Resources and Guidance for Student Peer Review

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Overview

The goal of this document is to provide guidance to instructors who want to implement peer review in a course. It includes a checklist of considerations to work through when developing a peer review process for a course, a detailed list of existing software systems for peer review, and references to resources where readers can look for more detailed information.

The information was compiled through a broad literature review, review of existing software systems, and conversations with instructors in the department who have implemented peer review in their courses.

For an introduction to student peer review and its advantages and disadvantages, see the companion document *Introduction to Student Peer Review*.

Table of Contents

So you want to use peer review in your course?

The following section outlines a checklist of questions that you will need to take into consideration and decide on when implementing peer review. Some of these questions will influence others – for example, the stages of peer review that you want to include may restrict your selection of software systems, and vice versa.

Why do you want to use peer review?

The first thing to consider is *why* you want to use peer review. There are many advantages to peer review, and many possible reasons for introducing it: one goal could be to introduce *peer feedback*, so that students can receive more feedback on their work from a broader number of perspectives; another goal could be to introduce *peer grading* to reduce workload on TAs and/or increase the number of assignments that you are able to offer; or maybe the goal is all of the above.

Once you have a list of goals that you hope to achieve in implementing peer review, you can start to develop a peer review process and adopt software that will support those goals.

Which assignments (and how many) will be peer reviewed?

Implementing peer review in a course can take a surprising amount of time and effort on the part of the instructor. It can also take multiple iterations through the process for students to get the hang of it. For these reasons, most instructors in the Computer Science Department that I spoke to felt that that peer review was not worth the effort for only 1-2 assignments.

Similarly, it will be easier to implement peer review for a series of assignments with similar goals and marking schemes. The more divergent the assignments, the more time you will need to dedicate to developing each assignment and preparing the students for how to complete it.

The types of assignments you want to peer review will constraint your software options. Most software systems will accept submissions in common text or document formats, but not all support other types of files, such as code files, media files, and zip files.

What steps in the peer review process do you want to include?

At its most basic, peer review includes a submission phase, where students hand in their assignment, and a review phase, during which submissions are distributed to peers and the reviews completed. Depending on the goals you want to achieve by introducing peer review, you may want to include additional stages or steps before, during, or after these two main stages.

Additional pre-submission activities may include calibration or review practice. Additional mid stream or post-review activities may include: self-assessment, revision of the original assignment, providing feedback to reviewers on review quality, and access to reviews of a submission created by other students.

How will the students be trained?

The quality of the evaluations that students can produce will depend on the training and support provided to them, as well as the perceived value of the activity. Training on how to evaluate, as well detailed marking schemes and rubrics, will help to ensure that students are able to create high quality reviews, and that they perceive the activity as useful and fair.

Calibration

In general terms, calibration involves giving the students example submissions that have already been marked by a TA or instructor. Students mark these example submissions as a training exercise, and then - depending on how the calibration is implemented – the results of this process will be acted upon in some way.

One simple incarnation is to show students original expert marks for the submission, and then conduct whole-class or small group discussions around why their grades may be different. The calibration methods found in existing software systems tend to be quite a bit more complex. For example, in the Mechanical TA system, students can use calibration to graduate from a *supervised* pool, where theirs submissions and reviews are marked by TAs, to the *independent* pool, where marking is entirely peer based. By contrast, the Calibrated Peer Review software system uses the results of calibration adjust the weight reviews have in determining final grades

Calibration essays can be created by the instructor or can be student submissions from previous years. For a submission to be suitable for calibration, it will ideally be marked by multiple members of course staff according to the calibration rubric, and there will be high agreement between markers. Submissions with high disagreement between markers will not be as effective for calibration.

Detailed instructions and rubrics

The more detailed the marking rubric provided to the students, the more consistent they will be in applying it when completing their reviews. However, creating a useful and effective rubric takes quite a bit more effort than most instructors expect, and can require many iterations to perfect.

Some instructors have also reported that creating the materials for these training activities can also be a useful way to train TAs. For example, by involving TAs in creating the marks for expertly reviewed essays used for calibration, they have the opportunity to learn the rubric and calibrate between themselves.

How will the students' marks be determined?

Consider early on if you will want to mark the submissions and/or reviews submitted in the peer review process. There are many different ways to grade peer review assignments, and your final decision will likely be influenced by the software system that you choose to use.

Not all peer review software systems explicitly support peer grading. Those that do tend to operate in very different ways, and they differ both in the *types* of marks that be assigned (i.e. scores out of a total vs. Likert scales) and in the method for calculating an *overall grade* for the activity: some use complex algorithms to determine grades, while others use basic calculations like the mean and or median; some rely purely on peer grading, while others support combinations of instructor and peer grades; some support grading of both reviews and submissions, while some support only grading submissions; some are flexible in the options that can be chosen, while others force the instructor to follow a particular approach.

What system will I use to support peer review?

Low tech peer review: It is possible to implement very low cost and low tech peer review activities. In the Computer Science department in past and upcoming offerings of CPSC 530, students bring their homework to class, and then these are randomly distributed to other students. The students are all provided with a detailed mark sheet, which they then follow to mark their peer's assignment directly. A

similar method is described in a case study of an engineering class by Gibbs[1], where students completed peer review of assignments as part of an in-class activity. However, there are a number of limitations to this method, including its scalability to large courses and the fact that only one other student generally reviews assignments.

Software supported peer review: Given the complexity of implementing peer review, instructors usually choose to adopt a software tool that explicitly supports the process. Software tools make it very easy to distribute submissions and reviews, especially when more than one review will be performed. They also make it possible for student reviews to be anonymous.

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[1] G. Gibbs, "Using assessment strategically to change the way students learn.," in *Assessment Matters in Higher Education: Choosing and Using Diverse Approaches*, S. Brown and A. Glasner, Eds. 1999.

Peer Review Software Systems

Depending on the types of assignments you wish to have the students peer evaluate, different tools may suit your purposes better than others. Tools vary in the stages of the process that they support, the types of submissions that can be made, the types of marking and overall grade calculation supported, their cost, and whether or not they are UBC supported.

Common Features

Most peer evaluation software systems have a small set of basic functionalities in common. All of the systems described later in this section support the following: Submission + Review phases

All systems below support a submission phase, in which students enter or upload their assignment, and a separate review phase, during which submissions are distributed to students for reviews to be complete.

Most systems support some combination of additional pre-submission and/or post-review activities, but the makeup can differ significantly between systems. Refer to Table 1 for a quick overview of which systems support which activities.

Automatic movement between phases

For all systems except mechanical TA, progression between the phases is completely automatic. Mechanical TA has automatic opening/closing of phases, but currently requires some scripts and routines in the system to be run manually to move from one phase to the next.

Submission of written assignments

Most peer evaluation systems have been designed primarily to support writing / essay assignments, and all of the systems below support direct text entry and/or common document file types. Only some of the systems support other forms of file and media, such as code, math equations, pictures, etc.

Peer Grading.

Any of the peer evaluation systems described in the next section can be used to support peer grading..

The majority of software systems explicitly support peer grading, but each has a unique approach. Some simply use the mean or median, while others have more complex algorithms that, for example, attempt to reduce the impact of poor reviews, take into account review quality, or weight grades based on a range of different factors.

In a small number of systems, peer grading is not automatic, and must be manually done by the instructor. In these systems, numerical ratings by peers are recorded as part of the review process, but no final grades are determined by the system; the instructor must export the grades and decide manually how final grades should be calculated from the data.

Quick Comparison Tables

Table 1: UBC Support and Additional Supported Phases

System	UBC Supported	Pre-Review Phases		Review or Post-Review Phases			
		Calibration	Practice	Self Assessment	Compare Reviews	Revision	Feedback on review quality
Aropä			☐	☐	☐		☐
CPR	☐	☐		☐	☐		
CrowdGrader					☐		☐
Peerceptiv						☐	☐
peerScholar				☐		☐	☐
Praze					☐		☐
TurnItIn's Peer Mark	☐						☐
Mechanical TA	☐ (CS only)	☐			☐		

Table 2: Supported Assignment Formats

	Direct Entry			File Upload			
	Text Entry	Code	Equations	PDF	Doc files	.zip	any type
Aropä	☐			☐	☐	☐	☐
CPR	☐						
CrowdGrader	☐	☐	☐	☐	☐	☐	☐
Peerceptiv	☐			☐	☐		
peerScholar			☐	☐	☐	☐	☐
Praze	☐			☐	☐	☐	☐
TurnItIn's Peer Mark	☐			☐	☐	☐	☐
Mechanical TA	☐	☐		☐	☐	☐	☐

Aropä

http://aropa.gla.ac.uk/docs/

Overview

Aropä is designed to support both peer feedback and peer grading. The system also includes a survey module, which instructors may find useful if they regularly administer surveys in their course.
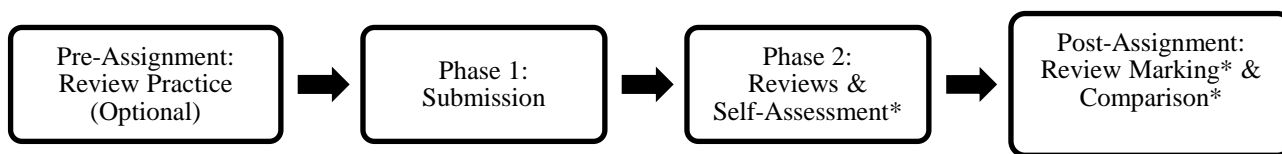
Cost: Free

UBC Supported: No

Getting Started: Instructors can request access by following the 'Getting Starting' instructions on the Aropa instructors page: http://aropa.gla.ac.uk/docs/instructors.html

Students are allocated accounts through anonymous ids assigned by the instructor.

Authoring Assignments

Each assignment must be created individually. The marking rubrics for assignments are stored as template and can be imported into other assignments.

The Aropä Process

```
┌──────────────────┐     ┌──────────────┐     ┌──────────────────┐     ┌──────────────────────┐
│ Pre-Assignment:  │     │  Phase 1:    │     │    Phase 2:      │     │  Post-Assignment:    │
│ Review Practice  │ ──▶ │ Submission   │ ──▶ │   Reviews &      │ ──▶ │ Review Marking* &    │
│   (Optional)     │     │              │     │ Self-Assessment* │     │   Comparison*        │
└──────────────────┘     └──────────────┘     └──────────────────┘     └──────────────────────┘
```

*Optional

Pre-Assignment: Review Practice (Optional)

Aropa supports review practice by allowing instructors to create a separate assignment in which all students review the same sample submission and sample reviews. The instructor must provide a sample submission and a rubric, and then configure so that all students will review the sample submission. After reviewing the sample submission, students can then see specific sample reviews written by course staff.

Phase 1: Submission

Students can enter text or equations directly, or may upload an arbitrary file (including .zip files).

Phase 2a: Reviews

Students complete the number of reviews assigned to them by their instructor. Students have the option to download all submissions they are to review in a .zip file for convenience.

Students can also be required to complete a self-assessment. If the instructor enables this option, the students' own submission will be included as one of the reviews that they must complete.

Post-assignment: Review Marking & Comparison (Optional)

Comparison: If enabled by the instructor, students see reviews submitted by the other reviewers of the submissions that they reviewed.

Review Marking: A secondary assignment tied to the original assignment can be created supports marking of the reviews directly. The reviews from the main assignment will automatically populate the submissions for the review-marking assignment, and the instructor can specify a custom rubric for evaluating the review quality.

Marking

Aropä uses the marks assigned to the submission in each review to determine a grade – only quantitative marks from radio buttons used in the marking rubrics are included. An average is calculated (using mean, mode or median) and can be weighted equally or auto-calibrated based on review accuracy. The total mark for the submission is the sum of the weighted averages. Only reviewers who have entered a mark are included in the average.

Auto-calibration is recommended only when each submission has at least four (and preferably many more) reviews. It has the benefit of identifying and reducing the influence of persistently inaccurate reviewers. However, the weights (and marks) can be difficult to explain to students.

Other useful features

- Automatic movement between phases based on specified dates/times

- Upload of class list in CSV format

- Export grades as CSV.

- Assign additional instructors for a course (e.g., TAs)

- TA/Instructor marking (in addition or instead of peer review).

- Instructor can impersonate students to access student view/options

- Support for granting individual extensions

- Customizable allocation of submission-reviewer pairings

- Group submissions

- Custom rubrics (must use radio buttons for quantitative data)

In addition to peer review assignments, Aropa also supports flexible custom surveys (not peer-reviewed). This survey functionality could be used for quizzes, peer-evaluations of team performance, etc.

Resources

Documentation: http://aropa.gla.ac.uk/docs/

Marking Algorithm: http://aropa.gla.ac.uk/docs/grade-calculator-script.pdf

Selected Publications

Hamer, J., Kell, C. and Spence, F. 2007. Peer Assessment Using Aropa. In Proc. Ninth Australasian Computing Education Conference (ACE2007), 43-54.

Hamer, J., Ma, K. T. K., and Kwong, H. H. F. 2005. A method of automatic grade calibration in peer assessment. In Proceedings of the 7th Australasian conference on Computing education - Volume 42 (ACE '05),

Calibrated Peer Review (CPR)

http://cpr.molsci.ucla.edu

Overview

CPR is primarily designed to support peer grading. CPR enforces a three-step process that includes calibration as a required step for all students.

UBC is expected to upgrade to CPR 5 by the end of 2014.

Cost: Free

UBC Supported: Yes (CPR v4.5)

Getting Started: Instructors can request access by following the instructions on the UBC CPR Wiki under 'Getting Started': http://wiki.ubc.ca/Documentation:CPR
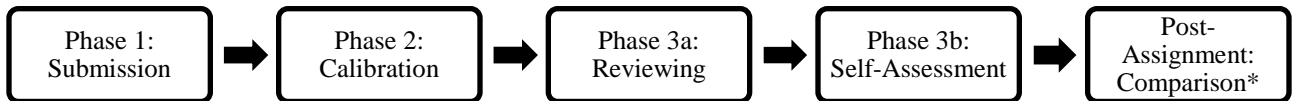
Students gain access to CPR by creating an account associated with their UBC Student ID.

Authoring Assignments

New assignments must be posted as a template to the CPR Central Assignment Library, hosted by UCLA, so that other instructors using CPR may reuse them. The instructor may then import their assignment into CPR UBC, and edit the particular instance of the assignment that they wish to give to students.

When creating an assignment, the instructor must also create three pre-graded calibration submissions (of poor, moderate, and excellent quality) to be used in the Calibration phase.

The CPR Process

Phase 1: Submission → Phase 2: Calibration → Phase 3a: Reviewing → Phase 3b: Self-Assessment → Post-Assignment: Comparison*

*Optional

Automatic open and close dates must be assigned for the Assignment Submission (Phase 1), Calibration (Phase 2), and Review/Self-Assessment phases.

Phase 1: Submission

In CPR 4, only direct text entry is supported. Upload of arbitrary files is supported in CPR 5.

Phase 2: Calibration

Students are trained to evaluate other submissions. Students are required to review three *calibration* submissions using a detailed set of questions about the assignment and assigning a rating out of 10 – the calibration submissions are supplied by the instructor, along with specification of what the 'correct' grade should be. If students do poorly and do not submit reviews close to the instructor's expectation, they may try a second time to complete the calibration on the same essays.

Phase 3: Reviewing and Self-Assessment

Reviews are performed using the same rubric as in the Calibration phase. Students *must* review 3 submissions, and the instructor does not have the ability to customize this number.

After completing all three assigned reviews, the student then use the same rubric to complete a self-assessment of their own submission.

Post-assignment: Comparison (Optional)

If this option

is enabled, students see reviews submitted by the two other reviewers of the submissions that they reviewed.

Marking

The marking algorithm for a student takes into account peer reviewers' evaluations, the students' performance on calibration training, the quality of the reviews done on peer submissions, and the quality of the self-assessment. A poor performance by a student on the Calibration in phase 2 will decrease the weight of the grades given by that student to their peers' submissions.

A downside to this approach is that the method for determining student grades is difficult to explain to students (and instructors!).

Other useful features

- Automatic movement between phases based on specified dates/times

- Upload of class list in CSV format

- Export grades as CSV.

- Assign additional instructors for a course (e.g., TAs)

Resources

Documentation: http://cpr.molsci.ucla.edu/Overview.aspx

UBC Documentation: http://wiki.ubc.ca/Documentation:CPR

Marking Algorithm: Ed Knorr has done some digging into how the algorithm works, and can provide some annotated examples upon request.

Selected Publications

Carlson, P.A., and F.C. Berry. 2003. Calibrated Peer Review™ and Assessing Learning Outcomes. In Proceedings of the 33rd Annual Frontiers in Education Conference, ed. D. Budny, 2, F3E1-F3E6, Piscataway, NJ: IEEE Digital Library.

Carlson, P.A., and F.C. Berry. 2008. Using Computer-Mediated Peer Review in an Engineering Design Course. IEEE Transactions of the Professional Communication Society 51, no. 3: 264-279.

Carlson, P.A., A.A. Russell, W.N. Waggenspack, C.G. Wilmot, D.F. Bowles, D.R. Voltmer, W.T. Monroe, W.N. Hull, and C.D. Raubenheimer. 2012. Improving Engineering Education with Enhanced

CrowdGrader

http://www.crowdgrader.org/

Overview

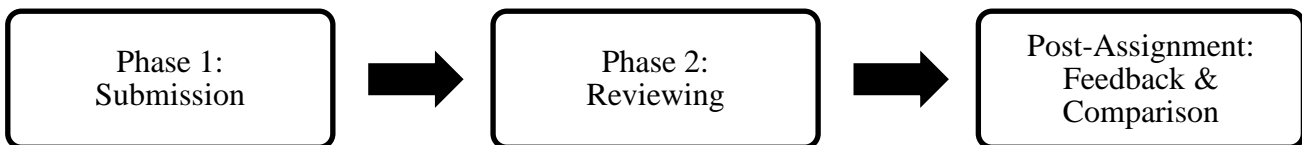CrowdGrader is primarily designed to support peer grading.

Cost: Free

UBC Supported: No

Getting Started: To access CrowdGrader, both students and instructors must use a Google account. Instructors can upload a class list or provide students with an access link.

Authoring Assignments

New assignments may be created from scratch or duplicated from previous assignments.

The CrowdGrader Process

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┌─────────────────┐      ┌─────────────────┐      ┌─────────────────────┐
│   Phase 1:       │  ──▶ │   Phase 2:       │  ──▶ │  Post-Assignment:   │
│   Submission     │      │   Reviewing      │      │  Feedback &         │
│                  │      │                  │      │  Comparison         │
└─────────────────┘      └─────────────────┘      └─────────────────────┘
```

Phase 1: Submission

Students can enter text or equations directly, or may upload an arbitrary file (including .zip files).

Phase 2: Reviews

Students perform the number of reviews required by the instructor. Students may decline up to 2 reviews.

Post-Assignment: Feedback and Comparison

Feedback: Students may provide feedback to their reviewers, and this feedback will be integrated into the students' grades. However, it is not currently possible to specify end date by which feedback must be submitted, and it is not required. You must set a due date for this yourself outside the system.

Comparison: students may also view the other reviews for the same submissions that they reviewed.

Marking

Marks consist of *crowd grades* and, optionally, *final grades* assigned by an instructor.

The crowd-grade of a student depends on the marks a student receives from other students on their submission (*submission grade)* and a mark assigned for the quality of their review (*review grade)*:

- *Submission grade*: CrowdGrader aggregates all peer marks using a reputation system, which eliminates outliers, and weighs student input according to its quality: students who are more precise in grading, and whose own submissions are better, are given more weight.

- *Review grade:* CrowdGrader computes a review grade that is a mix of: 1) the grading accuracy of the student when compared to the consensus of all student, and 2) feedback scores given to the reviews.

The allocation between the submission grade and review grade can be customized (default is 75% submission, 25% review). The instructor may use the crowd grades as a final grade. Alternately, the instructor can assign reference grades to a subset of students based on their scores, and then use CrowdGrader to interpolate a final grade.

Other useful features

- Upload of class list (pasting a comma separated list) or open enrollment via link

- Custom rubrics (may specify # of criteria, descriptions and value

- Export grades in multiple formats (CSV, Excel, etc).

- Assign additional managers for assignments (e.g., TAs)

- Option to allow students to decline reviews

- Customize # of reviews per submission

- Group submissions

Resources

Documentation: http://doc.crowdgrader.org/

Privacy Policy: http://doc.crowdgrader.org/privacy-policy

Marking Algorithm: See de Alfaro & Shavlovsky (2014).

Related Publications

de Alfaro, L. & Shavlovsky, M. (2014). CrowdGrader: Crowdsourcing the Evaluation of Homework Assignments. SIGCSE 2014, ACM.

Mechanical TA

https://www.cs.ubc.ca/mta/

Overview

Mechanical TA (MTA) is primarily designed to support peer grading. The system was originally developed within the UBC CS Department by the course staff for CPSC 430 – Computers and Society. The system is currently used in CPSC 110 and CPSC 430.

MTA supports sorting students into *supervised* and *independent* pools. All students in both pools peer grade assignments by other student in the same pool, but course staff determine grades in the supervised pool, while in the independent pool the grades are determined by peers. When using both pools all students begin in the supervised pool, and graduate to independent when their average review mark crosses a configurable threshold, or when they achieve a certain number of points through practice calibration reviews.

Cost: Free

*UBC Supported*: Informally supported within CS Department

Getting Started: Instructors interested in using Mechanical TA should contact Anthony Winstanley to set up a course and contact James Wright for an introduction on how to use the system.

Class lists are uploaded to the system and students gain access with their CS Ugrad account.

Authoring Assignments

New assignments may be created from scratch or duplicated from previous assignments. To use calibration, the instructor must also submit a pool of *calibration essays* for which existing marks exist – the more essays provided, the more practice students can obtain.

The Mechanical TA Process

Phase 1: Calibration*	➡	Phase 2: Submission	➡	Phase 3: Reviewing	➡	Post-Assignment: Comparison*
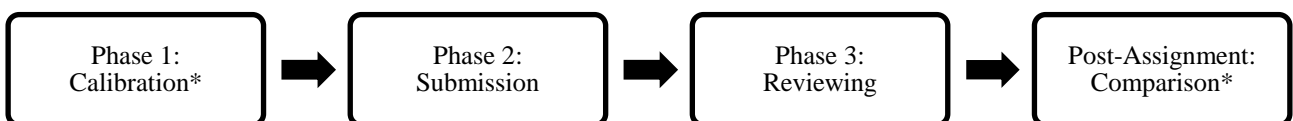
*Optional

Phase 1: Calibration (Optional)

In MTA, students can gain reviewing practice at any time in the course by reviewing a calibration essay If the student's review is within a configurable distance of the original grade, the student receives a 'review point'. Students who collect enough review points are moved into the *independent* pool.

Students in the supervised pool are required to complete three calibration reviews before entering their submission.

Phase 2: Submission

MTA supports direct entry of written essays and code, upload of any file type, and submission of image assignments.

Phase 3: Reviewing

Reviews are performed using the same rubric as used in calibration. Students always complete three reviews.

Post-assignment: Comparison (Optional)

If this option is enabled, students see reviews submitted by the other reviewers of the submissions that they reviewed.

Marking

Students are assigned marks for both reviews and submissions. The method of assigning marks differs depending on which pool the students are in:

- *Submission mark*: the median of peer reviews if in independent pool; or the mark assigned by a TA if in the supervised pool.
- *Review mark*: 10/10 if in independent pool; or the mark assigned by a TA if in the supervised pool.

In addition, MTA automatically selects essays from the independent pool for spot-checking of essay quality and review quality by course staff. All essays whose marked is above a configurable threshold are also selected, along with other randomly selected essays. As a result of spot-checking, course staff may adjust grades, and a student can be moved back into the supervised pool.

Other useful features

- Assign additional instructors for a course (e.g., TAs)

- Export grades

Mechanical TA is undergoing continued development in the Fall 2014, which will impact both the available features and the exact method(s) available for determining calibration thresholds.

Resources

Wright, J. R., Thorton, C., & Leyton-Brown, K. (2015). Mechanical TA: Partially Automated High-Stakes Peer Grading. To appear in *Proc. SIGCSE*'15.
http://www.cs.ubc.ca/~kevinlb/pub.php?u=2015-SIGCSE-MechTA.pdf

Peerceptiv

http://www.peerceptiv.com/

Overview

Peerceptiv, formerly SWoRD Peer Assessment, supports both peer feedback and peer grading. The system is explicitly designed to support writing and draft revision activities, and provides less support for other kinds of submissions.

Cost: Free for Instructors; Students seats can be purchased in Faculty/Department packs, or students can purchase access for $5.

UBC Supported: No

Getting started: Instructors can create an account at http://www.peerceptiv.com/. Classlists can be uploaded from a .txt file or entered directly. Students join by signing up with a course code provided by the instructor.

Authoring Assignments

New assignments may be created from scratch or duplicated from previous assignments.

The Peerceptiv Process

Phase 1: Submission	→	Phase 2: Review	→	Phase 3: Backevaluation*	→	Phase 4: Revision*
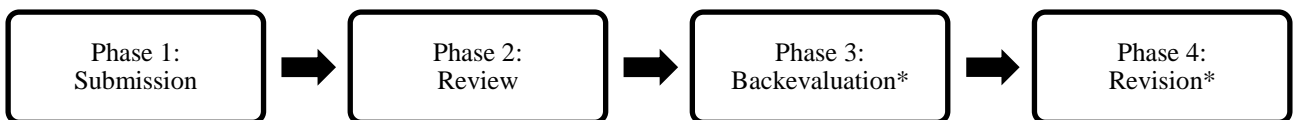
*Optional

The deadline for all phases is always 11:59pm EST on the date set by the instructor.

Phase 1: Submission

Peerceptiv supports submission of direct text entry and upload of document and media files. Students may also submit a link. Uploaded files are automatically converted to PDF, and so the system should not be used for code assignments where the code must be downloaded and executed.

Phase 2: Reviewing

Students complete the number of reviews specified by the instructor (up to a maximum of 6). The components of the review can be customized by the instructor, and can include numeric scales (between 2 and 7 points) and comments.

Phase 3: Backevaluation (Optional)

If enabled, students rate the reviews that they received on a scale from 1 – 5 (not helpful to very helpful), and can provide comments explaining their rating. A rating must be given for *every* numeric scale and comment field included in the original review.

Phase 4: Revision (Optional)

If multiple drafts are enabled, then students will have the opportunity revise their original submission. Multiple revision stages can be added, and each draft phase goes through the submission – review – backevalaution process.

Marking

The overall grade is calculated based on a mark for completing the required number of reviews and back evaluations (*task grade*), the marks a student receives from other students on their submission (*writing grade,*) and a mark assigned for the quality of their review (*review grade)*:

- *Task grade*: The task grade is the percentage of required reviews and backevaluations that were completed by the student.
- *Writing grade*: The average of the numerical score(s) given to the submission by all reviewers. This grade must be curved or benchmarked:
    - Curving: the instructor sets an expected mean grade and standard deviation curve, which will be used to curve the grades. This method is intended to prevent students from colluding to all obtain high grades.
    - Benchmarking: The instructor provides a score out of 100 for each of the top 5 submissions and the bottom 5 submissions (according to the mean peer ratings). The rest of the grades will be interpolated these grades as benchmarks.
- *Review grade:* The review grade is computed from a mix of: 1) the grading accuracy of the student's reviews compared to other reviewers for the same submission and 2) helpfulness as rated through backevaluations.

The allocation between the task grade, writing grade and review grade can be fully customized. The instructor also has the option to grade assignments, which can be used as one in the set of other peer reviews, on a sliding scale, or to override the system assigned grades.

Other useful features

- Automatic movement between phases based on specified dates (time always 11:59pm EST)

- Automatic publishing of assignment for a specified date

- Options for hard or soft deadlines (to allow late submission)

- Export grades as CSV.

- Save common rubrics to a library for easy use in additional resources

- Assign additional instructors for an assignment (e.g., TAs)

- Maintain same reviewers or randomly assign reviewers between drafts.

Resources

Website: http://www.peerceptiv.com/

Some instructional videos are available for instructors and students that cover the basics of using the software.

Selected Publications

Kaufman JH and Schunn CD. Students' perceptions about peer assessment for writing: their origin and impact on revision work. Instr Sci. 2011; 3:387–406.

Kwangsu C and Chunn CD. Scaffolded writing and rewriting in the discipline: a web-based reciprocal peer review system. Comput Educ. 2007; 48:409–426.

Nelson MM and Schunn CD. The nature of feedback: how different types of peer feedback affect writing performance. Instr Sci. 2009; 37:375–401.

peerScholar

Overview

peerScholar can be used for both peer feedback and peer grading.

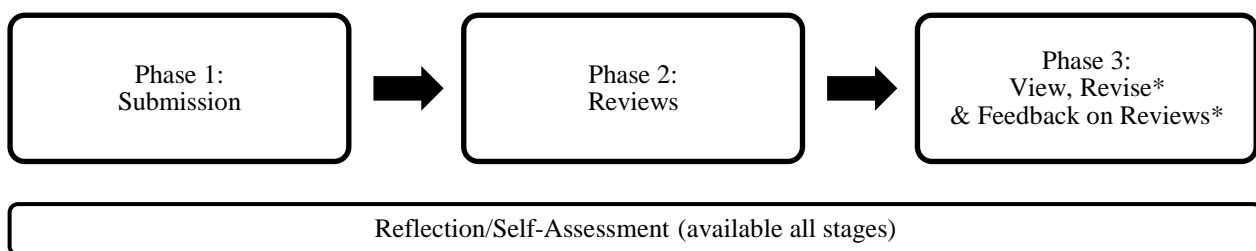*Cost:* Free for Instructors; $12.95 CAD for Students.

UBC Supported: No

Getting Started: Instructors can request free access by through Pearson Education. Once a course has been created, student obtain access by searching for the course id in the system.

Authoring Assignments

New assignments may be created from scratch, duplicated from previous assignments, or imported from previous assignments in the system library.

The peerScholar Process

| Phase 1: Submission | → | Phase 2: Reviews | → | Phase 3: View, Revise* & Feedback on Reviews* |

| Reflection/Self-Assessment (available all stages) |

*Optional

Phase 1: Submission

peerScholar supports submission of direct text entry and upload of arbitrary file types, including sound, image and video files.

Phase 2: Reviewing

Students complete the number of reviews specified by the instructor. The components of the review can be customized by the instructor, and can include one numeric scale and an unlimited number of comments. Inline comments are also supported for text files.

Phase 3: View, Revise & Give Feedback on Reviews

Phase 3 must be included, but the Revise and Feedback steps are optional.

Feedback: Students may rate the reviews that they received as *not useful*, *useful* or *very useful.*

Revise: Students view their draft submission and are given the opportunity to revise it. Generally, this option should only be used if the final version will receive a grade by instructors/TAs, as the revisions submitted in Phase 3 do not go through the peer review process.

Marking

peerScholar automatically marks submissions using the numeric rating scale by either: 1) averaging of all grades, or 2) dropping highest/lowest grades and then average of the remaining grades (Instructor/TA grades are not dropped). The instructor/TAs may also grade all assignments – in this case, the final grade must be allocated as a % weight composed of both peer marks and the instructor mark.

Other useful features

- Automatic movement between phases based on specified dates/times

- Export grades as CSV.

- Assign additional instructors for an assignment (e.g., TAs)

- Supports distribution within assigned courses and/or sections (e.g., a tutorial section)

Resources

Website: http://www.pearsoned.ca/highered/peerscholar/index.html

A small amount of documentation is available on the product website – however most support documentation and videos are labeled as 'Coming Soon'.

Selected Publications

Pare, D. E., & Joordens, S. (2008). Peering into large lectures: Examining peer and expert mark agreement using peerScholar, an online peer-assessment tool. Journal of Computer Assisted Learning, 24(6), 526–540.

Joordens, S., Desa, S., & Pare, D. E. (2009). The pedagogical anatomy of peer assessment: Dissecting a peerScholar assignment. The Journal on Systemics, Cybernetics and Informatics, 5(7).

Joordens, S. et. al. (2012). Zen and the Art of Metacognition: Quality-Based Discrimination, Peer Assessment & Technology. Academic Matters: The Journal of Higher Education.

PRAZE

http://lms.unimelb.edu.au/teaching/assessment/praze/

Description

PRAZE supports peer feedback, but does not explicitly support peer grading. An instructor can manually determine peer grades by exporting the review data.
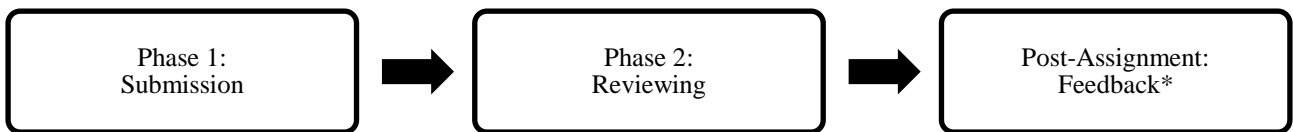
Cost: Free

UBC Supported: No

Getting Started: Instructors can request access by requesting access to the PRAZE National site. A portal for UBC has been created for other instructors currently using the system.

Student access is granted via supplied email addresses.

Authoring Assignments

New assignments may be created from scratch or imported from previous assignments in the system.

The PRAZE Process

```
┌─────────────────┐      ┌─────────────────┐      ┌─────────────────┐
│   Phase 1:      │ ───► │   Phase 2:      │ ───► │ Post-Assignment:│
│   Submission    │      │   Reviewing     │      │   Feedback*     │
└─────────────────┘      └─────────────────┘      └─────────────────┘
```

*Optional

Phase 1: Submission

PRAZE supports submission of direct text entry and upload of arbitrary file types.

Phase 2: Reviewing

Students complete the number of reviews specified by the instructor. The components of the review can be customized by the instructor, and can include the following types of questions: multiple choice, Likert scale, Yes/No, True/False, free text, numeric.

Post-assignment (Optional)

If this option is enabled, students see reviews submitted by the other reviewers of the submissions that they reviewed. The instructor form can customize the feedback form in the same way as the reviewing form.

Marking

PRAZE does not directly support peer grading.

The instructor can export the reviews and any data from numeric fields in the review form in Excel of CSV format, as well as data on which phases of the assignment each student completed. This data can then be used to manually generate grades based on custom criteria.

Other useful features

- Automatic movement between phases based on specified dates/times

- Upload of class list in CSV format

- Export grades as CSV.

- Assign additional instructors for an assignments (e.g., TAs)

- Group or pair submissions

- Supports distribution within assigned courses and/or sections (e.g., a tutorial section)

- Supports multiple assignment topics

- Email reminders to students who have not submitted a phase

Resources

Documentation: http://lms.unimelb.edu.au/teaching/assessment/praze/

Publications

Mulder, R.A. & Pearce, J.M. (2007). PRAZE: innovating teaching through online peer review. ICT, pp. 727-736.

TurnItIn's PeerMark

http://turnitin.com/en_us/training/instructor-training

Overview

PeerMark supports peer feedback, but does not explicitly support peer grading. An instructor can manually determine peer grades by exporting the review data.

Cost: Free

UBC Supported: Yes

Getting Started: Instructors can request access to TurnItIn by following the instructions on the E-Learning @ UBC website for TurnItIn under 'Get Started': http://elearning.ubc.ca/toolkit/turnitin/

Students gain access by creating an account with TurnItIn and joining the course with a specified Class ID and Enrollment password. Students can use an alias in the system.

Authoring Assignments

TurnItIn separates submission of the original assignment from the PeerMark module. A new PeerMark assignment must be created from scratch, and must be tied to an existing TurnItIn assignment.

The PeerMark Process

Phase 1: Submission	➡	Phase 2: Reviews & Self-Assessment*	➡	Post-Assignment: Comparison*
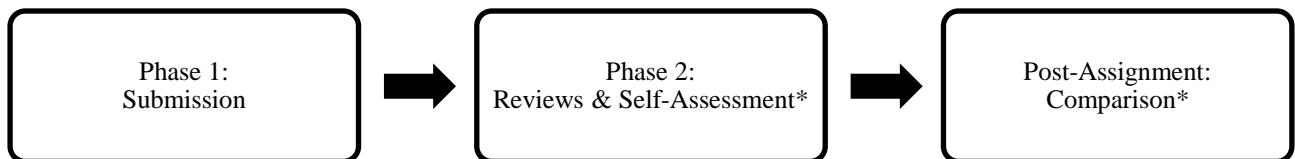
*Optional

Phase 1: Submission

PeerMark supports free text entry and upload of arbitrary file types.

Phase 2: Reviewing

Students complete the number of reviews specified by the instructor. The components of the review can be customized by the instructor, and can include both quantitative scales and free text.

Students can also be required to complete a self-assessment. If the instructor enables this option, the students' own submission will be included as one of the reviews that they must complete.

When students are completing the reviews, supported document file types (e.g., .doc, .txt, .pdf, etc.) will be displayed in the document viewer in the online system, and can be marked up with inline comments. All other file types will be made available to download via a download link.

Post-assignment: Feedback (Optional)

If endabled, students can rate the helpfulness of each review that they received out of 10. The instructor does not appear to have access to these ratings.

Marking

PeerMark does not directly support peer grading.

The system supports giving marks for review quality and completion only, and does not automatically take into account the scores assigned to a submission by reviewers. Instructors have two options in determining review marks: 1) manually assign a grade, or 2) automatically determine a grade based on the proportion of required reviews completed.

To generate a peer based mark for the quality of the submission, the instructor must calculate the grade manually. To do this, the instructor can export a .xls file containing a series of averages calculated based on the scores each student submission received from reviews.

Other useful features

- Export grades as .xls file.

- Automatic or custom allocation of submissions to reviewers

- Custom rubrics and point allocations

- Assign additional instructors for a course (e.g., TAs)

In addition to getting access to PeerMark, using TurnItIn for assignments gives the instructor access to all of the other TurnItIn features. This includes the Originality Check functionality, which can analyze written submissions for plagiarism.

Resources

E-Learning@UBC Documentation: http://elearning.ubc.ca/toolkit/turnitin/

Tutorials: http://turnitin.com/en_us/training/instructor-training

Other Systems

The following are additional systems that offer peer evaluation, but that at the time of writing were either unavailable to demo or appear to have been undeveloped/unsupported for a number of years.

PEAR (Peer Evaluation, Assessment and Review)
University of Guelph. http://www.uoguelph.ca/peartool/

Expertiza
North Carolina State University. http://expertizaatncsu.sourceforge.net

Captain Teach
Brown University

Moodle – Workshop Module
https://docs.moodle.org/27/en/Workshop