

QUIZ FACTORY SOFTWARE SPECIFICATION

Problem

High school and middle school teachers spend a considerable amount of time writing exams. This process is slow because it is difficult to create original questions, to find good quality questions that are already written, and to create multiple versions of a test to prevent cheating. It is even difficult to reuse previous exams because there is not a clean method of storing them.

Current Solutions

- Textbooks.
Exams provided in textbooks are often low quality and are of a limited quantity. Often the questions, being fact-based, are too simple.
- Canned Tests.
Canned exams are of variable quality. Because the instructor does not teach to the test, the exam may test on material not covered in the course.

Proposed Solution

This software will solve the aforementioned problems. To ease the test-creation process, the software will collect and categorize questions from a community of teachers, allowing teachers to search a database for questions to use in their exams. Using the power of the community, questions will be moderated by the users. The system will be driven by public content, so users will be able to find a variety of questions on various subjects. Users will be able to share private information by connecting with other trusted users.

To ease test administering, the system will allow users to administer their tests online. This feature will allow exams to be graded automatically, resulting in a detailed diagnostics tool for assessing performance. A mobile component will offer students total ease and privacy when completing their exams via a phone or tablet device. Teachers will also be able to use the mobile application to interact with all features of the website.

Proposed Features

- User Profile.
 - **Creating.** Users can easily register with the website by paying a nominal yearly fee. On registering with the site, the user will be required to give various pieces of information about themselves which will be used later by the system.
 - **Organizing.**
The private profile offers tools for organizing exams, questions objects, instructions, and general site activity. This profile is where classes, questions, and exams are created and stored, allowing quick and easy retrieval. To maximize efficiency, previously used questions can be easily searched to salvage useful

questions for new exams. Question usage will be tracked, so users will be able to see where that question has been used before.

- **Connecting.**

As a social component to the website, users will be allowed to connect with other users. Users that are connected will be able to share private data that other users cannot see, e.g. exams. Connected users may search for content by user name. This is unique to connected users.

- **Achievements.**

Users will be given individual achievements based upon various things such as site activity and question popularity. Statistics about each user will be displayed on the user's profile.

- **Privacy.**

All new content is automatically made public, but users may change the default and keep some information private. Exams are always private. Private exams and questions can always be viewed by friends. Student grades are always private and cannot be seen by connected users but only administrators.

- **Questions.** A question is composed of a question stem grouped with suggested correct answers and suggested distracters, incorrect answers. Short answer question types do not have suggested incorrect answers.

- **Creating.**

- **Text Question Types.** Questions may be plain text, but they may also contain attachments (pictures, diagrams, etc.) Many diagrams may be attached to a single question.
 - Multiple Choice – several possible answers but can only select one options
 - Multiple Response – several possible answers and can select many. NOTE: The distinction between multiple choice and multiple response is invisible to the user when creating a question and is only made when creating an exam.
 - True/False
 - Matching - Questions of this type have a set of items that are matched to another set of items. One or more items in the first set may be mapped to a single item in the second set.
 - Open Answer - Examples are short answer, essay, or fill in the blank. Rather than definite answers, these questions have suggested answers.
- **Object Question Types.** User's may upload an "object" such as an image or video clip to ask questions about. Here multiple text questions may be attached to a single object, differentiating it from the standard text question types that allow attaching multiple diagrams to a single question.
 - Diagram
 - Video

- Audio
- Text Passage
- Other Question Types
- Word Bank.

Allows users to match words in a word bank to blanks in a passage or group of sentences.

○ ***Tagging.***

When adding a new question, it can be tagged with keywords that will make it more easily searched for by other members of the website. Based upon previously entered information, the software may provide suggested tags.

○ ***Metadata.***

For each question added, the following optional metadata will be attached: grade level, subject, difficulty, user class (or global class). Other information will be attached automatically such as ratings and popularity.

○ ***Formatting.***

Questions will be formatted with a WYSIWYG editor in the browser.

○ ***Importing.***

For automatic question detection when uploading, the questions will need to conform to a standard test bank format like GIFT. Otherwise, the user will be required to manually enter individual questions.

○ ***Searching.***

Users may search by keyword(s), by tag(s), by grade-level, and by subject. Users may NOT search by user to find all questions by a particular user unless the users are connected. After a search, tags will be suggested to extend the search.

▪ **Positive Tags.**

Users may specify certain tags for which to search the database of questions.

▪ **Negative Tags.**

Some tags may be undesirable in the search, so users will be allowed to block specific tags.

○ ***Adding Variations.***

Questions that are considered by users to be variations of the same question are grouped together for convenience. Variations can be given a quality rating. Users may manually add variations if they want to change the wording of a question.

○ ***Unrelated Variations.***

If a variation is deemed unrelated to the others, it can be moved to a separate question altogether. All answers associated with the given variation are copied to the new question but also remain with the other variations.

○ ***Duplicate Questions.***

Duplicate questions are not entered twice.

○ ***Commenting.***

If users wish to comment on the quality of a group of variations or answers, they

may post comments on the given group of questions. This feature will encourage quality content.

- ***Rating.***

Users will be able to “bump” questions or answers they think are quality, giving those questions or answers higher search relevance. In the case of a low quality question or answer, users may “de-bump” it. The idea is to make the website self-managing, so high-quality content will be displayed before low-quality content.

- ***Moderating.***

Because of the high volume of input, moderating will be done by the users. A “flag” button will be available for users to mark any content as offensive or obviously obnoxious.

- ***Tooltips.***

Even teachers may have a problem with some of the jargon, so tooltips will be in place to clarify possibly obscure definitions. Users will place their mouse over a problem phrase and quickly get a definition.

- Exams.

- ***Creating.***

- **Assigning Questions.**

- Users may easily assign desirable questions to one or to many exams.

- **Question Point Values.**

- For exam questions that are more difficult than others, users will be allowed to add point values to each question. These point values may only be used for the automatic grading system or they may be reflected in the chosen template when exporting. Default point values will be given but may be changed by the user.

- **Exam Instructions.**

- Users can append instructions to their exams when creating them. Instructions are components of an exam that can be placed in an exam and linked with specific questions. Instructions are completely private and can only be seen by connected users. Instructions may also have metadata, allowing users to search for instructions.

- **Scrambling.**

- A scrambling feature will be available to logically rearrange exam questions to create different versions of the same exam. Scrambling takes into account links between questions and instructions or questions and objects.

- **Complex Scrambling.**

- Scrambling can turn into a sorting mechanism with various options.

- **Copying.**

- New exams may be created from old tests by copying them.

- ***Formatting.***
 Formatting will be done in the browser with a WYSIWYG editor.
 - Format test (chosen from template)
 - Format answer sheet (chosen from template)
- ***Exporting.***
 Users will be able to easily print created exams from the website or download the document in Rich Text Format (.rtf) and print it themselves. This format provides the necessary formatting capabilities and the ability to embed images.
- ***Grading.***
 Users will be able to manually add test performance statistics to the system even before online testing is available.
- Test Administration.
 - ***Online Administration.***
 Students will access online tests with simple URLs. Tests will be given timing options, so students must complete the exam within certain time periods or so students must take no longer than a particular time. These settings may be changed in real-time. Users will be allowed to print the completed exams or grade them online.
 - **Automatic Grading.**
 - **Essay Correction.**
 Tools will be provided for correcting open answer questions online.
 - **Grade Exporting.**
 Grades can be exported to various formats to be imported easily into other grade book applications.
- Administrators.
 Designated school administrators will have access to private information related to completed student exams and student grades. Administrators can grant more permission to particular users.
- Message Board.
 This feature will allow users to start general discussions not relating to particular questions. A simple mechanism will be put in place so users can easily link to questions.

- Mobile Application.
 - ***For Teachers.***
Teachers may use the mobile platform to browse the question database, manage their profiles, and grade exams. Full-featured usage is the ultimate goal.
 - ***For Students.***
Students may use the mobile platform as a testing tool for taking online exams. Using the platform, students will also be able to view their grades, see previous exams, and view teacher comments on assignments.
- Student Profile.
Students will be able to organize their homework online.
- General Storage.
Users will be able to use the system as a file storage mechanism to not only store questions and exams but also lesson plans, rubrics, etc.
- Plagiarism Detection.
This tool will allow teachers to compare students' work to detect plagiarism.
- Grade Book Application.
Teachers will be able to track student grades online.

Proposed Versions

- Version 1.0 – Due: June 2013.
 - ***Version 0.1.***
 - **User Profiles.**
 - *Creating.*
Users can easily register with the website by paying a nominal yearly fee. On registering with the site, the user will be required to give various pieces of information about themselves which will be used later by the system.
 - *Achievements.*
Basic achievements will be available at this point.
 - *Privacy.*
All new content is automatically made public, but users may change the default and keep some information private. Exams are always private. Private exams and questions can always be viewed by friends.
 - **Creating Questions.**
A question is composed of a question stem grouped with suggested correct answers and suggested distracters, incorrect answers. Short answer question types do not have suggested incorrect answers.

- *Types available:*
 - Multiple Choice – several possible answers but can only select one options
 - Multiple Response – several possible answers and can select many
NOTE: The distinction between multiple choice and multiple response is invisible to the user when creating a question
 - True/False
- **Tagging.**
When adding a new question, it can be tagged with keywords that will make it more easily searched for by other members of the website.
- **Other Metadata.**
For each question added, the following optional metadata will be attached: grade level, subject, difficulty, user class (or universally-recognized class).
- Version 0.2.
 - **Questions.**
 - *Types:*
 - Matching.
Questions of this type have a set of items that are matched to another set of items. One or more items in the first set may be mapped to a single item in the second set.
 - Open Answer.
Examples are short answer, essay, or fill in the blank. Rather than definite answers, these questions have suggested answers.
 - *Formatting.*
Questions will be formatted with a WYSIWYG editor in the browser.
 - *Rating.*
Users will be able to “bump” questions or answers they think are quality, giving those questions or answers higher search relevance. In the case of a low quality question or answer, users may “de-bump” it. The idea is to make the website self-managing, so high-quality content will be displayed before low-quality content.
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questions can be easily searched to salvage useful questions for new exams. Question usage will be tracked, so users will be able to see where that question has been used before.

- *Connecting.*

As a social component to the website, users will be allowed to connect with other users. Users that are connected will be able to share private data that other users cannot see, e.g. exams.

Connected users may search for content by user name. This is unique to connected users.

- *Achievements.*

More achievements will be made available in this version.

- **Searching.**

Users may search by keyword(s), by tag(s), by grade-level, and by subject. Users may NOT search by user to find all questions by a particular user unless the users are connected. After a search, tags will be suggested to extend the search.

- *Positive Tags.*

Users may specify certain tags for which to search the database of questions.

- *Negative Tags.*

Some tags may be undesirable in the search, so users will be allowed to block specific tags.

- **Creating Exams.**

- *Assigning Questions.*

Users may easily assign desirable questions to one or to many exams.

- *Exporting.*

Users will be able to easily print created exams from the website or download the document in Rich Text Format (.rtf) and print it themselves. This format provides the necessary formatting capabilities and the ability to embed images.

- Version 0.3.

- **Questions**

- *Object Types.*

User's may upload an "object" such as an image or video clip to ask questions about. Here multiple text questions may be attached to a single object, differentiating it from the standard text question types that allow attaching multiple diagrams to a single question.

- Diagram

- Text Passage

- *Importing.*

For automatic question detection when uploading, the questions will need to conform to a standard test bank format like GIFT.

Otherwise, the user will be required to manually enter individual questions.

- *Commenting.*

If users wish to comment on the quality of a group of variations or answers, they may post comments on the given group of questions. This feature will encourage quality content.

- *Moderating.*

Because of the high volume of input, moderating will be done by the users. A “flag” button will be available for users to mark any content as offensive or obviously obnoxious.

- **Creating Exams.**

- *Question Point Values.*

For exam questions that are more difficult than others, users will be allowed to add point values to each question. These point values may only be used for the automatic grading system or they may be reflected in the chosen template when exporting. Default point values will be given but may be changed by the user.

- *Exam Instructions.*

Users can append instructions to their exams when creating them. Instructions are components of an exam that can be placed in an exam and linked with specific questions. Instructions are completely private and can only be seen by connected users. Instructions may also have metadata, allowing users to search for instructions.

- *Scrambling.*

A scrambling feature will be available to logically rearrange exam questions to create different versions of the same exam.

Scrambling takes into account links between questions and instructions or questions and objects.

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Scrambling can turn into a sorting mechanism with various options.

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Users will be able to manually add test performance statistics to the system even before online testing is available.

- *Formatting.*

Formatting will be done in the browser with a WYSIWYG editor.

- Format test (chosen from template)

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- **Message Board.**

This feature will allow users to start general discussions not relating to

particular questions. A simple mechanism will be put in place so users can easily link to questions.

- **Mobile Application for Teachers.** Teachers may use the mobile platform to browse the question database, manage their profiles, and grade exams.

- **Tooltips.**

Even teachers may have a problem with some of the jargon, so tooltips will be in place to clarify possibly obscure definitions. Users will place their mouse over a problem phrase and quickly get its definition.

- **Version 2.0 – Due: June 2014.**

- Questions:

- **Object Types:**

- *Audio*
 - *Video*

- **Other Question Types**

- *Word Bank.*

Allows users to match words in a word bank to blanks in a passage or group of sentences.

- Test Administration

- **Online Administration.**

Students will access online tests with simple URLs. Tests will be given timing options, so students must complete the exam within certain time periods or so students must take no longer than a particular time. These settings may be changed in real-time. Users will be allowed to print the completed exams or grade them online.

- *Automatic Grading*
 - *Essay Correction.*

Tools will be provided for correcting open answer questions online.

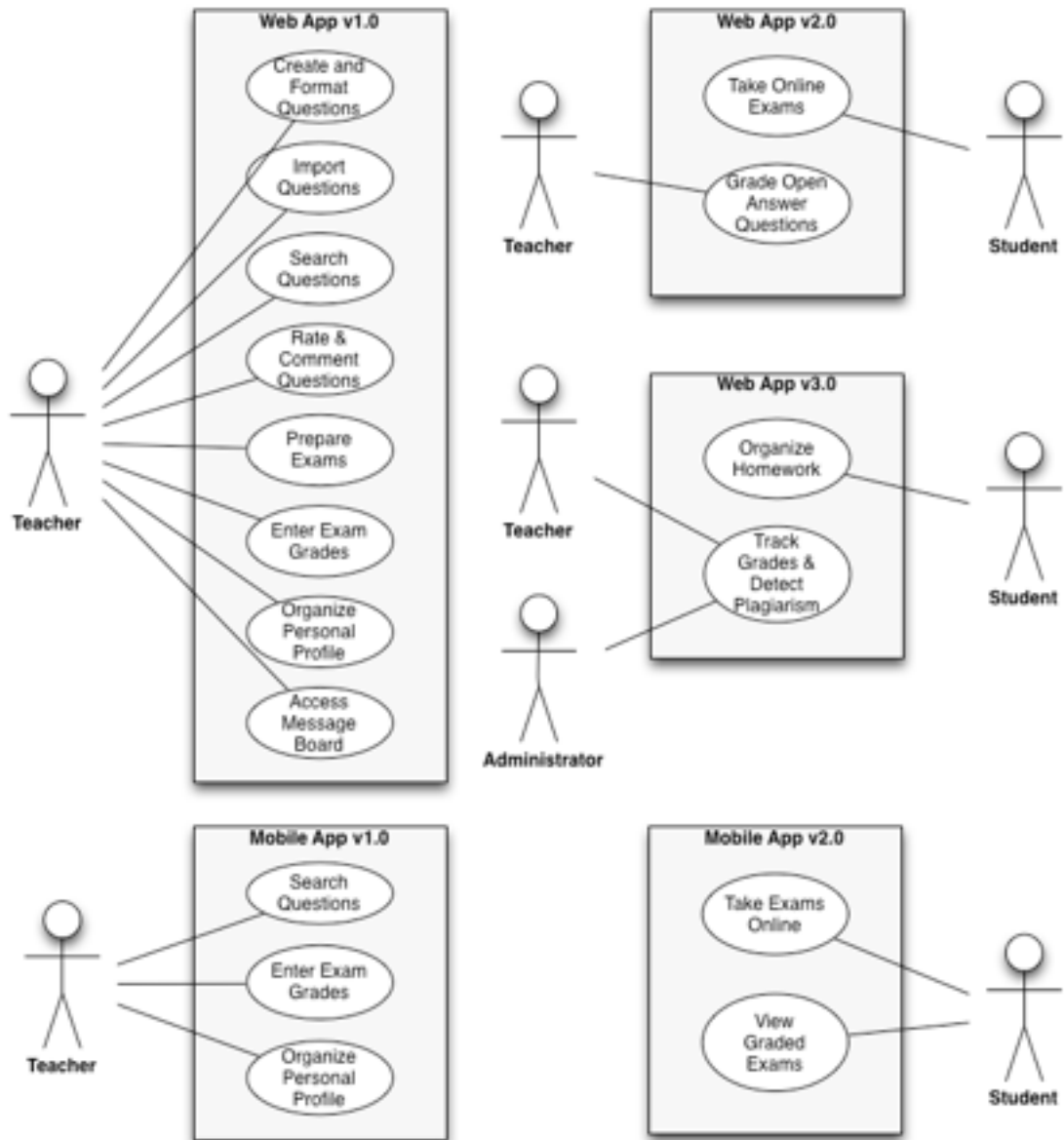
- Mobile Application

- **For Students.**

Students may use the mobile platform as a testing tool for taking online exams. Using the platform, students will also be able to view their grades, see previous exams, and view teacher comments on assignments.

- **Version 3.0 – Future Releases.**

- Administrators. Designated school administrators will have access to private information related to completed student exams and student grades.
Administrators can grant more permission to particular users.
- Student Profile. Students will be able to organize their homework online.
- General Storage. Users will be able to use the system as a file storage mechanism to not only store questions and exams but also lesson plans, rubrics, etc.
- Plagiarism Detection. This tool will allow teachers to compare students' work to detect plagiarism.
- Grade Book Application. Teachers will be able to track student grades online.



Name	Enter Exam Grades
Description	Before online testing is available, teachers will be able to enter exam grades manually. This feature will allow teachers to track the difficulty of problems.
Primary Actor	Teacher
Precondition	User must be logged in and have created at least one exam.
Trigger	While viewing exams, the user clicks the "enter grades" button next to the desired exam.
Basic Flow	The user selects an exam for which to enter grades. Clicking the "enter grades" button takes the user to a grade entry form. Now the user must enter the total number of students who took the exam before moving on. Next to each question is an input box where the user may enter the number of students who got that question correct. After inputting all grades, the user clicks the "submit" button. All grades are then saved, and the user is returned to viewing exams.
Alternate Flows	Before providing grades for all problems, the user clicks the "submit" button. The grades that are provided are saved to the database, and the user is returned to viewing exams. At a later time, the user may return to enter the remaining grades.
	Connection to the page is lost before the "submit" button is clicked. All information is lost.
	Instead of clicking the "submit" button, "cancel" is clicked. The user is returned to viewing exams, and all grades are unsaved.

Name	Access Message Board
Description	A message board will be available for users to discuss various topics related to teaching.
Primary Actor	Teacher
Precondition	User must be logged in.
Trigger	Navigating to the message board is done by following the "message board" link in the primary site navigation.
Basic Flow	Upon entering the message board page, the user initially sees a list of available discussion topics. Clicking one of these topics takes the user to a page listing the discussions under that topic. The most recent discussions are displayed first. Each discussion is a user's post and replies to that post. In the discussions view, users may add a new discussion by clicking the appropriate button. Alternately, they may reply to an existing discussion by clicking that discussion and clicking the "reply" button. For this project, a third-party message board will be used, so it will contain all the common message board features.
Alternate Flows	

Name	Create and Format Questions
Description	Users can enter and save their exam questions on the website for easy storage and later retrieval.
Primary Actor	Teacher
Precondition	User must be logged in.
Trigger	While viewing the user's profile, the user clicks the "add" button in the "questions" block to add a new question.
Basic Flow	The add button takes the user to a question creation form. Here the user selects the type of question they wish to create: multiple choice, multiple-response, true/false, matching, open answer, diagram, or text passage. Depending on which type is selected, a form will be automatically created with the required input fields such as question stem, correct answers, and distractors. The top of the page will have a form for inputting metadata about the question. This form will be displayed constantly because it is independent of the question type. Example fields in this form are "grade level", "related tags", and "class". Input will be easily formatted with a WYSIWYG editor in the browser. Once all the required fields are completed, the user clicks the "submit" button, saving all the information and returning the user to their profile page. Here the user can see their newly added question. Not only is the question saved for that user, but depending on the privacy settings, the question is consumed by the database and made available to all users.
Alternate Flows	Instead of clicking the "submit button, "cancel" is clicked. The user is returned to their profile, and all grades are unsaved.
	The user clicks the "submit" button without completing all the required fields. No data is saved, and the user is left on the question creation page with all the incomplete fields highlighted.

Name	Search Questions
Description	Along with storing their own questions, users may search the site's database of questions uploaded by all users.
Primary Actor	Teacher
Precondition	User must be logged in.
Trigger	To search their own questions, the user can enter their query in the search box atop their personal profile. Alternately, to search the global database of questions, the user can enter their query in the search box in the primary site navigation. Either way, the basic flow is the same.
Basic Flow	The user starts by entering their search terms in the search box and clicking the "search" button. Queries can consist of any metadata associated with questions because metadata will be searched along with the actual content of a question. A new page is displayed where the user can sort through the results. Questions are displayed in the center-right column while the search terms are shown in the left column where the user may modify their query. Additional search conditions will be available in this column. Users will be able to limit the search to only questions suited for a specific grade, for a specific subject, or for any specific metadata. As the user selects new options, the search results are filtered as necessary. To discard unwanted results, users may also specify certain tags as undesirable so that questions marked with those tags are eliminated from the results. The user may remove the extra conditions at any time to restore the original results. Questions are displayed with their question stem only; if the user wishes to see more of that question, they can click the question.
Alternate Flows	No results are found for the given search conditions. Instead of results, a simple message will be displayed, informing the user of the issue.

Name	Prepare Exams
Description	The primary purpose of this site is to make it easier for teachers to prepare exams. Using their own questions or questions uploaded by others, users will be able to easily create, reuse, and export exams.
Primary Actor	Teacher
Precondition	User must be logged in.
Trigger	Two options are available for creating new exams. First, the user may click the "add" button in the "exam" block of the personal profile. Second, the user may select the "new exam" link from the pop-up menu next to any question when searching for questions.
Basic Flow	In the personal profile, the user may select the "add" button in the page's "exam" block which will open the exam creation page where the user can enter information about the exam, grade level, subject, etc. The only required information is a unique exam name. Once the user is satisfied with the information, they can click the "submit" button which will save their new exam and return them to the profile view. The user can start adding questions to the exam once it is created. While browsing questions, the user can mouse-over the "add to exam" button next to any question. This action will bring up a menu with a list of all the exams for that user with the newest exams listed first. The last option in this list will be "add new exam" which will take the user to the exam creation page. Once the user has completed that form or the user has selected an exam, they are taken to a page displaying that question's variations and possible answers. Here the user can select which stem variation and which answers they would like to use. They can then select "submit" to save that question to the specified exam and return to browsing questions.
Alternate Flows	The user clicks "cancel" while creating a new exam. The user is simply returned to whichever view they were at before creating the exam--either their personal profile or the question browsing.
	The user clicks "cancel" while adding a question to an exam. No data is saved to the exam, and the user is returned to browsing questions.

Name	View/Edit/Export Exams
Description	Once an exam is created, the user is able to manipulate that exam from their user profile.
Primary Actor	Teacher
Precondition	User must be logged in. At least one exam must be created.
Trigger	(various)
Basic Flow	While viewing their personal profile, the user may view a list of exams they have created in the "exam" block. Clicking on each exam name will take the user to a more detailed view of that exam, what questions are on the exam, and what the exam looks like. Here the user may rearrange the order of the questions and remove questions. When the exam is complete, the user may download the exam by clicking the "download" button. The exam will be exported to an RTF (rich text format) file and downloaded to the user's computer.
Alternate Flows	The user is disconnected while editing an exam. All changes are saved, so the user can easily return and finish working.

Name	Rate & Comment Questions
Description	While users are browsing questions, they are able to give ratings to questions and answers. They are also able to comment on questions.
Primary Actor	Teacher
Precondition	User must be logged in. A question must exist.
Trigger	While browsing questions, the user clicks the "bump" button next to a question to rate it. The user is also able to click the "comment" button to add a comment to the question.
Basic Flow	The user likes a question and clicks the "bump" button next to that question. The total rating for that question goes up by one vote which increases it's search relevance. On the other hand, if a user rates the question down, it decreases it's search relevance. If a user is exceptionally passionate about a question, they can add a comment by clicking the "comment" button next to the question, opening a pop-up window where the user can submit their comment.
Alternate Flows	The user decides later they do not like a question that they rated well earlier. Simply rating the same question down will erase the previous up vote and add another down vote. This functionality also works for the opposite action.

Name	Organize Personal Profile
Description	Upon logging into the website, the first view will be the user's personal profile. It is here that users can manage their exams, questions, and friends.
Primary Actor	Teacher
Precondition	User must be logged in.
Trigger	User clicks one of the various buttons on the profile page for adding/modifying/deleting content.
Basic Flow	The user signs in to the website to view their personal profile. Here will be exams, questions, friends, and recent activity. Using the various add/edit/delete buttons, users may customize their profile. The profile will display a list of questions that the user either used or uploaded him/herself. Here the user can rate questions, remove questions, add questions to exams, and comment on questions. Personal information will be attached to each question, showing how often that particular user has used that question and how difficult it has been for students of that particular user. Exams will also be listed where the user can create new exams or manage existing ones. Also displayed on the profile are the user's friends and the user's achievements. The user may not change their achievements but may only view the statistics. Friends may be unfriended and new friends may be added from here as well.
Alternate Flows	A section is void of content, i.e. the user has not created any exams or the user has not had any achievements. In this case, the block will be empty with an appropriate message displaying why the block is empty.
	A question or multiple questions have not yet been rated or been given a difficulty by the user. The average community rating and average difficulty will be displayed instead.

Name	Import Questions
Description	To build their database of questions, users can upload their questions in a few standard question-file formats like GIFT.
Primary Actor	Teacher
Precondition	User must be logged in.
Trigger	The user clicks the "import" button on their main profile page under the "question" block.
Basic Flow	<p>This action takes the user to the question import page. Here the user is presented with a list of acceptable file formats that can be imported. After selecting the desired file format, the user is able to browse for and upload a file from their computer. This file is then parsed, and the resulting questions are displayed in a new page along with form input boxes above the question and next to each question. Input boxes are for the user to input metadata about the questions in general or for individual questions. As aforementioned, the same metadata applies. If the questions are acceptable to the user, they can choose to cancel, save and quit, or save and upload another file, continuing the process. When a file is saved, the questions are saved to the user's personal profile. The questions are also added to the public question database if the user's default privacy settings are set to public.</p>
Alternate Flows	The uploaded file is corrupted or invalid. An error message is displayed to the user.
	Instead of savings, the user cancels the upload when viewing the resulting questions. The user is returned to their personal profile.

Name	Take Online Exams
Description	Teachers will soon be able to use this website as a tool for administering exams as well as preparing them. Students will be able to take the exams on any personal computer or mobile device.
Primary Actor	Student
Precondition	Student must have created an account and be logged in. The teacher must have created and opened an exam. To open an exam, the teacher should click the "open" menu item while viewing the appropriate exam. If the teacher specified a timed test or a specific time period that the test would be available, the student may only take the test within those time limits.
Trigger	Student clicks the "view exam" button on their profile page after logging in.
Basic Flow	After clicking the "view exam" button, the student is taken to the exam administration page. Here they will see detailed information about the exam and possibly instructions. It is important to note that the student has not officially begun the test at this point; this is important if the test is timed. Because the exam has not officially begun, the student may cancel and return to their profile. To begin the exam, the student may click the "start test" button. Each question of the exam is then presented to the student one at a time. The student enters their answer to the question and clicks the "next" button to continue with the test. A progress bar will be displayed at the top of each page. When the exam is completed, a list of each question will be displayed next to a graphical representation of that question's status--complete, incomplete, or marked. Each question is linked to the full question where it can be answered or the answer can be changed. Once the exam is complete, the student can click the "submit" button on the final page, returning the user to their profile. The "submit" button marks the exam as finished, and it cannot be started again.
Alternate Flows	Because the student does not know the answer to a question, they skip it without answering. The question is simply marked as incomplete, and the student can return to the question later.
	While taking the exam, the student decides to leave and come back or the student is disconnected. All questions that have been answered are saved. The student is returned to their last incomplete question when they resume the exam.

Name	Grade Open Answer Questions
Description	Open answer question types must be graded manually, but this website will have tools to make the process less arduous. Using the online tools, teachers will be able to mark-up, comment, and return open answer responses entirely online.
Primary Actor	Teacher
Precondition	User must be logged in. An exam must have been created, opened, and completed by at least one student. Partially completed exams cannot be graded.
Trigger	While viewing an exam, students that have completed the exam are listed in the right column. The user can simply click the "grade" link next to a name to grade that exam.
Basic Flow	After clicking the "grade" link, the user is taken directly to the first ungraded open answer question as the other question types will have been graded already. A tool menu will be available on the side with common editing tools. One of the options will be a "free-form" option that will allow the user to draw on the page using either a mouse or stylus on a touch-screen device. Once the user is satisfied with the comments, they give the student a grade for the question and continue to grade the remaining questions. After all questions have been graded, the user selects the "release" button, allowing the student to see the graded exam. If the user wants to return to the exam later, they do not have to release it immediately.

Name	Organize Homework
Description	To increase the usefulness of the website to students, students with accounts will be able to organize their own files using the website.
Primary Actor	Student
Precondition	User must be logged in.
Trigger	The user clicks the various buttons on their profile for adding/modifying/deleting content.
Basic Flow	A student's profile consists of completed assignments, upcoming assignments, and personal files. Assignments that were added by the instructor cannot be deleted by the student. Content uploaded by the student, however, can be deleted. As a result, the personal files block will have options to upload new files, remove existing files, and view existing files. When uploading new files, students can specify metadata for each file to categorize it, making it easily searched later. This metadata will consist of the following information: class, type (homework, exam, etc.), and due date if applicable. Using the due date field, the website will sort assignments by the most urgent on the profile pages. In the completed assignments section, students may view (but not edit or delete) completed exams or homework assignments. The student may also see comments made by the teacher if the teacher has completed grading and released the assignment. Opened exams that are incomplete will also appear in the upcoming assignments section. To take or continue taking the exam, the student simply needs to click the exam link.
Alternate Flows	A user attempts to upload a file that is too large. The file will not be uploaded; an error message will be displayed to the user instead with the size restrictions in bold.

Name	Track Grades & Detect Plagiarism
Description	These are useful tools for teachers and school administrators to manage student grades and student work.
Primary Actor	Teacher or Administrator
Precondition	User must be logged in.
Trigger	The user clicks the "grades" button in the primary navigation. To access the plagiarism checks, the user can click the "copy check" button while grading an assignment.
Basic Flow	On the user's personal profile, they can look at student grades by following the "grades" button in the primary navigation menu. This action takes the user to a grade report page. Here the user can see statistics for virtually anything the user could request: current students, previous students, specific exams, specific students, and more. Grades cannot be changed here but only viewed. While grading assignments, teachers also have the option to check work for plagiarism. The grading page will have a "copy check" button that will check that student's work against our large database of other work to see if it was copied and how much was copied. Grades of plagiarized work will be left to the discretion of the teacher.
Alternate Flows	