Demonstration of PLOTs from the EuroPLOT project

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Abstract. The EuroPLOT project (2010-2013) has been funded to explore the concept of **persuasive design** for learning and teaching. It has developed Persuasive Learning Objects and Technologies (PLOTs), manifested in two tools and a set of learning objects that have been tested and evaluated in four different case studies. These PLOTs will be shown in this demonstration, and the participants can try them out and experience for themselves the impact of persuasive technology that is embedded in these PLOTs. This will be one authoring tool (PLOT-Maker) and one delivery tool (PLOTLearner). Furthermore, there will be learning objects shown which have been developed for those four different case studies. All of these PLOTs have already been tested and evaluated during case studies with real learners.

Keywords: Persuasive Design, persuasive technology, eLearning, learning objects, case studies

1   Background (Pedagogy)

In his seminal introduction of the concept of Persuasive Technology (PT), BJ Fogg [1] has identified several core principles of persuasive design. These seven persuasive design principles are: Reduction, Tunneling, Tailoring, Suggestion, Self-monitoring, Surveillance, and Conditioning. Related to these principles is *Kairos* which stems from Greek philosophers (Aristotle) and means the "opportune moment or place" to perform a persuasive action. These principles have been embedded in our tools for authoring

and delivering learning objects, as well as in the learning objects themselves. EuroPLOT [2] has the aim to use these principles for learning and teaching and explore their effectiveness.

2 Background (Technology)

The authoring tool PLOTMaker (http://www.glomaker.org) [3] uses a graphical interface to create a flow of actions and presentations that engage the learner. This consists of an authoring environment for the teacher and a player for the learner which can play the learning objects. Supported is Windows and Android.

The delivery tool PLOTLearner [5] is actually a set of technologies, focused on learning that involves large texts. The underlying EMDROS database [4] handles an annotated text corpus, and the tool can then present to the learner excerpts from these texts that have a context and are semantically structured. This can be used for example for language grammar learning.

The learning objects that have been developed with PLOTMaker are accessed by the learner through the PLOTMaker player. The persuasive design elements which have been embedded in those learning objects, are in the design and the structure of the learning content rather than in the use of specific technology. There is one exception, and this is the location-based Augmented Reality concept which inherently realizes the concept of *Spatial Kairos*.

3 Results and outcomes achieved

The tools and the learning objects have been developed iteratively, and have been tested and evaluated in four case studies:

3.1 Academic Business Computing

This case study is undertaken in the framework of database teaching in academic computer courses which are taught at two universities. The learning objects in these courses are developed with the tool PLOTMaker and are focusing on teaching basic SQL. The goal of this case study is to demonstrate the applicability of this approach in two different countries and languages (English in UK, Czech in Czech Republic). The specific topic of these learning objects is database normalization and SQL querying, and the main persuasive principles used in the PLOT's design are **reduction** and **interactivity**.

3.2 Language Learning

This case study investigated the learning of language with the help of a large corpus of text. The learning tool PLOTLearner was specifically developed for this kind of learning with a large text repository (data-driven learning) from annotated texts. The

language to be taught is Ancient Hebrew. Due to the difficulty of this language, this provides a valuable example of showing how a language with a different visual writing system can be taught effectively to students through the engagement with a large structured text corpus.

3.3 Mediating Kaj Munk

The Danish writer and vicar Kaj Munk (1898-1944) has produced a significant oeuvre of plays and other texts, all of which is archived in the Kaj Munk Archive in Aalborg University. In addition, there is a Kaj Munk Museum in his old Vicarage in Vedersø (Denmark). Learners who want to inform themselves about life and work of this writer can do so through several methods developed in the EuroPLOT project: they can explore the writings through an online Kaj Munk Study Edition that allows structured access through the EMDROS database of Kaj Munk's works. Furthermore, at a tool has been developed which makes it possible to visit the Kaj Munk Museum virtually using mobile devices, hereby using computers as persuasive media with Augmented Reality (AR) technology.

3.4 Chemical Substance Handling

In an industrial context, employees often need training in how to implement and handle new regulatory demands. This is especially important in the case of using chemical substances which may be harmful. In the EuroPLOT project, DHI has used PLOT-Maker to develop learning objects which teach adult learners in an industrial context how to handle such dangerous chemicals. This considers health and safety aspects, and the persuasion of the learning objects is implemented through tailoring and simulation.

4 Demonstration outline

The demonstration at EC-TEL will show all the PLOTs that have been developed in the EuroPLOT project. This will be:

- The authoring tool PLOTMaker, showing how persuasive learning objects can be created.
- The delivery tool PLOTLearner, showing how large text databases can be used for persuasive learning.
- The persuasive learning objects for chemical handling, and business computing learning, created with PLOTMaker.
- A video of the Kaj Munk museum site showing the use of the Augmented Reality learning objects.
- The access of Kaj Munk's works through a PLOTLearner implementation.
- Ancient Hebrew language learning with PLOTLearner.

Participants can try out hands-on demonstrations of all these technologies.

## 5	Specific technology and environment needed at conference

We will bring one laptop computer, which will be able to show all the technologies to the demonstration audience / participants. This means we need 240V power and a table. Also required is wireless internet access (Wi-Fi). We will demonstrate all PLOTs sequentially on this one single machine.

If another desktop computer (running Windows) would be available, then we could scale the demonstration and show several of the PLOTs simultaneously. At least the Kaj Munk video could then be shown in a loop while the other demonstrations could be tried out by the participants.

References

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