Affordances of Social Technologies as Social Microworlds

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Abstract

Social technologies such as blogs and wikis have been used extensively in multiple educational settings for diverse purposes. Despite their popularity, their potentiality is not fully exploited, whereas their use is not clearly framed in theory. In this poster we present the potential of social technologies as social microworlds for facilitating groups of learners to construct a shareable artifact. A qualitative study that captures the use of different types of social technologies in three different classroom settings sheds light on the affordances of social technologies to transform the activity of learning across a new culture of computational tools.

Author Keywords

Constructionism; social constructionism; social media; web 2.0; affordances; limitations; Computer Assisted Language Learning; CALL

ACM Classification Keywords

K.3.1 Computer Uses in Education: Collaborative learning; H.5.2 User Interfaces: User-centered design.

Introduction

Although abundant literature exists on the use of social technologies as useful tools for improving communication, collaboration and information sharing [2, 3], Wang & Vasquez [10] point out that their

Setting

Class 1: Greek as a second language
Duration: 650 hrs
Class 2 and 3: Greek as a mother tongue for academic purposes/dissertation writing
Duration: 52 hrs

Participants

Class 1: 4 male students
Class 2: 12 female and 8 male students
Class 3: 5 female and 2 male students

Social Technologies

Class 1: wikis, blogs, Facebook, Google documents, Dropbox
Class 2 and 3: wikis, blogs, Facebook, Google documents

Processes

Class 1: work in groups for developing an online dictionary and calendar using social technologies
Class 2 and 3: work in groups for developing a research project which had the format of an academic research paper using social technologies

capabilities are not fully exploited and their use is still not clearly grounded in theory. To fill this void, this study aspires to ground the use of social technologies as social microworlds under the theoretical framework of constructionism [3, 4]. Papert [3] coined the term constructionism advancing a theory of learning, teaching and design, which can be summarized in the conviction that individual learning occurs more effectively when learners understand the world around them by creating connections between old and new knowledge, in interactions with others whilst creating meaningful artifacts; a sand castle, a computer program or a theory of the universe [4]. A microworld, according to Papert, is "a computer-based interactive learning environment where the prerequisites are built into the system and where learners can become active, constructing architects of their own learning" [3]. Our study is guided by the following research question:

What are the affordances of different types of social technologies as social microworlds in facilitating groups of learners to socially construct online artifacts?

Literature Review

Constructionism and its Social Perspective
Extending Papert's work [3], Shaw [8] launched the term social constructionism emphasizing the importance of the social setting whilst engaging in constructing external and shared outcomes. Shaw [8] views social constructionism as a strong tie between Vygotskian sociocultural theory [9] and Piagetian constructivist learning processes [7], since socially constructive activities may provide developmental activity of the individual for constructing an artifact in a social setting. According to Shaw [8], for social constructionism to take place, appropriate tools need to

exist that will involve subjects of social settings to be both constructive and creative. The advent of social web gave a new perspective to social constructionism. Parmaxi et al. [5] explored how the construction of an online artifact manifests in practice within social technologies, providing its core dimensions that were sorted out in three high-level categories: exploration of ideas, construction of artifact and evaluation of artifact.

Social Technologies in Language Learning
Social technologies were studied in this paper in the context of Computer Assisted Language Learning (CALL). A burst of research in CALL provided a long list of the potentials of these technologies in the second language (L2) classroom, considering them amongst the most popular trends in CALL research agenda [2, 12]. However, the employment of these technologies in the learning process is not always positive. For example, Li and Zhu [1] highlight the importance of the kind of interaction in an online collaborative environment for improving learning opportunities.

Setting

The current study was run in three classes throughout 2011-2013 in order to have a wide spectrum of the use of social technologies in different settings. The three classes gave an in-depth insight of the different ways of using these technologies to develop shared and meaningful artifacts.

Methodology

Data Collection
The data was collected using a variety of methods (see Table 1): questionnaires, in class observations and field notes kept throughout the course by the researcher and learners' summative reflections. Focus groups and

Class 1	
Data	**Purpose**
Questionnaire	Insight into students language and computer literacy
Students' Reflections	Self-evaluation of their activities outcomes and process adopted
Instructors' reflections	Reflection of activities outcomes
Instructors' field notes	Overview of the process adopted and activities held
Interviews	Reflection on activity process and outcomes
Focus group minutes	Overview of process adopted by the group
Classes 2 and 3	
Data	**Purpose**
Questionnaire	Demographic data and insight into students computer literacy
Instructors' field notes	Overview of the process adopted and activities held
Learners' summative reflections	Self-evaluation of their activities outcomes and process adopted
Interviews	Reflection on activity process and outcomes
Focus group	Overview of process adopted by the group

Table 1. Overview of data collected in the three different classroom settings.

individual interviews were conducted in order to elicit qualitative data about the process that participants followed within social technologies. To triangulate the findings, the study also collected data by observing utterances, texts and artifact development within social technologies.

Data Analysis
We adopted a deductive approach for identifying the affordances of different types of social technologies as social microworlds. As a basis for our analysis we used an established code scheme developed by Parmaxi et al. [5] that manifests the aspects of online artifact construction within social technologies. The code scheme consists of 9 codes that were sorted out in three high-level categories: exploration of ideas (orientation, brainstorming, material exploration), construction of artifact (outlining, editing material), evaluation of artifact (revising, peer reviewing, instructor reviewing, presenting/publishing). Taking them as a basis for our analysis allowed us not only to explore how these aspects manifest within different social technologies, but also enabled us to identify how the overall artifact construction is facilitated or inhibited by each type of social technology.

We analyzed the data set using the Qualitative Research Software Nvivo. The content of the utterances was read for meaning or idea to define segment boundaries, thus, consecutive sentences that construct the same meaning are taken as one text unit and coded into a single code. This ensures that each coded segment captures the essence of described events in detail and it is still seen within its context [6]. A weakness of this approach is that the decision of what constitutes a meaning can be very subjective. To

address this issue, we followed Pfeil and Zaphiris [6] approach, developing a detailed guide for determining the unit of analysis. An inter-coder reliability test with a sample of the data set revealed that two independent coders agreed on the segmentation in 77% of the cases.

The coding was not exclusive and each segment was coded under a) one of the categories manifesting the action held for the construction of the artifact and b) the specific social technology in which an action was taking place. These layers allowed us to identify the stage of social constructionism that was conveyed (categories), and the medium that this was done (Facebook, Google Document, Blog, Wiki, dropbox, offline). To measure the inter-coder reliability, 10% of the data set was coded by another independent researcher. Cohen's KAPPA was calculated to be 0.75 which according to Stemler [11] is considered to be substantial.

PRELIMINARY RESULTS
Affordances of Social Technologies as Social Microworlds
Various types of social technologies have been used in different ways throughout the different phases of the artifact construction.

SOCIAL NETWORKING TOOLS
Facebook, and more specifically Facebook Group and chat, has been used extensively throughout all phases of the artifact construction. The first stage of construction involved orientation towards the idea of the artifact to be constructed, by setting goals and objectives. The Facebook group provided a ground for communication in which the instructor and students

could exchange their ideas and relevant material for implementing a specific task. Moreover, learners could exchange material throughout the construction of the artifact. Students used tagging to ask from their classmates to complete a specific task or to inform them of what has been implemented and what needs to be done.

Facebook was also used for the actual construction of the artifact. Students would upload their artifact either as a post or as a Word Document on the Facebook group for further discussion by their peers. However, the use of Facebook throughout the construction phase often caused problems, especially in cases that various different versions of the artifact appeared on the group.

Apart from exploration and construction, an essential concept in constructionism is evaluation. Having in mind that "people seldom get anything exactly right on the first try" [4], the construction of an artifact is seen as an iterative process that includes several modifications and revisions. Facebook was preferred vis–à–vis other social technologies, as a means for discussing and making decisions on how the group's artifact should be formed. The Facebook group facilitated discussion amongst the members of the group on what needed to be changed or refined for polishing their artifact. However, difficulties were also reported, especially in cases in which the constructed artifact was uploaded in Word Document. In these cases, students and the instructor had to download the document and post comments on the Facebook group which was not always efficient. Comments beneath a WordDocument where generic had difficulties in pointing to a specific error and would only limit to generic rather than specific comments.

The Facebook group also facilitated peer reviewing between members of different groups. Students found their peers' comments helpful in improving their artifact. However, there were cases in which students appeared resistant in following their peers' comments and emphasized the importance of the grading procedure that would be carried out by the instructor and not by their peers. The evaluation of the artifact amongst group members was also conducted through private chats on Facebook rather than through posting comments that were viewable by all members of the group. Apart from their classmates, students also received comments from their instructor who would evaluate their progress and gave them suggestions for improvement.

BLOGS

From students' viewpoint, blogs facilitated both construction and evaluation of their artifact through discussion with their peers and instructor. Students expressed their preference for using blog as a stepping stone for formulating their learning, often through their mistakes. *S1 Interview (Class 1): "Blog has assisted so much, […] the reason is that you write your own thinking, you form your own stories and with that you know how to create a story in Greek and also you write so many words in Greek, you make mistakes, you correct it and that's the way to go"*.

Students also experienced difficulties in working on the blog and expressed their preference in using instant messages for discussing their artifact, in a way that would reach directly someone else who can see it quickly and response immediately.

WIKI

Wiki was found to be a useful tool for exploring, constructing and evaluating an artifact. Students started from orientation of their artifact to construction and evaluation until they reached the finalized product. During the exploration phase, learners exchanged material and built on each other's ideas: *S23 Interview (Class 2): "Each one of us would log into the wiki and add into what the previous one had written".* During this phase, students focused in writing down ideas that could be used in the artifact and moved on in the construction phase, first by enriching the artifact with more details. The examples vary, but in each case learners practice in the use of language in a rich "object-to-think" [4]. Participants viewed the construction phase as highly iterative and powerful since learners had to involve systematically in problem solving and explaining the constructed artifact to their potential audience. In this phase difficulties evolved when word files replaced text on wiki pages since "*on the wiki it was easier to check on the changes that were made. On the word file, you need to open the file, read the file entirely and then identify what changes were made -if any*" (S23 Interview, Class 2). Apart from constructing their artifact, students were also involved in peer reviewing. Reviewing was conducted in the form of comment in the discussion forum of Wiki through which students managed to identify and correct their mistakes. Additionally, the instructor often challenged participants by highlighting their mistakes within the wiki, not for penalizing them but for allowing deeper thinking of their artifact.

DIGITAL ARTIFACTS SHARING PLATFORMS

The digital artifacts sharing platforms used were Dropbox and Google Documents. Dropbox shared folder facilitated mostly exploration and sharing of material amongst students which was then used for construction of an artifact. Google Document enabled exploration, construction and evaluation of an artifact. In Class 1 students engaged in building a monthly calendar with their experiences throughout their life in Cyprus. Each one of them would note on the calendar important dates for all group members to remember. In Class 2 students were encouraged to use Google Document after the difficulties their instructor encountered in providing comments. Students identified the affordances and weaknesses of Google Documents in constructing their artifact. Amongst the affordances, students reported the privilege of Google in having the whole artifact together. However, problems emerged related to the content of their artifact. Moreover, the Google Document also facilitated the revision and reviewing of the artifact by their peers and their instructor: *S14 Reflections (Class 2): "One of the main advantages of Google Docs is the simple and easy suggestion of a mistake at a specific point in the text".*

DISCUSSION - CONCLUSION

In this study, social technologies are considered as tools that involve subjects of social settings in the creation of constructs. The different phases of an artifact construction have been facilitated and inhibited in different ways within social technologies. This study has shown the hidden potentials of social technologies in allowing groups of learners to socially construct an artifact that is visible and evaluated by the world, a lexicon, a calendar or a groundbreaking research paper. The design of well-structured social microworlds needs to accommodate the needs and expectations of both learners and instructors as well as the affordances of technology. Learners need to work in exciting and

participatory environments that resemble real activities of adult life; whereas the instructor needs to act as collaborator, reviewer and authority, as people act in real social situations.

These findings suggest several emerging design principles for developing educationally powerful social microworlds that will provide alternatives to traditional instruction. Incorporating all phases of artifact construction into one tool that will match with dynamic technological cultural trends and sound theoretical and pedagogical grounding will subsequently optimize the learning experience. Translated into practical terms this idea sets a research agenda concerned with developing appropriately marched social microworlds that can support a broad range of actions that enable recasting of knowledge into different forms. Social microworlds will make an attempt to mesh social technologies with pedagogical actions, recognizing a synergistic interaction between the artifact, the pedagogy and the technology. These microwolds can mediate relationships primarily between people and ultimately create conditions for learners to be in contact with their artifacts and explore naturally abstract knowledge that previously required direct teaching.

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