Community, Content and Collaboration Management Systems: socio-constructivist scenarios for the masses?

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Abstract

In the center of socio-constructivist initiatives are the design of innovative activities that support a social mode of learning in a collaborative setting, an augmented awareness of learning processes and meaning construction and autonomy and responsibility for learning. This requires the development of technologies that support authoring and scripting, collaboration, reification and reflection of learning activities, and integrated learning activities. Within this more general framework, we focus on pedagogies associated with simple Internet technology. While there are dozens of "e-learning" platforms, not many open systems exist for "orchestrating" socio-constructivistic learning scenarios. We suggest to explore the pedagogical potential of the increasingly popular open source information and collaboration portals and present our strategy.

The problem

Currently, there exist many variants of web-supported pedagogies, e.g. transmission of contents, web-based instruction, learning by apprenticeship in virtual environments, pedagogical work flow scenarios. However, not all of these are supported by affordable technology and we would like to argue that there is a particular need for tools that support socio-constructivist learning at the activities level. Empirical research (e.g. Dillenbourg 1999) reveals that collaborative or collective constructivist learning is not per se an effective learning method. The teacher can not simply ask students to start projects and encourage peers to learn together. Socio-constructivist learning is more effective if individuals and groups have to evolve within well-specified scenarios, i.e. sequences of phases within which group members do tasks and play specific roles. While teachers can orchestrate complex scenarios with very little technology, the effort can soon become cumbersome.

Remember 1993's slogan of "shifting the focus from teaching to facilitating" ? WBT, "Learning Management" or "E-learning" systems are mostly anchored in the behaviorist CBT tradition made progress in modularisation of contents and standardization, but they do not fundamentally seek to improve pedagogies by supporting rich socio-constructivist scenarios and they don't take the teacher seriously. His "facilitator" role is degraded to writing web-pages, quizzes and to grading exercises, i.e. he becomes a mediator of reusable learning objects. In reality, a large chunk of education is less about content delivery than engaging students in active problem and project-based learning. Therefore, the main focus of research & development in educational software should not concern passive "interactive" courseware but to support students to solve more complex and open-ended tasks.

Constructivist (e.g. project or problem-based) scenarios are quite popular (Wilson & Lowry, 2001) but supporting technology is hard to find and our current work aims to change this.

The Work Plan and strategy

Implementation strategy #1: Imitation and adaptation of "Internet culture". Web pages, forums, e-mail and FTP are successful because they support the basic needs for exchange, communication and collaboration. While simple web technology does enable creative educational scenarios it has 2 drawbacks: (1) Maintaining static web-sites is time-consuming and simple discussion systems do bad knowledge management. (2) More sophisticated scenarios (like co-authoring or work-flow) are badly supported. Now, community web-sites facing the same problems found an answer. Within the last two years have sprung up what we coin C3MS (Community, Content and Collaboration Management Systems). Inspired by personal weblogs, news systems, simple CMS and various groupware like file-sharing or calendars, C3MS are modular tool s for configuring interactive community web-sites. Extension mechanisms allowing third party persons to contribute plugins with additional functionalities. Systems like PostNuke or PhPWebSite offer a good set of core portal functionalities, such as user administration, a news/journal system, web-links sharing, search, FAQs and polls. We can add 3rd party modules like collaborative hypertexts, pictures galleries, simple content management systems, event calendars, chats, project managers, file-upload, and glossary management.

What can be learned from Georgia Tech's CoWeb/Swiki CSCL-as-authoring-experience (Guzdial, Rick & Kehoe 2001) and a more recent trend to use simple Weblog software in education (Davies 2002), is that teachers are open to radical new pedagogies if the technology is simple and effective. Since we believe that a large number of rich educational scenarios can be supported by modular C3MS systems at reasonable cost, we started deploying a few systems with teachers to investigate.

Implementation strategy #2: Teach teachers. Success stories of new technologies in education are often related to the teachers' ability to insert it into existing knowledge. In other words, it is easier to promote change when teachers can relate to "models" they know, even if they are not necessarily related to teaching. Teachers able to understand the meaning of simple bricks are might be more willing to use them for building more complex scenarios, i.e. teachers must have an operational awareness (vonGlasersfeld) in addition to operational control. Inspired by Guzdial's work with CoWeb, we start by presenting simple activities that can be enhanced with C3MS. At the same time, we also introduce portals as community tools (for project or teacher support). A first version of the catalog of educational scenarios (Frete, Schneider & Synteta 2002) is available as well as a companion document about C3MS bricks (Synteta, Schneider & Fréte 2002) and we hope to observe and report interesting experiments within the next 2 years.

Implementation strategy #3: Don't' overdo it. We do not know yet the boundaries of C3MS portals and we didn't explore writing serious portal modules. One major drawback seems to be the lack of provision for integration (e.g. data-flow) between applications, necessary for sophisticated support of workflow. We can either try to add this functionality or base our future work on more sophisticated platforms like portlets servers (e.g. Jetspeed) or pipelined XML architectures like Coocon2. While Java is a less affordable technology than Php it can add to the stability of the system and it offers the interesting TagLibs paradigm (JSP/XSP) that would allow us to offer teachers an intermediate scripting level. In addition, we may able to connect components of our system more easily to micro-world components. Another drawback is the management of teaching activity contents over time. How can we efficiently enough "reset" activities (without loosing productions). Some of these issues can be dealt with by careful planning of module use and naming. So, handling these issues require the same sort of planning that a traditional user-driven educational web site does. But certainly we would like to have tools for this.

Implementation strategy #4: Differentiate among teachers: Such a system in order to be acceptable by the teacher community should appeal to teachers with different levels technical competence and different levels of "activeness". We discriminate four levels of use with respect to how they appropriate learning technologies: (1) Reusing. Teachers who appreciate ready-to-use material. In our case, this is a scenario that has been instantiated with content. (2) Editing. Teachers who feel the need to modify the content of a CSCL scenario they appreciate. (3) Designing. This means in our case to compose completely new scenarios by re-assembling basic components. (4) Programming. Some teachers like to program and we can expect them to develop modules. The originality of our approach is to enable teachers to work according to their technical skills, to the personal investment, to what is available. The same teacher could borrow objects at levels 1, 2 or 3 at different times according to his availability, his familiarity with the environment, his involvement in the community.

Implementation strategy #5: Use synergies. C3MS are by definition a space for communities. As formulated by e-learning practitioner Gilroy (2001) "E-learning should be first and foremost about creating a social space that must be managed for the teaching and learning needs of the particular group of people inhabiting that space". People learn a lot from informal exchange with fellow learners, with professors, experts, i.e. from exchange within tightly or loosely defined communities. The Internet spirit (i.e. open contents) is still popular as MIT's OpenCourseWare or Berkeley's University's IU Project show. Opening up the classroom to the outside world also means that the outside world (other classes, teachers, parents, experts) can and should participate. While each small community may want to run its own portal, they can syndicate contents. Building networks of information has become more easy. Next, students and teachers can run portals for other reasons. We have the hypothesis that the perception of their general usefulness for "real life" will help introducing them to education. Lastly, there exist sporadic initiatives to create campus portals that are actually useful to the community and not just a presentation/information tool designed by some disconnected central service. Such portals could add support for teaching activities and therefore synergies ought to be thought out between information systems and educational technology groups.

Conclusion

This research on the use of "Community, Content and Collaboration Management Systems" for socio-constructivist scenarios sponsored by the European School of Tomorrow - SEED project is at its beginning stages. So far, we initiated a few field experiments and we produced an initial catalog of

socio-constructivist activities with C3MS bricks. We plan to support further sites, will prepare more dissemination materials and hope to report results within the next 2 years. We are aware that C3MS portals are not capable to do complex CSCL workflow scenarios, but we believe that there is an important need to actively support educational scenarios with simple technology under the control of teachers. Finally, C3MS may be a chance to maintain the Internet Spirit in education which is threatened by the philosophy of many e-learning systems.

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