



EMPOWERING STUDENTS BY CO-DESIGNING EXPANDED LEARNING SCENARIOS

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Introduction

Learner-centred environments and instruction involve the application of a variety of methods that place students and their learning activity at the centre of the teaching and learning process. This may materialise in different ways, but some common characteristics would be that learners are usually confronted with an authentic, ill-structured and contextualized task, in order to induce relevant learning experiences, as occurs for example with inquiry-based learning models. For many years researchers have been calling for a transition from teacher to student-centred environments and instruction. However, many features of teacher-centred models still remain in higher education practices. There are different perspectives that explain the tension between teacher-centred and student-centred models (Elen, Clarebout, Léonard & Lowyck, 2007). In this paper we sustain the transactional view, according to which teachers and students are jointly responsible for the success of the learning process. This means that teachers and students negotiate and decide together the tasks and roles that each one will assume in the process and, thereby, each other's level of control over the learning process. Among other things, this may depend on the students' capabilities and willingness to regulate their own process, as well as on their level of domain-specific prior knowledge. From this perspective, teachers continuously reassess and coach the gradual growth of students' responsibilities and reorient their own tasks and role accordingly (Elen et al, 2007).

A critical factor for the adoption of this kind of student-centred transactional model is the students' capacity and readiness to self-regulate their learning process. On the other hand, many studies prove that student engagement constitutes an essential means for generating positive learning experiences in higher education (Paulsen & Feldman, 2005). Deci and Ryan's "self-determination theory" proposes social and environmental factors that facilitate intrinsic motivation. According to this theory: "social contextual conditions that support one's feelings of competence, autonomy, and relatedness are the basis for one maintaining intrinsic motivation and becoming more self-determined with respect to extrinsic motivation" (Ryan & Deci, 2000, pp.68).

Our research is based on the assumption that empowering students to feel more autonomous, competent and connected with their teachers and peers may result in greater involvement in their learning processes, and in turn this may have a positive impact on the adoption of a student-centred transactional model. We sustain that student empowerment may require

intervening in different directions, some of the more fundamental ones could be stated as follows: i) improving students' knowledge and expertise with the learning methodology; ii) proposing a rich, compelling and authentic learning scenario and tasks, providing opportunities for active learning; iii) promoting interchange and negotiation between students and teachers regarding their respective tasks and responsibilities throughout the learning process.

The Design2Learn project intends to involve students in the co-design of learning scenarios that are inquiry-based and expanded by technology. In this paper we focus on the potential of empowering the student voice through student involvement in the joint process of designing learning scenarios with teachers and researchers. We believe that these participatory design practices may also increase students' engagement and facilitate the adoption of student-centred and expanded learning scenarios.

In the following sections we refer to the foundations of co-design as a means of empowering students by integrating their voice into the design of expanded learning environments. Next, we present the D2L research framework and purpose, as well as the research questions dealt with in this paper. Finally, we discuss the opportunities and pitfalls observed so far in the experiences of students co-designing expanded learning scenarios.

Theoretical background

Students' empowerment and learning co-design

The learning process in current online and face-to-face educational scenarios commonly requires students to understand meanings and learning tasks proposed by the teacher. This asymmetric relationship between the teacher and students makes the latter strongly dependent on the former and turns the learner into a passive receptacle of content. However, there are other more knowledge-based approaches in which the learners' role changes considerably by making them more responsible for their own learning while the teacher occupies a co-learner position, which has been shown to be academically effective and personally satisfying (Houser & Frymier, 2009). These approaches rely on empowering learners through engagement and enabling them to develop their capacities and achieve their potential. Empowerment gives students the role of meaning-maker by allowing them to take the initiative in their learning, something that is crucial in a co-design perspective. There is evidence showing that PBL-oriented tasks – under the IBL umbrella – promote more empowerment and learning engagement than conventional lecture learning (Siu, Laschinger & Vingilis, 2005).

The empowerment paradigm is nourished by different theories such as self-directed learning (Knowles, 1984), self-regulated learning (Zimmerman, 1990; Azevedo, 2005) and also the self-determination theory (Deci & Ryan, 1985). All these theories tackle aspects that are directly related with students' inclusion in the process of designing their learning with their peers and the teacher which are: learner self-concept, learner experiences and perceptions, readiness to learn, metacognition, motivation, orientation towards learning, etc. (Brooks & Young, 2011).

It is possible to find numerous recommendations on how to promote empowerment in learning but most of the proposals and studies only consider the teachers point of view or involve occasional student feedback on assignments or tasks (Klopfenstein, 2003) or student satisfaction surveys. Although all primary empowerment factors are connected with the students' perspective and characteristics (meaningfulness, competence, impact and choice (Thomas & Velthouse, 1990) it is difficult to find learning design studies that involve students negotiating with teachers or educational designers about the learning approach of the instructional process, which could presumably be one of the most effective strategies for engaging and including learners' perspectives in the online educational setting.

Although the idea of student participation in curriculum design is not new and has been developed mainly in primary and secondary education, especially in the USA (Rudduck & Fielding, 2006), it continues to have a very modest and partial scope in the field of higher education. The latest pedagogical literature provides arguments in favour of the idea of actively involving students in curriculum design, either from the perspective of enhancing the development of their critical judgment, increasing their commitment and responsibility for their own learning, enabling more authentic and meaningful learning experiences, improving the options to personalize learning, or understanding the very idea of curriculum as a co-creation task between teachers and students (Bovill, Morss & Bulley, 2009). However, although there is a clear stream of research that supports the need to address learning in universities from the shared responsibility of teachers and students, examples of transformation in concrete contexts of practice are almost anecdotal and confined to specific projects, and there is still little systematic evaluation of their real impact and specific dynamics (Bovill, Cook-Sather & Felten, 2011).

From student-centred to expanded learning scenarios

Student-centred education obviously promotes better adaptation to the students' learning needs and expectations. One way of putting the student into the centre of the learning process is to implement methodologies that imply the students' involvement and engagement by letting them take decisions and orientate their learning process. In this sense, when proposing inquiry-based methodologies we place students actively into the centre because they are the protagonists of the activity, constructing and regulating their learning. Literature in the IBL domain has led us to identify several principles that an inquiry process must meet. We have applied these aspects as referential design principles when co-designing the learning scenarios:

1. the learning process is based on inquiry (the student has to investigate by contrasting new ideas with prior knowledge and experiences),
2. learning is orientated by problem solving,
3. the sequence of learning tasks is based on the scientific method (understand the problem, search for information regarding the problem, formulate questions, collect and analyse data, contrast hypotheses and answer the questions),

4. the learning activity is focused on the students and directed by them (students are the protagonists of the activity, they construct and regulate their learning),
5. teaching is approached in an inductive manner (not by giving lectures), and
6. the teacher supports and scaffolds the learner activity when and where necessary.

Based on the idea that learning does not occur just when teacher consider and trying to accompany students when and where they need it, has grown the notion of expanded learning opportunities (ELOs). The basis of ELOs is that learning may occur anytime and anywhere, which implies to rethink when, where and how education occurs. This approach considers that formal education is not the unique way of teaching, understanding that students can learn continuously inside or outside of the education institution, from not just teachers and without time constraints. In this sense, the use of technologies has increased the concept of “expanded” by incrementing the notion of “time to learn”, “places where to learn”, “ways of learning” and incorporating a wider community “from whom to learn”.

Literature regarding the future trends in technology-enhanced and expanded learning – TEEL – (Andrews et al. 2011; Davidson & Goldberg, 2010; Johnson et al., 2015; Luckin et al., 2010; Redecker et al., 2011; Redecker et al., 2010; Sharples et al., 2014; Traxler, 2011; van der Woert, 2014) emphasizes the following principles, which we have also adopted as a design principles in the co-designing process of learning scenarios:

- Learning is participatory and social: technology facilitates the horizontal relationship between the teacher and the students. Students are networked and participate in various communities. In this regard, technology can offer a social and networked learning environment that facilitates interaction between students, mutual support and knowledge sharing.
- Learning is ubiquitous, it takes place anywhere and anytime. Giving students a central role involves considering and taking advantage of the multiple contexts and times when their learning occurs. It is important to connect formal and informal learning, to create synergies between the two learning experiences and the spaces and resources involved. In this sense, technology encourages mobility and access to knowledge transversely and contextualized in real experiences, shaped by multiple devices and learning spaces, whether formal or informal.
- Learning involves open practices: technology promotes the use of open educational resources, reusing what others have already created and even improving or creating new resources, disseminating and making them available to the educational community. Technology enables teachers and students to access these resources, consult, use, edit and share, as well as create new ones and post them.
- Learning is personalized and self-directed: it has to do with providing students with everything necessary to meet their needs and preferences and also adapting to their skills. Technology may allow students to set and adjust their own learning environment according to their needs, rhythms and learning styles and encourage self-learning and lifelong learning.

Incorporating students into processes of co-designing learning scenarios may promote the integration of new perspectives, consistent with stated IBL and TEL design principles, which may help to change teaching practices to better suit students' way of learning.

Methodological design

The specific research questions raised by this study have been formulated as follows:

- Is co-design an effective approach for empowering students' voice and promoting student engagement?
- Can the student voice approach bring relevant contributions to the design of expanded learning environments?

Research framework

The study applies the methodology of design-based research (Design Based Research Collective, 2003). The object of study is therefore the very process of co-designing involving teachers, students and researchers, taking as key agents both the teachers and the students to whom those practices are addressed. A mainly qualitative approach is used for data collection, analysis and interpretation although quantitative measures have been used for specific results.

The participants in the research are a group of six teachers and 11 students from two universities with different models, one of them blended (University of Barcelona) and the other virtual (Universitat Oberta de Catalunya). Therefore teachers and students come from four different contexts or practice settings corresponding to four subjects in various disciplines: communication, tourism (from UOC) and economics and biomedical engineering (from UB).

Throughout the entire co-design process exhaustive data collection was performed using several research instruments, with the aim of thoroughly keeping track of the co-design process. In this study, and for the purpose of analysing the means and the results by which students have participated in the co-design process of expanded learning scenarios, we have considered the following research data and instruments: i) questionnaire to students (applied after the intervention), ii) observation and audio recording during the co-design workshops, and iii) brief questionnaire to students after each workshop.

Co-design methodology

The co-design process took place cyclically, through the following five main phases: i) preparation, ii) exploration, iii) envisionment, iv) operationalization and v) assessment and reflection. Phases 'i' to 'iv' consisted of a series of seven participatory workshops in which the six teachers from the four selected practice settings participated along with members of the research team. In all, around 12 participants shared their experiences of teaching practice in the field of inquiry-based learning and technology-enhanced learning. In phase e, the students selected from each context joined the design work groups with the aim of critiquing the prototypes of the learning scenarios designed by teachers, bringing their own ideas and perspectives and thus validating the final designs.

The present study is framed in the last phase of the co-design process of assessment and reflection (phase v). In this phase the prototypes of the learning scenarios are implemented, which means that each learning scenario is enacted in its real context, while the learning experience is monitored and feedback is collected from all the participants. This systematic and iterative process allows the designed scenario to be assessed and progressively refined.

In this phase, students selected from each context (a total number of 11) joined the design work groups (formed of one or two teachers and members of the research team) with the aim of critiquing the prototypes of the learning scenarios designed by teachers, bringing their own ideas and perspectives and thus validating the final designs. These students took part in the same type of participatory workshops used in previous phases, but on this occasion based on the enactment of the learning scenario in their corresponding context of practice. In the last three workshops the prototypes of the learning scenarios were tested and feedback was collected from the students and the teachers. The aim of this exercise was to enable the four designed learning scenarios to be refined based on collected feedback, reflection and discussion by each design team.

Opportunities and pitfalls in students' co-designing expanded learning scenarios

In this section we present a summary of the findings obtained after the first co-design cycle with teachers and students. We discuss these findings in relation to the two research questions guiding this specific study.

Regarding the first question: *Is co-design an effective approach for empowering students' voice and promoting student engagement?*

- Students perceived that they gained knowledge of the learning design process, the learning methodology used and more specifically they obtained a better understanding of the learning scenario they had been involved in as learners, i.e., of their own learning process. This would point to evidence of perceived competence and self-efficacy as suggested by Deci and Ryan (1985):
- Students highly valued having the opportunity to provide feedback from their perspective, especially regarding their problems, concerns and needs, so that the teachers could take this into account in the future. Both students and teachers agreed on the interest of confronting each other's perspectives: students claim to have understood the complexity of teaching and of learning design, the amount of factors that need to be taken into account and the difficulty of satisfying both the teacher and the student view. They experienced the co-design encounters as moments for cooperation with teachers and other students, which gave them the opportunity to know and to understand different points of view, with the idea of benefitting both sides. This observation could be associated with the sense of relatedness proposed by Deci and Ryan (1985).
- Co-design instruments and tasks employed in the workshops (concept and force maps, matrices, diagrams, etc.) have proved useful for supporting dialogue and reflection on learning practice/approach. On the other hand, time seems to be one critical factor in

co-design. A sustained dialogue over time is required to generate the context of trust needed to deconstruct mutual prejudices between students and teachers and allow them to express their ideas clearly. It also takes time and external facilitation for students to come to understand and use certain pedagogical concepts (Bovill, Morss & Bulley, 2009).

- There were several aspects where students felt particularly confident that their contribution might be of interest: assessment criteria, methods and tools to track their work, alternative ways of presenting a learning activity to improve student motivation, organizational issues and timing of learning activities.
- In general, students did not perceive a change in their self-conception, understanding or attitude towards learning after the co-design process. However they admitted to having a greater understanding of the roles of student and teacher as well as a broader perspective of possible approaches to learning and of the variety of learning strategies and tools.
- Facilitators of the co-design process identified by participating students can be summarized as follows: the moderation or direction of the co-design tasks, the willingness of participants to hold a dialogue and cooperate as well as their openness towards the use of new methods and tools. They also felt that starting the discussion by asking them about general problems and then delving into the analysis of each learning scenario was a good strategy.

Regarding the second research question: *Can the student voice bring relevant contributions to the design of expanded learning environments?*

- Some students found difficulties in separating the analysis of what was proposed by the specific learning scenario and the general practice at the university. They had formed ideas about what did not work in the university that strongly conditioned their perspective on the co-design process. Some students were also reluctant towards some innovative components proposed by the learning scenarios. This forced teachers to find arguments for some of the most recently integrated design decisions that they still felt unsure about themselves.
- Students widely considered the IBL approach to be interesting because it “taught them to use their own resources to become more autonomous in the work process”, something that would presumably be a necessary competence in their professional career. They also admitted that this approach increases motivation and might result in more effective learning, which “remains”. Nevertheless, they insisted that this methodology would need a higher level of control or guidance by the teacher, as well as tools to help them avoid getting lost in the process, for instance in the stage of gathering information, given the great amount of information available online.
- Anticipated problems and weak aspects identified by students in the learning scenarios were mainly related with teamwork, organization and assessment, autonomous learning, content treatment and presentation and lack of motivation.
- Technology-enhanced and expanded learning design principles were more difficult to capture in the design process and to reflect in the learning scenarios than IBL

principles. Students were generally quite conservative in their ideas about the use of digital resources. They showed a generally positive attitude towards the proposed TEEL design principles but they had difficulties suggesting specific solutions to be implemented in the learning scenarios and the ones proposed tended to be quite reproductive of usual practices with technology proposed by teachers, for instance related with content presentation. We could say they did not seem to be very knowledgeable about the use of technologies for learning and not very interested in proposing the use of new tools, not even new tools they normally use in their social practices.

- Students also expressed difficulty in sharing experiences with students from universities with different models (face-to-face and online). Rather than regard these exchanges as a source of richness, they considered them a source of unproductive discussions that did not lead to practical or useful solutions.

Conclusions

The findings are consistent with the evidence obtained in previous studies, according to which student-centeredness and teacher-centeredness are not opposite poles of the continuum, which favours the transactional view of the relationship between teachers and students (Elen et al. 2007). Our results show that from the students' point of view the distribution of responsibilities in the learning process must be interactively and continuously negotiated and decided by teachers and learners. Students may accept the role of co-developers of the learning scenario, both as learner and as designer, but they expect the teacher to ensure the conditions for this co-development. On the other hand, students feel engaged by challenging learning scenarios but they also expect these scenarios to be safe enough to ensure that the learning activity they undertake is as effective as possible. This shows that in inquiry-based and technology-expanded learning scenarios it is of critical importance to adjust the balance in the tension between student autonomy and learning support, either indirectly or directly provided by the teacher.

Another conclusion aligned with previous research is that in initial contact with authentic, inquiry-based and expanded learning scenarios, some students may show a "delayed engagement". They may feel some reluctance and misapprehension regarding the approach, since it is so different from the one of more familiar academic models. According to Herrington, Oliver and Reeves (2003) in order to fully engage with this kind of learning scenario, students need to elaborate a process of "suspension of disbelief", which means that they need to accept the fundamental basis for the scenario, and recognize its complexity and therefore its value as a learning experience. Co-design may act as a facilitator for this suspension of disbelief mechanism, but it requires a proper approach and guidelines as well as sufficiently long time involvement from students.

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