Designing for Flipped Teaching and Learning: leveraging the potential of learning analytics and gamification

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Focus

- How do we design a Flipped MOOC? What are the challenges?
- How about gamifying the content-driven direct instruction for engagement, motivation and creation of sense of community?
- How do we leverage the potential of Learning Analytics to inform the learner and the teacher
MOOCs and their Design

Massive Online Open Courses – we all know what they are 😊

- **xMOOCs** - most typical type of MOOCs - mainly university content transferred online
- **cMOOCs** - Connectivist MOOCs
- etc
Context: Flipped Classroom

- blended learning, most widely used to use MOOCs in the university context

- One of the effective approaches can be Flipped Classroom:
  - Direct instruction at home and online – video driven classes, prior to classroom
  - Active Learning / interactions - in the class
Research says

- Highly engaging classroom-wise
- Students prefer to have interactions online, but do not prefer video lessons to real lectures
- Findings suggest that a MOOC-based flipped class is a good solution to promote student’s motivation and learning, but the implementation of this teaching strategy is delicate and must be very well planned. [Rodriguez et al, 2017]
Online phase

- Direct instruction - actual situation
  - Flipped Classroom situates the online phase on individual learning, self-regulation and content orientedness
  - Videos, quizzes...

 Desired state:
- Student - Motivation, engagement, reflection, interactivity, sense of community, collaboration
- Teacher – feedback, planning the design and evaluating the design, connecting the classroom and online phases
Offline phase

• Now: Active learning, interactivity
  - Problem based learning
  - Project-based learning
  - Collaboration
  - Sense of community

• Desired state:
  - feedback loop
  - planned activities according to the online phase and achievements
Challenges

- Any gaps learning design-wise?
- Added value of technology?
Learning design

- Teaching is designing experiences
- The creation of appropriate learning environments to foster learning, the need to build on prior learning and the importance of reflection (Bransford et al. 2000)
Learning Design

- Flipped MOOCs can be effective in terms of learning results BUT requires explicit design
- Making the implicit explicit through Learning Design
- Instructionism vs constructivism - instructional design vs learning design
- Learning design as an area of research and development includes both gathering empirical evidence to understand the design process and the development of a range of learning design resources, tools and activities. (Conole, 2013, Designing for Learning)
Design and orchestration

- It is suggested that the success of the Flipped MOOC depends very much on the design and orchestration of learning activities.
- Orchestration: design, management, awareness, adaptation and role of actors [Prieto et al 2015]
- Focus on the Design, Management and Awareness phase but with other two components in mind.
To design a flipped approach – we need to design it well:

- We need to think about the cycle of design, implementation, evaluation and redesign.
- We need to think about reflection and awareness for the teacher and for the student.
- We need to think about the added value of technology.

All of these lead to:

- gamification as a design strategy
GAMIFICATION

- ALESSANDRA
Gamification

- ALESSANDRA
Learning analytics Definitions

- Learning analytics is the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs.

- LA as a technology-enhanced learning (TEL) research area that focuses on the development of methods for analyzing and detecting patterns within data collected from educational settings, and leverages those methods to support the learning experience. (Chatti et al 2015)
Learning Analytics

- For students - (awareness, feedback, social comparison, progress, goal achievement, gamified dashboards)
- For teachers - (inquiry, action, planning, data-driven decision making, design evaluation)
Data - where do they come from?

**Sources**

- Main source - big data - digital traces of interactions with content, peers, teachers
- Outside of the LMS data - distributed systems
- Assessment data (for instance, quizzes)
- Student Information Systems
- Library
- Can be also multimodal - sensor, tracking devices
Data - what can they show and do?

- **Student**
  - Show progress (towards a goal)
  - Compare results and achievements (social comparison)
  - Social network analysis
  - ITS (intelligent tutoring system - adapt (content))
  - Support the learner (reflection and awareness)
  - Nudge the learner if off track
  - Recommend learning paths
Data - what can they show and do?

- **Teacher**
  - aggregated progress view
  - identify learner groups and learners at risk
  - Social network analysis
  - analyse and visualize engagement
  - cohorts
  - Real time and retrospective (for course evaluation and redesign cycle)
Conceptualization and Workshop Assignment
Where are we now?

- We introduced:
  - Massive Open Online Courses (MOOCs)
  - Online courses for mass audiences
- Flipped Classroom
  - Didactical concept in classroom education that flips classroom and home phases to offer more interactivity in the classroom
- Gamification
  - Application of game elements to non-gaming concepts to increase motivation and engagement
- Learning Analytics
  - Systematic use of learner data to improve learning processes
Flipped MOOC

- What is a flipped MOOC?
  - What do we actually flip?

- What is the role of Gamification?
  - Which game elements can we apply?
  - How do we do that?

- What do we need learning analytics for in that context?
  - Which data is available?
  - How can we make use of the data?
Towards a flipped MOOC

- Domain
- Target Group
- MOOC
- Content
- Engagement
- Motivation
- Goal
- Achievement
- Gamification:
- Game Elements
- Flipped MOOC
- Collaboration
- Communication
- Interactivity
- Immeriveness
- Learning Analytics:
- Learner Data
Workshop Assignment: Design a flipped MOOC

- Build groups of 3-4 participants
  - Give the group a name
- Select a domain, a topic, and a title for your MOOC
  - How could the MOOC be organised in sections?
  - How much content would you need?
- Review the list of game elements
  - Which would you choose for your MOOC (select 2-3 from the list)? Why?
  - How would you integrate them in your content?
  - Are you missing further important game elements?
- Apply learning analytics
  - Which learner data would each game element require to function?
  - How can we acquire that data?