HOW PEDAGOGICAL DESIGN OF TECHNOLOGY-ENHANCED ACADEMIC COURSE PROMOTES LISTENING TO STUDENT VOICE AND REFLECTING ON STUDENTS' PERCEIVED LEARNING?

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ABSTRACT

The wide spread of digital technologies in higher education raises the need to examine the added value of digital technologies to enhancing high-quality teaching and promoting active learning. This study explored the characteristics of pedagogical design in a technology-enhanced academic course. We analyzed how the course enabled expressing "*student voice*" as listening, collaboration and leadership (Mitra, 2007), as well as to what extent these characteristics are expressed in cognitive, emotional and social aspects of students' *perceived learning* (Caspi & Blau, 2008, 2011). During four semesters, we conducted qualitative analysis of reflective learning diaries written by 78 graduate students in education as part of the course requirements. The analysis revealed many statements expressing student-voice (n=222). In terms of Mitra, most of them were related to the basic level of student-voice - *listening* (n=173). However, a considerable number of statements reflected the advanced levels of student-voice: *collaboration* (n=16) and *leadership* (n=33). In addition, many statements described different aspects of perceived-learning (n=532). Some of them reflected *cognitive aspects of perceived learning* (n=157), indicating students' ability to analyze their understanding. Other statements expressed positive or negative *social aspects of perceived learning* (n = 103) and approximately half of the statements which related to the second research question (n = 272), reflected positive or negative *emotional aspects of perceived learning*. The findings contribute to research on student-voice and students' perceived learning in academia as well as to design of teaching-learning-assessment processes in technology-enhanced courses in higher education and training.

KEYWORDS

Collaborative Learning, Distance Learning, Teaching, Learning and Assessment, Pedagogical Design, Student Voice as Listening, Collaboration and Leadership, Cognitive, Emotional and Social Perceived Learning

1. INTRODUCTION

The development of information and communication technology (ICT) increased the necessity to examine the added value of various technological tools for high-quality teaching, as well as for active individual and collaborative learning (Shamir-Inbal & Blau, 2017). However, because online learning is usually based on written text, with few, if any, non-verbal social communication cues, the transmitted messages may require more effort to understand, compared to those transmitted face-to-face (Walther, 2012). As a result, students who study mainly through asynchronous online collaborative learning report a sense of disconnection with their peers, which may affect their learning motivation (Deng & Yuen, 2010). Including synchronous active-learning activities, interactions and teamwork can overcome this disadvantage of e-learning compared to face-to-face classroom learning and promote student participation and achievement (Blau & Shamir-Inbal, 2017; Blau, Weiser, & Eshet-Alkalai, 2017; Weiser, Blau & Eshet-Alkalai, 2018). This study examined how pedagogic design of an academic course, which included both synchronous and asynchronous digital collaborative activities and participation in an online learning community, enabled and encouraged expressing student voice, as well as cognitive, emotional and social aspects of students' perceived learning.

Listening to learners' points of view about the learning content and their learning experiences encourages them to take an active part in the learning process and in evaluating its outcome (Herenkohl & Metrl, 2010; Mitra, 2007). The "*student-voice*" approach perceives learners as partners in the design of the teaching and

the learning content (Blau & Shamir-Inbal, 2018). According to Mitra (2007), "*listening*" is the most basic form by which the "student voice" is expressed and enables the improvement of educational processes and outcomes: for example, taking into account students' reflections about the learning content and instruction quality of the teaching staff in their school. More advanced level of student voice - "*collaboration*", involves joint exploration of educational needs and design of educational processes by teachers and students. In the highest level of expressing student voice - "*leadership*", students are responsible for carrying out learning activities with the help of a teacher and for pedagogical and curriculum decision-making. An example of this level of expressing student voice is learners leading changes in teaching strategies or choices regarding the subjects taught or educational projects implemented in their school.

Various levels of expressing student voice are particularly important in digital learning and are reflected in metaphors of learning and digital learning used by students in descriptions of their learning processes (Blau, Grinberg, & Shamir-Inbal, 2018; Shamir-Inbal & Blau, 2016). *Perceived learning* is defined as the set of beliefs and feelings expressed by students when looking back on the learning process that has taken place (Caspi & Blau, 2008; 2011). According to Caspi and Blau, perceived learning has three different aspects: cognitive, emotional and social. The *cognitive aspect* of perceived learning refers to the sense of acquiring new knowledge and reaching new insights. The *emotional aspect* of perceived learning examines experiences and emotions during the learning process, such as the degree of interest aroused by the content or the ease of understanding the content. The social aspect of perceived learning refers to the degree of enjoyment of learning-related interpersonal interactions with the teacher and/ or peers.

The study examined the following research questions:

1. What characteristics of pedagogical design in an academic course encourage the expression of "***student voice*" on the levels of listening, collaboration and leadership**?
2. How pedagogical design of an academic course that includes collaborative tasks in small teams and encourages participation in the course learning community is reflected in **cognitive, social and emotional aspects of students' *perceived learning***?

2. METHODOLOGY

The study was conducted within the qualitative research paradigm. **The participants** in the study were 78 students who enrolled in four cycles of a graduate course in education. The course combines studying of theoretical frameworks and applying the knowledge acquired in a collaborative technology-enhanced learning environment.

The research instrument was learning diaries of the students. One of the course's tasks was to write a study diary in which students reflected on the course content and on their learning processes.

The analysis of the students' insights and feelings reflected in their learning diaries was based on the Grounded Theory approach (Corbin & Strauss, 1990). The data were coded bottom-up to main themes and categories. Two other raters independently coded approximately 25% of the categories following the discussion of disagreements. The final coding scheme reflects the agreement between the three raters.

Finally, we pointed out the connections between the categories that were mapped in bottom-up coding and the theoretical frameworks describing expressions of student voice as listening, collaboration, and leadership (Mitra, 2007), as well as cognitive, emotional and social aspects of perceived learning (Caspi & Blau, 2008, 2011).

3. FINDINGS AND DISCUSSION

Regarding the first research question, the data revealed many statements describing the expression of *student voice* (N = 222). Consistent with Mitra's (2007) framework, the data of student voice expressions was mapped across the categories of listening, collaboration, and leadership. Most of the statements were related to the basic level of student voice - *listening* (n=173). However, a considerable number of statements reflected the advanced levels of student voice: *collaboration* (n=16) and *leadership* (n=33). Research literature reports positive effects of expressing student voice on teaching, learning, pedagogical design and assessment, as well as on student achievement (Blau & Shamir-Inbal, 2018; Mager & Nowak, 2012; Toshalis

& Nakkula, 2012). While Mitra's framework was offered in the context of face-to-face learning in schools, our findings add to the literature by highlighting the role of technology-enhanced learning, collaboration in teams and interaction in the course learning community to the expression of student voice in academia.

In the context of the second research question, the analysis of the learning diaries revealed many statements that describe students' *perceived learning* (n= 532). Some of the statements expressed *cognitive aspects of perceived learning* (n = 157). In previous studies, high cognitive perceived learning in online courses was associated with an increase in students' satisfaction (Baturay, 2011) and achievement (Rockinson-Szapkiw, 2016). Other statements expressed *social aspects of perceived learning* (n = 103), most of them described positive social learning (n=77), while a few reported negative social learning (n=22). Approximately half of the statements related to the second research question expressed *emotional aspects of perceived learning* (n = 272), among them some expressed positive (n=171) and others - negative emotions (n=101). Qualitative bottom-up coding employed in this study validates the perceived learning concept investigated in previous studies by quantitative methods (for review see: Caspi & Blau, 2008, 2011), and extends it by differentiating between positive and negative sub-categories of social and emotional perceived learning.

In addition, previous studies demonstrated that one of the main reasons for dropping out of distance learning courses is a sense of loneliness (Lee & Choi, 2011). Positive social perspectives on distance learning can reflect the situation in which learners are connected to peers and feel the sense of belonging to the course learning community (Pigliapoco & Bogliolo, 2008). Moreover, previous research highlighted the crucial role of social perceived learning in online environments to improve cognitive aspects and build understanding of the learning content (Caspi & Blau, 2008).

Figure 1 summarizes elements of the pedagogical design that were mapped in this study and are recommended in order to promote collaboration, encourage student voice and enable expression of students' perceived learning in blended or online academic courses.

The role of students	The role of lecturer	Pedagogical design and assessment	Design of the content and the course learning environment
• Engaging in active learning - individual, in small teams and in the course learning community • Sharing of learning outcomes with peers • Providing mutual assistance and peer feedback - in lessons and in the course learning community • Following norms of respect, listening, patience, and culture of trust and openness in the course learning community • Developing a sense of belonging to the course learning community	• Providing scaffolding for students' learning • Participating in group discussions • Being availabile for learners' questions • Encouraging teamwork and interaction in the course learning community • Demonstrating norms of respect and openness • Providing sensitive feedback to students' learning outcomes • Communicating with learners through different channels: face-to-face, synchronous and asynchronous	• Connecting theory and practice • Cultivating the course learning community • Designing learning activities that stimulate critical thinking and develop creativity • Designing learning activities that require continuous collaboration in small teams • Designing learning activities to experience a variety of digital tools • Integrating self and peer-assessment • Presentating clear criteria for assessing learning outcomes	• Adapting content to students' interests and backgrounds • Designing a flexible digital learning environment, independent of place and time • Integrating a variety of channels in presenting the course content - visual, verbal and auditory • Integrating face-to-face classes with online synchronous classes, as well as with well and ill-structured asynchronous learning activities

Figure 1. The components of the pedagogical design mapped in the study

4. CONCLUSION

This research contributes to both educational theory and practice. Based on Mitra's (2007) conceptual framework, the study examined how the development of collaborative learning culture through teamwork and interaction in the course learning community is expressed in student voice as listening, collaboration and leadership and is reflected in teaching, learning, instructional design and assessment processes. In addition,

the analysis of student learning diaries enabled examination of how this innovative pedagogical design is expressed in cognitive, emotional and social aspects of students' perceived learning (Caspi & Blau, 2008, 2011).

In practical terms, the study revealed pedagogical design principles detailed in Figure 1 that can be recommended for technology-enhanced academic courses in order to encourage collaborative learning, promote student voice and enable expression of students' perceive learning. These principles refer to the roles of students and the lecturer, characteristics of the learning content and environment, as well as pedagogical design and assessment methods. The findings can promote the adoption of innovative pedagogy in academia.

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