Participative Assignment Marking System – Usage Narratives

Purpose

This document records the requirements for an assignment marking system.

A significant problem in large scale education is marking assignments. The logistics of distributing assignments to markers and ensuring that marking is completed in a timely manner can present a considerable administrative burden. Additionally encouraging fair and informative marking and generally improving the standard of marking can be a significant task that simply becomes too hard on a large scale.

This system is intended to encourage improved performance by all participants by having everyone rate the performance of each person or object they deal with.

- Students rate the assignment for usefulness (did the students learn something), fairness, understandability.
- Students rate their marker for the fairness an informativeness of their marks.
- Markers rate the students assignments by marking them.
- Markers rate the rubric for its understandability and ease of marking.
- Subject Coordinators rate the markers for timeliness or efficiency

Other ratings may be introduced as experience with the system increases.

Over time there should be a tendency for better markers, better assignments and better rubrics to acquire better ratings.

The system should have various ways to allocate unmarked assignments to markers, distribute the assignments, collect marks and return feedback to the students.

Scope

This document records information about the objects and their properties, the relationships between them and the expected usage of a system for specifying, submitting and marking academic assignments. The main requirements for the system are;

- Manage the logistics of submitting, distributing and marking assignments.
- Manage marks awarded for each assignment.
- Manage performance or other ratings by participants of other participants or system objects such as the assignment or the rubric.

Out of Scope

- The system will not manage any of the HR functions such as recruitment or payment.
- The system will not manage student enrolments.

Intended Audience

This document is intended for stakeholders of this system, mainly students, subject coordinators, system administrators, markers, tutors and developers.

It is also intended for those institutions who may want to know of its intended functionality.

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Terms and definitions

Assessment Item	A template for an assignment that records the unchanging information about the assignment.
Assignment	An instantiated assessment item. Information that may be specified include the start date, due date, total marks or percentage allocated to the assignment.
Rubric	"a scoring guide used to evaluate the quality of students' constructed responses". Rubrics usually contain evaluative criteria, quality definitions for those criteria at particular levels of achievement, and a scoring strategy.
Subject coordinator	A person who coordinates teaching activities.
Marker	A person who marks an assignment.
Tutor	A person who tutors a student.

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Assessment item

A subject coordinator wants to create a new assessment item. He develops the assessment item specification and instructions, storing drafts in the assessment item repository.

This system will record and maintain the following information about the assessment item;

- Description of the assessment task.
- Description of the assessment item output/deliverable artefact.
- Student knowledge and/or skills to be assessed.
- Marks or contribution to the final grade
- Type of assessment {report, presentation, performance, demonstration, artefact, …}
- Method of assessment {automated, assessor review, …}
- Estimated effort required to complete the assessment item.
- Mapping of this assessment to subject learning outcomes.
- Rubric (Assessment criteria, scale)

Drafts may be saved at any time during their creation.

The status of a new or revised assessment item specification remains as "Draft" until approved.

Functions

Create an assessment item.

Modify an assessment item.

Delete or remove an assessment item. A draft assessment item may be removed from the system. An assessment item that has progressed beyond draft is not removed from the system but will be removed from view. Hidden assessment items can be resurrected.

Copy an assessment item. Subject coordinator wants to copy and assessment item prior to modifying it.

Publish an assessment item. Make an assessment item available to different audiences;

- All students in a nominated subject.
- All or selected assessors.
- All or selected subject coordinators
- All or selected or nominated reviewer

Workflow

Draft -> Published.

Exceptions

Assessment item specification is not completed in the one session. Subject coordinator needs to revise it or complete it.

Assessment item specification needs to be revised while still in draft.

Assessment item specification needs to be revised after release (publication).

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Assessment item specification needs to be revised after some submissions have been received.

Expansions

The University imposes a workflow that requires all assessment items to be reviewed and approved prior to release. Draft -> reviewed ->published

Record the qualifications, experience, skills required of assessors for this assessment item. For example, they may need to have an undergraduate degree in electrical engineering, have minimum of 5 years industry experience, have acceptable communication skills.

Provide the means to export an assessment item, preferably in XML format so that it can be imported again, possibly by a different subject coordinator.

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Rubric

Subject coordinator can create a rubric. Unlike an assessment item, a rubric should be contained within the system. See "Marking an assignment" for reasons why this is required.

There two general types of rubric: holistic and analytic.

Holistic rubric

An holistic rubric consists of a single scale with all criteria to be included in the evaluation being considered together (e.g., clarity, organization, and mechanics). With an holistic rubric the assessor assigns a single score (usually on a 1 to 4 or 1 to 6 point scale) based on an overall judgment of the student work. The assessor matches an entire piece of student work to a single description on the scale. An example of an holistic rubric is;

Assessment Levels	Description
0	There is nothing to assess.
1	The work has major deficiencies, is off topic or simply wrong. However, there is some work that should be acknowledged as correct and relevant.
2	The work is mostly correct but flawed in some way. Something is missing, something is incorrect, and something would badly distract the reader from the merits of the work.
3	The work is competent, credible, usable or satisfactory. While the work may not be robust enough to satisfy its specific requirements.
4	The work demonstrates mastery of analysis and showing good quality (more than satisfactory). The work sets out its objectives and how they are satisfied.
5	The work demonstrates mastery of complex analysis and alternatives, and is of a superior quality (more than good quality). Alternative ways of satisfying the objectives are presented, along with reason why the chosen alternative is the best in the situation.

Analytic rubric

An analytic rubric resembles a grid with the criteria for a student product listed in the leftmost column and with levels of performance listed across the top row often using numbers and/or descriptive tags. The cells within the centre of the rubric may be left blank or may contain descriptions of what the specified criteria look like for each level of performance. When scoring with an analytic rubric each of the criteria is scored individually.

An example of an analytic rubric is

	Needs improvement (1)	Developing (2)	Sufficient (3)	Above average (4)
Clarity (Thesis supported by relevant	The purpose of the student work is not well-defined.	The central purpose of the student work is identified. Ideas	The central purpose of the student work is clear and ideas	The central purpose of the student work is clear and

information and ideas.)	Central ideas are not focused to support the thesis. Thoughts appear disconnected.	are generally focused in a way that supports the thesis.	are almost always focused in a way that supports the thesis. Relevant details illustrate the author's ideas.	supporting ideas always are always well-focused. Details are relevant, enrich the work.
Organization (Sequencing of elements/ideas)	Information and ideas are poorly sequenced (the author jumps around). The audience has difficulty following the thread of thought.	Information and ideas are presented in an order that the audience can follow with minimum difficulty.	Information and ideas are presented in a logical sequence which is followed by the reader with little or no difficulty.	Information and ideas are presented in a logical sequence which flows naturally and is engaging to the audience.
Mechanics (Correctness of grammar and spelling)	There are five or more misspellings and/or systematic grammatical errors per page or 8 or more in the entire document. The readability of the work is seriously hampered by errors.	There are no more than four misspellings and/or systematic grammatical errors per page or six or more in the entire document. Errors distract from the work.	There are no more than three misspellings and/or grammatical errors per page and no more than five in the entire document. The readability of the work is minimally interrupted by errors.	There are no more than two misspelled words or grammatical errors in the document.

Workflow

Draft -> Published

Functions

Create a rubric.

Modify a rubric.

Copy a rubric. The subject coordinator wants to create a new rubric based on an existing rubric.

Publish a rubric. Make the rubric available to;

- Students in a subject
- Selected or all Assessors.
- Selected or all reviewers.
- Selected or all subject coordinators

Exceptions

Rubric is not completed in one session. Subject coordinator can develop the rubric over many sessions and drafts.

Modify a rubric after it has been published. Retain the old version.

Modify a rubric after student submissions have been received.

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Expansions

The University adds a review step to the workflow, requiring that all rubrics be review by some appropriate reviewer. Workflow becomes Draft -> Reviewed -> Published

Export and import rubrics. Export the rubric to an XML file so that it can be emailed or copied. Import an XML rubric.

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Assignment

Introduction

An assignment is an instantiation of an assessment item. Generally this involves setting dates for the start, submission, return of marks and feedback, setting the maximum marks, attaching a rubric. An assignment may be re-used provided the dates ‘make sense’ which generally means that they are not past dates nor too far in the future.

The assignment is also associated with a subject.

Workflow

Draft -> published.

Functions

Attach an assessment item to a subject.

Set assignment dates.

Set maximum marks.

Attach a rubric to the assignment.

Review the assignment. At this stage the review will include only that the assignment dates are not set in the past or more than one term into the future. See expansions for possible validity checking.

Exceptions

Subject coordinator must abandon assignment creation. Offer ‘Save’ or ‘Cancel’

Subject coordinator revises an assignment after publication but before submissions have been received.

Subject coordinator revises an assignment after some submissions have been received.

Change is made to the underlying assessment item. The change is NOT propagated to the assignment.

Subject coordinator replaces an assignment with another assignment. This would normally happen if there were changes to the underlying assessment item. This would need some sort of administrative oversight.

Expansions

Automated checks of an assignment may be expanded in future, depending on the economics of doing so. For example, a mid term assignment is valuable to the students only if marks and feedback are received in time for them to act on the feedback. If the date for returning the marks is too late then that would be flagged for attention. Similarly there may be some heuristic for the number of marks allocated to a particular type of assignment.

It is possible that someone might want to use different rubrics for the one assignment. Some subjects have multiple streams of students, each of which is to be marked differently.

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Ratings

Introduction

This system depends on ratings to encourage better performance by all participants. The rating can be multi-attribute. This is a recommender system so should use an appropriate recommender algorithm to maintain a current rating.

Any add, change or delete to the rating records should trigger a recalculation of the rating of the parent record.

Functions

Student rates the assignment. Ratings are applied to the assessment item. Rating attributes include;

- Clarity of the assignment
- Helpful for learning
- Size matched marks

Student rates the rubric. Rating attributes include;

- Clear what is expected.
- Fair weighting of marks
- Helpful for learning

Student rates the marker. Rating attributes include;

- Marks are clearly explained.
- Marking is fair.
- Marking is prompt.
- Marking helps to understand the topic

Marker rates the assignment. Rating attributes include

Marker rates the rubric.

Subject coordinator rates the marker.

Subject coordinator reviews all ratings for a marker, rubric, assignment to assure that ratings conform to policy guidelines of fairness, language use, and more. Subject coordinator deletes any ratings that are offensive or unjustifiable.

Exceptions

To be resolved. Marker could mark different assignments and perform differently on each of them. Initially the rating will apply to the marker regardless of the assignment.

To be resolved. A rubric may be used for more than one assessment item and may perform differently on each of them. Initially the rating will apply to the rubric regardless of the assignment.

Participative Assignment Marking System – Usage Narratives

Expansion

Marker rating calculated separately for each assignment they mark. For example they may mark a programming assignment poorly but an engineering assignment well. This is likely to happen when a marker becomes ambitious and bids for work for which they are not qualified. While it is the subject coordinator's responsibility to ensure the marker is competent to mark the assignment, over time subject coordinators will rely on the marker ratings given to them by students and by subject coordinators.

Participative Assignment Marking System – Usage Narratives

Marking expression of interest (EOI)

Introduction

A subject coordinator wants to recruit markers for an assignment. They need to broadcast details of the assignment and remuneration to all suitably qualified markers.

Normally the assignments would be distributed in appropriate sized blocks. For example, a simple assignment that takes less than 15 minutes to mark might be distributed in blocks of 50 whereas a larger assignment that could take 2 hours to mark might be distributed in blocks of 5. An heuristic is that a block should take about one day or less to mark. An individual marker could bid for and be allocated more than one block. A subject coordinator may choose to not block assignments for marking, equivalent to a block size of 1.

Functions

Assignment and rubric must be published.

First the subject coordinator decides the number of assignments in a block.

Then estimate the number of blocks. If the number of students is known then the estimate can be quite certain but there may be some circumstances, e.g. an optional assignment, where an estimate will be quite inaccurate.

Select qualified markers. The selection could be through a search function augmented by selection from a list. Since the system will eventually have hundreds of registered markers, manual selection is impractical.

If there is a fixed payment, note it.

Send a message to the selected markers, asking for bids. The email should list the assignment description, the rubric, remuneration, the date the assignment will be available for marking, the date results must be returned, any constraints on bidding, e.g. maximum bid of 4 blocks.

Exceptions

Change of conditions after the Request for EOI has been sent. Send a revised Request for EOI.

Assignment and rubric are draft, not yet published. Send the Request for EOI, noting the status of assignment and rubric.

Cancel Request for EOI.

Expansion

Enhancements are most likely to concern methods of searching and selecting potential markers.

Although email is the current universal default for communicating between parties, some different form may be used in future. For example, direct communication between the central server and a client app.

Participative Assignment Marking System – Usage Narratives

Bids for marking.

Introduction

A notice of a new assignment is received by email. James Fletcher, a marker, checks the details of the assignment, estimates how long it will take to mark a "block" of assignments and calculates a *price*. Since his marker rating from the students is high and because his record of promptness is good, he decides not to discount his price per block. Since it is a slow time and he could use some extra income, he bids for 5 blocks.

Functions

Record a bid that includes;

- Marker name (possibly ID)
- Assignment.
- Number of blocks – maximum, minimum or exactly.
- Price per block
- Discount
- Additional costs
- Total price
- Notes – any comment the marker wants to record about this EOI.

Send the bid to the central system.

Notify the subject coordinator of the bid.

Exceptions

Marker withdraws their bid.

Marker modifies their bid, sends an updated bid. Withdraw the original bid and record the updated bid.

Expansion

Participative Assignment Marking System – Usage Narratives

Accepting bids

Introduction

The subject coordinator looks at the returned bids. He notices that the number of bids has risen since last time, indicating that the system is becoming more popular. He notices that several of the better ranked markers have bid for multiple blocks. Although marking several blocks involves less paperwork, he would prefer to distribute the work among more markers, partly to build up an cohort of experienced markers and partly to "fill many rice bowls". So, he accepts three of the bids to mark multiple blocks but reduces the number of blocks from 5 to 3. He also accepts bids from 3 other markers who have bid for one block each. The markers are notified of their success by email through the system and asked to confirm their acceptance because the coordinator has awarded less than they requested. Fortunately all accepted.

Functions

List all bids.

A subject coordinator may have requested EOIs for multiple assignments.

Allow the subject coordinator to search for or list EOIs for selected or multiple assignments.

Allow the EOIs to be sorted in various ways.

Subject coordinator selects markers by recording the number of blocks to be awarded.

Successful markers are notified of their success and the number of blocks awarded.

Exceptions

A marker may subsequently withdraw their bid for some reason.

Expansion

Participative Assignment Marking System – Usage Narratives

Submitting assignments.

Introduction

The students submit their assignment to the assignment repository.

Functions

Upload an assignment. Identify the assignment by concatenating the student ID and file name.

Record the date and time it was submitted. Submission time is taken as the time the student pressed the “Submit” button or whatever other way they committed the upload. This allows for a difference between the time it was submitted and the time it was fully received due to transmission delays.

Notify the student of successful or unsuccessful upload.

Exceptions

Student wants to re-submit

A student has submitted the wrong assignment but the submission deadline has not yet passed. They go to the submission page and try to submit the new assignment. The system asks if this new submission replaces the previous one and, if the student confirms that is does, replaces the previously submitted assignment with the newly submitted one. Had the student responded that the new submission does not replace the old one, the system would refuse to accept the new submission.

Student misses the deadline

A student is submitting an assignment close to the deadline. The internet traffic is heavy or, possibly, their connection is not good. For whatever reason the submission is not registered (“Submit” button is pressed) before the deadline. If late submissions are allowed, the submission is accepted. If late submissions are not allowed, the submission is rejected.

Expansion

An assignment may have multiple files. E.g. an architecture and commentary on that architecture, or code, design documentation and commentary.

Participative Assignment Marking System – Usage Narratives

Distribute assignments to markers

Introduction

Generally there are some restrictions on who can mark particular assignments. The main restrictions are usually that markers must mark those students they have tutored or advised, or marker must not mark those students they have tutored or advised. Restrictions on who must, may or must not mark specific assignments are usually to provide good governance of assessment and to reduce collusion and misconduct. For these reasons students should not know who will mark their assignment but might be informed after marks are returned.

Subject coordinators may have all sorts of reasons why they want assignments distributed to markers in a particular way. This system cannot anticipate them all so it will provide some functions, some standard ways then leave the markers to deal with the problem.

Functions

Allocate submitted assignments to blocks of nominated size randomly.

Allocate submitted assignments to blocks of nominated size in some sorted sequence.

Allocate submitted assignments to specific markers according to a distribution list. A subject coordinator may want all assignments in a subject to be marked by the same marker to maintain consistent advice.

Manually allocate assignments to blocks.

Exceptions

None

Expansion

There are sure to be additional ways to distribute assignments.

Participative Assignment Marking System – Usage Narratives

Querying marks and feedback

Introduction

One of the students received feedback they thought was harsh and not a true reflection of the work. They want clarification from the marker. To discourage wholesale appeals it must first be sent to the subject coordinator to decide whether or not the appeal has some merit. In this case, the subject coordinator agrees that the marks need some explanation so flags the assignment marking. The marker knows they won't be paid until all such appeals are dealt with so takes this seriously. The marker receives the student's request for clarification and the subject coordinator's comments. After reviewing the assignment and marking, the marker agrees that the marking could have been more consistent and transparent so alters the marks and feedback. The student accepts the revised mark and feedback.

Functions

This is mostly an email based process. The only function needed is that the subject coordinator may need to view the submission and marks (and comments).

Exceptions

None

Expansion

None

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Registering a marker

Introduction

Having heard about casual marking from one of her friends, Beatrix checks how to become a registered marker. She is requested to apply to the University in the same way as registering for any other casual academic work. That is, send in a resume and proof of any qualifications. The University Qualifications Board reviews the resume and qualifications before agreeing that this person meets the criteria for casual academic staff. The PAMS administrator enters Beatrix's details, listing their areas of interest so that they are notified on assignments of interest but not of assignments outside their area of expertise. A marker is added to the register of markers. Record;

- Name
- Phone number
- Expertise
- Availability.

A marker can update their own personal details except their expertise. Their expertise must be reviewed by a subject coordinator, or other administrator, who can then update their expertise.

Functions

Workflow: Applied -> provisional -> approved

Register the marker.

Marker can review and update their information. If they modify information then the modified profile becomes provisional and requires approval by an administrator.

Upload/Import applicant information. Flag errors, provide an error listing that can be sent back to the applicant. Retain the uploaded information as a provisional application.

Exceptions

Applicant does not provide all the required information. Register them provisionally. Request the missing information or request clarification of information.

Expansion

The system is likely to extend to an interface to HR and Financial systems. Provide the means to interface either through export and import or through direct interface to those systems.

Participative Assignment Marking System – Usage Narratives

Marker passes deadline

Introduction

The subject coordinator is monitoring the progress of marking one particular assignment. They notice that one marker has not yet started marking. The coordinator emails the marker to ask if there is some reason for the delay and asks for an estimated start date. No response is received before the coordinator decides to cancel that marker's contract and award it to another marker.

Functions

Subject coordinator can display an assignment showing student ID, date submitted, date sent to marker, Marker ID, date result mark received, mark.

Subject coordinator (or administrator) can drill down on a selected student ID to show the rubric and marks.

Cancel a contract. Cancel any financial commitments. Return all assignments to the pool of undistributed assignments. Subject coordinator returns to assignment distribution to redistribute the assignments for marking.

Exceptions

Marker has marked some but not all assignments distributed to them for marking. Cancel the remaining marking, return the unmarked assignments to the pool for redistribution.

Expansion

Nothing yet.

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Draft reviews

Introduction

A student is unsure of their work and wants to get a review and feedback from someone other than another student. The student checks to see if there is a marker/tutor willing to review their work and what they will charge for doing so. Since the student is able to see the marker/tutor's ratings for reviewing given to them by other students, they are able to select a highly rated marker who charges an affordable fee. The student then requests that the marker/tutor review and provide feedback for the assignment, agreeing to pay the fee once the feedback is received.

Functions

Student searches for a tutor (marker who has flagged their interest in tutoring). Likely criteria are having marked this assignment in the past, expertise in nominated knowledge or expertise. Search returns all matching tutors and their student ratings for marking and for tutoring and their tutoring rate.

Student chooses a tutor (or cancels). The system records the choice.

System administrator contacts the nominated tutor to confirm the tutors willingness to accept the work. If confirmed, the system records the relationship between student and tutor so that assignment distribution has the information necessary to distribute assignments for marking correctly.

System administrator notifies the student of tutoring acceptance or rejection.

Exceptions

Expansion

Student nominates multiple tutors in a nominated sequence of preference. System administrator contacts the nominated tutors in that sequence until one accepts.

Participative Assignment Marking System – Usage Narratives

Record assignment marks

Introduction

To increase visibility of progress in marking an assignment, the marking scheme is not downloadable. Marking is done online, being saved as it goes. The subject coordinator reviews the assignments and their progress through marking. The assignments can be listed by marker, by mark, by student or selected on marking status (marked, unmarked, being marked)

Functions

When an individual assignment marking is completed, post the result in the result register/grade book.

Exceptions

Student has appealed the mark. Result is held as provisional.

Expansion

Participative Assignment Marking System – Usage Narratives

Administration functions

Introduction

Those who administer either a subject or the system will need some administration functions

Functions – subject coordinator

View a list of all students enrolled in a subject. Show assignments submitted, assignment marks

View a list of all markers, selected by some criteria, sorted by some criteria.

View a selected marker.

Export all marks for an assignment. Include subject ID, student ID, overall mark and mark breakdown.

Functions – system administrator

Exceptions

Expansion