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Teaching how to learn with a wiki in primary education: What classroom interaction can tell us

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ABSTRACT

Understanding how wikis are used to support collaborative learning is an important concern for researchers and teachers. Adopting a discourse analytic approach, this article attempts to understand the teaching processes when a wiki is embedded in a science project in primary education to foster collaborative learning. Through studying interaction between the teacher and students, our findings not only identify ways in which the teacher prompts collaborative learning but also shed light on the difficulties for the teacher in supporting student collective collaboration. It is argued that technological wiki features supporting collaborative learning can be realized only if teacher talk and pedagogy are aligned with the characteristics of wiki collaborative work: the freedom of students to organize and participate by themselves, creating dialogic space and promoting student participation. We argue that a dialogic approach for examining interaction can be used to help to design a more effective pedagogic approach in the use of wikis in education, to shift into Web 2.0 learning paradigm and to equip learners with the competences they need to participate in knowledge co-construction.

1. Introduction

Social technologies have become key features of leisure and work places, and also are starting to have a key role in education. Web 2.0 technologies have opened up new possibilities for open learning (Cole, 2009; Moskaliuk, Kimmerle, & Cress, 2009). In a short time we have shifted from a static web in which users had a passive role to a dynamic, collaborative and participatory web in which users have an active role, creating and sharing knowledge in a global web setting.

Different authors have agreed that Web 2.0 classes need to emphasize a learning culture based on participation, collaboration, creativity, dialog and knowledge creation (e.g. Lim, So, & Tan, 2010; Mercer, Warwick, Kershner, & Kleine Staarman, 2010; Wegerif, 2007). Particularly, cultural beliefs about learning with Web 2.0 technologies and practices focus on a dialectic relationship between personal and collaborative learning, highlighting socio-techno-spatial relationships which are advocated in current classrooms (Lim et al., 2010). Bonderup (2009) has further suggested that Web 1.0, characterized by knowledge transmission, the passive role of learners and a strong controlling role of the teacher has been dominant in current classrooms, while there is a need to advocate the Web 2.0 learning paradigm. Web 2.0, exemplified by wikis, is more focused on knowledge creation, student participation and less teacher control in learning. Students are considered more participants of the learning community while the teacher is more an expert participant who guides and helps students in developing a collaborative knowledge construction process. In this line of argument, it is important to know how schools can move forward to an eLearning 2.0 paradigm, and provide the educative community with valuable knowledge about: a) how web learning activities should be designed in order to promote collaborative knowledge creation models;

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or b) what competences students need to develop in order to be able to fully participate in collaborative knowledge creation activities; or c) what roles the teacher may play in order to promote eLearning 2.0 student competences.

Our article follows this line of research, aiming to understand the characteristics of teaching processes when a wiki is used for collaborative learning in primary education. More specifically, in this article we focus on the role of the teacher when a wiki environment is used in the classroom for promoting collaborative learning through the analysis of teacher–student interaction. Our study analyzes how teacher dialog may or may not contribute to enabling children to become progressively more able to solve a task collaboratively.

Wikis are characterized by a variety of unique and powerful information-sharing and collaboration features. Some researchers have drawn attention to the potential of wikis for collaborative learning because participants can create a shared digital artifact and this activity may facilitate the development of collaborative learning processes (Cress & Kimmerle, 2008; Moskaliuk et al., 2009). However, while many researchers have described the broad range of potential pedagogical applications for wikis (Lund & Smordal, 2006), few of them have studied how the teacher can support students' appropriation of collaborative construction of meaning through the articulation of each others' thoughts and ideas, and it is even rarer to study this issue in primary education. In this article we attempt to examine the characteristics of teacher–student interaction when a wiki is used to enhance collaborative learning. We argue that such interaction is one of the key variables to help students create and engage in powerful, critical and reflective dialogs using Web 2.0 technologies that facilitate the co-construction of new knowledge.

Based on the above considerations, our study is grounded in the following three main concepts which are helpful to gain understanding about teacher–student interaction to promote web 2.0 competences and attitudes: a) sociocultural theory to promote and analyze classroom interactions and participation in collective activities; b) the concept of "dialogic space" as a social space, a realm of activity within which people can think and act collectively (Wegerif, 2007) and c) "dialogic teaching" (Alexander, 2008) as a pedagogic approach in which teachers encourage students to participate actively, using group-based discussions to articulate, reflect upon and modify their own understanding.

Re-addressing the aim of our study along these lines, we examined how the teacher can create or hinder learning opportunities to enhance student interaction and collaboration using the wiki affordances for carrying out a collaborative task. To this end, we designed and implemented a science project in which twenty-five primary students and their teacher used a wiki environment for the first time, with the specific aim of establishing and supporting collaborative interaction, while engaging in a collaborative writing task.

2. Sociocultural theory, sociogenesis and classroom interaction

From the sociocultural theoretical perspective (Vygotsky, 1978), 'learning is conceptualized as knowledge construction through participation and negotiation, when language is used in context as a primary mediating tool. As Li (2011) puts it, 'language exchange is understood as a tool, which facilitates meaning negotiation, turn-taking in an activity, creation of a consensus between participants, and the developing of new forms of knowledge' (p.147). In schools, classroom interaction – as one form of social interaction – creates learning opportunities where knowledge is jointly constructed through participation, negotiation and collaboration. This learning opportunity, in turn, creates a foundation for individuals to develop.

This perspective is shared by Valsiner and van der Veer (2000) who proposed the concept of sociogenesis — 'the social genesis (i.e. development emergence) of the person' (p. 3) in studying the social mind and in particular intellectual interdependency. They discuss how different sociogenetic thinkers (such as P. Janet, J. M. Baldwin, G. H. Mead, and L. Vygotsky) have investigated the social nature of the mind and pointed out the existence of two different epistemologies. One perspective is ontological which offers theoretical constructions that fuse the person and the social environment, and the concepts of participation and appropriation which are key concepts to explain sociogenesis. The other perspective of sociogenesis emphasizes the idea that psychological phenomena emerge through social experience. They theorize that the person is viewed as distinct from the environment, yet interdependent with it, and they emphasize the notions of internalization and externalization.

As an alternative theoretical route Valsiner and van der Veer (2000) propose strengthening the understanding of the ways in which the person and social units relate and these authors tackle the concept of intellectual interdependency, that is, how the idea is socially constructed. This concept emphasizes the process of purposive communication efforts by persons and institutions, in which constructed ideas are transformed into new forms. Thus, this process can be seen as an active construction of novel ideas in the interdependent relationship of the persons involved. Lund (2008) advocates that the concept of sociogenesis 'transcends the more individual aspects of learning and signals an epistemological shift from learning as a process *within* minds to learning as process *between* minds' and favors an expansion of the "social" and the dialectical concept of interaction within the zone of proximal development (ZPD) (p. 40). ZPD can be viewed as inhabited by individuals as well as a collective who can create a common ZPD through their interactions. Thus, this section aims to understand the social processes involved in the development of new ideas. In order to understand the social development of knowledge, we need to take consideration of the importance of the process of meaning negotiation, knowledge construction, participation, intersubjectivity and intellectual interdependency.

These processes are mediated through a symbolic tool, which Vygotsky further suggested as language. Language is seen as a tool to mediate and shape thinking. In the context of the classroom, the teacher uses language to perform different functions. One traditional view suggests 'teacher talk' falls largely into an IRF pattern (Initiation – Response – Feedback) (Sinclair & Coulthard, 1975) and the first act of this pattern features 'closed questions' to which the teacher knows the answer (Wood, 1992). The purpose of this kind of talk is to help teachers identify what pupils are thinking, display knowledge or test children's factual knowledge of understanding, usually as a reiteration of information provided earlier by the teacher. To many researchers (Perrott, 1988; Van Lier, 1996), this kind of talk does not develop children's thinking or provide children with the possibility of