

Creating Proper Media Objects for Computer Supported Learning-Environments

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Abstract

In the last three years the research group of Didactics of Informatics at the University of Paderborn has carried out a project called MuSoft (*Multimedia in der SoftwareTechnik*). The aim of the MuSoft project is to produce multimedia learning objects for teaching and learning software engineering. The educational objectives are achieved by means of case studies, especially the model of a high rack storage area. Thus, the idea of an Informatics Learning Lab (ILL) occurred.

The ILL is an interactive web-based multimedia exploration platform to enable constructivist types of blended learning. Students use learning objects in a self-organized learning process in an open collaborative learning environment. The design of the ILL demands the careful choice of the *didactical context* (models and roles, objectives, selection of content), the *organizational context* (methodical concept, integration of media, interaction between learning groups) and the *technical context* (learning platform, groupware, content management, digital media).

After deciding about objectives and the learners' roles in a given technical context of the ILL we have to focus on the construction of learning and media objects. Media objects can be construed on different levels of abstraction from the socio-technical information system of the case study: real world scenario, physical model (here LEGO Mindstorms) or software model. For all levels of abstraction the ILL provides students with different types of media, which should enable them to gain comprehension of relevant facts and structures of the ILL. We also have to distinguish between different types of encoding: symbolic (dealing with signs and symbols e.g. in a text), drawing (abstract mapping of facts in a chart) and picture (lifelike mapping). These types of encoding are cut into two different areas: respectively static and dynamic types of information representation at the different levels of abstraction.

In this grid of abstraction levels, encoding types and also granularity many different types of media objects are possible. But which are the proper ones to support learning software engineering?

Overview of the Research Questions

- Which case studies are appropriate to increase the application of knowledge of software engineering?
- Which coding types and levels of abstraction are eligible to enhance the learning success in regard to the learning issues (case study) and the common educational objectives of university courses in software engineering?
- Does the insertion of interactive animations assist the learning outcome?

References

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