Students as designers; strategies and instruments to support student-centred learning

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## Two projects

**Design2Learn**  
Studying the development of more authentic, contextualized and learner-focused learning scenarios through a co-design process involving students and teachers in the negotiation of the design principles of such scenarios based on an inquiry learning model and technology enhanced.  

3-year research project

**Co-ludifica**  
Developing instruments (design patterns) that make it easier for teachers to design "gamified" learning activities in a coherent and effective way. Design patterns are developed through a co-design process involving students with the purpose of capturing their learning experience in the patterns.  

1-year innovation project
Defining Learning Design

“An application of a pedagogical model for a specific learning objective, target group, and a specific context or knowledge domain. The learning design specifies the teaching and learning process, along with the conditions under which it occurs and the activities performed by the teachers and learners in order to achieve the required learning objectives” (Conole & Fill, 2005).

”… design is by nature iterative and collaborative. It requires discussion, reflection, critique and implementation, so it works better in teams in which there is a complementarity of skills and knowledge. Being a cognitively demanding task, it requires tools and representations that allow for abstraction to be managed and understood”. Goodyear & Retalis (2010)
Defining Co-design

“a highly-facilitated, team-based process in which teachers, researchers and developers work together in defined roles to design an educational innovation, realize the design in one or more prototypes, and evaluate each prototype's significance for addressing a concrete educational need”.

Roschelle, Penuel & Shechman (2006)
Student participation in curriculum design

Student-centred learning → Student-centred curriculum

**Purpose of participation**
Designing learning scenarios / Supporting the elaboration of design instruments

**Student role**
Designer, agent in the decision-making process

**Participation form:**
- Collective / Individual → small groups of voluntary students
- Strategies / Instruments → participatory workshops, LD supporting representations/instruments
- Period, length → specific periods, short
1. Co-design processes involving students and teachers can facilitate the adoption of an inquiry-based learning model mediated by a more mature and autonomous use of technology by students.

2. Students’ participation in the co-design process can integrate their perspective and promote deeper learning.

3. The use of tools for representing teaching and learning practice can facilitate the co-design process.

**Design2Learn:**

**Design principles**

- Inquiry-based learning & Technology-enhanced and networked learning
- Co-design instruments and strategies with special attention to student perspective:
  - Representation instruments to support LD
  - Participatory design strategies
Context of practice: UB / UOC

- 4 courses
- Two different university models: blended and virtual
- About 4 UB / 2 UOC teachers
- 11 students: 2, 6, 2, 1
- Different disciplines: economics, biomedical engineering, tourism, communication
Get involved to know the participants’ context and needs, build common ground and understanding. Reflect and share issues in your practice.

Identify problem/s related with teaching/learning practice, define and operationalize the design challenge to address.

Explore other experiences and decide suitable design principles and pedagogical approach. Generate variety of ideas to address the design challenge.

Conceptualize a learning scenario able to solve the design challenge and turn it into a visual and tangible model that can be implemented and tested.

Implement the prototype in real context, monitor and collect feedback about the learning experience. Assess, reflect and improve the designed scenario.

iterate – document – reflect – refine – iterate …
Problem finding

CONTEXTUALIZE & EMPATHIZE

PROBLEMATIZE & DEFINE

DOCUMENT & IDEATE

CONCEPTUALIZE & PROTOTYPE

IMPLEMENT & ASSESS

Problem solving

Implement the prototype in real context, monitor and collect feedback about the learning experience. Assess, reflect and improve the designed scenario

Solution testing

WS1 (only students)
• T1. Represent designed learning scenario in a timeline and identify pros & cons.
• T2. Put in common pros & cons found.
• T3. Elaborate force map of 1 chosen common problem.

WS2 (students & teachers)
• T1. Share force maps of common problems with teachers.
• T2. Share timeline representation with pros & cons with teachers.
• T3. Brainstorm about available digital learning resources in each context.
• T4. Categorize digital learning resources based on purpose of use and design principles.

WS3 (students & teachers)
• T1. Identify IBL characteristics and reflect on personal experience with IBL.
• T2. Improve & ideate new learning scenarios based on IBL and TEL principles.

iterate – document – reflect – refine – iterate ...

Theory-practice loop
WS1 (only students)

• **T1.** Represent designed learning scenario in a timeline and identify pros & and cons.
• **T2.** Share pros & cons found.
• **T3.** Elaborate force map of 1 chosen common problem.

Participatory pattern workshops, (Mor, Warburton, Winters, 2010)
WS2 (students & teachers)

• T1. Share force maps of common problems with teachers.

• T2. Share timeline representation with pros & cons with teachers.

• T3. Brainstorm available digital learning resources in each context.

• T4. Categorize digital learning resources based on purpose of use and design principles.

EoR DF
Luckin, 2010
WS3 (students & teachers)

- T1. Identify IBL characteristics and reflect on personal experience with IBL.
- T2. Improve & ideate new learning scenarios based on IBL and TEL principles.
**1. Co-design processes involving students and teachers can facilitate the adoption of a gamified-based learning model.**

**2. Students’ participation in co-designing design patterns will allow their perspective to be integrated into identifying problems as well as in the proposed solution.**

**3. The use of tools for representing teaching and learning practice can facilitate the design process.**

**Design principles**

- Gamification design frameworks to support learning activities in online learning

- Co-design instruments and strategies with special attention to student perspective:
  - Design patterns
  - Participatory design strategies
Defining Gamification

By gamified learning activities we mean those that have been conceived based on the principles of game design or emulate the experience of participating in a game without being strictly a game.

Thus, the purpose of gamification in a strict sense is motivation, and not so much fun or learning. It can be understood as an indirect way of improving learning, as it is possible to increase students’ participation and involvement.
Defining Design Patterns

Design patterns are elaborated on the basis of shared practical experience in which a particular action can solve a particular and recurrent problem in a given situation or context.

They start from a basic structure that consists of: a) from a given specific situation or context; b) raise a recurring problem in the practice of teaching / learning; c) to propose a solution that responds to this problem. In this case, the solution to be considered would incorporate gamification elements.
Context of practice (UOC)

1. Patterns elaboration
   - 2 Discussion groups with students and 2 with teachers (1 virtual/1 face2face).
   - Different disciplines
   - 14 students / 16 teachers

2. Patterns implementation/validation
   - 7 design patterns - applied and assessed in 7 courses in different Degree/Master Programmes (by teachers and students).
   - Validation process through an evaluation template (in process).
Get involved to know the participants’ context and needs, build common ground and understanding. Reflect and share issues. Identify problems in teaching/learning practice related with learners’ motivation/engagement and define/operationalize the design challenge/s to address.

Explore gamification frameworks and experiences and decide suitable design principles. Generate variety of ideas to address the design challenge.

Conceptualize a gamified solution for each design challenge and sistematize it following the design pattern template that can be implemented and tested.

Implement each design pattern in real context, monitor and collect feedback about the experience. Assess, validate and improve the design pattern.
Group discussions with students (script)

1. Presentations and purpose.
2. Warming up questions: why study in a virtual university, particularities of studying at UOC, expectations, etc.
3. Specific stories/scenarios related to recurring difficulties / problems in their global learning experience at UOC.

Narrative structure: For each point, try to focus on the difficulties, the specific situation, the conditions that had an influence, the strategies put in place to solve them (by students themselves, the teacher, peers ...) and the final result.

Try to collect stories related with the use of learning resources and digital tools, teaching methodologies, learning activities, assessment and feedback, teacher support, attrition, motivation, gamification.
Identified problems in learning practice

1. Management / dynamization of group work

2. Manage / stimulate discussions in virtual forums/debates

3. Management / dynamization of work with wikis

4. Mechanisms to favour peer support and avoid feeling lonely

5. Feedback efficiency

Gamified Design Patterns

1. Feed Me! Peer review and feedback
2. Team building. Configuration of work teams
3. Score. Evaluation of teamwork
4. D-BATS. Improving virtual discussions
5. AgileWiki / WikiQuest. Organizing work in wikis
6. FeedQuest-FeedBack. Learning about and from feedback
7. Habit is the goal. Training study self-management
Some final reflections

About the co-design strategies and instruments

- Co-design tasks and instruments were useful to support dialogue and reflection on learning practice/approach.
- Difficulties in separating the analysis of the learning scenario and the general practice at the university.
- Genuine dialogue requires time and a global view. Their contribution was limited to specific areas or aspects.
- Only a small group of students who didn’t represent the variety of student’s points of view.
Some final reflections

About the value of students’ participation

• Students value and want to be involved in the design of their courses, but this requires training.
• Promotion of mutual understanding between teachers and students.
• Reluctance towards teachers’ innovative practice.
• Not very knowledgeable of the use of technologies for learning and not very interested either in proposing the use of new tools for learning purposes.
Still many open questions …

• Who is in control of the design process? What should be the role of each participant in co-design? How to manage simultaneous participation of different agents (teachers & students).

• How to train students & teachers in curriculum-design.

• How to find the balance between providing tools/foundations to support the design process and letting it emerge from its own context/participants.

• How to sustain and keep track of the process across time the multiple iterations required (design-analysis-reflection-design).
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