

Wiki and Student Models - a handshake in Distance Education field?

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Abstract: The current paper discusses the potential use of Wiki as an environment for the formation of student models during distance education sessions. The idea of student models is not novel, rather their benefits in distance education. The up growth use of Wiki environment signals the culmination of variety collaborative activities in the field of distance education. Is it proper and what is the possible benefit for instructors of using Wiki as an environment for co-development of student model?

Key-Words: Wiki, Student Models, collaborative Student Modelling, Distance Education

1 Introduction

A variety of definitions are available in literature regarding Student Models. According to Barr et al, "Student Model represents student understanding of the material to be taught with the purpose to make hypotheses about student's misconceptions and suboptimal performance strategies" [1]

Jim Greer illustrates in bullets, the different interpretations that a Student Model may have, by indicating that such model may be:

- An abstract representation of the learner.
- Teacher's conceptualisation of a learner.
- System's beliefs about the learner.
- System's beliefs about the learner's beliefs and skills.
- It may include history of learner actions (raw data)
- Interpretations of raw data.
- Explanations of behaviour [4].

Employment of Student Models as a valuable tool for instructors is not a new idea. Several different uses of Student Models had been reported in the literature [5], [10], [11], [15]. When it comes to distance Education, student models mean to help the teacher to achieve more effective educational sessions, rather than to act as monitoring and diagnosing tool for the

simulation of a virtual tutor. The Student Model act as an intermediate communication component between the tutor and the students, recording the tutor's suggestions and feedback regarding the students' progress in addition to the comments made by the students regarding their personal problems or the misconceptions occurred [14]. This new adopted role of Student Models in distance education has raised the issue of opening the access to them, also by the students and the teachers, for inspection and tuning reasons [8]. The so called Open Student Model [9] requires by its definition, the collaboration among students and tutors in order to negotiate and modulate its scheme. A lot of researchers from Suzan Bull [3] and J. Kay [6] to Zapata-Rivera and Greer [17],[18] alleged that, opening the Student Model to students/tutors can encourage the learner reflection, as the awareness about what have been mastered or not, and therefore enhance the learning process.

Though a lot of research has been dedicated to open student models to the students, few researches have been dedicated in opening them to tutors [17]. According to Mazza, "If the open student model has demonstrated to enhance the learning process for students, it's likely to be

the same for the tutoring process” [8]. That issue of collaboration among tutors in order to form Student Models leads to Wiki environment as a potential collaborative tool in their hands.

2 Wiki, a new tool in the field.

The Wiki technology relies to the philosophy of web sites that are freely editable by anyone who visits them. This technology was invented by Ward Cunningham in 1995. The idea behind such sites is to create truly communal repositories of knowledge where the contribution cost is so low as to allow novice and expert users alike to act as active members of a community.

According Lamb, Wiki is applied to a diverse set of systems, features, approaches, and projects [7].

This open editing environment is powerful and problematic at the same time, depending on the identity of collaborative users identified as valuable contributions or vandals.

Lamb states that, “Wikis work great as shared online sketchpads or as spaces for brainstorming. They are perfect for creating perpetually updated lists or collections of links, and most users can instantly grasp their utility as informal bulletin boards”. Some other uses of Wikis includes common formation of meeting agendas, course management system authoring environment (so that design teams can quickly and collaborative brainstorm instructional strategies, capture suggestions etc), and also as a support for collaborative experiments in composition and as a prompt for reflection on the nature of online writing and reading.

Among the most commonly reported phobias regarding the use of Wiki is that “If anybody can edit my text, then anybody can ruin my text”. Although that such argument seem to be true, some safety keys have been consider in order to minimize that risk. Wikis save copies of successively edited versions; thus, work that has been deleted or defaced can be easily recovered. All the changes are readily detected and e-mails or RSS (Rich Site Summary) alerts in addition with IP tracking facility are also available to the administrator. Clay Shirky successfully argues that “A wiki in the hands of

a healthy community works. A wiki in the hands of an indifferent community fails. The software makes no attempt to add ‘process’ in order to keep people from doing stupid things.” (Shirky 9). Its therefore obvious that easy way of collaboration is the source power of Wiki environment. This particular characteristic may be the core of collaborative Student Model development process, among the Wiki tutors.

3 What kind of handshake to expect?

In order to answer the above mentioned question it critical to understand the benefit of collaborative Student Modelling process.

A quick glance at the distance education sessions of any University (or other Organization) reveals that it’s very often the case where tutors share the same students among different lessons. Additionally tutors, in some cases, share the same lesson with other tutors individually or as a co-teaching activity.

So why not having the tutors to share their experience and ideas regarding the learning profile of their students? This is very common practice in traditional education sessions where the school teachers’ board meets annually (at least) to discuss issues regarding students’ performance, learning abilities or difficulties etc.

The benefits of such debates are enhanced if someone expands that process to a web based environment where multicultural tutors can potentially meet and collaborate.

In a Wiki based environment such meetings can be set up as a default process. So the tutors have a simple and easygoing method to meet and co-develop Student Models.

But such process –of formal or informal – tutors’ meetings and exchanging ideas is really a part of Student Modeling process? Why to have Wiki as the basis of such development and not a simple web chat/conference session?

To provide an answer, someone has to identify the elements of Student Modelling procedure. Raymund and Masamichi, indicate three essential elements of student modelling: the student behaviour, and the background knowledge and the student model.

Student behaviour refers to a student’s observable response to a particular stimulus in a

given domain, that, together with the stimulus, serves as the primary input to a student modelling system. This input (i.e., the student behaviour) can be an action (e.g., writing a program) or, more commonly, the result of that action (e.g., the written program).

Background knowledge is comprised of the correct facts, procedures, concepts, principles, schemata and/or strategies of a domain -called theory- and of the misconceptions held and other errors made by a population of students in the same domain – called bug library.

Student model is an approximate, possibly partial, primarily qualitative representation of student knowledge about a particular domain, or a particular topic or skill in that domain, that can fully or partially account for specific aspects of student behaviour [12].

Tutors can use Wiki in order to provide a space for free writing, or to debate course topics including assigned readings, require students to collaborate on documents such as an essay written by the entire class or to discuss curricular and instructional innovations [16].

Wiki environment has the ability to save copies of successively edited (by students) versions of document in a very easy and simple way. Therefore, valuable data regarding Students' behaviour and Background knowledge can easily identified and retrieved via students' contributions-edits in the Wiki environment, given that such documents are easy accessible by others tutors.

Commenting those data with other tutors contributes critically in the process of Student Modelling. Tutors have the ability to argue debate and conclude to a potential report regarding students' model. These co-authored data usually include qualitative information rather quantitative and comprise the core of Student Modelling process.

Having a single chunk of data which can be easily edit by others, it's a more convenient and manageable procedure rather than having a infinite list of nested discussion threads (usually appeared in web based chat/conferences) which are difficult to index and too complicate to interconnect in order to reach to a conclusion.

Regarding the privacy of those (confidential?) data, Wiki provides the ability of password protected workspaces, where only authorized editors are permitted to make contributions.

But what are the benefits of collaborative Student Modelling? Why do tutors have to bother?

Tutors benefits can be summarized in the following:

a. Improved class knowledge monitoring: Tutors often need to have a clear idea of the performance of their classes. This information can also be shared among other tutors in order some valuable annotations to derive. Such annotations may notify the need of altering instructional strategy or identify a particular learning difficulty on a taught subject.

b. Creating a group for collaborative problem solving essays based on the derived Student Models. The process of grouping students based on their leaning style, behavior, consideration ability becomes a more easygoing process.

c. Identification of students with some kind of irregular learning (dis)abilities. Concentration to students who need particular attention, like those that are progressing too fast or too slow with the schedule, or those that doesn't access the course for long time, or don't participate to assessment activities becomes a valuable information for the tutor [2]. If such information is also shared among other tutors, a more solid and integer profile can be schemed regarding such students.

All the above mentioned benefits combined with the Wiki environment, may be a motivation for a new kick of strike to the collaborative Student Modelling process.

4 Conclusion

The value of using Wiki as basis for the collaborative development of Student Models, derives by its simplicity to use and the easy going processes available to the tutors willing to participate in such effort.

The built in record mechanism of revised editions, the notification process, and the handy way of retrieving information, reinforce the role of Wiki as a tool for collaborative Student Model development.

The expected outcomes of such process may contribute to the improvement of collaborative teaching, the construction of better instruction strategies, and reinforce the interaction among tutors regarding the critical issue of Student Modelling.

Wiki itself as a very promising collaborative environment may consider new developed features towards this aspect.

A new era in collaboration is rising from the swaddling clothes of educational community, altering Student Modelling from a solo procedure to a common effort process.

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