Visualizing learning designs using IMS Learning Design:
the position of the Graphical Learning Modeller

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Abstract

Two research communities that need to work closer together are the community looking into the depiction or representation of learning designs and the community focusing on IMS Learning Design and its increased accessibility. A synopsis of some findings within these communities is given in order to then evaluate a graphical IMS Learning Design editor, the Graphical Learning Modeller.

1. Learning Design Descriptions

Recent research has focused on the question how educators and instructional designers approach the task of planning instruction [1]. In this regard, two questions are of interest: 1) what are the necessary components to describe a learning design, and 2) how are visual representations capable of supporting the representation and design process.

An Australian group researched the way instructors approach the task of planning instruction [1]. The researchers found that they needed a common set of components in order to translate the often textual descriptions of learning designs into a recognizable schema that could be quickly scanned for its “ingredients” [2]. The so created description schema consisted of three essential elements, which are learning tasks, learning supports, and learning resources.

Independently of the findings of the Australian project, the specification IMS Learning Design (IMS LD) has proposed a language to describe learning designs in a standardized manner [3]. IMS LD recognizes, next to roles, learning and support activities as well as environments¹ as main components of a learning design. These components can be closely linked to the ones identified in the Australian project.

1 Environments contain learning objects and learning services.

We may thus consider that activities for learning, support for learning processes, and needed resources during the activities comprise core building blocks for the description of learning designs.

Goodyear [4] pointed out that the traditionally text-based representation of learning designs needs improvement to better support and propel educational design. Stubbs and Gibbons [5] have pointed out regarding instructional design that a large focus was placed on researching visual representations of learning content but only a small number of investigations were performed for visual representations that are used to further the design itself.

It is thus worth looking into how graphical representations might support the process of planning instruction on top of providing a structured textual description of a learning design.

The Unified Modeling Language (UML) may be useful for depicting processes for instructional design, because UML diagrams are already being used in software engineering for design and development processes. However, instructional designers are unfamiliar with UML and sometimes have the feeling that its concepts are difficult to comprehend [6].

2. IMS LD tools as drivers for graphical support of instructional design?

As tools are being developed to edit and play IMS LD units of learning, the question is whether these tools can assist in graphically supporting the instructional design process. A look at the field of current IMS LD editor projects shows that graphical editing software are at the forefront of European developments.

One of the tools currently being developed is the Graphical Learning Modeller (GLM)², an IMS LD editor whose target audience are instructional designers.

² http://sourceforge.net/projects/prolix-glm/
that have little to no prerequisite knowledge of IMS LD. The original role of the GLM was to establish a modeling environment for the quick design of learning design templates, which are free of learning content.

Fig. 1 shows a system for classifying tools that are used to create specification-conformant products [8]. The GLM is classified in the upper right quadrant of the matrix (cp. Fig. 1), since it is distant from the specification, does not cover the entire range of functions, and has the specific purpose of learning design template creation.

3. Suffice of GLM representations

If the request is made that a visual design editor for IMS LD should graphically represent the core components of a learning design (learning activities, learning support, and learning resources), then the GLM falls short of this request. The GLM visualizes two components—learning activities as well as support activities. Learning resources, which were not in the focus during the development, are not graphically depicted but represented in lists and icons in their relation to the activities. Is this visualization sufficient to support instructional design processes?

User tests have shown that when learning designers look at the designs that others have built in the GLM, they understand them. Designers have access to two representations in the GLM: The visual illustration of activities (high level overview) is accompanied by textual information, which offers detailed information [2]. This enables instructional designers to explore a learning design at different levels of detail. The GLM thus partially supports instructional design because other designers quickly grasp the essence of the described learning design.

4. Conclusion

The paper described the components of a learning design description. The question was then raised, how IMS LD graphical editing tools may aid the instructional design process. The GLM was evaluated as providing partial support in this regard.

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4. References