-service teachers' learning by,helping engaging them with the field of knowledge they need to further understand and by using digital resources to build their teaching materials.

The participation of pre-service teachers in the collaborative design of the NCDMs follows a Vygotskyan perspective about the creation of zones of proximal development. In these zones, the focus on the individual learner is replaced by the focus on the collective engagement of learners, in a process that is moderated by the instructor (Newman and Holzman, 1993). The instructor's mediation helps pre-service teachers to critically integrate knowledge into their teaching, to deepen their understanding about cyberculture and to build their teaching skills as they develop teaching materials.

OUTCOMES

At the end of the semester pre-service teachers complete their NCDM and they make a final visit to the school to present their work and to dialogue with the high school students. These learning materials include various resources gathered from the internet as well as new content produced by pre-service teachers and high school students. Activities have been designed to motivate students to explore new technologies, to learn and to share their learning online. In 2014, NCDMs developed by the students covered themes such as power relations throughout history and what it means to be a good student and a good professional.

See figures 1 and 2 for some print screens of these materials, available at:
 <http://equipeciber.wix.com/maosemcena> and at:
 <http://cibercultura20132.wix.com/sustentabilidade#!get_involved/c1yzj>.

Figure 1. NCDM's web interface based on fiction movies and other resources to teach power relations.

Figure 2. NCDM's web interface based on music and other resources to teach sustainability.

Pre-service teachers have spoken about their learning process and they have pointed to initial difficulties in understanding and applying principles of cyberculture to their teaching and teaching materials. For example, students said they have never worked on connecting activities students enjoy doing online to their teaching. They posed doubts such as how to transform what students share on Facebook into meaningful teaching activities about a given course topic? Or how to make sure an online conversation could help expand students' knowledge about a lesson topic? As the semester progressed, however, they started to feel more comfortable with the LIFE-UFC project and they acknowledged that the teacher mediation was a key element for their learning. This pointed to instructors' need to reposition themselves as mediators of learning activities that include searching and selecting resources from the internet to teach a given subject. This process of mediation by the instructor happened according to some studies cited by Hannafin and Hill (2007). The instructor guided learners through the "potentially bewildering range of resources and interactions and providing compass points that highlight how relevant knowledge should be valued and used in academically sound ways" (Beaty & Howard, 2010, p. 605). Also, pre-service teachers shared with the instructor the once traditional central position of knowledge on campus. This happened as they helped to build knowledge about the enacting process of the NCDM, expanding ideas initially formulated by the course instructor. This constituted a learning process that evolved much closer to their own identities, interests and online activities they enjoyed the most.

Pre-service teachers also expressed their appreciation of the class dynamics. They were seated at large tables and could move around with their portable computers. They could work with different groups of students and exchange ideas as they build their materials. They appreciated their exchanges with the high school class during their visits, but they were puzzled by the fact that most students would not engage with them online following the in-person visits to the school. This happened despite pre-service teachers' coordinated efforts to engage the high school students on these exchanges. Apparently, high school students had enough access to the internet through their own portable devices (as demonstrated during some school activities), but still they did respond to these conversations. As the semester progressed, pre-service teachers became actively engaged in the development process – they moved from peripheral participation to fully-engage participation. As the pre-service teachers gained skills and increased their confidence, the materials and activities they produced evolved. Their perspectives about the course goals and methodology and their understanding about key themes in the field of cyberculture changed.

The instructor's role changes from the one that is envisioned as the source of knowledge to the one who learns with the pre-service teachers. This means that knowledge expertise moves along all members of a learning network (Beaty & Howard, 2010). The authors understand that learners become experts in 'why they want to know it" and the instructor assumes the role of a "fellow holder of expertise", who brings a distinct suite of skills and knowledge, i.e., the epistemology of the disciplinary field, theories and a critical perspective about the chosen theme.

IMPLICATIONS

Although pre-service teachers appreciated the methodology and the learning process they engaged with during the course, they also faced significant challenges along the way as they had not experienced engaging with cyberculture laws and digital technologies to teach before. First they had to learn about cyberculture, a field of study that was new to them. Also, they had had very little opportunity to think about how to bring the knowledge they already had about technologies and the internet to their own teaching. They had to become familiar wtith the high school students' interests about subjects they wanted to learn further and they had to connect these topics with resources available on the internet. They also had to develop learning activities

in which the use of technologies was meaningful and appealing to the high school students. As the semester progressed, they became increasingly aware of their understanding about the course systematics – to build digital learning materials directly connected to their teaching and to their students – and their need to reposition their teaching based on cyberculture laws, engaging in dialogue with the high school students.

As they analyzed a similar experience, Greene and Land (2000) pointed to the importance of scaffolding – learners must be supported and challenged along their learning process. They may need explicit guidance about how to select resources from the internet and from other sources along the learning process as they become more familiar with their topic or the context (as cited in Hannafin & Hill, 2007, p. 532). Also, Macdonald, Heap and Mason (2001) pointed out that many skills are needed to effectively use resources they find on the internet (e.g., information and technology skills, cognitive skills). The authors also indicated instructors' actions to help students focus on select quality learning resources among the many possibilities available nowadays (as cited in Hannafin & Hill, 2007, p. 533). The strong presence of the course instructor helped facilitate students' learning as it supported their quest for expanding the boundaries of their teaching as they builted the NCDMs.

Pre-service teachers completed the semester with a good understanding of new ways to teach as it can be seen in the NCDMs available online. These materials present many learning activities based on original resources they found on the internet and that they transformed in order to meet their teaching needs and to met their students interests, particularly in regards of new uses of various technologies along the learning process. In short, pre-service teachers learned to engage in a dialogue with the high schools students, to explore and transform resources available on the internet and to use various technologies and software to develop new materials. These elements indicate the occurrence of creative appropriation formulated by Lemos (2004) and the authorship entailed to Connectivism by Siemens (2004). The LIFE-UFC project evolved along the ideas that:

> *teachers are no longer valuing only the traditional role of the "expert" teacher, they are realising that to engage in new forms of learning and teaching, such as we find in networked learning, they have to revaluate their existing pedagogic practice in favour of values associated with the supervisor in various roles such as , academic instructor, a process-oriented supervisor and a social mediator. That is, where there is a great value placed on process, methodological dimensions and stressing the importance of a reflexive approach. (*Hogdson, McConnell and Dirckinck-Holmfeld *2012, p. 296)*

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