Crowd-sourced Open Courseware Authoring with SlideWiki.org

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Abstract—**While many Learning Content Management Systems are available, the collaborative, community-based creation of rich e-learning content is still not sufficiently well supported. Few attempts have been made to apply crowd-sourcing and wiki-approaches for the creation of e-learning content. In this article, we showcase SlideWiki -- an Open Courseware Authoring platform supporting the crowdsourced creation of richly structured learning content.**

Index Terms—**Crowd-sourcing, OpenCourseWare, Wikis.**

I. INTRODUCTION

SlideWiki is a Web application available at http://SlideWiki.org facilitating the collaboration around educational content. With SlideWiki users can create and collaborate on slides and arrange slides in presentations. Presentations can be organized hierarchically, so as to structure them reasonably according to their content. Currently large-scale collaboration (also referred to as crowd-sourcing) around educational content (other than texts) is supported only in a very limited way. Slides, presentations, diagrams, assessment tests etc. are mainly created by tutors, teachers, lecturers and professors individually or in very small groups. The resulting content can be shared online (cf. Slideshare, OpenStudy, Google Docs). However, proper community collaboration, authoring, versioning, branching, reuse and re-purposing of educational content similarly as we know it from the open-source software community is currently not supported.

With SlideWiki we showcase a platform, where potentially large communities of teachers, lecturers, academics are empowered to create sophisticated educational content in a truly collaborative way. For newly emerging research fields, for example, a collaboration facility such as SlideWiki allows disseminating content and educating PhD students and peer-researchers more rapidly, since the burden of creating and structuring the new field can be distributed among a large community. Specialists for individual aspects of the new field can focus on creating educational content in their particular area of expertise and still this content can be easily integrated with other content, re-structured and re-purposed. A particular aspect, which is facilitated by SlideWiki is multi-linguality. Since all content is versioned and richly structured, it is trivial to semi-automatically translate content and to keep track of changes in various multi-lingual versions of the same content object. We expect that the SlideWiki approach will have a substantial impact with regard to disseminating educational content in many languages.

II. SLIDEWIKI FEATURES

A. Authoring

For logical structuring of presentations, SlideWiki utilizes a tree structure in which users can append new or existing slides/decks and drag & drop items for positioning. When creating presentation decks, users can assign appropriate tags as well as footer text, default theme/transition, abstract and additional meta-data to the deck. SlideWiki employs an inline HTML5 based WYSIWYG (What-You-See-Is-What-You-Get) text editor for authoring the presentation slides (cf. Figure 1, image 1). Using this approach, users see the slideshow output at the same time as they are authoring their slides. SlideWiki supports the direct integration of LaTeX formulas, which are rendered as HTML using the MathJAX JavaScript library. SVG images are supported for drawing shapes on the slide canvas. SlideWiki supports the progressive display of slides as well as different animations and effects. Using the CSS3 extension Saas dynamic themes and styles can be created for the presentations. Besides four standard transitions, SlideWiki supports creating impress.js transitions. Presentations can be presented directly from the Web browser in fullscreen mode. SlideWiki allows to import & export presentations from PowerPoint and HTML.

B. Collaboration

SlideWiki supports versioning, forking/branching and merging for slides and decks (similar as GitHub do for software code or ordinary Wikis for text). SlideWiki ensures that every author's personal revisions of slides and decks are always preserved. SlideWiki is committed to open knowledge and giving credit to original authors and contributors. All contributions on SlideWiki (including images, styles etc.) have to be licensed under the Creative Commons Attribution Share Alike license (CC-BY-SA). SlideWiki tracks all contributors and sources to a particular slide (respectively deck) and list these contributors to acknowledge their contributions.

C. Questionaires

SlideWiki supports the creation of questions and self-assessment tests based on slide material. Each question has to be assigned to at least one slide. Questions can be combined into tests. Automatically created tests include questions from all the slides within the current deck. Manually created tests present a collection of chosen questions and currently cannot be manipulated as objects (cf. Figure 1, image 2). Currently, only multiple-choice (and multiple-mark) questions are supported, however, we plan to expand the list of supported question types.
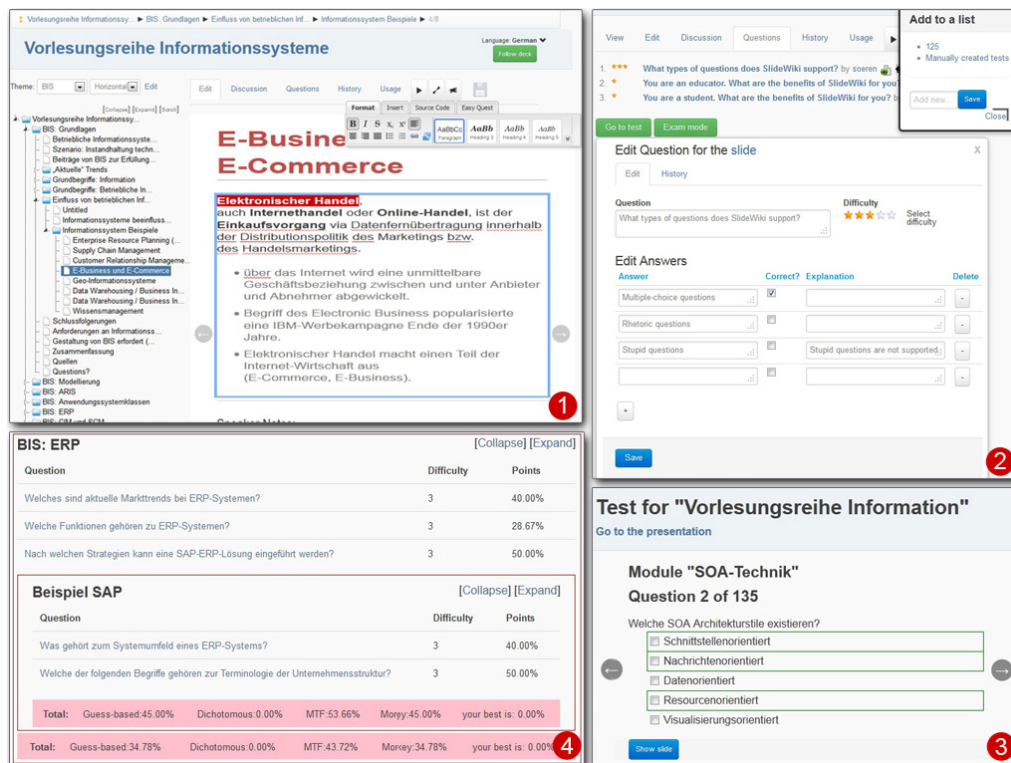
Figure 1.   Four SlideWiki screenshots. 1 - Tree structure of the presentation and inline WYSIWYG editor; 2 - Editing of a multiple-choice question; 3 - Question in learning mode; 4 - Module-based scoring of an assessment test.

D. Translation

SlideWiki allows the semi-automatic translation of all content using the Google Translate API into 54 supported languages. Translated presentations can be edited independently from the original one, but revisions to the original presentation can be easily tracked.

III. CONCLUSIONS

We showcased SlideWiki, a Web-based platform for the crowd-sourcing of OpenCourseWare in many languages. There exist some online tools for presentations (e.g. Google Docs Presentations, Prezi or SlideShare). SlideWiki differs due to its focus on: *E-learning* - questions can be added to slides and comprehensive self-assessment tests are created. *Collaboration* - SlideWiki empowers whole communities to create presentations collaboratively. *Translation* - with SlideWiki content can be easily translated in more than 50 languages.

For educators, SlideWiki significantly increase the user base by making the content accessible to a world-wide audience; high-quality e-learning content can be translated and disseminated in many different languages; students can contribute and discuss the educational content and peer-educators can be involved in improving and maintaining its quality and attractiveness, which will ultimately increase the reputation in the community, by sharing qualitative e-learning content. *Students* can view rich-learning content right in a browser, discuss particular content (e.g. a slide or question) with other students and instructors, contribute additional content, improvements and feedback and assess learning progress using the questionnaires. *Schools and universities* can make e-learning content easily accessible (each presentation and slide has its own URL), leverage the wisdom of educator crowd, which can collaborate efficiently in creating rich educational content; make the e-learning content produced in the organization really re-usable and re-mixable; increase the reputation of the school by sharing the quality e-learning content. *For Humanity* education is one of the main factors for societal progress (in the Human Development Index, e.g., education is weighted one third). Despite huge investments the potential of the Internet and crowd-sourcing techniques for e-learning is still not sufficiently explored. With SlideWiki we aim to dramatically improve the efficiency and effectiveness of the creation of learning material for online and offline use. With its semi-automatic translation and liberal licensing SlideWiki aims to make educational content dramatically more accessible to learners in developed and developing countries.

REFERENCES

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