The Music is not in the Piano: Engaging vs. Enabling MS PowerPoint

Andrea Kohlhase
DiMeB (Digital Media in Education)
Dept. of Mathematics and Computer Science, University Bremen
Germany
kohlhase@informatik.uni-bremen.de

Abstract: In this paper we want to showcase how the transformation from an enabling towards an engaging technology in school might be done with MS PowerPoint (PPT) with an open-source extension – the semantic work environment CPoint. In particular, we discuss the differences between teachers' and students' engagement with PPT and the opportunities which are offered by the enhanced PPT. We introduce a new CPoint module called CPointStudent that alleviates the transformation process for students.

Introduction
In 1991 Alan Kay framed the piano metaphor for enabling technology: “The computer is the greatest piano ever invented, for it is the master carrier of representations of every kind” (1991). However, he also noted that the “music is not in the piano”. If we look at today’s (Western) net generation, most kids have accepted and integrated Information and Communication Technology (ICT) completely into their off-school life, i.e. they are playing the piano and generating their own music. Mark Prensky comprised their resulting expectations towards the world and particularly on teachers pointedly in: “Engage Me or Enrage Me” (2005). Indeed, in ICT for school we are looking for not only enabling technology, but also engaging technology - engaging for students (as enrage ment suppresses learning) and engaging for teachers (so that they are willing to integrate ICT into their classes) alike.

The presentation software MS PowerPoint (PPT) fulfills the basic conditions for use in school: it is broadly available and it can be employed meaningfully as it can greatly support presentation tasks of educators. But even though we can thus consider PPT as an enabling technology, there are restrained voices that place PPT in school into the 'eye-candy' corner, arguing that this beautifying method comes at the price of reducing in-class interactivity, i.e. going back to traditional lecturing. In (Kohlhase, 2006) we discussed these objections and introduced a semantic (freely available) extension of MS PowerPoint, the CPoint system ("Content for PowerPoint"), that ‘unbolts’ (Feldstein & Masson, 2005) PPT so that it might become a truly enabling and somewhat engaging technology, which we called "emPowerPoint" (mPPT). The idea consists on the one hand in taking teachers' reality into account by using an invasive technology design (Kohlhase 2005), and on the other hand to provide ICT that's flexibility is adapted to students' and teachers' needs (Kohlhase, 2006).

Here we show how the CPointStudent module of the CPoint system can support the transformation from an enabling towards an engaging technology in schools.

mPPT as Engaging Technology for Teachers
If we look at using PPT in school from a teacher’s perspective, then we can point e.g. to the personal reuse factor of PPT documents, the enhanced creative feeling at design-time, and the supportive character of publicly visible structure. Therefore, we can consider PPT as enabling technology for a teacher. But unfortunately, PPT per se fits all-too well with the traditional “sage on the stage” lecturing style. Moreover, a ready-made PPT presentation itself doesn’t call for any participation on the side of students except if the PPT author planned it that way. In particular, the normal use of a PPT presentation fixes not only the content to be taught, but also the structure in which it will be taught, and even its time line. PPT is as inflexible as a row of chairs bolted to the floor in a traditional classroom.

The PPT extension "CPoint" enables a teacher to manage PPT documents on a fine-granular level, namely the individual objects on each slide of a group of presentations, by exploiting semantic technology. For instance, a teacher remembers that she used a certain table for population growth in the third world in last year's course and she wants to reuse it this year. If she didn't use a sophisticated filing system for her PPT presentations then she would have difficulties to exactly point to the right document that contains this table. In contrast, with CPoint she can use a word that she remembers like "population" to scan all PPT files in the course collection to get a quick overview on available objects. Maybe, she won't select the table she remembered but another one which fits even better this year. Besides many other advantages which were showcased in (Kohlhase, 2006), the deployment of CPoint allows a
teacher to reflect the implicit structure of the information available on her slides, so that the quality of slide content can be ensured.

This way MS PowerPoint is transformed by CPoint from an enabling technology to an engaging technology for teachers, as the motivational constructs self-efficacy and locus of control, subjective reasons for taking action with PPT, and self-regulation (see Miltiadou & Savenye, 2003) are all in place.

mPPT as Enabling Technology for Students

In a student's view, the visual preparation of learning content in a regular PPT document addresses a particular learning channel, that enhances her learning experience (see e.g. Sanders-Bustle, 2003). Moreover, the presentation can be used as a handout document for students to follow-up the course work. Another pedagogic plus for the students consists in the increased coherence of the material induced by the public character of the presentation. Finally, we have the eye-candy argument, that a student’s motivation to follow a lesson is supported for example by attention-drawing animations (both arguments are critically discussed in terms of learning, e.g. Tufte, 2006). Additionally, PPT already supports some forms of interaction, e.g. slides can be used as communication elements between students and teachers, or with hyperlinks or video streams contacting the world is possible.

These (rather weak) arguments for PPT as an enabling technology in schools can be boosted by the CPoint extension to PPT: For instance, CPoint helps increase the coherence of the underlying information structure of not only one presentation, but of whole collections of presentations in a course via semantic rigor induced by CPoint, which in turns leads to improved learning processes. The visualization of this structure via CPoints (in the GPointGraphs module) helps students to understand the topic from a logical/functional point of view. The semantic markup of PPT objects which allows the teacher to handle her instruction material flexibly at design time also allows her to break the linearity of instruction and enables interactivity around the PPT material in class.

Thus mPPT constitutes an enabling technology for students in a school scenario. But it does not motivate the student to use it yet. In the next paragraph we analyze what is still missing and discuss how our new CPointStudent module remedies this and transforms mPPT into an engaging technology for students.

mPPT as Engaging & Enabling Technology for Students?!

Engagement is participation and ongoing interaction. A technology is engaging if people are voluntarily becoming users of a technology. So we have to take into account the students' motivations for taking the action of using the technology. From a design perspective this means, that the technology has to offer opportunities for motivation. We use the motivational constructs extracted by Miltiadou & Savenye (2003) for an analysis, they differentiate between

- **Individual’s perceptions about their ability to accomplish a task (self-efficacy, locus of control, attributions)**
  
  Currently, PPT documents are handed down to students as a kind of "cheat sheet" to remember the "show". The document is static (usually printed) and thus leaves no motivational or interaction opportunities for the student. In particular, a handout does not make use of the semiotic qualities. mPPT remedies this situation by offering the handout as a *living document* that can be worked on in the PPT work environment using CPoint. The original CPoint system was rather form driven, but “Forms are dead!” (Duval, 2005) or at least should be. Thus the new student-oriented “CPointStudent” extension of CPoint offers an easier and unified approach: there is only one area for basic information left (see figure).

  A student can become engaged by such a living handout because she can handle the various information objects on the slide by herself and e.g. create a different logical/functional view of the objects via CPointStudent. These different views could be for instance compared and used as a topic for discussion in class.

- **Individuals’ reasons or purposes**

  CPointStudent allows to mine the information contained on the slides (extra information, classification, as well as relationships): it offers a new visualization mode in which available extra information for slide objects can be directly made out (without having to open the form by clicking on the object). Now the
classification information is visible on the right hand side of objects, the extras are visible on the left hand side. Thus the PPT document becomes a semantic handout that evokes interaction.

- **Self-regulation**
  As a PPT document contains semiotic material, it can be prepared in different fashions for various learning techniques and strategies for accomplishing the learning task. CPointStudent is our first approach in this direction, for example offering direct access to semantic visualization.

**Conclusion**

If we take the piano-metaphor for ICT-use in school seriously, then we have to provide not only enabling technology in school, but rather engaging technology, so that the piano is played. We also have to take into consideration that we do have two kinds of players: the educators and the students and we elaborated on their different needs. We showcased PPT enhanced by the CPPoint system (especially CPointStudent) as an engaging technology for teachers as well as students, because it transforms mere presentational documents into living, evoking, and engaging documents.

**References**


