

Thinking outside the task: Learner autonomy and creativity in Web 2.0-based dialogic spaces

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Abstract:

The paper explores potential benefits of promoting learner autonomy and creativity in virtual dialogic spaces on an example of Web 2.0 supported instruction in several academic disciplines including foreign languages.

In particular, the paper aims to investigate manifestations of higher-order thinking skills employed by college students in the execution of written online tasks that involve multimedia artifact generation (e.g. cartoons, concept maps and screencasts). In the paper the account of the students' response to autonomous reinterpretation and negotiation of tasks in a shared electronic medium is provided against the background of the existing educational practices proposed for fostering activation of learners' higher-order thinking in a dialogic paradigm.

Keywords: *e-learning, Web 2.0, artifacts, higher-order thinking, dialogic paradigm.*

1. Introduction

1.1 Creativity and autonomy in e-learning

The paper discusses the relationship between creativity and autonomy and their facilitation of reflective dialogue in a digital learning space. Autonomy for learners is a novel trend in e-learning 2.0 that is characterized by a shift from the teacher-to-student *knowledge transfer* approach to *mutual construction of knowledge* (Ehlers 2009). Autonomy presupposes the learners' capacity to control their own learning and make informed decisions regarding the direction of their own learning efforts (Figura and Jarvis 2007).

Creativity is the ability to 'produce work that is novel' and 'appropriate' with regards to the adaptation concerning task constraints (Sternberg and Luart 1999, 3). The use of Web 2.0 tools has the potential to increase individual creativity and facilitate active participation of learners (Ullrich et al. 2008). For instance, the learning tasks for students can be designed to require creative synthesis of multimodal information as well as online discussions to develop a suitable approach to their projects (Spires et al. 2012). A complex view which also interprets creativity as arising from a series of interactions, including that 'between a person's thoughts and actions as individuals and in communities', is given by Loveless et al. (2006, 2). In the context of this paper, interaction is interpreted in a Bakhtinian sense (1986), as

dialogue in which the expression of a learner's voice and its interaction with other voices is central to construction of knowledge.

Whereas the capability of technology to develop learner autonomy has been augmented by the arrival of Web 2.0, it is fairly recently that creativity has been established as a variable in individual learning skills. In the wording of one of the recently established technology standards for language learners (Healey et al. 2011) autonomy is placed next to creativity. Creativity and autonomy are also found together in Guerra's (2007, 4) definition of the fantacognitive direction of education as 'autonomous exploration in the world of knowledge' 'aimed at stimulating in every student the ability and motivation to make original paths of understanding'.

1.2 Theoretical support for research goals

The main goal of this paper is to briefly present several case studies from undergraduate courses that demonstrate the unfolding of the creative process of students of Information Systems in a Croatian university. The cases were taken from the courses Computer Mediated Communication, Data Structures and English Language I.

The evidence of the 'shared enquiry' (Bakhtin 1986) and 'creative cognition' (Wheeler et al. 2002) arising from the interplay between creativity and autonomy was found in the qualitative analysis of the students' artifacts. In the case studies references can be made to the cognitive, metacognitive and social dimension of such efforts including:

- re-construction of meaning through content negotiation (e.g. integration of core-discipline-related knowledge in a linguistic task)
- externalization of meta/cognitive awareness through content/task mediation
- externalization of metacognitive awareness through task customization (e.g. toward a more real-life authentic format)
- identity negotiation through student-teacher role reversal
- problem-solving skills in tool/medium customization.

Such findings indicate that the complementariness between the virtual and dialogic space was motivating for activation of students' higher order thinking skills.

2. Case studies

2.1 Learning about online communication with Web 2.0

The Computer-Mediated Communication Course was performed in a hybrid learning environment in the fourth year of study of Information Systems at the University of Zagreb, Croatia. This course was conducted in form of classroom lectures, exercises in the computer laboratory, and with the use of various online tools in a virtual learning environment (VLE). As described in some of our earlier studies (Bubaš et al., in press; Bubaš et al. 2011), the VLE consisted of multiple tools (online environments): Moodle course pages, blog, e-portfolio system, wiki, and numerous other Web 2.0 tools (for the creation of mind maps, block-diagrams, online surveys, mockups, mashups, online debates, web presentations etc.). Before the use of each of those tools the students were given brief instructions in the computer laboratory. Then they performed an assignment specially adapted for a specific Web 2.0 tool, which in many cases required creative and autonomous activity supplemented by collaborative work and/or peer-to-peer learning. The Web 2.0 tools were mostly used independently and outside the Moodle LMS even though in some cases the wiki of the Moodle system was used instead of the MediaWiki¹, and the e-portfolio system Mahara² was in some cases reachable after a *single-sign in* to the Moodle system.

In the period 2010-2012 during this course the students were asked to use mind maps and block-diagrams to illustrate the theoretical content of the course. The student-created artifacts were in many cases surprisingly creative, elaborate and detailed. For instance, one mind map in the *bubbl.us*³ Web 2.0 tool, designed as a visualization of the concept of *information literacy*, had as many as 40 elements at the third level of hierarchical organization. Also, a block-diagram on privacy in the use of web that was created with the Web 2.0 tool *Gliffy*⁴ by another student contained a detailed instruction with process description and decision points on how to ensure online privacy with the use of antispyware and by browser configuration for privacy. Another example is an online debate with the *CreateDebate*⁵ Web 2.0 tool that was performed by a small group who needed less than 15 minutes to develop 35 *support/dispute* arguments on the topic “Internet as an (in)secure place for everyday activities”.

¹ <http://www.mediawiki.org/wiki/MediaWiki>. [8.7. 2012]

² <https://mahara.org/>. [8.7. 2012]

³ <https://bubbl.us/>. [8.7. 2012]

⁴ <http://www.gliffy.com/>. [8.7. 2012]

⁵ <http://www.createdebate.com/>. [8.7. 2012]

After the students had learned about various Web 2.0 tools during the semester, as a final task they had to create an online project report on a course related topic with the use of as many different tools as possible. This final project enabled them to manifest creativity and become autonomous selectors and creators of informative and attractive multimedia and multimodal content.

2.2 Web 2.0 in foreign language instruction

In the undergraduate *English Language I* course in the first year of study of Information Systems at the University of Zagreb, Croatia, a standalone wiki resource was used to supplement the course that comprised face-to-face lectures and practical language sessions. While individual and more conventional out-of-class activities were submitted online through the course learning management system (LMS) Moodle, the wiki resource provided students with a shared space for publishing and sharing their collaboratively developed content. In the initial phase of the *Engwiki* project (started in the academic year 2006/2007) over 25 e-tivities were performed in the wiki, primarily aimed at content or structure review. In the 2009/2010 academic year grammar-focused e-tivities were introduced (for reports on the two project phases, see Kovačić et al. 2008; Kovačić 2010). The Web 2.0 tools integrated into the wiki ranged from visualization tools to those used for tagging of video files and recording short presentations of created articles and artifacts related to grammar topics.

In each of the grammar based articles, the textual part of the task was intended for objective description of a particular unit of English grammar. On the other hand, the artifact students developed using one or more multimedia tools constituted the more personalized and open-ended part of the task. Creativity was, however, not restricted to planning and designing artifacts. Conceptualization of abstract grammar concepts in form of a dialogue/cartoon were just as challenging as the technical problem-solving concerning tool usage or integrating narration with the video for the purpose of article presentation beyond a mere content reproduction.

In a concrete example of a grammar-focused article on *Participle phrases*⁶ it is notable that students cherished the counterbalance between the more constrained part of the task (summarizing in the textual part of the wiki article, and, to some extent, in the concept map designed using *Gliffy*), on the one side, and the opportunity for creative self-expression in the audio-video recording (using the *Screencast-O-Matic*⁷ tool), on the other. Having forged an alternative identity, the co-authors of the wiki article took their initiative and established a

⁶ http://e.foi.hr/engwiki/index.php/Participle_phrases_9. [16.6. 2012]

⁷ <http://www.screencast-o-matic.com/>. [8.7. 2012]

dialogue between themselves presenting the content in a conversation-like manner. The recorded dialogue functions as collaborative inquiry in its own right, but its creators also put themselves in the shoes of language tutors, addressing it at the audience – other course participants. The students' involvement in the task indicates they approached all its stages as a 'creative act of discovery' (Zamel 1982), even though the process involved revising their work on several occasions to improve content accuracy. The described example illustrates identity negotiation through student-teacher role reversal, mentioned in section 1.2 of this paper.

2.3 Creativity in learning data structures and algorithms

The hybrid course Data Structures is carried out at the undergraduate level of study of Information Systems at the University of Zagreb, Croatia. The use of Web 2.0 tools in this course in period 2010-2012 enabled creativity and innovation in student work in two ways. First, a mind mapping tool was used to complement problem definition, which contributed to creative analysis of a specific programming task. Then the students had to create a block-diagram (flowchart) of their programming solution with a Web 2.0 tool. In addition, an online note-taking tool had to be used to explain the theoretical background of the data structures related problem. Finally, a screencasting tool was used to explain the solution step-by-step so each code snippet recording was supplemented with an oral explanation. For each step the students were able to use a variety of Web 2.0 tools, for instance, several tools were available for the creation of mind maps, as well as for block-diagrams, screencasting and note-taking (for a taxonomy of tools see Orehovački et al. 2012a; the potential of mind mapping and note-taking tools is presented in Orehovački et al. 2012b).

Student teams integrated their artifacts with a wiki page that linked together the parts of their multimodal solution to a specific programming problem. The tasks facilitated student-to-student interaction and peer-to-peer learning. A greater degree of student autonomy and learning outcomes were achieved owing to mobilization of higher order thinking through knowledge presentation and application. It must be noted that the Web 2.0 tools were selected on the basis of their usefulness and reliability (Bubaš et al. 2011) and that much of the course content was covered with the topics of student projects, which contributed to the creation of resources for learning and meeting course requirements.

3. Conclusion

As described in the theoretical parts of our paper and three case studies the use of Web 2.0 tools can stimulate/facilitate student creativity and support learning outcomes related to autonomy and higher order thinking (analysis, synthesis, knowledge presentation and

implementation). The contribution of the paper therefore lies in the domain of exploring the affordances of Web 2.0 technologies for supporting thinking skills, which according to some authors is still underused (Hedberg and Brudvik 2008). It can be concluded that stimulating creativity in the tertiary classroom by using multimedia Web 2.0 tools for creating cartoons, concept maps, screencasts and similar artifacts can be felt beyond the development of communication, grammar, or programming skills, with possible implications in the 'positive spillover effects onto learning, supporting and enhancing self-learning, learning to learn and life-long learning skills and competences' (Ferrari et al. 2009, iii).

4. Literature

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