Developing Smart Digital Tools for Instructional Design

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Outline

- Instructional design and digital tools

- Challenges/open problems

- Our approach

- Methodology

- Initial findings

- Summary

Instructional design

DESIGN for LEARNING IS

IMPORTANT ?

Quality Assurance Agency (QAA) in 2016 : "learning design – the quality of teaching materials, assessment strategies and workload – offers the most significant contribution to overall student satisfaction" (www.qaa.ac.uk).

Studies by Stanford University (Kizilcec et al., 2013) and Open University (Ferguson & Clow, 2015) showed *that*

learners' engagement depends on the

pedagogical strategies of the course.

Tools for instructional design

Celik, D.; Magoulas, G. D. (2016). A Review, Timeline, and Categorization of Learning Design Tools.

Tools for instructional design

Celik, D.; Magoulas, G. D. (2016). A Review, Timeline, and Categorization of Learning Design Tools.

Tools for instructional design

Constructivism

The 4SPPIces model The 4Ts The Conversational

Framework 3P The e-Design Template Constructive
Alignment The Design Principles Database Design
Narrative Approach The 7Cs of LD Framework ISiS
Quality Matters 3E

Connectivism

The Learning Ecosystem Model

Celik, D.; Magoulas, G. D. (2016). A Review, Timeline, and Categorization of Learning Design
Tools.

The Learning Designer: a tool to support instructional design for TEL

- Make learning theory and good practice more accessible to teaching staff, and hopefully transform lecturers' everyday practice to teaching

- Express theory-based principles of instructional design both as visual representations and as decisions to be made in an interactive design tool

- Guide teachers through the construction of activity sequences that make appropriate and effective use of pedagogy.

- Scaffold teachers' decision making from basic planning to creative TEL design

The Learning Designer aims to build a domain model for instructional design,

so teachers can learn through

collaborative construction of TEL

ID tool Controlled Automatic tagging of LD concept used

Context-aware adaptation **by user** (happens behind the scene)
-Run time identification - Similarity between user-modified
of context path concepts and core Learning Designer
- Recommendations concepts/knowledge

Standard ID process

User-driven interaction - Pre-canned steps to access relevant
content - Browsing contents, searching,

User-driven adaptation - Search support (term expansion) - Exploitation of community knowledge (modified concepts) modifying concepts and properties - Standard help

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What kind of support?

User controlled
Automation of ID process

Example of module design in LDer

The analysis gives you information about the spread of learning types that your class is covering. There is also an

estimate of preparation times.

To explore it further

Learning Design Support Environment (google "ldse": https://sites.google.com/a/lkl.ac.uk/ldse/downloads

Since 2014: Web-based version providing an easy way to

share designs at

http://blogs.ucl.ac.uk/ltu/projects/learning-designer-

%20help/ International Community at: https://buildingcommunityknowledge.wordpress.com

Challenges/open problems

• None of these ID tools/frameworks has emerged as de facto standard

• No agreed common language used among the tools so far

• Lack of convergence and proliferation of new ID approaches inevitably leads to fragmentation of the field

• Widely acknowledged difficulties in capturing and representing ID practices' complexity in the tools (Bennett, Agostinho,

& Lockyer, 2014; Persico & Pozzi, 2015).

• HE context: studies (Prieto et al., 2014; Bennett et al., 2011; Charlton et al.,2009) did not consider the complex socio-material environment but were mainly human-centric.

Our approach

Explore the factors that prevent the use of these digital tools in lecturers' instructional design practice and influence their adoption in educational organizations through the lens of **socio-materiality**.

Aim: Develop an enhanced conceptual understanding of factors influencing ID

tools adoption and embedding in educational organizations, and of the requirements for these tools.

Develop a new conceptual model for the design of the next generation of ID tools.

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Our approach

Socio-materiality considers that social and material are
constitutively entangled in everyday life.

ID practices are bound up with materiality in a sophisticated manner, and this relationship is inadequately

reflected, or sometimes not reflected at all, in empirical studies.

Our approach

1. What are the human and non-human actors involved in

the ID practice of HE lecturers? 2. What are the entangled relations of these actors in the

ID practice of HE lecturers? 3. What boundaries or networks are created when human and non-human elements

are enacted in the ID practice of HE lecturers? What do these boundaries or networks tell us? 4. How do existing ID approaches, conceptual models or frameworks, and ID tools align with ID practices?

Methodology

- Interviews (60 - 120 min) : 10 experts, from five countries, with established experience in instructional design (10+ years)
- Survey: 110 lectures (10+ years avg.), 27 countries

• Creswell (2014)'s qualitative data analysis steps : preparing the data for analysis, reading all the data, start coding, using coding to generate description, advancing how the themes will be presented, and interpretation.

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Findings

Findings

Actors and their relations in experts' ID practice

7Cs CONCEPTUAL FRAMEWORK

Findings

(Gráinne Conole, 2014)

CONVERSATIONAL FRAMEWORK

THE LEARNING DESIGNER

Findings

Findings

▪ Even though there are various human and non-human actors engaged in the ID practice, and they all have explanatory value when trying to understand the various ways technology is enacted into ID in HE, we see barely overlap of these actors with existing ID frameworks and ID tools.

▪ All these actors connect to each other in a complex manner and engage into bounding practices. However, although participants acknowledged the existence and influence of all these actors, some of these actors

seems to disappear when participants practise instructional design in their own institutions. Moreover, most of the fifty-four actors identified are currently not considered by the various ID tools and ID approaches.

▪ Although human actors, e.g. lecturers/designers, are at the core of the ID networks and bounding practices and perceived to be the most important ones in educational technology systems, this view

can be problematic when other actors involved in ID practice are ignored or are given little value.

Summary

• Understanding the ID practice requires considering all of the human and non-human actors, including knowledge of the context of teaching, students' skills and abilities, institutional environment, subject matter and standards, staff competencies, and conceptions of lectures and educational software designers about ID approaches.

• Identifying issues of misrepresentation of ID practice and misalignment of lecturers' ID practice with ID methods and ID tools can inform the development of new conceptual models, ID tools, and technologies with larger potential to be adopted by practitioners and educational organizations more broadly.

To explore it further

• **[LDer]** Laurillard, D., Charlton, P., Craft, B., Dimakopoulos, D., Ljubojevic, D., Magoulas, G., Masterman, E., Pujadas, R., Whitley, E.A., Whittlestone, K., A constructionist learning environment for teachers to model learning designs, **Journal of Computer Assisted Learning**, 29(1), 15–30, 2013.

• **[LDer]** Charlton P., Magoulas G. and Laurillard D., Enabling Creative Learning Design through Semantic Technologies, **Technology, Pedagogy and Education**, 21(2), 231-253, 2012.

• **[LDer]** Charlton, P. and Magoulas, G. D. Next Generation Environments for Context-Aware Learning Design, Hatzilygeroudis, I. and Prentzas, J. (eds.), **Combinations of Intelligent Methods and Applications**, vol. 8, Smart Innovation, Systems and Technologies Series, Springer Berlin Heidelberg, pp. 125-143, 2011, ISBN: 978-3-642-19618-8.

• **[Tools]** Celik, D.; Magoulas, G. D. (2016). Approaches to Design for Learning. In ICWL Conference. Rome, Italy.

• **[Tools]** Celik, D.; Magoulas, G. D. (2016). A Review, Timeline, and Categorization of Learning Design Tools. In ICWL Conference. Rome, Italy.

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