

### **Students' perspective on participation in a co-design process of learning scenarios**

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#### **Introduction**

In many higher education (HE) settings, teacher-centred approaches continue to be used and teaching practices are far removed from the students' perspective. Designing authentic learning scenarios focused on both students' interests and their needs is imperative if traditional paradigms are to be overcome.

Digital generation learners expect a more customisable, open, social and ubiquitous education and there is a growing divide between teacher practices and student preferences (Sola and Murillo, 2011). For this reason, several studies point towards the involvement of students in helping teachers adapt better to students' needs and learning preferences (Gärdebo and Wiggberg, 2012; Nygaard *et al.*, 2013).

The students' perspective can be integrated in various ways: students can be, for example, 'experts' or teacher support in technological matters (Ringstaff, Sandholtz and Dwyer, 1991), 'learning co-conspirators' (Dipinto and Turner, 1997), providers of feedback on courses (Bovill, Morss and Bulley, 2009) or, as in the present study, co-designers of learning scenarios (Bovill, Cook-Sather and Felten, 2011; Cameron and Tanti, 2011).

Although the literature suggests a number of reasons for student involvement in curriculum design, there is still little systematic evaluation of their specific dynamics and real impact, especially in the area of HE (Bovill, Cook-Sather and Felten, 2011). Fraser and Bosanquet (2006, p. 272) propose four categories for conceptualising curriculum development and these focus on: a) the structure and content of a unit or subject; b) the structure or content of a programme; c) flexible learning experiences with attention to individual needs and goals; d) focus on co-construction of knowledge between learner and teacher.

The Design2Learn project involves developing, implementing and evaluating learning scenarios co-designed by teachers, students and researchers. The project aims to study the development of learning scenarios that are authentic, contextualised and learner-focused. Through a co-design process in which students and teachers negotiate the design principles of such scenarios, the goal is to assess the potential of this approach as a catalyst for change and innovation in HE. The project attempts to involve students in curriculum design in order to develop scenarios that may promote more flexible learning experiences and address students' individual needs and goals, thereby attempting to focus on the student experience of learning.

The study reported in this paper aims to analyse the students' role and contribution to the co-design process as well as the impact their involvement had on them.

### Theoretical background

Several approaches have explored student participation in planning and designing a curriculum with the view that incorporating their perspective on teaching and learning can be beneficial for students and teachers. The 'student engagement' approach considers that enabling students to participate may encourage them to take control, reflect and become aware of their learning process, encouraging the adoption of deeper learning approaches (Bain and Zimmerman, 2009).

Among the options for student participation, one being explored is students' direct involvement as 'learning co-designers', assuming more responsibility in planning and creating the curriculum. Although the literature puts forward a number of reasons for student involvement in curriculum design, there is still little systematic evaluation of their specific dynamics and real impact (Bovill, Cook-Sather and Felten, 2011). According to Carey (2013), student involvement in curriculum development is located somewhere between three categories of engagement: learning and teaching, student identity and governance. Roschelle, Penuel and Shechman (2006, p. 606) describe co-design as *"a highly-facilitated, team-based process in which teachers, researchers and developers work together in defined roles to design an educational innovation, realise the design in one or more prototypes, and evaluate each prototype's significance for addressing a concrete educational need"*. This approach can promote deeper learning among students while providing key elements and opportunities to guide the teacher intervention (Cameron and Gotlieb, 2009; Cameron and Tanti, 2011). Authors like Bovill, Morss and Bulley (2009) emphasise the importance of involving students in curriculum design in order to give them greater control and commitment to their own learning process. However, it is not just about listening to students and collecting data for academics to make decisions, it is about promoting students' active participation in shared decision-making and acting according to these decisions (Manefield *et al.*, 2007). Bovill *et al.* (2015) use the term 'co-creation' to refer to *"meaningful collaboration between students and staff, with students becoming more active participants in the learning process, constructing understanding and resources with academic staff"*. According to these authors, co-creation can occur in different ways and on diverse levels.

Regarding students' involvement as designers, Cameron and Tanti (2011) conducted a project during which students were asked to take an active role in planning and creating their own learning tasks through a problem-based learning approach supported by social media tools. The findings demonstrated that the act of designing learning can facilitate student engagement and deeper learning in the classroom. Bovill, Cook-Sather and Felten (2011) describe a multiple case study of student participation in course re-design. Results showed that, through this experience, students and academic staff gained a different perspective and a deeper understanding of learning and enhanced engagement, motivation, and enthusiasm.

All these experiences recognise that, when teachers and students work together as co-experts, co-learners or co-designers, this results in a positive change of roles and greater student engagement; it also promotes, in both students and teachers, deep understanding of learning.

However, one of the constraints of student participation is that teachers and students need time to build the context of trust required to deconstruct mutual prejudices and allow them to express their ideas clearly. It also takes time and external facilitation for students to learn and use certain pedagogical concepts. When students understand that their views will be taken into serious consideration, the co-design process becomes richer and more fluid (Bovill, Morss and Bulley, 2009). Another key point is the degree of teacher control and the students' need to be taken into real consideration. According to Cameron and Tanti (2011), for students to assume the role of co-designers, teachers must relinquish some control. They must be more self-aware, flexible and knowledgeable to respond to student learning needs and accept their opinions and demands. Institutional factors can also constrain student participation, such as professional requirements or regulatory frameworks (Bovill, Morss and Bulley, 2009).

Moreover, participatory approaches have a number of drawbacks if they are not genuine or are proposed inappropriately. Sometimes student participation is treated as an aesthetic and superficial issue, limited to spaces that are too specific and time-constrained to have a real impact on the learning-design process. There is a risk of falling into objectifying and generalising the student perspective and ignoring their diversity of profiles and underlying motivations. Students used to maintaining a relationship under the authority of teachers may show resistance or fears and they may even feel manipulated when facing such proposals (Bovill, Cook-Sather and Felten, 2011).

This study aims to deepen the analysis of student participation in a process of co-design of learning scenarios in HE. To do so, it focuses on the perspectives of students and their experience of the participation process. The research questions are thus as follows:

- What does students' participation bring to a co-design process to build inquiry-based (IBL) and technology-enhanced learning scenarios (TEL)?
- What accounts for students' involvement or what is the students' perception of gain from participating in a co-design process?

## **Methodology**

### ***Research design and methodology***

The study applies design-based research methodology (The Design Based Research Collective, 2003). The object of study is the very process of co-designing that involves 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.

The participants in the research are a group of six teachers and eleven students (in addition to the nine members of the research team) from two universities with different models, one of them blended (University of Barcelona - UB) and the other virtual (Universitat Oberta de Catalunya - UOC). The teachers and students come from four different contexts or practice settings corresponding to four subjects in various disciplines: Communication and Tourism (UOC) and Economics and Biomedical Engineering (UB).

### ***Context of intervention and target group***

The co-design process took place cyclically, through the following five main phases: a) preparation, b) exploration, c) envisionment, d) operationalisation; e) assessment and reflection. The intervention object of this study is framed in the last phase of the co-design process of assessment and reflection (phase e). In phase 'e', the students selected from each context joined the design work groups formed of one or two teachers and members of the research team. The aim was for students to critique the prototypes of the learning scenarios designed by teachers in the previous phases, adding their own ideas and perspectives and thus validating the final designs.

The target group of the present study therefore comprises the students selected from each context (a total number of eleven, aged between nineteen and fifty) who joined the design work groups in phase 'e'. In this phase, the prototypes of the learning scenarios were implemented with each learning scenario enacted in its real context, while the learning experience was monitored and feedback was collected from all the participants. Students took part in three participatory workshops with the following goals: 1) identify general strengths and weaknesses of the designed scenarios and analyse opportunities and threats from the university context; 2) share digital learning resources identified and used in personal and educational settings and analyse their potential integration into the designed scenarios; 3) identify and reflect on inquiry-based learning (IBL) features and principles in the designed scenarios; 4) propose solutions (for instance, digital resources) to support IBL activities in each scenario that may help to solve the problems identified in the first session. Thus, in the last three workshops, the learning scenario prototypes were tested and feedback was collected from the students and teachers. The goal was to refine the four designed learning scenarios based on each design team's feedback, reflection and discussion.

### ***Research instruments and analysis***

In this study, and for the purpose of analysing the students' role in the co-design process, the following research data and instruments were used:

- structured interview (prior to the co-design process)
- questionnaire (after the co-design process)

**Table 1.** Research instruments

<b>Instrument</b>	<b>Goals</b>	<b>Application</b>
<i>Interview</i>	<ul style="list-style-type: none"> <li>• Collect students' expectations about the project and its contribution</li> <li>• Collect their initial level of knowledge/experience of IBL, TEL and co-design processes.</li> </ul>	All students are individually interviewed, either face to face or via Skype.
<i>Questionnaire</i>	<ul style="list-style-type: none"> <li>• Collect evidence on: a) student's degree of understanding of the concepts, tools and procedures worked with; b) students' experience in the co-design process; c) students' perception on their contribution to, and the gain obtained from, co-design.</li> </ul>	All students fill in a digital questionnaire (mainly open questions) when their participation in the project has finished.

An analytical model was developed to integrate all the meaningful dimensions for studying the co-design process according to the literature review and the research questions. The strategy for content analysis followed a mixed deductive-inductive approach. Firstly, a set of key dimensions and topics was identified, based on the research literature and research questions. The aim was to target the most relevant aspects in the data-gathering process. These dimensions and topics were then taken into account when constructing the research instruments in a distributed manner, which means that some of these aspects are included in various instruments while others appear in just one of them. Once the data had been collected, they were compared with previously-established key dimensions and topics. Then, the final categories of analysis were defined and used to analyse and interpret the results.

**Table 2.** Research categories

STUDENT PROFILE	<i>Age</i>
	<i>University</i>
	<i>Studies</i>
	<i>Course</i>
	<i>Employment</i>
TEACHING METHODOLOGIES (TM)	<i>Previous experience</i>
	<i>Personal and general preference</i>
INQUIRY-BASED LEARNING (IBL)	<i>Previous experience</i>
	<i>Perceived gain</i>

TECHNOLOGY- ENHANCED LEARNING (TEL)	<i>Previous experience</i>
	<i>Perceived gain</i>
	<i>Digital competence</i>
LEARNING ACTIVITY DESIGN (LAD)	<i>Previous knowledge</i>
	<i>Perceived gain</i>
CO-DESIGN	<i>Previous experience and understanding</i>
	<i>Students' contribution to (personal and general)</i>
	<i>Personal and peers' gain from</i>
	<i>Difficulties/obstacles and facilitators</i>
	<i>Suggestions for improvement</i>
LEARNING ATTITUDE / APPROACH	<i>Attitude towards autonomous/teacher-led learning</i>
	<i>Preferred learning approach</i>
ROLES PERCEPTION	<i>Teacher role: ideal conception and current image</i>
	<i>Student role: ideal conception and current image</i>

### Results

The results were obtained by analysing the data collected in the initial interviews and from the final questionnaire applied to the students. The evolution of their perspective on learning, teaching and/or the co-design process itself was analysed before and after their participation in the project. From this analysis, a number of themes have been identified as emerging from the results and these themes are developed and discussed below.

#### ***Student profile***

The students' most common previous experiences with teaching methodologies in HE were: lectures, guided practice, autonomous practice and teamwork. They had very little experience of learning methodologies such as project-based learning, case-based learning and problem-solving, or any others that involved self-reflection on the learning process.

In terms of personal preference of learning methodologies, the answers were not very homogeneous, although the proposals could be grouped into: more motivational methodologies; beginning with guided practice and gradually moving to more autonomous activities; having more sessions based on practice; having more opportunities to interact with the professional world.

All the students considered it relevant or very relevant that the technological tools used in the courses allowed them to participate in the activities and work together or collaborate with

their classmates. The possibility of accessing content anywhere and at any time from different devices (ubiquitous uses) was also considered fairly relevant. In contrast, the less valued features were the possibility of using open applications and resources and publishing their work publicly (open practices), as well as the flexibility of choosing, managing and customising the preferred tools (personal and self-management uses).

Students' answers revealed that none of them had previously participated in: the design of learning activities; decisions about the learning resources to be used; the content or topics of study for any course. It could be concluded, therefore, that previous experience with co-design-orientated activities was very limited among these groups of students.

Students anticipated some predictable obstacles in the co-design process: management and coordination of all stakeholders; the difficulty of changing some aspects such as the course content; the possibility of disagreements, both among themselves and with the teachers, which could diminish the impact of the students' contributions.

### ***Appraisal and understanding of the co-design process***

As noted, the students' previous experience of participating in co-design processes or related activities was practically non-existent. This implied a lack of references to compare with the one reported in this case. Nevertheless, the overall assessment by the students was generally positive and no major difficulties were encountered during the development of co-design activities. The main aim of the co-design process was understood by most of them, but there were varying interpretations regarding the implications of the specific work carried out. Therefore, although it may be desirable, previous experience is not required to participate in a co-design process.

What students anticipated in the initial interview as potential problems differed from the problems that did emerge in the process. For example, students anticipated a lack of understanding between themselves and the teachers – this expectation could be attributed to certain prejudices about the possibilities of good rapport between the parties. Instead, some organisational obstacles were detected, such as: lack of time to delve into the activities; difficulty exchanging significant experiences when the participants' situations were perceived as too heterogeneous; difficulty achieving concrete results owing to a view of the scope of the project as too large and diverse. Time is therefore recognised as a key issue, coinciding with previous studies (Bovill, Morss and Bulley, 2009). Organisational aspects were also identified by the students as facilitators in co-design, such as: proper design and moderation of the process; participants' openness to collaboration; the use of new methods and strategies. These results highlight the importance of good planning, moderation and design when implementing this kind of process, in addition to an open-minded attitude among participants.

Finally, the students' general perception was that a co-design process can be mutually beneficial for both teachers and students, by making each of these groups more aware of the other's points of view (among others, motivation behind certain decisions, difficulties addressing certain tasks), something which contributes to greater understanding between both parties. In this sense, as put by Cameron and Tanti (2011), for students to assume the role of co-designers, teachers must relinquish some control.

### ***Aspects related to designing IBL scenarios***

Students generally rated IBL methodology positively, noting as strengths the fact that it gave them more autonomy in the process and that it placed them in situations more akin to those they might encounter in their future careers. However, they also mentioned that the same requirement of self-sufficiency made them feel rather insecure and in greater need of educational guidance to ensure they did not get lost during the process. This can be detected in the type of comments students made about the designed scenarios, observations which mainly relate to improving educational scaffolds, strategies and tools.

Considering that the participants' conception of learning was quite traditional and that they had relatively little experience of active and student-centred learning methods, it is particularly interesting that they valued the IBL approach. Participating in the co-design process could have provided a deeper understanding of the methodology and its implications for their learning, although explicit evidence of this was not collected. However, this did not prevent them from continuing to be highly dependent on teacher guidance. It would be interesting to see how this evolves as students become more adept in the practice of IBL.

### ***Issues related to designing technology-enhanced learning scenarios***

In authentic and student-centred learning scenarios, students must take control of the environment where learning activities are carried out. In this sense, they should be given the opportunity to select and be in charge of the tools and services required to carry out the tasks (Väljataga, Pata and Tammets, 2011). The project intended to offer them this possibility in the co-design process by providing them with the principles of personal and distributed learning environments. The students greatly appreciated this, but found it difficult to propose alternative tools to the ones provided by the teacher to mediate specific learning activities. In fact, a certain contradiction was observed between their desire to try out new and more engaging technological tools outside those traditionally found in the virtual campus and their actual resistance to integrating them into their learning activities, owing to the learning curve involved. In general, students tend to choose the more familiar tool when they do not see an immediate benefit from a new one. Another difficulty encountered is that students may show some reluctance to share their personal-use tools with teachers for academic purposes. These, among other reasons, make it difficult to escape institutionally-centralised environments that are highly controlled by teachers. Besides, the tools that are incorporated at the discretion of students remain, for most of the time, completely outside the teacher's tracking. This leads to the logical conclusion that students should find more opportunities during their university courses to practise and acquire expertise in selecting and integrating new tools adequately, coherently and usefully, with some monitoring by teachers.

### ***Precursors of change in students' attitude and approach towards teaching and learning***

The students' perception of aspects related to the role of both teachers and students is strongly influenced by a rather classical conception of teaching and learning. This is primarily

focused on assimilating the subject content, the success of which would depend on the teachers and their ability as transmitters, facilitators and motivators in this process. There is also a somewhat limited level of reflection on their own abilities to learn autonomously – either in formal or informal contexts – and little awareness of the need to take responsibility for the process as learners. In this sense and, as reported by Carey (2013), students at the beginning of the co-design process seemed to consider the curriculum as something mainly related to what had to be learnt, but that did not have much to do with their learning processes.

The experience of having participated in a co-design process seems to have expanded the students' vision of the teacher by giving them a better understanding of, among others: the implications of designing learning activities; the complexity involved in the teaching task; the contextual constraints the teacher has to face. Nevertheless, this new vision is not so much reflected in a change of perception of the teacher's role as in a clearer picture of the implications of the teaching task, which leads to a more empathetic attitude.

Moreover, they did not recognise a change in their views on the student role, but they did admit to having reflected on the existence of different learning methods and tools. In the scenarios analysed, the students also valued elements such as: collaborative work; greater autonomy in the process; the closeness of the learning situation to the professional real context; the use of new resources and procedures. In effect, their reflection on the change is linked to the more specific aspects related to their personal experience in the designed learning scenarios. These results partially concur with those obtained by other studies (Bovill, Cook-Sather and Felten, 2011), according to which the students developed a broader and deeper perspective on teaching and learning as well as enhanced engagement and enhanced student/staff relationships (Cook-Sather *et al.*, 2014). In this sense, as suggested by Bovill *et al.* (2015), they seem to have moved away from their initial perception of their role as being subordinate to that of the teacher and slightly away from their rather passive traditional role. Students and teachers need to be made aware of the benefits of trying new approaches to learning and time is required to build their confidence gradually and avoid possible resistance.

### Conclusion

In this section the research questions are retaken again to detail the conclusions of the study.

- What does students' participation bring to a co-design process to build inquiry-based and technology-enhanced learning scenarios?

A clear conclusion that derives from this study is that students value, and want to be involved in, decision-making concerning the design of their courses (Little and Williams, 2010). However, students require training on how to give useful feedback and teachers need to learn how to be responsive to comments given by students (Davidson and Young, 2005; Bovill, Bulley and Morss, 2011; Bovill, 2014). In accordance with findings by other authors, this study found that feedback from students tended to highlight shortcomings rather than to offer balanced alternatives or solutions to their experiences. More creative input from students was missed, especially in the ideation process. This must be interpreted within a prevailing culture of student complaint and tutor response (Carey, 2013). Thus, one of the

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conclusions is that it is better to focus on analysing and improving specific learning scenarios and avoid generic and abstract reflections that are sometimes more related with beliefs than real experiences in practice.

In addition, as various authors have pointed out, participatory approaches have a number of drawbacks. They require genuine dialogue and mutual understanding and this involves devoting time to build a shared vocabulary (Carey, 2013). After participating in the project, the students said that they felt engaged in the co-design process, although they were able to provide only a partial judgement, not a global view.

The interplay between the roles shows the interdependence of the design team members. However, the late incorporation of the students into the design process and the short period in which they were involved conditioned their contribution to and impact upon the final learning scenarios. There was no collective ownership of the goals of the design process. The unequal number of teachers and students from both universities (face-to-face and virtual) was also a limitation to further discussion and contrasting of views about the virtual university scenarios.

The teachers mostly maintained their position of control over the scenario to make final decisions, so the students' role was that of consultants or validators. They gave their opinion on methodological aspects and tools, but their contribution was very limited regarding content or assessment issues. Owing to time constraints, the changes suggested by the students could not be totally or immediately implemented; consequently, the students could not possibly see an effective change based on their contributions. Bovill (2014) mentions different design approaches to the time perspective: current, future and retrospective. The retrospective approach enables students to use their experiences and knowledge of a course to inform their contributions. Current and future approaches perhaps promote the greatest ownership by students. In the present study, the most productive contributions came from students who participated from a future approach and the least productive came from those who took a current approach, as they appeared to lack the perspective to make judgements on the learning scenario; any student took the retrospective approach in this case.

Although the students generally believed that it would have been good to hear more opinions and points of view, they also indicated that, with a bigger group of participants, it would have been difficult to moderate and create dynamics that were truly productive. They proposed other strategies for involving the rest of their classmates in the co-design process, such as conducting online surveys to seek their opinion. In this regard, it would be interesting to explore the use of negotiation methods, such as those applied by O'Neill and McMahon (2012), in order to allow the empowerment and participation of the whole class group in the co-design process.

- What accounts for students' involvement or what is the students's perception of gain from participating in a co-design process?

The participants reported that the co-design process was useful for promoting mutual understanding between teachers and students. However, the students' perception of learning did not change because of the co-design process. Their approach to teaching and learning remained quite traditional, although the students valued IBL because it promoted

autonomous and authentic learning. Furthermore, they were less adept at using technologies than expected, so their contributions regarding the use of tools to support the learning scenarios were not disruptive.

Bovill *et al.* (2015) refer to four different roles that students may assume in co-creation: a) consultant, b) co-researcher, c) pedagogical co-designer and d) representative. According to the results, the participants in the Design2Learn project mainly adopted the consultant role, sharing and discussing valuable perspectives on teaching and learning. Therefore, it would be interesting to analyse the conditions required for them to play the role of pedagogical co-designer, which, by sharing responsibility for designing learning, teaching and assessment, is more aligned with the goals of the project. Both approaches call for all the participants involved to challenge and rethink their own assumptions about teaching, learning, power and knowledge (King and Felten, 2012).

According to Väljataga, Pata and Tammets (2010), change in students' perception of the learning environment is dynamic, so it is necessary to conduct iterative evaluation cycles of the components of the environment and the affordances it provides. This implies the need to give students more opportunities for reflecting on their learning process and thus advancing their competencies with respect to self-direction.

All of this indicates that shifting the roles students play, giving them real responsibility for course design, is a gradual process that cannot depend on a single project, but instead needs further institutional support. However, what is possible in co-design, what students bring and what the process gives back to them all depend on such several factors as the discipline, the culture of the institutional professional bodies involved, the university teaching model, the teachers' and students' level of expertise and confidence in this type of participatory process.

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