Crowdmark Feature Overview

Spring 2021
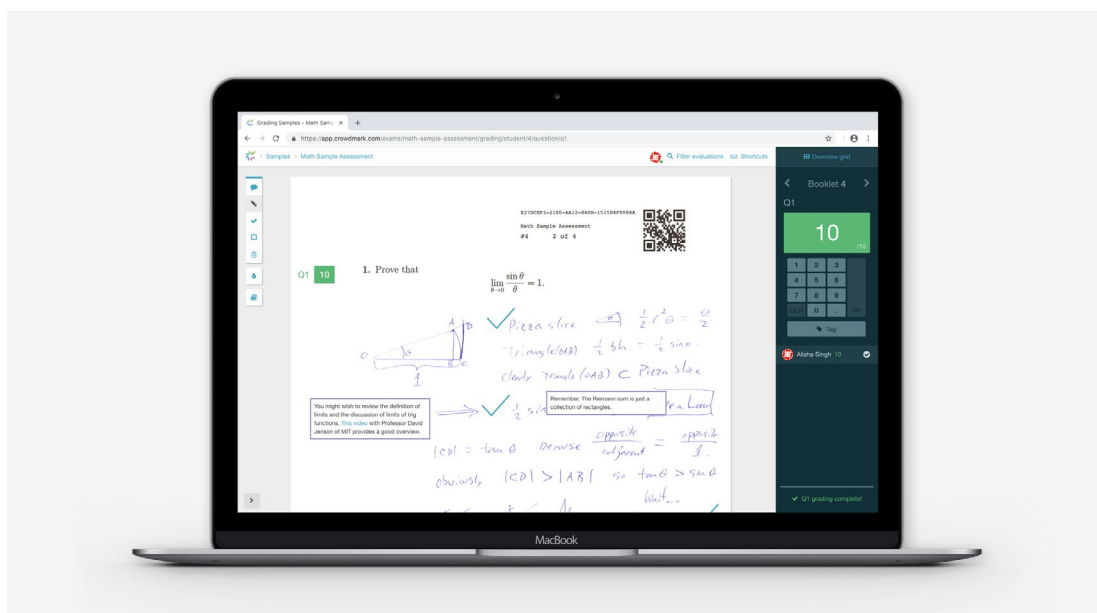
Contents

Crowdmark Overview

Crowdmark is a grading and assessment solution that enables educators to grade paper-based and digital exams and assignments 3× faster than traditional workflows while leaving richer feedback for students.

Our solution provides a patented paper-based grading system for in-class exams as well as synchronous and asynchronous remote assessment workflows.

We streamline grading of short and long answers with a full suite of grading tools while automatically grading multiple choice questions. Student work is returned electronically to their Crowdmark portfolio along with unparalleled insights into performance.

We believe that teaching and learning is a fundamentally human-to-human experience therefore we do not seek to replace the expertise of instructors with robots. In contrast to our competitors, Crowdmark is intentionally designed to enhance and support teaching and learning. Our product leverages artificial intelligence to automate administrative tasks freeing up educator's time to leave rich personalized feedback for every student.

Save Time

Crowdmark saves educators valuable time by streamlining the exam and homework workflow and taking care of all of the tedious administrative parts of grading. But this does not come at the cost of leaving less feedback for students.

Crowdmark allows educators to grade student work up to 3× faster

An independent study completed at the University of Toronto (2014) comparing traditional grading workflows to using Crowdmark, found grading time can be reduced to 1/4 of traditional grading time. Please click here to view the white paper.

Crowdmark eliminates the need to shuffle paper, alphabetize, add points, input grades, and store exams/homework in boxes. Grading can start as soon as the first batch of exams is uploaded. There is no preparation or set-up required to grade student work or add scores. Instructors have the option to create a rubric in advance or simply grade dynamically by entering scores and adding comments.

Automation
Automatic matching of students to exams
Automatic sorting of booklets from multiple versions of an exam
Reuse your existing exam templates by simply dropping the PDF into Crowdmark
Automatically generated multiple choice bubble sheets – no special paper required
Automatically grade multiple choice bubble sheets or browser-based questions
Duplicate existing assessments including comment library
Create, reuse, import, and export rubrics/grading schemes/comments via CSV
Automatic navigation to the next ungraded question
Automatic flagging of scores exceeding maximum total per question
Retroactively batch update/edit comments (with or without points) across all exams
Invite grading team via email with automatic acceptance
Keyboard shortcuts for grading tools

Flexible Grading Tools

Create comments 'on-the-fly' or reuse previously created comments

Comments support emoji, Markdown, and LaTeX for math and chemical notation

Combine long answer, short answer, and multiple choice questions in one exam

Comments can include images (e.g. graph or diagram) and links to learning resources

Review overview grid to manage grading at a glance

Free-form annotations with a pencil tool/stylus

Apply ✔ ✘ ? stamps with a click or a keystroke

Highlight student work

Six different colours of 'ink' for highlights and annotations

Enter question scores via keyboard or built-in keypad

Easy navigation to any exam booklet

Search for assessment by booklet number or student name

Reduced number of regrade requests because of rich and clear feedback

Assigned Assessments

Remote Exams and Homework

With our Assigned Assessment workflow, educators can assign assessments (e.g. exams and homework) that students can write anywhere, anytime, and submit for evaluation with the click of a button.
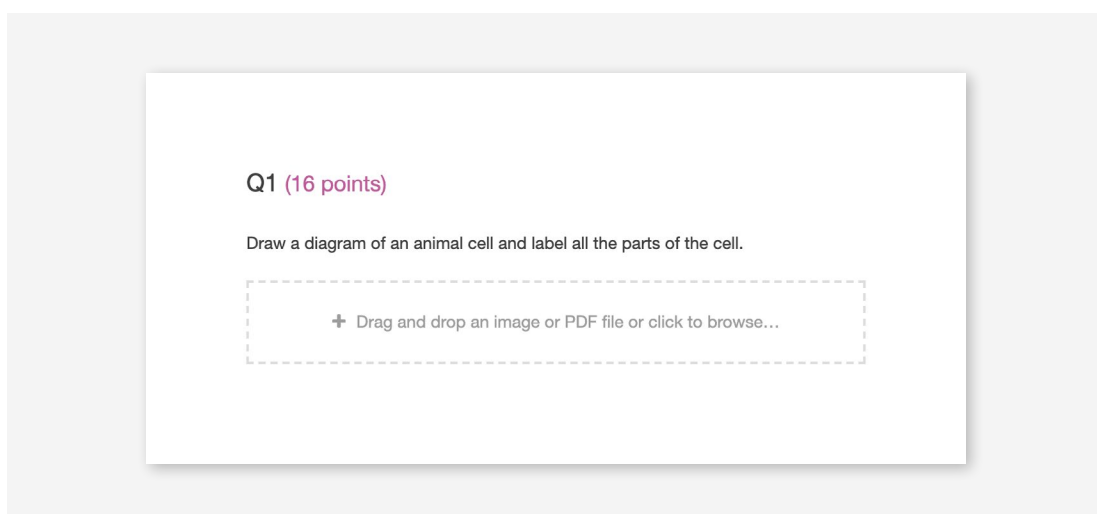
Setting up your exam in Crowdmark is fast and flexible. If you have prepared the exam already, you can attach the file for students to print off and complete, or you can enter the questions directly into Crowdmark and have students upload or enter their responses online within a specified timeframe.

Crowdmark offers three different question types: handwritten work, text entry, or multiple choice.

Flexible Question Types

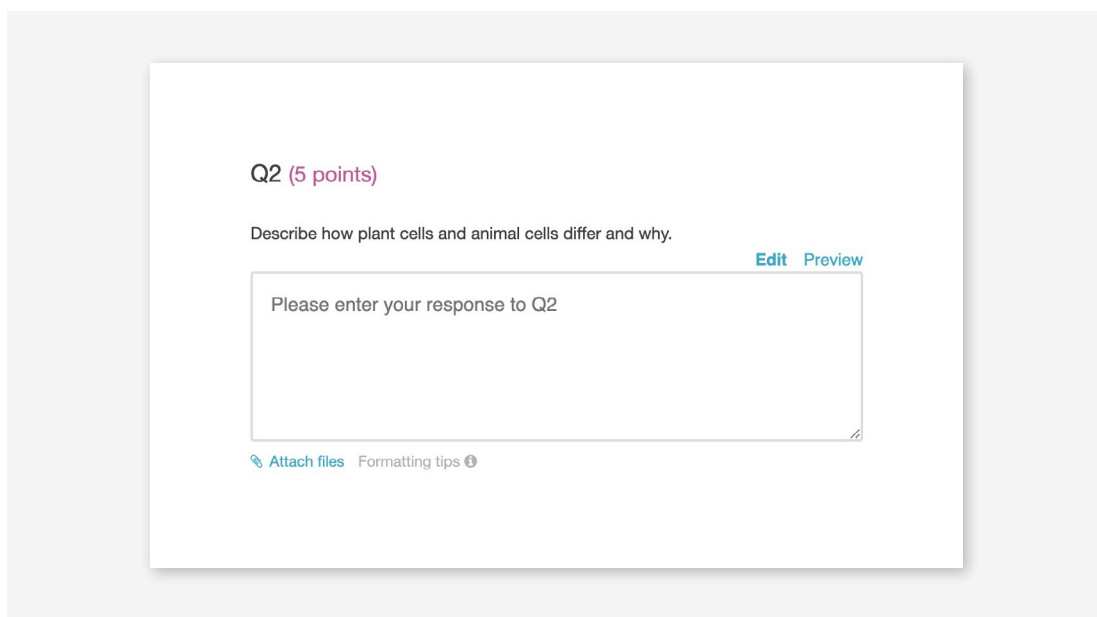### Image and File-Based Submission

This response type allows students a great degree of flexibility when answering complex questions. Students may complete their answers on paper and scan or take a photo and upload a JPG or PNG to Crowdmark. Alternatively, they can complete their answers digitally and upload a PDF to Crowdmark.
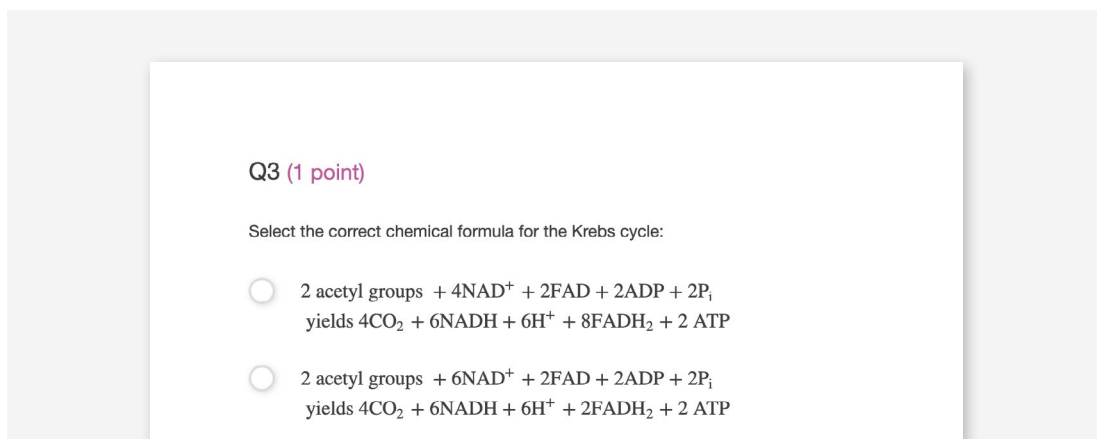
Text Entry with Markdown Formatting

This response type allows the student to type their answer directly into the Crowdmark interface. They can use Markdown to include images, files, and links in their responses and LaTeX for equations and chemical notation. Images are automatically embedded in the text, while other files can be added as a link for the grader to view or download the file.

Multiple Choice

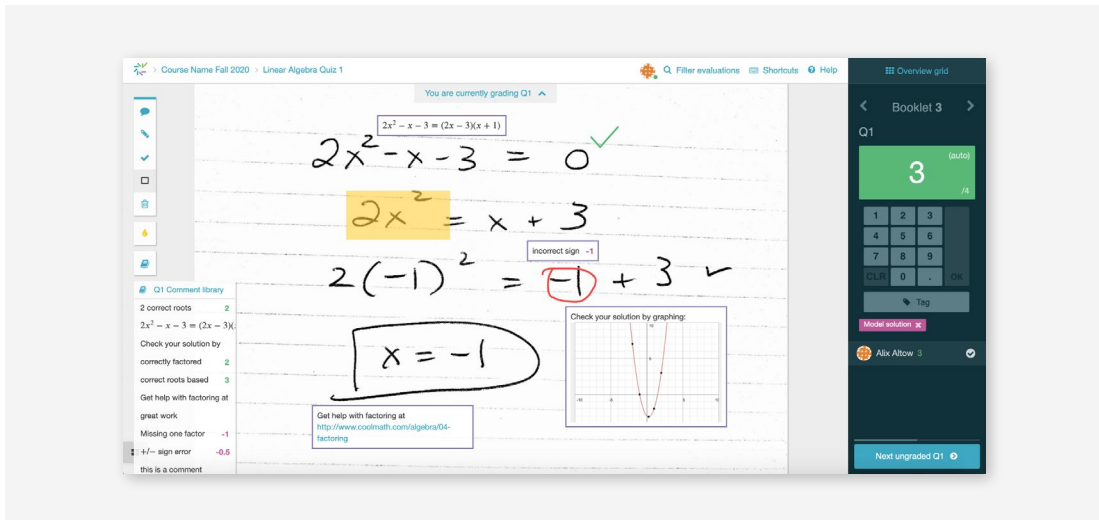Multiple choice allows for instructors to set questions with predefined responses for students to select. An instructor can indicate one or more correct responses to a multiple choice question. These responses are automatically graded by Crowdmark.

Features for Educators

Grade anywhere, anytime on any Internet-connected device including tablets with a stylus.

All major browsers are supported.

Assignments and remote exams can be set up in advance with automatic scheduled distribution to students.

Graded assessments can be returned electronically.

Group assignment workflow allows students to submit work as a group and receive the same grade and feedback.

Assignments can be submitted with variable-length answers.

Flexible timing and scheduling options are available for students who need accessibility accommodations.

Late penalties are automatically applied to the total score and can be configured to deduct a customizable percentage per day, hour, or minute after a deadline has passed.

Gain real-time insights into each student's activity during an exam with a detailed log for all submissions.

Drag and drop functionality makes it easy to change the order of a list of questions in any assignment. Variation of content between versions of an assessment will prevent students from knowing answers ahead of time or answers being posted to a third party.

Images uploaded by students are automatically optimized to load quickly when grading.
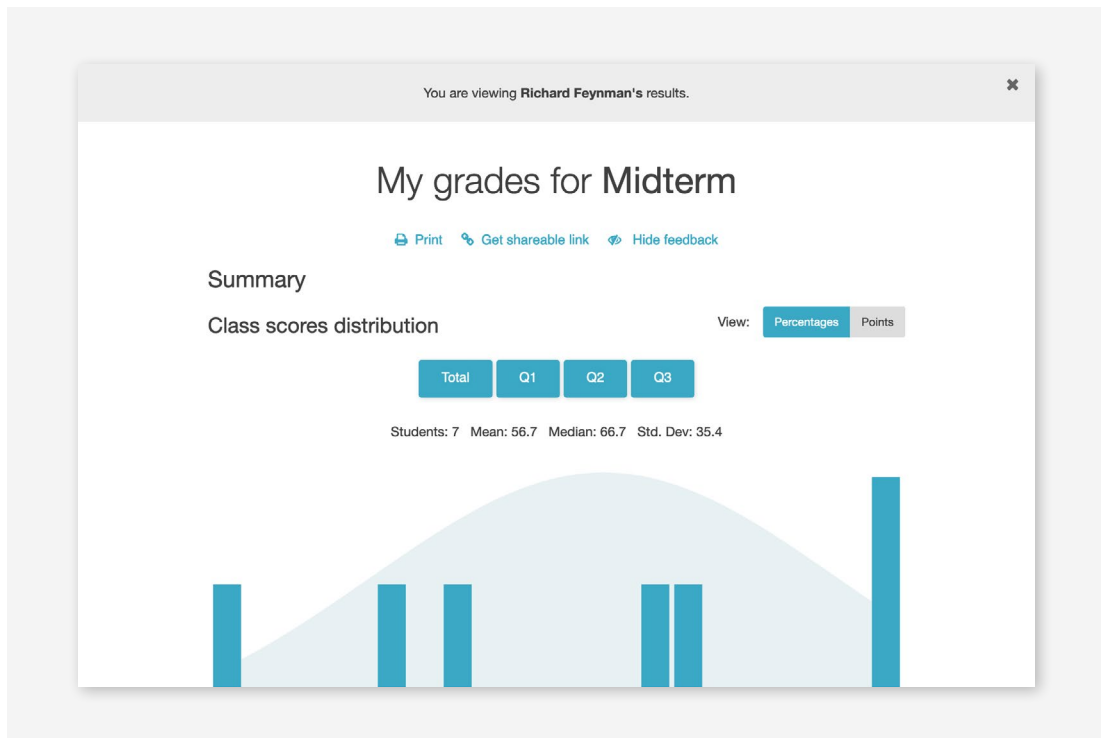
Features for Students

Students have a Crowdmark Portfolio storing all graded work and future assessments in one place.

Students can access their Crowdmark Portfolio by signing in through their institution's LMS.

Students can upload assignments directly to Crowdmark via mobile phone.

Students can upload a PDF and drag pages to the correct answer fields in the submission interface.

Students can toggle feedback on and off.

Students and Instructors can archive courses that are no longer active.

Asynchronous assignments allow students to write assessments at a time that's convenient for them, within a designated window.

A countdown timer helps students understand how much time they have left to complete an assessment.

Automatic image resizing ensures that answers upload to Crowdmark faster and that students don't need to perform any additional steps.

Administered Assessments

In-Class and Proctored Exams

Crowdmark's administered assessment workflow makes it easy for educators to create and grade in-class exams monitored by the instructor or other supporting staff. Administered assessments allow instructors to upload existing custom format exam booklets, automatically assign a unique QR code to each page, and generate a printable PDF file containing a booklet for each student.

This paper to digital workflow allows for easy printing, scanning, and uploading to an online collaborative grading system.

Worry-free Scanning and Uploading

Crowdmark's patented QR Code Administered Exam workflow provides a bulletproof method for handling large-scale exams. Using optical character recognition and artificial intelligence, exams are automatically matched to the student roster and pages are routed to the correct location.

Even if a stack of exams is inadvertently mixed up, shuffled, or dropped, the pages will still be routed to the right place. In other systems without QR codes, educators will be left manually sorting and guessing page order based on a student's handwriting.

Crowdmark automatically detects errors and missing pages and will notify the facilitator exactly what page is missing from which booklet.

Proctored Assessments for Distance Education

Crowdmark offers a workflow for online learning or students who are studying at a distance. Often these students must complete a written paper-based mid-term or exam. In this scenario, a Proctor can log into Crowdmark to download and print the exam. The student completes the exam in a supervised setting. Once completed, the exam is scanned into Crowdmark and graded back on campus. Exams no longer need to be couriered to and from the exam centre saving time and costs.

Grading and Feedback

Faculty and teaching assistants can grade exams and homework anywhere, anytime by accessing Crowdmark via any Internet-connected device including desktops, laptops, and tablets. Crowdmark works elegantly with a tablet (e.g. iPad, Surface) and stylus similar to a red pen on paper but with many added benefits.

Educators no longer have to carry around stacks of paper or grade from a designated location. Students no longer have to commute to campus to drop off assignments or pick up graded work. Valuable teaching time is no longer wasted by handing back student work during class time because student work is returned electronically.
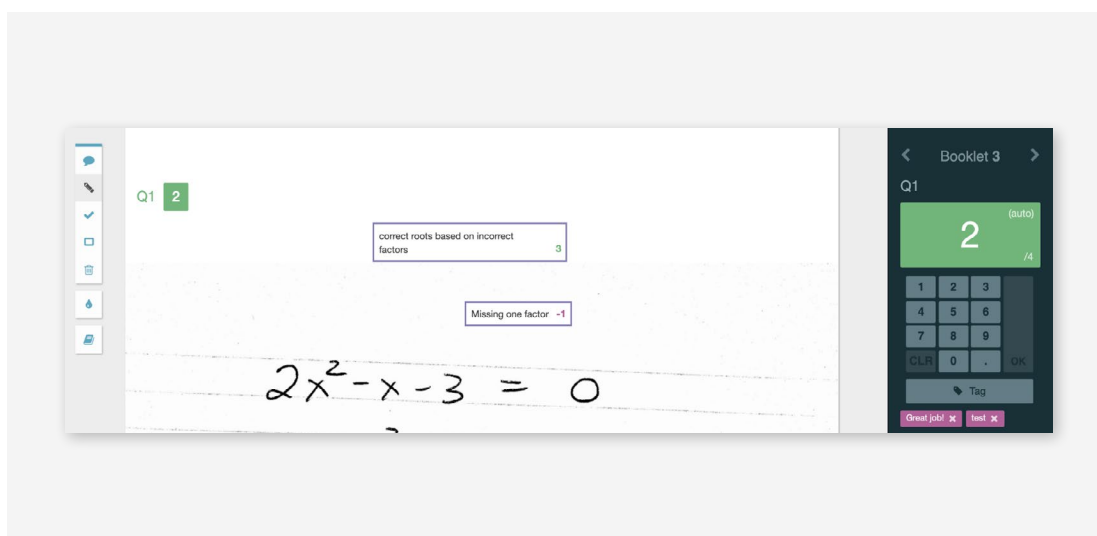
Integration with Learning Management Systems

Crowdmark is integrated with all major Learning Management Systems including Canvas, D2L, Sakai, Blackboard, and Moodle. Crowdmark supports single-sign on, import of courses and student rosters as well as export of student grades.

More Formative and Personalized Feedback

Crowdmark enables educators to leave richer, more personalized feedback for students. A key advantage is that the feedback is left directly on the students' work to support student understanding of errors. There is no limit to the amount of feedback that can be given and typed comments are easier for students to read than handwritten comments.

Inline Feedback for Students

Comments, hyperlinks to resources, images, and graphs are inserted directly on the student page to provide in-context feedback.

Exemplary answers can be created in advance and dragged onto the page including images of diagrams or graphs.

Rubrics, grading schemes, and comments can be created in advance and shared with the grading team to ensure consistency.

Comments can be batch edited or updated retroactively (including point values) with no limits. For example, a comment can be used 1000 times and updated on the 1001th time updating all past instances.

Import comment library, rubric, and grading scheme from a CSV file. Instructors can share the file or reuse it for future exams.

Highlight and add comments directly to text entry submissions.

Filter student work using tags to identify exemplary answers.

Create comments dynamically while grading to respond to student messages on the exam. This creates a dialogue between educators and students and a more personalized experience for students.

Topics can be added to assessment questions to provide insight into student performance against learning outcomes.

Grader Management and Collaboration

Crowdmark is an online collaborative grading solution that enables instructors working alone or with a team of assistants, to evaluate student work more effectively. Crowdmark provides a number of features to help manage the grading team and ensure unbiased, consistent grading.

Grading in Crowdmark is organized by question. Q1, Q2, Q3, and so forth. Crowdmark will automatically navigate to the next ungraded answer of a specified question. Therefore graders can be assigned specific questions to grade. Grading all Q1s, for example, improves efficiency and consistency enabling graders to grade faster while providing richer feedback. Alternatively, Facilitators may choose to assign grading by booklet. Crowdmark allows for multiple graders to leave independent evaluations on the same question.

Facilitators also have the option to clone another grader's evaluation. This is useful in situations where a Facilitator is reviewing a grader's work and needs to make changes before the evaluation is shown to the student. Crowdmark ensures that ownership of each piece of feedback is maintained.

Q1	Q2
98% graded (1 left)	✔ Grading complete!
06:15 at 17 eph	04:30 at 19 eph
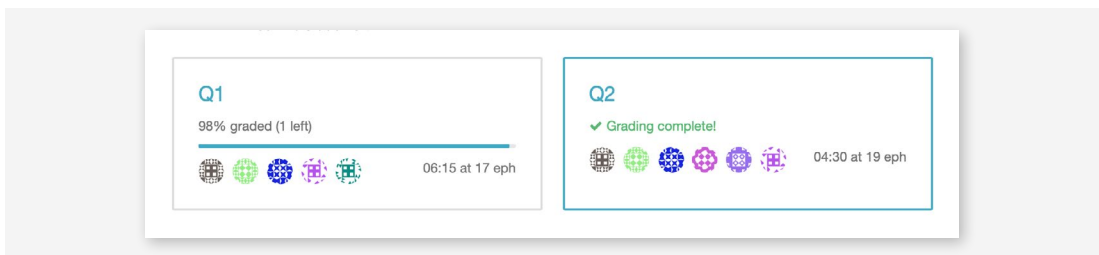
Managing Graders

Graders are invited to grade an assessment via email.

Crowdmark provides detailed timing data on all graders including velocity (evaluations per hour) and total grading time per assessment.

Filter using tags to identify exemplary answers, cheating, areas needing extra attention.

Filter on tags, scores, and comments to ensure consistency.

Crowdmark allows instructors to download student work before and after grading (including annotations) in PDF format.

Reporting and Analytics

Features for Students

Crowdmark offers a personalized performance report for each student for each course. The report helps students identify their strengths as well as provide suggestions on areas for improvement.
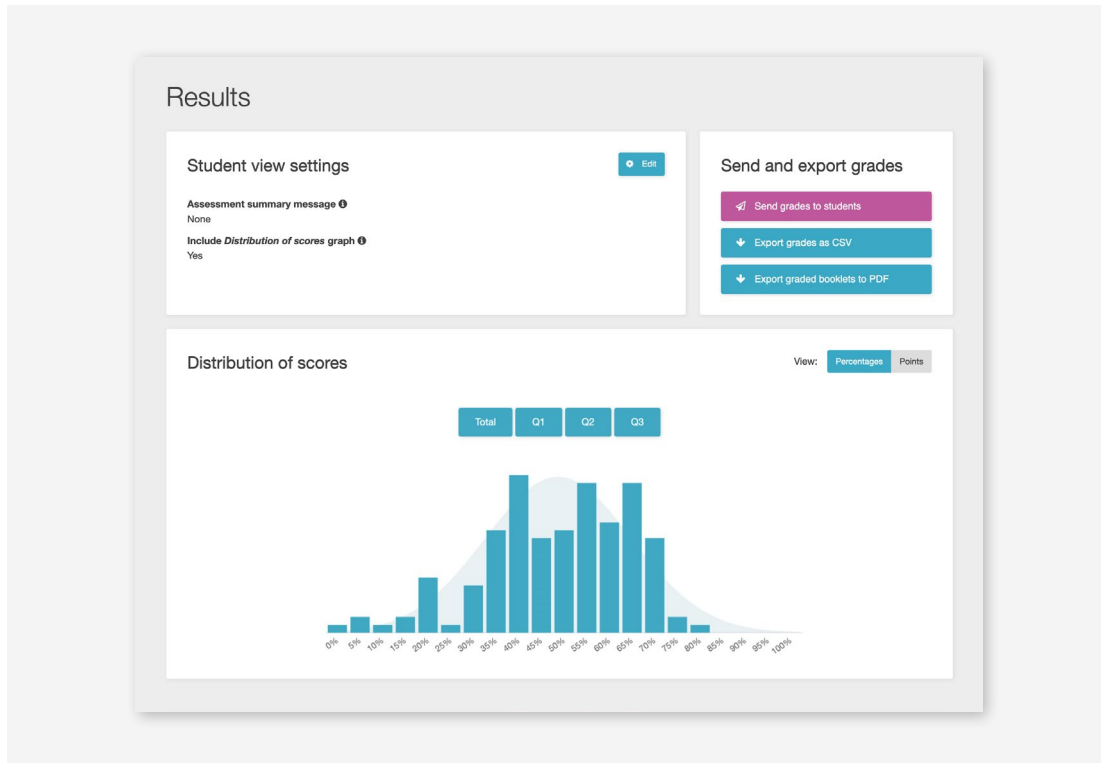
Features for Educators

Educators can view the number of times a comment was used to see the most common errors made by students. Detailed score reports, with granular scores for each question, can be downloaded as a CSV file to further analyze data.

Descriptive statistics and histograms are generated for the total score and for each question. Crowdmark generates reports for each assessment that include mean, median, and distribution of the student results. There is an option to share these reports with students when their graded assessments are returned.

Overall test statistics and item analytics for multiple choice assessments are available in Crowdmark. These reports and visualizations provide information to the instructor on question difficulty, ability to discriminate between strong and weak students, quality of distractor responses, and test reliability.
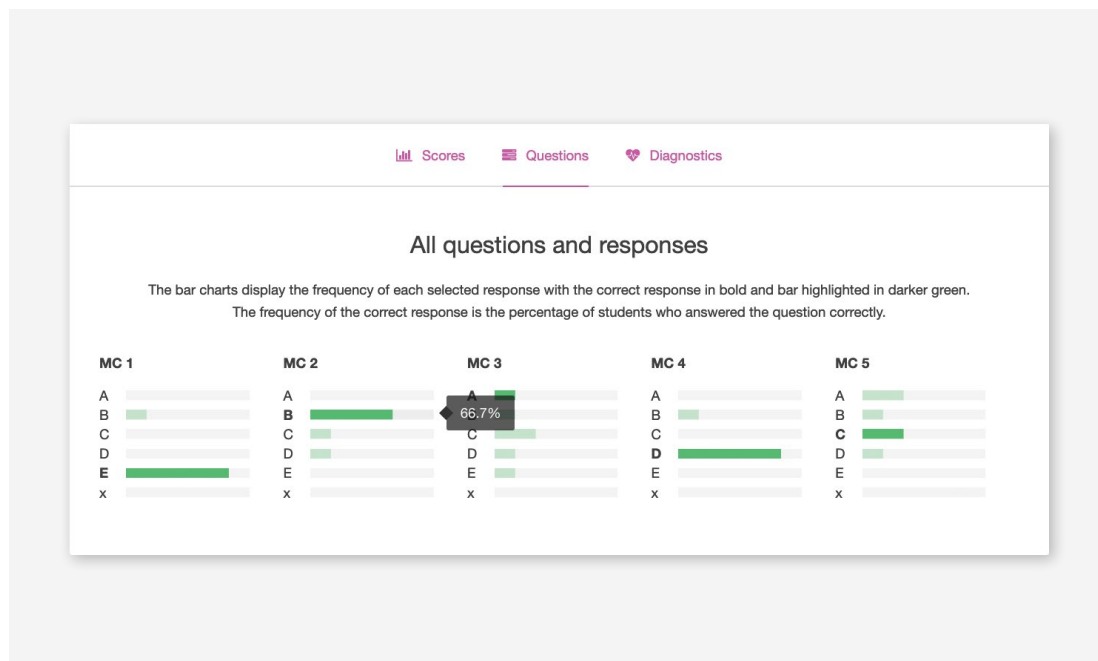
Instructors may export grades for all assessments in a course at once. The exported CSV file will include a column for each question of each assessment as well as a column with the total scores for each assessment.

Advanced Analytics

Further investigations into scores within each assessment or across an entire course can be carried out using the Crowdmark API. Instructors at some universities have used the Crowdmark API to generate heat map visualizations of scores across an entire course.

Some instructors have examined correlations between questions and final grades in a course in an effort to identify questions that arise early in the term that may have stronger predictive influence on final grades than initially thought. Other instructors have started to explore the sentiment and content of comments left by members of the instructional team and how those natural language dimensions may influence the learning performance of students over time.

Additional Resources

Security and Integrity

Crowdmark is built as a modern web application aligned with best practices in responsive user interface, API design, and security. Crowdmark is LTI compliant and has successfully integrated with all major LMS solutions.

Crowdmark works with various single-sign-on mechanisms (e.g. LDAP, Shibboleth, CAS), and follows the RESTful approach for API design. Crowdmark is committed to maintaining the privacy and security of our customers' data and is FIPPA and FERPA compliant.

Security Features
Crowdmark is the only online grading tool with anonymous grading to prevent bias. Only users with a Facilitator role in Crowdmark can access student identity.
Students are enrolled directly into courses; there are no tokens required that can be lost or shared.
Unique tags can be added to student answers and filtered based on specific criteria. For example, student work can be tagged and filtered for suspected cheating.
Crowdmark creates a digital artifact of each exam that cannot be altered after scanning.
All student homework uploads include an audit log that displays each action taken by a student with a timestamp for both the instructor and the student.
Crowdmark logs the MD5 hash (a file's unique identifier) for each file uploaded to an assessment, which can later verify the authenticity of an upload.
All grader work is timed and logged in a team management dashboard to provide Facilitators with maximum visibility into the grading process.
Crowdmark's Exam Matcher App can be used in real-time by proctors to match students to exams with verified ID and take attendance during exams.
Owners can lock an assessment at any time.
Crowdmark provides multi-factor authentication (MFA) as an option for each institution. Our MFA feature is implemented with email authentication.

Accessibility

Crowdmark follows modern web application development practices to ensure accessibility to people with vision, hearing, and motor control disabilities. Scanned images of handwritten work by students may be intrinsically difficult to evaluate by some users with visual ability challenges.

Crowdmark strives to comply with the W3C standards for accessibility and build our product to meet these standards whenever possible.

Accommodations for Students with Special Needs

Crowdmark offers a specialized workflow for Accessibility Services. This workflow meets the needs of students who require special accommodations for exams. Accessibility Services personnel can be assigned a Proctor role to download the required exam from Crowdmark.

Once the student has completed the exam, it is scanned into Crowdmark and will be added to the ungraded exams along with the rest of the class. There will be no obvious indicator that the exam came from Accessibility Services and this helps to prevent bias in grading.

Resources

Moving Your Assessments Online
https://crowdmark.com/help/remote-assessments/

Best Practices for Remote Assessments
https://crowdmark.com/blog/best-practices-for-remote-exams/

5 Ways to Prevent Cheating in Online Assessment
https://crowdmark.com/blog/five-ways-to-prevent-cheating-in-online-assessment/

Pivots, Pitfalls, and Productivity – How are you Navigating the New Normal?
https://crowdmark.com/blog/pivots-pitfalls-and-productivity-panel-discussion/

Teaching Practices for your Virtual Classroom
https://crowdmark.com/blog/teaching-practices-for-your-virtual-classroom/

Contact Crowdmark

For questions about support please email support@crowdmark.com.

For questions about purchasing Crowdmark please contact Michelle Caers at michelle@crowdmark.com.

Crowdmark welcomes feedback and feature requests from our community of educators. If you have a feature request please send it to support@crowdmark.com.