Project Proposal

OMS CS6460

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Motivation and Context

Problem Description

Assessments are an essential part of education because they guide the development of students, improve the quality of programs, inform prospective students and their parents, and provide evidence of accountability[1]. There are many different types of educational assessments, such as standardized, performance-based, norm- versus criterion-referenced, and alternative (i.e. essays, interviews, observations, etc.), and all assessments must be either formative or summative. Aside from the alternative assessment, observation, many of the other types of assessments are question-answer based and they are given in formats such as multiple-choice exams, essay questions, surveys, or interviews.

Summative assessments should be given periodically to determine, at a particular point in time, what students do and do not know. Formative assessments should be ongoing and incorporated into classroom practice in order to improve teaching and learning. Successful teacher assessors carefully select or create the right assessment at the right time in order to inform instruction and support the learner, thoughtfully administering the assessment with the least disruption to the ongoing learning in the classroom[2].

Students of all levels take many different types of tests each year. According to a study performed during the 2014 - 2015 school year, students will take an average of 112 standardized tests from kindergarten through eight grade[3]That number only includes the state or district mandated tests, it does not include classroom or district administered assessments. With all of these assessments, there must be new questions written. For standardized tests, many educators from across the nation or state write and review questions collectively but there is not an online tool that allows them to collaborate easily. For classroom level tests, educators would save much more time and energy if they could share test questions nation-wide on a particular topic (i.e. Literature educators can share questions for specific novels). Sharing assessment questions for summative and formative exams will help educators collectively create large question banks for many subjects, standardize curriculums, and ask the better questions.

Existing Solutions

There are some solutions similar to what I want to propose, they are considered curriculum-sharing websites. Must of these websites, such as curriki.org, lets educators share their curriculums and resources with each other, but are targeted towards K-12 teachers. Others, such as Schmoop.com, allow educators for all grade levels to buy and sell their assignments and activities. There are also many other tools available for student engagement. Socrative.com, in particular, uses on-the-fly questions to quickly assess students. Educators can create their own question banks

to use freely, but cannot share with other educators. I was unable to find a tool that helps educators collaborate to build large, robust question banks on a variety of topics.

Project Proposal

I will create a question authoring and collaboration tool for educators. The tool will be a web application, accessible only by email invite. Invited educators may join (upon request) existing groups or they may start their own group for formative or summative tests (i.e., "5th Grade World War II" or "High school *To Kill a Mocking Bird*"). The tool will allow educators to author multiple-choice or open-ended questions that can be used for assessments. The questions will be visible to all group members. All group members will have the ability to read, rate, comment on, tag, or export any of the questions for use. Further down the road, I'd like the system to be able to collect performance data on questions. Due to time constraints, I will not be able to implement a way for users to create new groups in the first rollout (final project). The final project will be an advanced prototype, which I expect to use for a pilot study with a select group of educators.

Technical description

The proposed project will be built using the tools and languages in the table below.

Item	Tool	Language/Framework
Wireframes	Moqups	
Backend	IDE: NetBeans	Java/Groovy/Grails (3.2.0)
Frontend		HTML5/CSS3/Bootstrap
Database		GORM
Hosting	Heroku	
Other Support	GitHub	

Tasks and Schedules

Task List

This project will require approximately 100 hours of effort. About 25 hours are dedicated to the following non-technical tasks:

- 8 Weekly Status reports
- Requirements Document
- Wireframes

- Low-Fidelity Prototype
- Final Paper and Presentation

The other 75 hours are dedicated to the Function prototype and building the web application, this includes the following tasks:

- Building the user log-in page
- Building the user dashboard
- Building the question database with CRUD
- Build user function to tag questions
- Build user function to export questions
- Front-end design
- Testing

Weekly Milestones Calendar

Week	Description	Deliverables
October 10th – October 16th	Review Grails tutorials. Set up the working environment in NetBeans. Write the requirements document.	Weekly status report #1 Requirements document
October 17th – October 23rd	Compile low-fidelity prototypes and wireframes. Start to build Login page.	Weekly status report #2 Wireframes
October 24th – October 30th	Complete Login page. Begin building user dashboard.	Weekly status report #3 Intermediate Milestone #1
October 31st – November 6th	Complete user dashboard, including a secure way to access groups (possible an access code). Begin building question database.	Weekly status report #4 Working app
November 7th – November 13th	Complete building database and start on 'add questions' page.	Weekly status report #5
November 14th – November 20th	At the end of this week, users are able to add multiple choice questions to the database. Build page that allows users to view and rate other questions.	Weekly status report #6 Intermediate Milestone #2
November 21st- November 27th	Build export capability, build a tagging feature (if time allows). Start final testing.	Weekly status report #7
November 28th – December 4th	Front-end, make it visually appealing. Finish final testing. Host on Heroku.	Weekly status report #8 Final tool 99% complete
December 5th- December 11th	Final touches. Prepare the presentation and final paper.	Final paper and presentation Final tool complete

Intermediate Milestones

Intermediate Milestone #1: Due October 30, 2016: Low-Fidelity Prototype.

For this milestone, I will deliver wireframes with descriptions for each page- Login, dashboard, adding a question, rating questions, viewing questions, tagging questions, exporting questions.

Intermediate Milestone #2: Due November 20, 2016: Functional Prototype.

For this milestone, I will deliver a functional prototype that allows the user to login and view/add questions to the database at a minimum.

Risk and Fallback Plans

A risk of this project may be that I am inexperienced with backend development and may fall behind the proposed schedule. If this happens, I will cut out the time I set aside to make the front-end of the web-app visually appealing and use the extra week to implement functionality. If I am still behind, I will eliminate the ability to tag questions.

References

1. Redesigning Higher Education: Producing Dramatic Gains in Student Learning by Lion F. Gardiner; ASHE-ERIC Higher Education Report Volume 23, No. 7, p. 109

2. Serafini, F. (2010). Classroom reading assessments: More efficient ways to view and evaluate your learners. Portsmouth, NH: Heinemann.

3. Study Reveals How Many Required Tests Students Take. CBS. October 26, 2015. http://www.cbsnews.com/news/study-reveals-how-many-required-tests-students-take/.