



Illustration by Ben Wiseman

# Pearson Mastering™

## Implementation Guide

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## HOW TO USE THE IMPLEMENTATION GUIDE

Hello and welcome! Whether you are new to Mastering and seeking guidance for getting started, or have taught with the program and are now exploring yet-undiscovered features, you have come to the right place!

At Pearson, we believe that learning is a life changing opportunity, and that education should have a measurable impact on learners' lives. The Pearson Efficacy Implementation Guide was created to help you have a successful impact on your students' lives.

Here's what you get in the Implementation Guide:

- Just-in-time assistance for planning, setting up, and managing your course.
- Insightful best practices and strategies for effective implementation of your course based on the results found in case studies and white papers.
- Testimonials and tips from instructors who have successfully been down the path you are taking.
- As you work through the lessons in the Implementation Guide, links are provided to step-by-step instructions and tutorial videos. You will know this additional support is available when you see the following icons:

	Watch a video showing you the steps for completing the activity.
	Open up the relevant Instructor Online Help page for a detailed walk-through of the topic.

In the next section, [What is Your Recommended Learning Path?](#), use the table as a guide to help you figure out where to go in the guide based on your specific needs.

## What is Your Recommended Learning Path?

Why am I here?	Modules
<p><b>I am new and I need to get up and running as quickly as possible</b></p>	<p>Start with Modules <a href="#">1</a>, <a href="#">2</a>, and <a href="#">3</a>.</p> <p>Complete <a href="#">Module 4</a> <b>before</b> classes start.</p> <p>Refer to <a href="#">Module 5</a> for info on assignments.</p> <p>Go through <a href="#">Module 8</a> on the Gradebook.</p> <p>Read <a href="#">Module 9</a> before the semester ends.</p> <p>It is also suggested you refer to the <a href="#">Planning Toolkit</a> and the <a href="#">Mastering Quick Start Guide</a>.</p>
<p><b>I am interested in using Mastering in a different delivery method or implementation model (i.e. flipped classroom, hybrid, online, and so on).</b></p>	<p>Refer to <a href="#">Module 1</a> and <a href="#">Module 2</a>. Once you know which features you want to use, refer to the appropriate module covering that topic.</p>
<p><b>I am a section instructor, assistant, or student tutor that works directly with students.</b></p>	<p><a href="#">Module 4</a> Only (<i>Note: If you work with grading or assignments in Mastering, you may need to refer to other modules.</i>)</p>
<p><b>I am an experienced user but want to redesign my course or incorporate best practices</b></p>	<p>Scan the table of contents to find the modules and lessons that address your interests and needs. Refer to <a href="#">Module 2</a>, the <a href="#">Planning Toolkit</a>, and the <a href="#">Course Redesign and Active Learning Implementation Toolkit</a>.</p>

<b>I want to know about the NEW features in Mastering</b>	See <a href="#">What's New</a> . <a href="#">Module 6</a> (Check your course to see if Adaptive Follow-Ups and/or Dynamic Study Modules are available) and <a href="#">Module 7</a> (Learning Catalytics is available for all courses)
<b>I want to learn more about measuring my students' performance and learning gains.</b>	Refer to Modules <a href="#">1</a> , <a href="#">2</a> and <a href="#">8</a> . It is also suggested that you refer to the <a href="#">Planning Toolkit</a> .
<b>I have specific areas I want help with</b>	Scan the table of contents to find the lesson that addresses your needs.
<b>I am an experienced Mastering user that just moved to Modified Mastering.</b>	Refer to: <ul style="list-style-type: none"><li>• <a href="#">Modified Mastering Implementation Guide</a></li><li>• <a href="#">Mastering vs. Modified Mastering Feature Details (PDF)</a></li><li>• <a href="#">Transition from Mastering to Modified Mastering (PDF)</a></li></ul>

**I am integrating Modified Mastering with my campus learning management system (LMS) such as Blackboard, Brightspace by D2L, Canvas, or Moodle.**

This is not the right guide for you. Modified Mastering is the alternative version of Mastering that allows for LMS integration.

Read the [Modified Mastering Implementation Guide](#). See also the [Modified Educator Support Pages](#).

**Important:** Refer to the LMS Support Pages to Create Your Course, Sync Grades, and Get Students Started:

- [Blackboard Learn](#)
- [Canvas](#)
- [Desire2Learn](#)
- [Moodle](#)

## Where Can You Go for Additional Help?

What is the issue?	Solution
<b>I would like to sign up for a virtual training and Q&amp;A at a time that works best for you.</b>	Visit the Mastering website and click <b>Training &amp; Support</b> . Select <a href="#">Request Training</a> to connect with a member of our Customer Digital Success team.
<b>I am having difficulty setting up my instructor account</b>	<a href="#">Pearson Support</a>
<b>The program is not displaying correctly on my computer</b>	Make sure to check the system requirements. If you need more help, contact <a href="#">Pearson Support</a> .
<b>I need a handout and a PowerPoint for my students to get registered for Mastering successfully.</b>	Click <b>Get Your Students Started Materials</b> from within the Learn More pod on your Mastering Course Home page.
<b>I need detailed information about how Mastering features work.</b>	Visit <a href="#">Mastering Online Help</a> where you can search for directions on how to do something specific in Mastering.
<b>I want to read this guide in PDF format.</b>	Click Download PDF from the guide menu on the top right.

## MODULE 1: OVERVIEW OF MASTERING

### Lesson 1: The Mastering Story: A Brief History

Before we get into how instructors use Mastering, it is helpful to understand why and how Mastering was developed and how it has evolved to include all the great features in the system today.

Mastering was originally funded by a National Science Foundation grant and launched first in Physics in 2002. It then branched out to Astronomy, Chemistry, Biology, and eventually to all of the disciplines we support today across Science and Engineering. We are committed to making each Mastering product specifically targeted to solve the teaching and learning challenges of each course.

Mastering was developed by a professor whose students were failing his course, and he didn't have the time and resources to sit down in individual office hours with each one, responding to each student's specific misconceptions. The system was conceived to emulate the office hour experience, only online. The system offers students hints and/or answer-specific feedback to their misconceptions. It helps students when they get stuck (which usually is at home at midnight!) and gives them the individual coaching they need to succeed. From an educator's perspective, the diagnostics within Mastering allow you to quickly see where your students struggle the most to address before lecture or exams.



[The Mastering Story](#) with Dr. David Pritchard, MIT physics professor and founder of Mastering (4 min 17 sec)

In addition, you can read the Massachusetts Institute of Technology journal articles published around the development and functionality of Mastering including:

[Pattern, correlates & reduction of homework copying](#) (David J. Palazzo Y.-J. L., 2010)

[Measuring student learning with item response theory](#) (David J. Palazzo Y.-J. L., 2008)

[Time to Completion of Web-Based Physics Problems Problem-solving transfer in web-based Socratic Tutor](#) (Rasil Warnakulasooriya D. E., 2007)

[Evidence of problem-solving transfer in web-based Socratic tutor](#) (Rasil Warnakulasooriya D. J., 2005)

## Mastering Brings Learning Full Circle

For more than 12 years, Pearson's Mastering has brought learning full circle. Mastering is the world's leading online homework, tutorial, and assessment system for science and engineering, designed to improve results and increase student engagement before, during, and after class. Learn about a few of the important features below that have been added to Mastering over the years.



### [Mastering Brings Learning Full Circle](#) [Continuously Adaptive Video](#)

**Before class.** Instructors ensure students come to class ready to learn by assigning Dynamic Study Modules, reading quizzes, pre-lecture quizzes, and formative assessments that test students' knowledge of the material. To learn more about the Dynamic Study Modules now available, [watch the Introduction to Dynamic Study Modules video](#).

**During class.** Learning Catalytics™ and powerful Mastering media, such as simulations, Flix, and videos, integrate technology in the classroom to engage students and encourage critical thinking while bringing tough topics to life. To learn more about Learning Catalytics, [watch the Introduction to Learning Catalytics video](#).

**After class.** Students continue to master concepts through homework, quizzes, and testing that automatically assess your students' comprehension of the material. Adaptive Follow-Ups assignments provide coaching and targeted opportunities for remediation, personalized to each student's strengths and weaknesses. To learn more about Adaptive Follow-Ups, [watch the Introduction to Adaptive Follow-Ups video](#).

## The Learning Science behind Pearson Mastering

Pearson's strategy for empowering learners starts with a deep understanding of the learning sciences: diverse, transdisciplinary fields that seek to understand how humans learn.

Using insights distilled from the learning sciences, we've arrived at a series of learning design principles that guide the creation of our products. These tenets have shaped the design of Pearson Mastering — and they drive us as we continue to refine Pearson Mastering in order to deliver even better learning outcomes.

Pearson Mastering demonstrates three key learning design principles:

- Supporting learning via scaffolding
- Supporting knowledge retention
- Customizing content through adaptivity

## Lesson 2: Differences between Mastering and Modified Mastering

Mastering is now available in two different versions, Mastering and Modified Mastering. Although similar in most aspects, it's important to note some differences between these options. It is also important that you and your students are clear on which version you are using in your course.

All of the features of Mastering are also within Modified Mastering, but Modified Mastering has some additional features, including:

- Enhanced course management tools.
- Ability to integrate with your campus Learning Management System (Blackboard, Brightspace by D2L, Canvas, or Moodle).
- Temporary 14 day student access.

Mastering and Modified Mastering differ in other aspects as well including sign in, interface design, the course creation process, and more. Please click on the PDF below for additional information about the differences between Mastering and Modified Mastering.



### PDF: [Mastering vs. Modified Mastering Feature Details](#)

*For more details about Modified Mastering, please see the [Modified Mastering Implementation Guide](#). Not sure which version is best for you? [Contact your sales representative](#).*

There are a few important points to be aware of no matter which version you use for your course.

#### 1. **Access code cards are author, textbook, edition, and version specific.**

To avoid students purchasing incorrect codes from outside sources such as Amazon or eBay, it is recommended that you provide your students specific

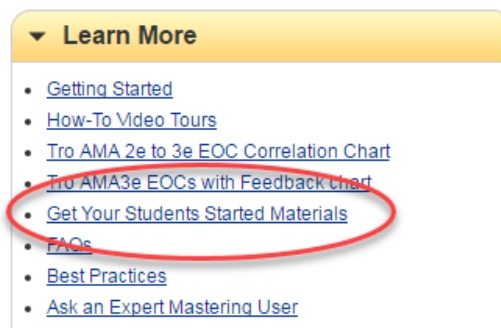
details in your syllabus on what you will use including the *author, textbook, edition, and version* information.

**Important:** As of 8/15/2016, students will be able to register and enroll in courses with either a Modified Mastering or regular Mastering access code card as long as the access code card is the same textbook edition, author, and title. For example: If you use Campbell 10E for your Mastering course, students can register for your course with a regular Mastering Campbell 10E access code card or with a Modified Mastering Campbell 10 access code card.

Notes about interchangeable access codes for Modified Mastering and regular Mastering:

- Once a student redeems their access code for a specific version (i.e. Modified Mastering), then their access will only allow them to enroll into additional courses for that same version. Therefore, if a student has registered for a Modified Mastering course, then they now need a new access code to register for a separate regular Mastering course for the same textbook and vice versa. Access code interchangeability allows them to register for either version, but access after the code has been redeemed only works for the version they registered with initially.
- Students can register for a LMS integrated course with either a regular Mastering or Modified Mastering access code. However, in order to use LMS integration, you must be using Modified Mastering.

2. **Mastering and Modified Mastering have different websites.** Provide students with the correct URL. You can find a handout to give to your students with registration and access information on your Course Home. Look for the Learn More area and select Get Your Students Started Materials.



*Note: If you are using Modified Mastering integrated with your Learning Management System (Blackboard, D2L, Moodle, or Canvas), students register and access their course directly through the campus LMS.*

3. **LMS (Learning Management System) integration is *only* available with Modified Mastering and not available with regular Mastering.** With Modified Mastering, instructors and students can link their LMS and Pearson accounts to enable single sign-on to Modified Mastering from within their LMS courses. Students can now spend more time learning and less time managing course access.

If you are using Modified Mastering *and* pairing your course to your campus LMS, use this guide for best practices around features like assignments, Learning Catalytics, adaptive learning, and so on.

Click on the appropriate link below to get to your specific LMS Educator Support pages for training specific to LMS integration including course setup, grade sync, and student access.

- [Blackboard Learn](#)
- [Brightspace by D2L](#)
- [Canvas](#)
- [Moodle](#)

In addition, you can refer to the LMS specific Quick Start Guides available.

- [Quick Start Guide: Modified Mastering w/Blackboard](#)
- [Quick Start Guide: Modified Mastering w/Brightspace by D2L](#)
- [Quick Start Guide: Modified Mastering w/Canvas](#)
- [Quick Start Guide: Modified Mastering w/Moodle](#)



[LMS Online Help](#) also provides you with all the steps and details you need to set up and use LMS integration with Modified Mastering.

## Lesson 3: Explore Results and Case Studies

As you plan and think about your course and the results you want to achieve from using Mastering, it is helpful to learn about the proven results from educators who have successfully implemented Mastering into their course. In the [Mastering Science and Engineering White Paper, v.4](#) and the [Mastering Science and Engineering White Paper, v.5](#), you can read through the collection of over 59 efficacy studies that illustrate the variety of ways instructors have used Mastering and the results they have achieved. You can also explore Mastering case studies, course redesigns, and video presentations at the [Pearson Results Library](#). We thank the institutions included in the Mastering White Papers for sharing their results and providing models of successful Mastering implementations.



[Mastering: An Effective Teaching and Learning Tool](#) (2 min and 15 sec)

### What Pearson Means by Efficacy and Effectiveness

- Efficacy describes whether a product or intervention has a positive effect on learning, such as reducing wrong answers, increasing retention rates, or raising final exam scores.
- Effectiveness measures the size of the educational improvement from a product or educational intervention.

### Why Pearson Is Interested in Efficacy Studies

To deliver the best educational experience for students, we need to understand how Pearson's content is performing and to verify the learning gains associated with the use of our products. Toward that goal, we actively seek out educators who wish to explore educational research questions and investigate the efficacy of Mastering products. Every efficacy case study in the Mastering White Paper was submitted voluntarily and without compensation to the contributors, to whom we

extend our deepest gratitude. Their dedication to their students' learning is invaluable.

### **What examples are available to demonstrate the efficacy of Mastering?**

Throughout this guide, you will see references, best practices, and tips shared from successful applications of Mastering from data-driven case studies. Strategies used by educators with demonstrated Mastering success are shared with you to help you succeed with your intended outcomes.

The case studies referenced come from the [Mastering Science and Engineering White Paper, v.4](#), a collection of 47 efficacy studies quantifying Mastering's impact on teaching, learning, and retention, as well as the [Mastering Science and Engineering White Paper, v.5](#) which features 12 new data-driven case studies on current educational topics (student engagement, identifying at-risk students, Adaptive Learning, and flipping the classroom).

### **How does Mastering provide students with personalized remediation and instant feedback to improve student engagement and success?**

Mastering automatically scores student responses (except free-form answers), and lets you determine when/whether students can see their scores and works. Mastering provides instant, graded feedback that can guide students through the solution of multi-step items with on-demand hints and feedback for wrong answers. Many courses also include enhanced adaptive learning features such as Adaptive Follow-up Assignments and/or Dynamic Study Modules.

If you'd like more information, see case study examples of personalized learning with Socratic tutorials:

[University of Hawaii at Manoa - Biology](#)

[Clemson University- Physics](#)

[University of the Sciences in Philadelphia- Chemistry](#)

[University of Colorado - Engineering](#)

Personalized learning with Adaptive Follow-Ups:

[Collin College – Biology](#)

[Hudson Valley Community College - Chemistry](#)

### **What Mastering diagnostics are available to track challenging topic areas for the class, at-risk students, or time spent on homework to provide early intervention?**

Mastering allows you track student progress and prevent students from falling too far behind; color coding in the Gradebook reveals students in trouble, and the Diagnostics View shows problem areas for the class.

If you'd like more information, see case study examples that highlight use of diagnostics before lecture or lab to increase engagement and preparation:

[SUNY College of Environmental Science and Forestry - Biology](#)

[Georgia Southern University - Physics](#)

[Lone Star College - Microbiology](#)

Diagnostics before exams to see topics that need more clarification:

[Missouri University of Science and Technology - Chemistry](#)

[University of Kentucky- Chemistry](#)

### **What are suggested approaches to enable students to learn basics on their own so class time can be used for active learning?**

Mastering pre-lecture assignments encourage your students to read their textbook before class and interact with course materials outside of class to increase learning and engagement during your class time. Pre-lecture assignments allow you to focus on active learning, collaborative group work, higher level content, richer class discussions, and critical thinking activities in class.

If you'd like more information, see case study examples of pre-lecture or pre-lab assignment implementation to engage students and create a more interactive classroom:

[Florida State College at Jacksonville – Microbiology and A&P](#)

[Rollins College - Biology](#)

[Texas State University - Biology](#)

Flipping the classroom to maximize student success:

[Rochester Institute of Technology - Biology](#)

[Vincennes University - Biology](#)

[Shoreline Community College - Microbiology](#)

[Metropolitan State University of Denver- Physics](#)

### **Are you looking for new ways to discuss critical thinking questions in class or engage students during lecture?**

With Learning Catalytics, instructors can pose questions throughout the class to assess how well the students understand a concept and whether there are questions or confusion. Equipped with this information, instructors can adjust their teaching in real time and dive more deeply into areas of common misunderstanding. The wide variety of open-ended question types in Learning Catalytics enables instructors to gather rich feedback on what students really know and can do, well beyond what is possible with traditional multiple-choice questions. Learning Catalytics also helps students learn by enabling and facilitating peer instruction. Learning Catalytics dynamically and intelligently groups students to generate productive groups for problem solving and conceptual discussion.

If you'd like more information, see the Learning Catalytics user stories for In-Class Learning:

[Matthew W. Stoltzfus' User Story](#), Chemistry Lecturer, Ohio State University

[Kelly Hogan's User Story](#), Senior Lecturer & Advisor, Biology Department, University of North Carolina

[Melissa Hines' User Story](#), Professor of Chemistry, Cornell University

[Dan Perlman's User Story](#), Associate Provost of Innovation in Education and Professor of Biology, Brandeis University

[Amy Skibiel's User Story](#), Lecturer in A&P, Biological Sciences Department, Auburn University

### **How does Mastering assess student learning outcomes?**

Items in Mastering are tied to publisher-provided student learning outcomes. Instructors can also create their own student learning outcomes and associate them with items in their assignments. From the Mastering Gradebook, instructors can examine mastery of quantifiable student learning outcomes to assess student understanding and skills. The information is also exportable for reporting purposes.

If you'd like more information, see case study examples where educators used the student learning outcomes feature in Mastering to assess attainment of learning goals:

[Santiago Canyon College - Microbiology](#)

[Florida State College at Jacksonville - Anatomy & Physiology](#)

[Butler University - Chemistry](#)

See examples of successful implementations of timed quizzes to help students prepare for exams:

[University of Ottawa - Chemistry](#)

[Collin College- Biology](#)

## Lesson 4: Implementation Models for Mastering

An implementation model describes the instructional strategy and method of delivering instruction. When talking about implementation models, you may also hear some models referred to as '*course redesigns*'. On one end of the continuum, it can reflect one instructor's modification of a course to shift instruction online to enable more active learning during class. On the other end, it can represent department-wide, institution-wide, or even statewide changes. Regardless of where you see yourself and your institution along that spectrum, you'll find relevant ideas in this guide.

### Common Implementation Models of Mastering

Model	Description
Supplemental	Mastering can be used as an instructional supplement to a traditional lecture or lab. The National Center of Academic Transformation defines <a href="#">the supplemental model</a> as a traditional course where the instructor supplements lectures and textbooks with technology-based, out-of-class activities or also changes what goes on in class by creating an active learning environment. Mastering assignments with tutorials are assigned to provide students with personalized remediation and instant feedback. Instructors often use pre-lecture assignments and the one-click diagnostics to see common student misconceptions before a lecture, lab, or an exam. Pre-lecture assignments promote reading before lecture, increase engagement during lecture, and promote better study habits. Learning Catalytics can be used to increase active learning in class and provide real-time feedback. Common reasons to implement this model include preparing students for class, providing students with immediate feedback, and increasing student engagement. For an example of this implementation model, see <a href="#">Louis McIntyre's Robeson Community College case study</a> .

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**Flipped**

One of the intended outcomes of a flipped classroom is increased class time to engage students in learning through active learning techniques, rather than through delivering lectures alone. The [Flipped Learning Network](#) defines flipped learning as “a pedagogical approach in which direct instruction moves from the group learning space to the individual learning space, and the resulting group space is transformed into a dynamic, interactive learning environment where the educator guides students as they apply concepts and engage creatively in the subject matter.”

Flipping the classroom replaces traditional lectures with student-centered learning strategies such as active learning, debates, discussions, peer learning, group work, problem-solving, and activities. Instructors assign pre-lecture assignments and post videos for students to work on outside of class prior to lecture. This allows students to interact and reflect on their learning as needed. Learning Catalytics can be used in-class to provide a different way to learn content, promote activities that are student centered, and conduct ongoing formative assessments during class time. Instructors use class time to do the harder work of applying and synthesizing knowledge through activities, discussion, debates, and problem-solving.

If you'd like more information: watch the [TEDx Talk](#) with Matt Stoltzfus from Ohio State University (Stoltzfus M. , How Socrates Can Stimulate your Brain Activity, 2014); read “[Profs: How to Flip Your Class](#)” (Stoltzfus & Lukoff, 2014); and refer to [Sandi Connelly's Rochester Institute of Technology \(Biology\) case study](#).

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**Fully Online**      The [fully online model](#) removes all in-class meetings and moves all learning experiences online, including both summative and formative assessments. To support an online course, there are assignments, e-text, videos, animations, simulations, and a robust study area within Mastering. Modified Mastering offers additional course management features and the ability to integrate with your local campus Learning Management System such as Blackboard, Canvas, D2L, and Moodle.

With a fully online course, instructors often utilize most of the features within Mastering. Security features are often use for summative assessments, such as quizzes or exams. Instructors provide students with many formative and summative assessments throughout the learning process. Student progress is monitored via the gradebook and diagnostics. For info, watch [Rethinking Lecture Styles for the Virtual Classroom with Terry Austin](#) and read [Joseph Gar's case study from West Kentucky Community and Technical College](#) and [Scott Hildreth's case study from Chabot College](#).

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**Replacement (aka hybrid)**      The National Center of Academic Transformation describes [the replacement model](#) as a model that reduces the number of in-class meetings and either replaces some in-class time with out-of-class, online, interactive learning activities or also makes significant changes in the remaining in-class meetings.

With the replacement model, in-class time is replaced with technology-based activities rather than simply adding technology-based activities to the traditional course. With this model, instructors assign what would be covered in a lecture within Mastering. With Mastering diagnostics, they are able to monitor student progress and common misconceptions. For more information, see [Gary Glaser's case study from Genesee Community College](#).

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**Buffet**

The [buffet model](#) customizes the learning environment for each student based on background, learning preference, and academic or professional goals and offers students an assortment of individualized paths to reach the same learning outcomes (Six Models for Course Redesign, 2008). Mastering is used to deliver tutorials, common homework assignments, online recitation, and exams that are mandatory for all students.

For more information, see [Klaus Woelk's case study from Missouri University of Science and Technology](#).

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Please refer to the [Course Redesign and Active Learning Toolkit](#) for additional help when planning a course redesign.

## MODULE 2: STEPS TO A SUCCESSFUL IMPLEMENTATION

After examining the most successful implementations, one thing is consistent: those schools that achieve success know precisely where they stand, they establish clear goals at the onset, and then specifically design their implementations to reach them. Review the recommended steps to follow to achieve a successful implementation.



If you'd like to go through a checklist of important tasks to do throughout the term, review the PDF below.



**PDF: [Mastering Implementation Checklist](#)**

In addition, you can work through a more detailed [Planning Toolkit](#) that walks you through the implementation process with various worksheets and checklists. The Planning Toolkit covers the three phases of the implementation process: planning, implementation, and evaluation.

“Phase 1: Plan” is where you identify the problems you want to solve so that when it comes time to measure outcomes, you'll know exactly how far you've come and what areas still need work. You'll also decide which pieces and features of the course will best fit your unique configuration and support your stated goals.

“Phase 2: Implement” is where your plan takes shape and you explore the available resources to learn how to most effectively use them to integrate the product into your course. This is also where you will design your course to align with your desired outcomes. You may also customize resources to help students get started successfully.

“Phase 3: Evaluate” is where you consider how you will analyze student performance and predict future success. You will devise strategies for student intervention and student performance issues. Depending on what the data indicates during the term, you may decide to revise the course setup and configuration. This phase also includes how to analyze end-of-term data to correlate results with learner outcomes and course goals.

The subsequent lessons within this module help you work through the steps in Phase 1: Plan. There is a lesson that provides sample goals and possible strategies to achieve them, a lesson on aligning your assessment plan and syllabus to your goals, and a lesson on identifying how you will measure your success.

Various modules throughout this guide support the steps in Phase 2: Implement. The last lesson in this module explains the professional development and training opportunities available to you. There are modules covering how to create and

manage your course, how to create successful assignments, how to use and manage the gradebook and diagnostics, tips to prevent cheating, how to use the adaptive learning features, and how to use Learning Catalytics. These modules provide you with information on how you might want to customize your course with best practices and tips on how to best do that.

For Phase 3: Evaluate, see suggestions later in this module about the type of data to look for in Mastering and how you may want to use that data for student intervention in this module. Also, refer to this module for suggestions on how you might want to use the data to make course revisions. Refer to Module 8 for information on how to monitor student performance throughout the term using the Mastering Gradebook and Diagnostics.

As you identify your teaching and learning goals and think about the features you want to use in Mastering, keep in mind great suggestions from an experienced Mastering user, Dr. Sandi Connelly from Rochester Institute of Technology:

***“When incorporating “new” things into your course,***

- ***Start small!***
- ***Don’t try to do everything at once!***
- ***Student success is the sum of all of the parts.***
- ***Success takes time (for the students AND you!)”***
- ***It must be fun!”***

The most successful implementations enable both students and faculty to ease into the new format. If you have an interest in flipping your classroom for example, try doing it first for a few lectures. This way, initial problems get worked out on a small scale before expanding to the entire course. Consider some approaches below when first starting out with Mastering:

- Pilot Mastering in a section or during a summer course before conducting a full-scale implementation.
- Start slowly and add more features later. Mastering is a robust and flexible system you can grow with over time.

**Tip:** Start with required homework such as assigning short pre-lecture assignments (under an hour per assignment). When you are ready, add Mastering's diagnostic, adaptive learning, and assessment features. Some of our most experienced users are still finding new, more effective, and more targeted ways to get the most out of their implementation.

- If you are changing the way you are conducting your in-class student experience, try it in a few lectures before doing it for all your lectures.
- If you are adding new features such as Adaptive Follow-Ups or Dynamic Study Modules, perhaps add them as extra credit first and move into full implementation for credit after using them a semester.

## Lesson 1: Strategies to Address Common Issues Facing Educators

What are the problems you want to solve by incorporating Mastering into your course? What are your course goals? Whether you are incorporating Mastering for homework in a course or exploring the viability of a full departmental redesign, your first step is to identify your goals and the problems you want to solve. The clearer you are on why you want to adopt Mastering, the more likely you will be successful addressing those issues. Every institution, course, and classroom is unique, but instructors in higher education today face a series of common teaching and learning challenges.

### Increase Active Learning or Flip the Classroom

Many aim to increase active learning or flip their classroom to allow for more active learning during class. Confirming previous research findings, students respond much more effectively to active learning than they do to traditional lectures, according to an [analysis](#) (Scott Freeman, 2014) looking at student outcomes in STEM courses, published in the Proceedings of the National Academy of Sciences. Review strategies below which have been implemented to increase active learning or flip the classroom.

### Goal: Increase Active Learning or Flip the Classroom

Ideas	Source
Assign pre-lab or pre-lecture assignments to shift the lecture or lab to a more integrated and reflective experience so students feel empowered to investigate, not regurgitate. Assign post-lab or post-lecture assignments comprising more application-based questions to ensure students have mastered the concepts explored during lab or lecture.	<a href="#">Florida State College at Jacksonville Case Study</a> – Anatomy & Physiology

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Post lecture videos within Mastering prior to lecture to explain key concepts.	<a href="#">Chabot College Case Study</a> - Physics
Use Learning Catalytics in class to provide a different way to learn content, promote activities that are student-centered, and conduct ongoing formative assessments. Synthesize knowledge through group activities, discussions, and debates.	<a href="#">University of North Carolina User Story</a> - Non-majors Biology <a href="#">Cornell University User Story</a> - General Chemistry
When selecting content for an assignment, pick a mix of tutorials and other questions types to promote active and self-guided learning.	<a href="#">Texas A&amp;M University Case Study</a> - Geography
Use Mastering diagnostics to see if there is an area of common student misconception after a pre-lecture assignment and spend more time on that in lecture. Base your in-class quizzes on the content with which students are having trouble. Have students work in small groups on the in-class assignments.	<a href="#">Texas State University Case Study</a> - Majors Biology
Introduce the format and activities with a positive attitude and show statistics that illustrate improvements in quiz or course grades. If students understand the change can help them, they are more likely to move out of their comfort zone and fully participate in it.	<a href="#">Shoreline Community College</a> -Microbiology
Assign videos, simulations, and animations to help students visualize what they read in the textbook and better comprehend the content. This will free up time during lecture for more in-class activities.	<a href="#">Bowling Green State University, Firelands College Case Study</a> - Geology

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Provide students with tips to succeed so they take responsibility for their learning outside of class. An example of a tip for students: Start your homework early in the week rather than one burst late in the week.

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[Metropolitan State University of Denver](#) - Physics

## Improve Retention and Student Success

Retention and student success are also common goals among colleges and universities. For example at Robeson Community College, the department wanted to address underprepared students and provide a resource for remediation outside the classroom. They looked at the issues that were impacting student success—including poor time management, a lack of study skills, no course prerequisites, and an increase in nontraditional students who hadn't been in a classroom in recent years. To address these needs, they redesigned the course with the goal of increasing students' preparedness, exposure to and engagement with the course materials, and retention and student success.

*"We redesigned our science courses adding Mastering to provide students with a tool to help them prepare for class and get help when they need it the most. Pre-lecture homework assignments engage students in course content outside of class and better prepare them for lecture. This in turn enables us to increase the amount of interactive learning and critical thinking activities during class."*

- Louis McIntyre from the [Robeson Community College Case Study](#)

Review the ideas listed below to improve retention and student success.

### Goal: Improve Retention and Student Success

#### Ideas

#### Source

Review the Estimated Time in Mastering to manage your students' time on task.

[Butler University Case Study](#) – General Chemistry

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Assign short, frequent pre-lecture assignments to keep students on track, increase preparedness, and engage students with course materials.	<a href="#">Rollins College Case Study</a> – Majors Biology
Require Mastering assignments with a significant value applied to them, include Mastering content on your exams, and limit attempts to prevent guessing.	<a href="#">Rochester Institute of Technology Case Study</a> – Non-majors Biology
Assign interactive animations, videos, and coaching activities at the beginning of the assignments to get students engaged, and end with multiple-choice questions.	<a href="#">Lone Star College – CY Fair Case Study</a> - Microbiology
Use Mastering diagnostics to see the most common student misconceptions so you can address them in your class. Use the gradebook to identify students who need encouragement.	<a href="#">Fullerton College Case Study</a> – Intro Chemistry
Assign timed quizzes to give students a snapshot of where they are in their preparation for the upcoming exam.	<a href="#">Collin College Case Study</a> – Majors Biology
Provide students with start-up guidance, information for technical support, and an explanation of the value of Mastering.	<a href="#">Robeson Community College Case Study</a> – Anatomy and Physiology

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## Enable Early Intervention

Another common teaching goal is to enable early intervention. There are many variables that influence enrollment behavior including student academic preparation, student aspirations, and other factors. Mastering can help educators find and help students struggling early in the semester.

By using the diagnostics and gradebook, you can find students struggling in your course. To improve student performance, you can also assign personalized learning within Mastering including tutorials/coaching activities, Adaptive Follow-Ups, and Dynamic Study Modules.

See some suggestions below from educators with this goal in mind.

## Goal: Enable Early Intervention

Ideas	Source
Add Adaptive Follow-Up assignments to topics where students struggle the most to provide them with personalized remediation.	<a href="#">Collin College Case Study</a> – Majors Biology
Motivate students by assigning pre-lecture homework and thereby monitor student reading and comprehension of the material.	<a href="#">Roane State Community College Case Study</a> – Anatomy and Physiology
Use the at-a-glance shaded gradebook to quickly find students struggling in your course. Use detailed student data during student meetings to identify his/her misconceptions and time spent.	<a href="#">Butler University Case Study</a> – General Chemistry
Use tutorials and coaching activities along with end-of-chapter questions in your assignments. Personalized feedback and hints help coach students to do better on the questions without feedback and hints.	<a href="#">Clemson University Case Study</a> – Physics with Calculus
Use Mastering diagnostics to find student misconceptions. Provide students with TA or tutor workshops to cover those misconceptions.	<a href="#">SUNY – College of Environmental Science and Forestry Case Study</a> – Majors Biology

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Use MyReadinessTest prior to class start to identify which students may struggle in the course based on baseline knowledge and skills.

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[Robeson Community College Case Study](#) - Chemistry

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## Improve Critical Thinking and Problem Solving Skills

The next common goal for science courses is to improve critical thinking and problem-solving skills. What do we mean by 'critical thinking'?

- "Critical thinking is the art of analyzing and evaluating thinking with a view to improve it." (Paul & Elder, 2014)
- "...purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based...The ideal critical thinker is habitually inquisitive, well-informed, trustful of reason, open minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results which are precise as the subject and the circumstances of inquiry permit." (Facione, 1990)

Critical thinking supports learning outcomes by improving students' ability to:

- Raise vital questions and problems
- Gather and assess information
- Come to well-reasoned conclusions and solutions
- Think open-mindedly within alternative systems of thought
- Communicate effectively with others in arriving at solutions.

(Paul & Elder, 2014)

Critical thinking skills help students understand the connections between ideas, solve problems, identify the importance of ideas, construct and evaluate arguments, and reflect on one's own beliefs or values. Using Mastering can enhance opportunities for critical thinking.

*"Cognitive psychologists describe cognition as developing in stages; with critical thinking (post-formal cognition) being the highest level of thinking and one that primarily develops during adulthood. Studies suggest that foundational knowledge, practice, behavior modeling, and opportunities for reflection all contribute to developing post-formal cognition. I chose Mastering because it has the tools and resources I need to easily embed in my courses the kind of pedagogical practices that support higher-order cognitive development.*

*Redesigning my course using Mastering enabled me to infuse three layers of pedagogical practices that foster higher-order cognitive development: (1) priming of the mind with basic knowledge before a higher order academic task is approached in lab or discussed in lecture, (2) providing timely formative feedback that allows for real time student redirection and addressing of misconceptions, and (3) in-class opportunities for reflection focused on areas in which students have the most difficulty."*

- Lourdes Norman-McKay, [Florida State College at Jacksonville Case Study](#)

In the examples below, go through some ideas from educators on how to encourage reflective thinking while also making it more engaging and interactive for your students.

## Goal: Improve Critical Thinking or Problem-Solving Skills

### Ideas

Assign a mix of tutorial and end-of-chapter questions to help develop problem-solving skills.

### Source

[Metropolitan State University of Denver Case Study](#) – College Physics

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Assign visual and interactive items to help students understand spatial reasoning and learn map-reading skills.

[Texas A&M University Case Study](#) – Geography

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Focus on the comprehension questions in Mastering to help students develop the kind of critical-thinking skills they need to analyze information and work through a problem.

[University of Arizona Case Study](#) - Microbiology

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Add essay review questions to mirror questions on your exams to promote critical thinking. Provide feedback on the written homework questions before the exam to help students identify those concepts they need to study.

[Roane State Community College Case Study](#) – Anatomy and Physiology

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Assign the basic concepts outside of class, so you can spend class time doing interactive learning, such as discussion and writing exercises.

[Bowling Green State University – Fireland College Case Study](#) - Geology

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Assign pre-lab or pre-lecture quizzes to shift the session to a more integrated and reflective experience. Assign post-lab or post-lecture assignments comprising more application-based questions to ensure students have mastered the concepts explored during lab or lecture.

[Florida State College at Jacksonville Case Study](#) – Anatomy & Physiology and Microbiology

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Use Learning Catalytics for in-class quizzes. Pair students by different answer responses to promote peer learning through the grouping function. Allow students to use their books and class notes to arrive at an answer to promote peer learning, critical thinking, teamwork, communication and problem-solving. Students learn how to apply information to a novel situation.

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[Auburn University User Story](#) – Anatomy and Physiology

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Use the Team-based Assessments in Learning Catalytics to probe whether or not students learned from their peers. By adding this, you can monitor student progress from lecture to the exam score.

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[Ohio State User Story](#) – General Chemistry

Assign problems of various levels of difficulty and offer harder problems for extra credit, which enables stronger students to advance their skills. Students get walked through complex problems and get help when and where they need it.

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[McHenry County College Case Study](#) – General Chemistry

## Increase Reading and Homework Completion

Another goal and common frustration is getting students to do the readings and homework for your course prior to lecture. Imagine if almost all the students in your class did the readings!

*“Over the years, I became increasingly frustrated with students who did not read the textbook and then struggled in class. I implemented MasteringA&P in 2011 because the program enabled me to assign pre-lecture homework and thereby better monitor student reading and comprehension of the material.”*

*-Bruce Fisher, from the [Roane State Community College Case Study](#)*

See some ideas to increase reading assignment and homework completion.

### Goal: Increase Reading and Homework Completion

#### Ideas

#### Source

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Assign short pre-lecture assignments using reading questions to encourage students to read chapters before lectures.

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[Texas State University Case Study](#) – Majors Biology

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Allow students to rework past homework for practice and allow them to print homework to use as a study tool.

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[Roane State Community College Case Study](#) - Anatomy and Physiology

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Add Adaptive Follow-Up assignments with the Test Out feature turned on to motivate students to do better and work harder on the Parent assignment.

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[Collin College Case Study](#) - Majors Biology

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Eliminate material covered in class that students already understand from the pre-lecture homework. Students will be motivated to do homework and readings if they are not spoon-fed the information in class the next day.

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[Rollins College Case Study](#) - General Biology

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Once you've used Mastering and have data, show them how Mastering has increase exam scores. They will be more excited and motivated to do the work in Mastering. If you don't have your own data yet, share data from the case studies on the Pearson website.

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[Collin College Case Study](#) - Majors Biology

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Assign a timed quiz to give students a dry-run for the test as this provides students with an 'eye-opening' experience to help them prepare for an exam.

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[University of Ottawa Case Study](#) - Chemistry

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Use interactive and visual question types to engage students with the content. Students enjoy having a tool to help them be productive. Animations help them visualize difficult concepts.

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[Santiago Canyon College Case Study](#) - Microbiology

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Assign tutorials that give students the step-by-step process for difficult problems to increase homework completion and student success.

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[Andrews University Case Study](#) - Engineering Statics

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Assign a mix of questions. Tutorials, simulations, and animations provide students with real-time guidance when students need it most. End-of-chapter questions make sure they can do the work without error-specific feedback and hints.

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[Fullerton College Case Study](#) - Chemistry

## Improve Student Engagement

The last common goal we will talk about is student engagement with your course. Many students today are accustomed to being engaged and expect it. So, how do you design your course to motivate and intrigue your students?

Educators note the importance for student's to see the connection of the course materials to their lives and professional goals to help build interest. You can engage students with the assignments in Mastering by considering what questions will motivate your students and stimulate their interest and learning.

Pre-lecture assignments are helpful to “prime the pump” by preparing students for your lecture. In addition, actively engaging students during lecture with a classroom response system like Learning Catalytics can also be helpful.

*“Millennial students won’t spend their time and energy on homework unless it is both required and counts toward their grade. Before adoption of MasteringBiology, I entered the classroom each period only to be met by a sea of faces that clearly had no idea what I was talking about. Since adoption of MasteringBiology and implementation of pre-lecture homework assignments, students are noticeably more engaged during lectures, and classes are more interactive.”*

*-Melissa Fierke, [State University of NY \(SUNY\) – College of Environmental Science and Forestry Case Study](#)*

Look through the table below for some additional student engagement suggestions from experienced Mastering users.

## Goal: Increase Student Engagement

Ideas	Source
Implement formative and summative assessments throughout the learning process including pre- and post-lecture Mastering assignments. Students come to class more prepared and more engaged in learning. They will ask better questions and have a better understanding of what they don't know.	<a href="#">Florida State College at Jacksonville Case Study</a> - Microbiology
Assign pre-lecture assignments and make students aware of the Study Area in Mastering. Students like the opportunity to walk through content prior to lecture, are more engaged in learning, and are more prepared for class. They report that they like using the Study Area, getting automatic feedback while working, and having resources in different formats, such as videos.	<a href="#">Robeson Community College</a> - Microbiology
Use the Mastering diagnostics to see if students understood the material you assigned in the homework. If they did well on the assignment, move on to more challenging topics and interactive activities. Don't lecture on what they already know.	<a href="#">Rochester Institute of Technology case study</a> - Non-majors Biology
Use questions with interactive feedback and embedded multimedia. Students enjoy having a tool to help them be productive. Animations help them visualize difficult concepts.	<a href="#">Santiago Canyon College</a> - Microbiology

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Add Adaptive Follow-Up assignments to give students the personalized remediation they need before moving on to the next topic. Let them know that the Adaptive Follow-Ups are specific to their needs and that no other students have the same Follow-Up assignment.

[Collin College case study](#)  
- Majors Biology

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Use Learning Catalytics as a vehicle to make sure students are actively engaged. For example, by asking students to draw, they had to engage in really thinking about the question...it made them think about the distribution and abundance of organisms in a way that my telling and showing maps alone would not have.

[Brandeis University User Story](#) - Biology

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Using the estimated time ratings in Mastering, design assignments to take about 20-45 minutes to complete. Include primarily tutorial and activity questions, such as animations and simulations, to engage students.

[Bowling Green State University - Fireland College](#) - Geology

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Allow students to select from a wide pool of instructional materials and strategies to match their own learning characteristics and needs. This flexibility enables students to prepare for challenges in subsequent courses. It encourages active learning versus memorization, and it helps individualize study plans in the large-enrollment basic science course and better serve the needs of diverse learners.

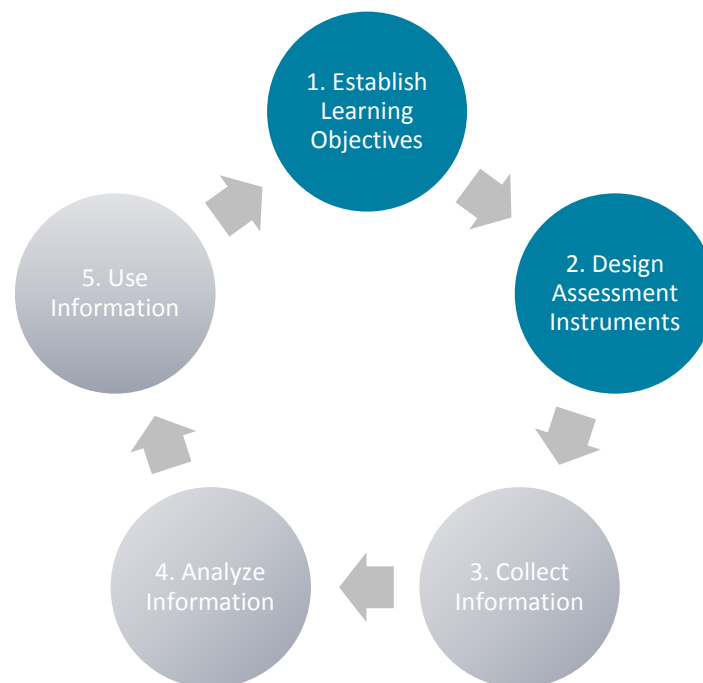
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[Missouri University of Science and Technology](#) - Chemistry

## Lesson 2: Assessment Planning and Syllabus Checklist

The assessment process is a continuous cycle that exists to support student learning. Each step of the assessment process informs the subsequent step and the process itself is iterative in nature. When an assessment plan is first initiated, the process begins with the establishment of objectives. Objectives are statements that describe in specific, measurable terms, what students should be able to know, think, or do as a result of instruction and/or educational intervention. These statements serve to inform all aspects of the assessment process.

The next step of the assessment process is the designing of assessment instruments. Assessment instrument design should be informed by the nature of your objectives. That is, your objectives should drive the decisions you make regarding the type of assessment instruments you use and the purpose/use of these assessment instruments. In order to yield valid scores, a wide-variety of assessment instruments that balances breadth and depth should be used to assess learners. Breadth represents an adequate sampling of content (was the objective assessed in multiple ways). Depth-items address certain content in-depth, giving insight into student progress and performance. (Goubeaud, 2010) (Liu, 2014)



Some tips when designing assessment instruments:

- “In order for scores to accurately represent the degree to which a student has attained an educational objective, it is essential that the form of the test item used in the assessment be suitable for the objective.” (Burton, 1991)
- Select relevant assessment instruments. Situating a learning experience and/or assessment instrument within a more relevant context fosters higher-order thinking, promotes generalizability of skills in realistic, future contexts (M. Spector, 2014), and may result in improved learning (Finkelstein, 2010) as indicated by better performance on assessment instruments.

Assessment plans can and, ideally, should utilize formative and summative assessments to create a comprehensive system of assessment. Formative and summative assessments should be aligned to learning and enabling objectives. Completion of formative assessment should support both student learning throughout the learning experience *and* success on summative assessments. Formative and summative assessment should work together to support student learning by providing a complete picture of student learning (in respect to objectives that collectively describe success) -- that is, formative and summative assessment should work together to provide a more detailed and accurate depiction of student learning in respect to the objectives (e.g., insight into student learning process(es) and performance(s), multiple measures of a given objective across multiple contexts, ample opportunity for practice, remediation/enrichment, and so on).

Ideally, the purpose of all assessment components, whether formative or summative in nature, is to provide differential feedback to different stakeholders (learners, instructors, accreditation bodies, and so on) at different stages of the learning process. Assessment provides individual and aggregate data to inform instruction, interventions, and improve student learning. (Bennett, 2011) (Looney, 2011)

The purpose of assessment exists on a continuum, ranging from a more formative to summative function. That is, the role of an assessment instrument can vary depending on its context and implementation. Formative assessment is commonly described as assessment for learning whereas summative assessment is commonly described as assessment of learning.

Formative		Summative	
Description	assessment <i>for</i> learning	Description	assessment <i>of</i> learning
Feedback	during learning more granular	Feedback	after learning less granular
Stakes	lower	Stakes	higher
Example	practice homework self-check chapter quiz	Example	cumulative quiz test final project

Formative assessment when designed and implemented appropriately can:

- Yield individual and aggregate student performance data to inform instruction and interventions
- Help address misconceptions, and improve rates of learning, retention, and metacognitive skills.

Since formative and summative assessments serve different functions, the category grading settings within Mastering reflect common uses of those categories (homework, quizzes, or tests). For example, with the default assignment settings for assignments in the homework category, students get immediate feedback and multiple chances to submit answers. In the quiz category, whether the answer is correct is hidden from students and they only have one chance to submit answer. All of the settings can be adjusted as needed, but the default settings are there to guide users and help them develop successful formative and summative assignments.

Often formative assessment is used throughout the course to assess ongoing curriculum and student achievement. On the other hand, summative assessment is typically used to evaluate or judge student achievement at the end of a unit or at the end of a course.

The table below presents another way of thinking about assessment for formative vs. summative purposes. That is, this table presents a slight shift in thinking about the functions of assessment for formative vs. summative purposes. While summative assessment's primary purpose would still be considered "assessment of learning", we should also consider how it functions for its secondary purpose of "assessment for learning". While formative assessment's primary purpose would still be considered "assessment for learning", we should also consider how it functions for its secondary purpose of "assessment of learning".

	Assessment <i>of</i> Learning	Assessment <i>for</i> Learning
Summative	<b>X</b>	x
Formative	x	<b>X</b>

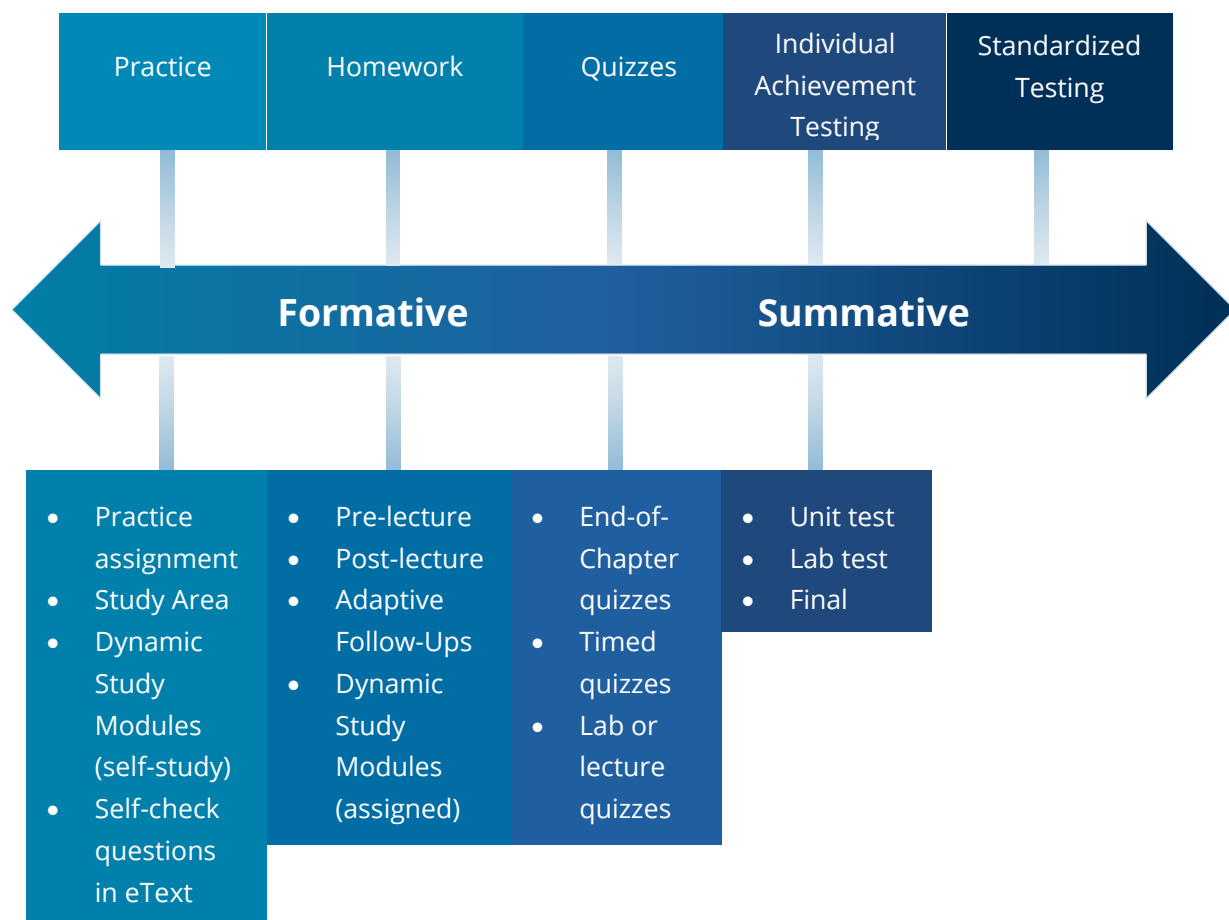
Note: **X** = primary purpose, x = secondary purpose (Bennett, 2011)

Mastering courses provide an opportunity for learners to increase their individual study skills through content, formative assessment, and summative assessment. Mastering uses various types of questions and answer types that can be used for instructor directed assessment in homework, quizzes, tests, labs, projects, and so on. Mastering allows for individual study to take place which can help to foster critical thinking (Abrami, 2014). Individual study takes place when learners study alone by engaging in reading, watching, listening to an instructor's explanations, reflecting on new information, and solving abstract problems on their own (Abrami,

2014). In addition, there is the ability to align learning outcomes to items in your assignments to assess specific learning outcomes.

## Formative versus Summative Assessment Examples in Mastering

Review the common types of formative and summative assessments used in Mastering on the bottom of the image above including pre-lecture, timed quizzes, and so on.



In many Mastering case studies, pre-lecture assignments have been valuable for formative assessment. The diagnostics in Mastering allow you to pinpoint common student misconceptions before your lecture. If you see that 50% or more of the

students in your class identify the same incorrect answer, it provides you with insight about a predominant misconception that you may need to address in class.

Timed quizzes are often used for low-stakes summative assessment to help students prepare for exams. Quizzes can provide students with a 'wake up' call to let them know what they don't know before an exam.

It is often helpful for students if you provide a consistent schedule of formative and summative assessments, such as due every Sunday and Tuesday night for example. The important thing is to make sure that your plan works for you and your students.

For more information on common assignment types used for formative and summative assessment within Mastering, refer to the assignment module and the adaptive learning module in this guide.

In addition, if you choose to use Learning Catalytics with Mastering, there are additional question types that can be used in or outside of class to allow for collaborative and active learning via dialogue. Dialogue is learning through discussion, dating back to the Socratic method in which concepts were clarified through one-on-one interactions (Abrami, 2014). In critical dialogue, learners are discussing a particular problem together. Learning Catalytics has the ability to use Instructor-Led Synchronous Modules or Team-Based Assessment Modules in-class as well as Automated Synchronous Modules outside of class. For more information, refer to the topic in this guide on Learning Catalytics.

## Assessment Plan Examples

Take a look at some assessment plans below. Assessment plans may vary depending on your course structure. Factor in whether you will use Mastering for both lab and lecture. Will you offer homework, quizzes, and/or exams? Will you use Learning Catalytics in class for participation and will those questions be scored based participation, correctness, or both?

Assessment Plan from [Louis McIntyre's Robeson Community College Case Study](#):

50 percent Lecture exams

15 percent Final exam

- 15 percent MasteringA&P homework
- 15 percent Lab (participation, reports, practicals, exams)
- 5 percent Other

Assessment Plan from [Angela Aspbury's Texas State University Case Study](#):

- 70 percent Lecture exams
- 20 percent MasteringBiology homework and quizzes
- 10 percent In-class pop quiz, collaborative work, attendance, and participation

Assessment Plan from [Guy Dadson's Fullerton College Case Study](#):

- 50 percent Exams (four)
- 20 percent Lab
- 15 percent MasteringChemistry homework
- 10 percent Problem solving (in-class)
- 5 percent Quizzes

Educators that track and measure learning gains are able to increase their abilities to demonstrate effectiveness, meet accreditation standards, fulfill grant requirements, and track quality-enhancement plans. Pertinent metrics might include comparisons of homework grades, exam scores, and final grades with those of past semesters; correlation between time spent and final grades; success or retention rates; and the effectiveness of using the text with Mastering.

See how Dr. Sandi Connelly from Rochester Institute of Technology changed her assessment plan after reviewing her results from her implementation of MasteringBiology:

In academic year 2009/10, the first year that she used MasteringBiology in General Biology II, Professor Sandi Connelly provided optional practice assignments for extra credit. Starting in fall 2010, she assigned 5 to 8 MasteringBiology assignments, which accounted for 5 percent of the students' final course grade. According to Professor Connelly, when she noticed the impact MasteringBiology was having on

student learning, she required more of its use, including one MasteringBiology homework assignment each week. She increased the weight of the assignments to 15 percent of the final course grade in 2011, and to 25 percent in fall 2012. In addition, up to 25 percent of the exam questions are pulled from the MasteringBiology Study Area.

*“Steadily increasing the use of MasteringBiology enabled more active learning opportunities and resulted in a six to eight percentage point increase in exam grades—a significant difference in a student’s final course grade.”*

- Sandra J. Connelly, Rochester Institute of Technology [MasteringBiology Case Study \(2011/12\)](#)

Beginning in Fall 2014, Connelly added Knewton Adaptive Follow-Ups to MasteringBiology homework and quizzes. Homework assignments are now worth 10 percent and contain active tutorial questions that involve watching or reading to complete the exercises. Adaptive Follow-Ups comprise five questions for extra credit. MasteringBiology quizzes, which contain reading or test bank questions, continue to be given and are worth 10 percent course credit.

Connelly now teaches the course in multiple formats including traditional lecture and lab, online, flipped, and hybrid. Her strategy for offering alternative formats, such as the flipped and hybrid models, is to put the responsibility for learning on students outside the classroom via videos, worksheets, and MasteringBiology homework; and to assess student learning during class via active-learning exercises, critical-thinking problems, and quizzes.

In fall 2014, Connelly implemented a hybrid-flipped class, a very new approach to courses at RIT—especially a College of Science general education course. Students are responsible for upwards of five hours of videos to prepare for exams, and they may meet with Connelly only three times (one time per week) between exams. The change was motivated by space constraints—there were literally no available seats in the room. The new design will be assessed side by side with Connelly’s online class, flipped class (which meets two times per week), and traditional lecture class in the fall and spring semesters of 2014. Because all students are assessed in the same way and have the same learning outcomes regardless of the delivery,

Connelly can conduct a valid analysis of the new design. These findings will help guide future directions for the course.

- *Sandra J. Connelly, Rochester Institute of Technology* [MasteringBiology Case Study \(2014/15\)](#)

Assessment Plan for Sandi Connelly's course in 2014/15:

65 percent Exams

25 percent MasteringBiology Homework/Quizzes

10 percent Class Participation



Watch the [video](#) (52 min 12 sec) with Dr. Sandi Connelly discussing the importance of measuring student success and learning outcomes.

## Syllabus Checklist

Your syllabus is an important way for you to share your course planning and expectation with your students on the first day of class. Research indicates that “the more information you provide your students about the goals of a course, their responsibilities, and the criteria you will use to evaluate their performance, the more successful they will be as students and the more successful you will be as a teacher” (Grunert O'Brien, Millis, Cohen, & Diamond, 2008)

Here is a list of what you may want to include on your syllabus:

- Basic course info (title, number, meeting days, location, URL, and so on) and any course prerequisites if applicable
- Your contact information (office info, office hours, phone, email, website, and so on) and any other teaching staff contact information applicable
- Course description
- Student learning goals, intended learner outcomes, and what you want students to take away from your course

- ❑ Textbook, Mastering Access Code, and any other supplies required (*Note: It is important to provide students with detailed information about the access code required to ensure they purchase the correct code. Access codes are version, author, and textbook specific. Provide students with the Mastering website information so they can successfully purchase the access code online if needed. To avoid students purchasing access codes incorrectly, it is suggested they purchase access codes from your bookstore or directly from Pearson online*)
- ❑ Course schedule including an assignment and topics outline that walks students through due dates, topics covered, and so on
- ❑ Assignment and exam information that describes the format of assignments and exams, length of exam, and so on
- ❑ Link to FAQs document or have FAQs part of your actual syllabus
- ❑ Any other course requirements or recommendations such as lab, study group info, seminars, and so on
- ❑ Your assessment and evaluation practices including the grading scale, grading policies, and how each type of formal and informal assessment (homework, quiz, test, participation, and so on) weighs into your overall grading scheme
- ❑ Course policy information
- ❑ Student resources and supplemental materials available to help students learn including tutoring if available, study groups, Mastering Study Area, Mastering Student Online Help, Get Your Students Started materials (Handout and Powerpoint), Mastering Student Tutorial videos, Student Tech Support contact info, and so on
- ❑ Links to Mastering data to show students how working in Mastering helps improve their exam scores

## Lesson 3: Strategies to Measure Success

If you say your course is successful, what does that mean to you? What are your course goals and learner outcomes? How will you evaluate whether you've achieved your course goals and learner outcomes?

In addition, it is important to think about what success means to your dean or your institution? Is your institution asking for lower DWF (D-grades, withdrawal, fail) rates? Do you need to track and increase attainment of student learning outcomes?

Finally, what does success mean to your students? For example, are students graduating and getting hired post-graduation? Are more students succeeding after graduating due to their critical thinking, quantitative, and other skills? Are students doing better in subsequent courses?

In the table below, see examples of institutional, departmental, instructor, and student goals:

Institution	Department	Instructor	Student
Collect measurable results of learning outcomes from every course (accreditation).	Demonstrate achievement of learning outcomes across each section in order for students to successfully move on to subsequent courses.	Effectively use Mastering to promote critical thinking and assess students' mastery.	Succeed in course in order to get a good job after college.

It is important to first define your goals and learner outcomes and then to keep those goals and learner outcomes in mind as you identify what, when, and how you will evaluate success.

It is often best to start simple and pick one thing to measure such as your exam scores or a particular exam for a topic when first starting out. What you don't track you can't measure. And what you haven't measured you can't prove has happened.

Faculty who consistently track and measure learning gains are able to make informed decisions about programmatic shifts and can increase their abilities to demonstrate institutional effectiveness, meet accreditation standards, track quality-enhancement plans, and fulfill grant requirements.

Use the information below to help you identify pertinent metrics.

## What Quantitative Results Can Be Measured?

What results you measure will depend on your specific course goals and course design, but may include:

- Comparison of grade distributions before and after a digital implementation
- Comparison of final course grades before and after required use of technology
- Comparison of student learning outcomes assessments before and after implementation
- Comparison of test averages, pass rates, success rates, or retention rates over semesters
- Accelerated completion of remedial courses
- Completion and achievement in subsequent course success
- Classroom time savings or departmental cost savings with the use of learning technology
- Improvement of placement test scores after completing work in Mastering
- Comparison of Pre- and posttest assessment

## What Qualitative Observations Can Be Measured?

- Students are coming to class more prepared and more engaged
- Improved class discussions, students are asking higher-level questions

- Students taking ownership of their learning, demonstrating agency and purpose in pursuit of their academic goals
- Student surveys



Watch the [video](#) (52 min 12 sec) with Dr. Sandi Connelly discussing the importance of measuring student success and learning outcomes.

## Examples of Data Collected throughout the Term

Based on the features and assets within Mastering or Modified Mastering that you will use and any other resources you will utilize in your course outside of Mastering, you will decide what data you would like to collect throughout the term. Below are some suggestions at the beginning of the term, during the term, and at the end of the term. You don't have to use all of these ideas below. Instead, pick one and measure the results! In the next term, you can add new features and measure the changes.

### Beginning of the Term

- Create an assignment that assesses baseline knowledge or skills necessary for the course. Some Mastering courses have content specifically created for this purpose called Get Ready for A&P, Math Tutorials, and so on depending on the discipline and course. Check the Item Library in your course to see what is available. If you are looking to track student learning outcomes, tie the items in the assignment to specific student learning outcomes.
- Gather student self-reports or surveys about how confident they feel about their knowledge and ability to apply it. You can also ask this question in a Mastering assignment or Learning Catalytics session.
- Use MyReadinessTest to diagnose students' abilities in math and core skills for learning anatomy and physiology. MyReadinessTest is currently available for chemistry, physics, and anatomy and physiology. For more information

about MyReadinessTest, please reference the below case studies and the [MyReadinessTest website](#). Speak with your Sales Representative about access to MyReadinessTest for your students.

- [MyReadinessTest and MasteringA&P with Knewton Follow-Up at West Kentucky Community and Technical College](#)
- [MyReadinessTest for Chemistry at Robeson Community College](#)
- [MyReadinessTest for A&P at Tarrant County College](#)

## During the Term

- Use the Mastering Diagnostics View to see student misconceptions, which assignments are working the best, which questions are the most difficult, which students may be cheating, and so on. You can also use the diagnostics to monitor student performance and help find at-risk students. For more details, refer to [Use the Mastering Diagnostics to Address Students' Misconceptions](#) in this guide.
- Use the Mastering Summary View to compare your students' performance on specific topics compared to the system average, your students' difficulty and median time spent compared to the system average, and so on. For more details, refer to [Use the Mastering Diagnostics to Compare Your Students with Others](#) in this guide.
- Use filters in the Mastering Gradebook to narrow your view and get a holistic sense of performance. For more information about the Mastering Gradebook, refer to [Use the Gradebook](#) in this guide.
- Use Learning Catalytics to gather real-time feedback from your students during class. Refer to the [Learning Catalytics module](#) in this guide for more details.
- Use the Student Learning Outcomes data and exports to monitor student mastery of key concepts. Tag items in assignments to specific student learning outcomes. In addition, tag questions in assessments outside of Mastering such as exams to the same learning outcomes. To learn more,

refer to the module titled [Create an Assignment to Assess Student Learning Outcomes](#) and the module titled [View or Export Student Learning Outcomes](#).

- Gather student feedback throughout the term from surveys, Learning Catalytics, and Mastering to see what is or is not working. You can create a custom essay question in Mastering if you'd like open ended answers. You can also create short or long answer questions in Learning Catalytics.
- Export Mastering assignment scores and correlate them with exam scores. For information on exporting scores, see [Export the Gradebook](#) in this guide.
- If you assign Dynamic Study Modules (DSMs), use the DSM reports to monitor student performance. There are various reports available to help you gather data about student and class performance. Reference the [Dynamic Study Modules lesson](#) in this guide for more details.

## End of the Term

- Export scores from the Mastering Gradebook. If you tracked Student Learning Outcomes, export student learning outcomes data as well.
- Correlate homework or quiz scores to exam scores.
- Conduct an end of term student survey.
- Conduct post-tests in Mastering to compare data to pre-tests in Mastering.

## Do You Need Assistance Developing a Plan to Measure Success?

If you'd like guidance on measuring success, please join us for a live, online workshop called [Measure Success: Why, What, and How of Data Collection](#) led by an experienced Faculty Advisor. It is suggested you work through the [Planning Toolkit](#) to help you develop a plan on how you will measure and evaluate success with worksheets and checklists.

Pearson would like to help you analyze your results from your use of Mastering. Pearson offers professional consultation and data collection tools to help measure the impact Mastering has made in your course. Pearson can provide templates, guidelines, checklists, and samples on course redesign, efficacy studies, data collection, and more.

On the following pages, you'll find sample data tracking templates. To receive either of these tools in Microsoft Excel format, any other tools available such as sample student surveys, or professional consultation, contact the Science and Engineering Efficacy Results Manager, Betsy Nixon at [betsy.nixon@pearson.com](mailto:betsy.nixon@pearson.com).

# Data Tracking Template 1

Name & Title:		School:	Pearson Digital Product Currently In Use:				
<p><b>NOTES:</b> If you have collected data in another format or prefer to submit raw data (and Pearson will compile), please feel free to submit your data instead of this document. <b>DIRECTIONS:</b> As a basis of comparison, please include historical data (data from classes before you used your Pearson Digital Product) as well as data from courses with a Pearson Digital Product in use. In row #15 please indicate technology in use (even a competitor's) or "none" for each time period and each section. If necessary, add additional columns if you have more sections. Please complete as many cells as possible. <b>TO VIEW A SAMPLE</b> of a generic completed data tracker, click the "Sample" tab at the bottom of this page!</p>							
	Section #	Section #	Section #	Section #	Section #	Section #	Section #
Course Name:							
Course structure: Traditional(face to face), Online, Hybrid							
Course Credit hours							
Indicate Technology-in-use or None							
Semester Start Date - End Date (Month/Year - Month/Year)							
Book in use (Author, Title, Edition)							
How many students were enrolled on the first day of class?							
Final Course Grade: How many students received within the A range (90-100%)							
Final Course Grade: How many students received within a B range (80-89%)							
Final Course Grade: How many students received within a C range (70-79%)							
Final Course Grade: How many students received within a D range (60-69%)							
Drop Withdraw Failure: How many students DID NOT complete the course?							
Pre-diagnostic Assessment Average Score (pre-diagnostic test that you create, a standardized score, a MyLab pre-diagnostic, etc)							
Post-diagnostic Assessment Average (post-diagnostic test that you create, a standardized score, a MyLab post-diagnostic, etc)							
Average Final Exam/Project Score (if you assign a final exam or assignment that is different from the post-diagnostic assessment)							
Average Final Overall Course Score							
Standard Deviation (see instructions below)							
<p>Do you have qualitative data, such as MyLab student surveys, that you can share with us? Or, are you willing to ask your students to complete a brief survey?</p>							
<p>Also, please let us know if you are interested in collecting any other kind of quantifiable data. We would be happy to work with you to design a data collection template.</p>							
<p>Standard Deviation: Step 1: In an Excel spreadsheet, list your students' final exam scores. For example, if you have 25 students, listing the final exam scores in column A would give you 25 rows in column A. Step 2: go to the next cell, A26 (column A, row 26), and type: =STDEV(A1:A25) . This will give the standard deviation of the final exam scores. To determine final grade averages, go to cell A27 and type: =AVERAGE(A1:A25). This will give the average of the final scores.</p>							

## Data Tracking Template 2

Course Information							
Course Name:							
Course structure: Traditional (face-to-face), Online, Hybrid							
Course Credit hours:							
Semester Start Date - End Date: (Month/Year - Month/Year)							
Was Mastering used this term? If so, was it required or optional?							
Book in use: (Author, Title, Edition)							
	If applicable: Pre-test score. Please specify the range (for example, 0-100).	If applicable: Post-test score. Please specify the range (for example, 0-100).	Mastering assessment #1 score (for example, specific homework or quiz). Please specify the range (for example, 0-100).	Mastering assessment #2 score (for example, specific homework or quiz). Please specify the range (for example, 0-100).	Quiz score. Please specify the range (for example, 0-100).	Exam score. Please specify the range (for example, 0-100).	Final exam score. Please specify the range (for example, 0-100).
Student 1							
Student 2							
Student 3							
Student 4							
Student 5							
Student 6							
Student 7							
Student 8							
Student 9							
...							
Student x							
<b>Note: Add/edit/delete columns and rows as necessary to reflect the course's students and assessments.</b>							
How many students were enrolled on the first day of class?							
How many students were enrolled on the last day of class?							
Final Course Grade: How many students received an A?							
Final Course Grade: How many students received a B?							
Final Course Grade: How many students received a C?							
Final Course Grade: How many students received a D?							
Final Course Grade: How many students received an F?							

## Lesson 4: Methods to Prevent Cheating

For information on how to prevent cheating, please refer to the PDF document below.

Topics include:

- How can you help your students decide not to cheat?
- When do students cheat?
- How do students cheat?
- What can you do to discourage cheating including what to assign, settings in Mastering, and more?
- How can I use the Mastering Gradebook to find potentially questionable student behavior?
- What other anti-cheating features does Mastering have?



**PDF: [Methods to Prevent Cheating](#)**

## Lesson 5: Student Intervention Strategies

In the last lesson, we discussed how you can measure success. We provided examples of the data you can collect during the term and at the end of the term. Now, what can you do with that data? After you analyze student performance data, you will determine what intervention strategies are needed to increase success during the term and address any performance issues.

Based on learning sciences research, there are strategies that instructors can use that can improve implementation. Examples include:

- Familiarize students with course features/resources before course start (Robinia, 2012)
- Schedule interactive materials for the classroom to promote learner interaction
- Create course orientation
- Provide help resources and information on how to submit answers. (Note: You can assign the Introduction to Mastering assignment to teach students how to submit answers.)
- Use consistent processes (use of email, technology, announcements)
- Communicate special reminders (announcements) about course deadlines

### What student intervention and communication strategies should you consider implementing during the term?

- Integrate study skills coverage into your curriculum to help students learn these skills. For example, you can provide them with tips on how to approach the work load daily and how to manage their time better. You can also assign your assignments consistently on the same days throughout the term so students see them on their calendar and can plan their time accordingly.
- Share the student misconception data you see in the Mastering Diagnostics with teaching assistants and tutors so they can work with students in need of extra practice or help students who are struggling with particular topics.

- ❑ Hold review sessions or study group sessions covering topics students struggle with most after reviewing the Mastering Diagnostic data.
- ❑ Place students in groups of mixed abilities to complete an activity to promote peer learning. (Note: You can do this with Learning Catalytics during sessions you run in class by grouping students by their answer. You can also create permanent groups in Learning Catalytics for Team-Based Learning assessments in Learning Catalytics.)
- ❑ Utilize university staff and campus resources to help with intervention.
- ❑ Offer online office hours during peak times when students are working on their Mastering assignments.
- ❑ Monitor student comprehension by assigning prelecture assignments and adjust your lectures based on the data you see in the Mastering Diagnostics to address student misconceptions and struggles.
- ❑ If you use Learning Catalytics, adjust your modules to cover topics students struggled with on their homework and group students for peer instruction in class. This will help to engage students that are less likely to seek out help on their own.
- ❑ For any at-risk students you identify, target them for academic support services.
- ❑ Promote and remind students about the campus resources available to help struggling students.
- ❑ If you have one-on-one meetings with students, use the time-on-task information in Mastering during your meeting to talk about the time they are spending on their work and how they might want to improve their study habits.
- ❑ If you have correlated your Mastering homework to exam scores, show students this data so they see why it is important to spend time in Mastering working on the assignments prior to exams. You can also show them the data from the Mastering case studies as needed.
- ❑ Discuss the data and the topics they struggled with in your class lectures. That way students make a connection of how important it is for them to spend time working in Mastering and will be more engaged during lectures.

- ❑ Clarify what you expect and what good performance is throughout the semester. Talk about goals, criteria, and expected standards consistently. Make goals quantifiable and clear, not just “do your best”. When you discuss goals, include students in the process and align your goals with theirs so they see the relevance. For example, talk about how they will use the knowledge they learn on a specific topic in their life and profession.
- ❑ Explain to students that they receive immediate, answer-specific feedback and hints within Mastering for many questions. Students are less likely to ignore or misconstrue individualized feedback over feedback aimed at groups of learners. (Hattie & Timperley, 2007)
- ❑ Have students commit to goals in a written document early in the semester and circle back to self-assess their progress on a weekly basis.
- ❑ Make sure to provide choices in learning to help increase motivation.
- ❑ Incorporate games in class to increase engagement such as jeopardy and other ways to improve motivation.
- ❑ Increase curiosity via incongruous/surprising information to help increase interest in course material.
- ❑ If a student is spending time doing homework and improving, praise “process”, e.g. “Your practice is paying off”. Explain to students that the brain is a muscle that “get stronger” with exercise, or practice. Emphasize with your students that they can improve performance with effort and persistence. (Christensen & Knezek, 2014) (Hochanadel & Finamore, 2015)

## Lesson 6: Use Mastering Data to Inform Course Revisions

In the last lesson, we discussed student intervention strategies that you may want to incorporate throughout the term. In addition, you may want to make revisions to Mastering during the term or for a new term to improve the course's effectiveness.

Review the checklists below for some ideas of how you can use the data during the term and at the end of the term to improve student performance and course effectiveness.

### What could you change in Mastering during the term?

- Change lengths of assignments because of time/success data.
- Change level of assignments because of success/grade correlations. For example, you may notice assignments are too difficult or too easy. Try to provide assignments with intermediate difficulty.
- Change item order in assignments, or adding hints, based on diagnostics.
- Correlate item types with student success to identify learning style preferences, language issues, and so on.
- Compare results with multi-section courses (coordinating across instructors) and make changes to assignments or coverage based on the comparison.
- Add Adaptive Follow-Ups or Dynamic Study Modules for topics that students struggled most with on their assessments. You can add them as practice if you don't want to alter what counts for credit during the term.
- Add practice quizzes to help students prepare for exams.
- Use Learning Catalytics for in-class quizzes. Pair students by different answer responses to promote peer learning through the grouping function. Allow students to use their resources (eText, textbook, class notes, and so on) to arrive at their answer.
- Use Team-Based Assessments in Learning Catalytics in class to help students prepare for exams and to probe whether students are learning from their peers. Use the data within Mastering to build the content in Learning

Catalytics around topics that students struggled with most on their assignments.

- Assign problems in your assignments or practice assignments with items that provide hints and feedback to help walk students through complex problems. You can add them for practice or extra credit as needed.

For suggestions on how to implement these changes in Mastering, refer to the appropriate topic in the Table of Contents of this guide for strategies and best practices or search [Online Help](#) for step-by-step how-to detail.

## **What changes could be made to your Mastering course at the end of the term?**

- Eliminate items, or even edit items to eliminate parts or add summative questions.
- Change assignment mixes based on difficulties, item types, time, and resources.
- Change assignment grading and presentation settings.
- Add hints to questions.
- Investigate hypotheses about student success.
- Address Student Learning Outcome results.
- Add Adaptive Follow-Ups or Dynamic Study Module assignments for the most difficult topics.
- Add Learning Catalytics to your course or edit modules. Learning Catalytics allows you to move up Bloom's Taxonomy and promote peer learning and student engagement.

## Lesson 7: Additional Training & Support

A successful implementation never truly ends. It is an ongoing process, ever evolving with the emergence of new and improved technology, the entry of each unique cohort of students, and the increased amount of information gleaned via the long-term tracking and measuring of student data.

From the main websites where you register and access Mastering, you can find the Mastering Implementation Resources under the Educator Training & Support area. Click **Training & Support** from the Mastering website to see the options available.

### Training Resources

▶ [Quick Start Guide](#)

▶ [Planning Toolkit](#)

▶ [Request Training](#)

▶ [Implementation Guide](#)

▶ [How Do I? Videos](#)

▶ [Pre-recorded Sessions](#)

### Support Resources

▶ [System Requirements](#)

▶ [Get Your Students Started](#)

▶ [Sign-in Help](#)

▶ [Top Questions](#)

▶ [Accessibility Information](#)

▶ [Contact Pearson Support](#)

All of our Mastering resources available to support your implementation are informed by the results of educators who have achieved measurable gains in teaching and learning outcomes with Mastering. The curriculum is flexible to provide you with the support you need in the way you want to receive it.

**[Planning Toolkit](#)**: Helps you plan your Mastering implementation by walking you through workshops and checklists that facilitate and support the three phases of the implementation process: plan, implement, and evaluate.

**[Live Online Training](#)**: Live online training is available by request. You can connect with a member of our Customer Digital Success team for a virtual training and Q&A at a time that works best for you.

**Implementation Guide:** This is the guide you are in now which provides insightful best practices and strategies for effective implementation of your course based on the results found in case studies and white papers.

**How Do I? Videos:** Short videos that demonstrate tasks such as creating an assignment or using the gradebook. Click **Training & Support > How Do I? Videos**. You can also reach the How Do I? Videos from within Mastering in the Learn More area on your Course Home page.

**Prerecorded Sessions:** Access recordings of the Live Online Training workshops. Note that CEUs are only available for Live Online Training workshops and not for the prerecorded sessions.

**Get Your Students Started resources:** It is important to get your students started successfully. Here you will find downloadable documents to provide to students on the first day of class. Go to the Mastering website, click **Training & Support > Get Your Students Started** to find the materials.

## Get Your Students Started

Get your students up and running quickly with a brief **Get Started** lesson on the first day of class. We've prepared the following materials for your convenience.



Presentation



Handout



Top Questions

**Important Note:** *There are specific student registration directions and top questions for Mastering, Modified Mastering, and Modified Mastering with Learning Management System (LMS) Integration. It is important to refer to the correct materials depending on the version you use for your course.*

For Modified Mastering, refer to the [Modified Mastering Implementation Guide](#).

For Modified Mastering with Standard LMS integration, go to the LMS Support pages. Each LMS has an integration guide and student registration resources (presentation, handout, and video). The LMS-specific Educator Support pages:

- [Blackboard Learn](#)
- [Brightspace by D2L](#)
- [Canvas](#)
- [Moodle](#)

**Pearson Support:** [Pearson Support](#) is always available for technical issues. From here you can choose the type of help you need or enter a search query.

## Get Assistance with Your Own Efficacy Study

Pearson would like to help you analyze your results from your use of Mastering. Pearson can provide templates, guidelines, checklists, and samples on course redesign, efficacy studies, data collection, and more. To maintain objectivity, Pearson does not offer compensation for participation in efficacy studies. Every research project is unique. Instructors interested in conducting studies should expect an interactive and rewarding partnership.

### Why conduct your own study?

All six accreditation boards require information on student learning outcomes and many administrators are now requiring instructors to report their course outcomes. Pearson can do the analysis of your results so you have it for reporting, and this analysis will also help you better understand the impact Mastering is having on your course.

### What kinds of studies can Pearson help with?

- Case studies – brief data supported cases discussing the course being taught, how Mastering has been implemented, and the results. This is published online and possibly in Pearson’s annual White Paper.
- Experimental Studies – Rigorous, controlled studies intended for publication in a peer-reviewed journal.

## How much time do you need to commit for the studies?

The time commitment is relatively low for a case study and includes:

- 30 minute phone call to discuss course and Mastering usage.
- You would need to take the time to gather course data which may include scores, exam, and final course grades for one or more semesters. It is ideal if you can send pre- and post-Mastering data.

Note: You will need to remove student identifying information before submitting data.

- Pearson does the data analysis and provides you with a summary of the findings.
- Pearson writes up the case study based on the information from the call and the analysis of results, and sends it to you for feedback and edits.

An experimental study requires a much higher commitment of time and works on the professor's part, and must get IRB (institutional review board) approval. Pearson will work with anyone that is interested in pursuing this type of study, including providing additional data gathered in Mastering that they do not have access to and statistical support.

Our research team includes PhD-level statisticians who provide practical advice about tracking and analyzing student data after the redesign of a course to incorporate technology. Our research team also includes experts in psychometrics, educational statistics, and journal publications. These individuals support instructors who want to (1) conduct efficacy studies, (2) provide our editorial staff with detailed reports on the quality of our online content, and (3) advise our software engineers of new methodologies for collecting and processing student learning data within Mastering products.

## Research Standards

Pearson adheres to Software & Information Industry Association guidelines for evaluation of educational technology products. The key guidelines are:

- Ask the right question

- Support the implementation of the product or service
- Plan a study of sufficient size and duration to demonstrate an effect
- Plan for plausible causal claims
- Avoid (the appearance of) conflicts of interest
- Provide a comprehensive and detailed research report
- Make the research findings widely available
- Accurately translate research for customers

## Have Questions about a Case Study?

Contact your sales representative or [betsy.nixon@pearson.com](mailto:betsy.nixon@pearson.com), Mastering Efficacy Results Manager, for more information.

Search the [Pearson Results Gallery](#) for user-provided evidence of measurable gains in learning outcomes and retention.

### Ask an Expert Mastering User

Once you have logged into your Mastering course, you can ask other Mastering experts questions via the Ask an Expert Mastering User link.

Your question will go directly to a few members of our Mastering Expert Team. This is a great way to get help with best practices and user tips!

*Note: If your question specifically deals with higher education student registration or other technical issues, please contact [Pearson Support](#). Ask the Expert Mastering User is not technical support.*

▼ **Learn More**

- [Getting Started](#)
- [How-To Video Tours](#)
- [Correlation Chart](#)
- [Get Your Students Started Materials](#)
- [FAQs](#)
- [Best Practices](#)
- [Ask an Expert Mastering User](#)

## Higher Education Events

We recently hosted a Learning Makes Us online conference, where instructors who currently use Mastering gave [presentations](#) on a number of different topics you might find interesting.

## Pearson Community

Connect with other educators to exchange ideas and share advice at <https://communities.pearson.com/northamerica/s/>.

## MODULE 3: CREATE AND MANAGE YOUR COURSES

### Lesson 1: Create an Instructor Account

To get started, you need to have access to the Mastering program for your discipline. You can gain access from one of these ways:

- **Your local sales rep might have created an account for you.** If you received a username and password for Mastering, you can go directly to **SIGN IN**.
- **You were given an access code.** If you have an instructor access code, you are ready to register for your Mastering course.
- **You do not have an existing account or an access code and need to request one during the registration process.**

To begin the registration process, go to the main page for your product. Please note that each product has its own website (masteringbiology.com, masteringchemistry.com, and so on). Click on Educator under Register and follow the instructions. If you encounter issues or need help, you can click on the Help buttons or contact Support.

**Important:** *If you plan to use the alternative version of Mastering called Modified Mastering, all users go to the same portal ([www.pearsonmastering.com](http://www.pearsonmastering.com)). LMS integration requires use of Modified Mastering. For more information about Modified Mastering, see the topic on [Mastering and Modified Mastering](#) in this guide.*

### Tips for Creating Your Educator Account

- Use your email address for your login and encourage your student to do the same. It is unique and easy to remember.
- Your educator subscription lasts for 5 years. After that, you will need to reregister but your data and courses will not be lost as long as you use the same login name. You are able to check on the status of your account anytime by clicking your name in the upper right corner when you are in your account.

## How do you get a student view of your Mastering course?

If you'd like to register as a student in your own course to see the complete student view, please contact [your sales representative](#) for a student access code. It is important to use a different username from your educator account when you create a student account.

## Lesson 2: Create or Copy Your Course

The first time you **Sign In**, you will be prompted to create a course. Before you create your first course, consider how many courses you will need to create for the current term.

**Important:** *The directions below apply to regular Mastering courses and not to Modified Mastering courses. For more information about Modified Mastering, see the topic on [Mastering and Modified Mastering](#) in this guide.*

### What to Consider Before Creating a Course

If you teach multiple sections, you can create one course for all your students. You can then create groups and organize students into groups to represent each section. This will allow you to view grades and export data by class, but also provides you with the convenience of having all of your students in one course. When you need to add content, move due dates, and so on, you only have to do this in one course.

If you prefer to create multiple Mastering courses for each section, you might want to consider establishing one course first then copying that course. Once a course is copied, they work independently so any corrections or additions must be made in each course.


During the course creation process, you will see options for what type of course you want to create:

Create a Course

Do you want to create or copy a course? \_\_\_\_\_

- Create a New Course
- Copy One of My Courses [i](#)
- Copy a Pre-Built Course [i](#)
- Copy Another Instructor's Course [i](#)

[Cancel](#)



Consider which option is best for you:

- Create a New Course - lets you set up an empty course shell for the textbook you choose. You can create and add original assignments, and may also add publisher-provided assignments that have been created for your textbook. These assignments contain some of the best content available, selected by experienced instructors.
- Copy One of My Courses (only an option if you already have a course created in Mastering) - lets you select from a list of your existing courses for the same Pearson product, and asks you whether to copy the assignment dates. See [Tips for Copying One of Your Own Courses](#) if you select this option.

**Important:** *If the new course is based on a new edition of the textbook, you can [copy to a new edition](#). A new feature allows you bring your assignments from one edition to the next and correlates content in the assignments to the new edition. Dynamic Study Modules do not copy to a new edition.*

- Copy a Pre-Built Course (if available) - provides a list of textbooks and courses that have been created with assignments for the textbook you select. Click a Course Title to learn more about its design. See [Tips for Using a Pre-Built Course](#) if you select this option.
- Copy Another Instructor's Course - Prerequisite: The course owner must first make the course available for copying and tell you the course ID. Only choose to copy assignment dates if you plan to use the same due dates that are already assigned in the course you are copying.

Regardless of the option you choose, you can view, edit, add, or delete assignments and set assignment dates.

**For Adaptive Follow-Up Users:** *If you copy a course that contains Adaptive Follow-Up assignments, those Follow-Ups are automatically included in the new course. You can remove or edit the Follow-Ups in the copied course.*

**For Dynamic Study Module (DSM) users:** *If you copy a course that contains modified DSMs, those modified DSMs are included in the new course. You can remove or modify*

*the DSMs in the copied course. If you are copying to a new edition, your DSMs (either regular or modified) will not copy to the new edition.*

## Best Practices: Create a Course

- If you are copying a course, you should remove the words "Copy of" from the Course Title, which students see when they sign in.
- Be sure to select the correct textbook, including its edition number (2e, 3e, and so on). You cannot edit the book selection later without the help of Support.
- Time Zone is required because it affects the time when assignments are available to students, when assignments are due, and when Mastering records each student submitted the assignment.
- If you're unsure of information right now, it's okay. You can change any information later except the textbook and course ID by editing course settings.
- If you are a new to Mastering, it is recommended you copy a pre-built assignments or copy another instructor's course from your department. Pre-built assignments contain questions recommended for new users. If you do, make sure that you preview and edit assignments to match your course objectives.

**NEW:** Select products also have Ready-to-Go Modules available that provide instructors with easy-to-use teaching tools for the toughest topics in the course. You will find recommendations for ready-made activities and assignments for before, during, and after class. If your course contains Ready-to-Go Modules, you will find them in the Instructor Resources area within Mastering.

- If you copy one of your courses, you will see a new option around copying the assignment dates. You may now select **Yes, adjusted dates**. If you do so, date adjustments are based on your selected due date for the first assignment. All assignments are shifted by the number of days between

assignments. This can help save time setting new due dates for a new semester.

If you select **No** then you will start with a clean slate in a new semester and you will have to select new dates for each assignment. If you select **Yes** then the assignment dates will remain the same as the course you are copying.

- Copy a course and select a new edition to receive automatically updated content in the new course. This automatic update means that you no longer need to manually edit assignments to ensure you are assigning the latest content. If you are moving from a new edition from an old edition, assignment content is automatically updated in a new course that is copied from an earlier course if the following is true:
  - The Item Library for the new edition is complete at the time the course is copied.
  - The original course was based on the immediately previous edition of the textbook; for example, if you copy a course based on edition 9 to create a new course using edition 10.
  - Dynamic Study Modules (DSMs) do not copy and update to the new edition. You must assign and modify the new DSMs in the new edition.

Follow the [steps to successfully copy to a new edition](#).

**Tip:** *If you would like to use an old assignment from a past edition without the automatic updates, you can always copy an assignment from one course to another. When you copy an assignment, the assignment content is not automatically updated to the new edition content.*

## Student ID

In addition to tracking students by name, with Mastering you can also maintain student ID information. The student IDs can match school IDs or can follow some other format or convention you choose. You can edit the description to tell students exactly what to enter into the field. This option is necessary for instructors with large classes and also helpful for smaller courses, especially if you export your grades.

### Create a New Course

1 Basic Information — 2 **Student ID Settings** — 3 Access Settings

Do you plan to combine MasteringAandP grades with grades in other systems?  
If so, Student IDs are an important part of this process. You can easily import these into MasteringAandP from a spreadsheet, or you can have students enter this data themselves.

Would you like MasteringAandP to prompt your students to enter their IDs? (You can change this preference later.)

Yes, prompt my students for their IDs, and let me customize the prompt.  
 No, I do not want students to enter in their IDs.  
[Learn more about student IDs](#)

Customize what your students will see:

Please enter your Student ID:

Don't know what to enter? Contact your instructor for help.

[Edit](#)

[Edit](#)

Click the text you want to edit. When you are satisfied, click "Continue."  
You can always edit this later in your Course Settings.

« Back Continue »

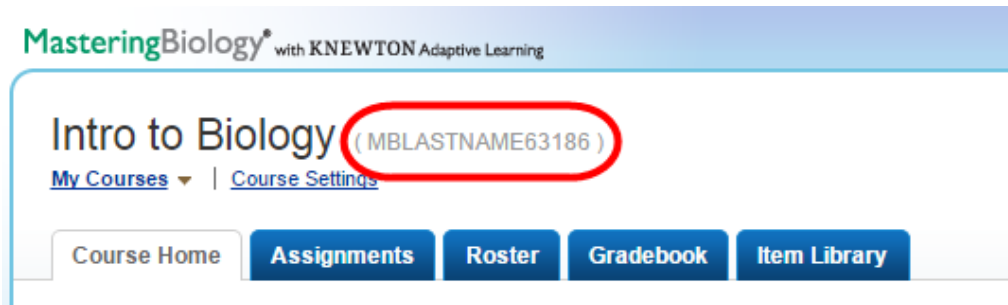
Here are some reasons you might want to use this feature:

- Official campus records can sometimes have a different name from the name some students use when registering for Mastering.
- On occasion, you might have two students with the same name enrolled in the class.
- You might want to export Mastering grades into a Learning Management System (LMS), such as Blackboard. (Instruct students to enter the same ID used for the LMS).

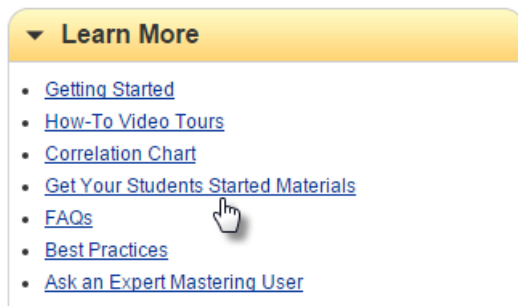
Note: If you use Learning Catalytics (LC), the Student ID in LC is separate from the Student ID in Mastering.

## Course ID

After you create or copy your course, you can find your course ID within your Mastering course next to the course title.



Students need your course ID when they register for Mastering. You can find a student registration handout and PowerPoint from within your Mastering course. Click **Get Your Students Started Materials** from the Learn More pod on your Course Home.



## Step-by-Step Directions: Create or Copy a Course



[Create a Course Help Guide](#)



[Create a Course](#) [2 min 21 seconds]

[Copy a Course](#) [1 minute 5 seconds]

## Lesson 3: Navigation of the Mastering Interface

*"It's clear my students are spending more time on homework as a result of Mastering. It's also **much easier for the instructor** than the system we had been using."*

- Professor Michael Cherney, Creighton University

Note: Refer to the [Modified Mastering Guide](#) if you use Modified Mastering.

### Instructor Course Home

The Course Home is the control center for all major tasks in Mastering.

The screenshot shows the Mastering Instructor Course Home interface. It includes a Course Calendar, In-Class Learning, Dynamic Study Modules, Course Materials, Announcements, and Learn More sections. Callouts provide instructions for each section:

- Course Calendar:** Callouts include "Assignment already due", "Dynamic Study Module assignments not yet due", "Adaptive Follow-Up assignment not yet due", and "Mastering assignments not yet due". A text box on the left says: "Create and edit assignments, view due dates, and see which assignments are due next".
- In-Class Learning:** Text on the right says: "Increase classroom engagement and peer-to-peer learning through higher level questions and discussion".
- Dynamic Study Modules:** Text on the right says: "Assign modules to increase mastery and retention".
- Course Materials:** Text on the right says: "Upload documents, videos, and screencasts for students".
- Announcements:** Text on the left says: "Add announcements that students see on their Course Home".
- Learn More:** Text on the right says: "Familiarize yourself with Mastering", "Get your students started", and "Ask an expert user a question".

### Course ID

The course ID to give your students for registration is always located in parenthesis in the top left corner of the screen next to the title of your course.

General Chemistry, Semester 1 (MCLASTNAME12345)

[My Courses](#) | [Course Settings](#)

Course Home Assignments Roster Gradebook Item Library

Course Calendar

You can find a student registration handout if you click **Get Your Students Started** from within the Learn More area on your Course Home. You can customize this handout and add your own course ID to it.

Learn More

- [Getting Started](#)
- [How-To Video Tours](#)
- [Correlation Chart](#)
- [Get Your Students Started Materials](#)
- [FAQs](#)
- [Best Practices](#)
- [Ask an Expert Mastering User](#)

## My Courses

Right below the course title and course ID is the **My Courses** link, where you will be able to:

- Create a New Course
- View/Manage All Courses
- Switch to a Different Course

## General Chemistry, Semester 1 (MCLASTNAME12345)

[My Courses](#) ▾ | [Course Settings](#)

[+ Create Course](#)

[View/Manage All Courses](#)

---

**Switch to a Different Course**

Select a course... ▾

[Item Library](#)

No

## Course Settings

Next to My Courses you will see your **Course Settings** link.

### General Chemistry, Semester 1 (MCLASTNAME12345)

[My Courses](#) ▾ | [Course Settings](#)

[Course Home](#)

[Assignments](#)

[Roster](#)

[Gradebook](#)

[Item Library](#)

▾ [Course Calendar](#)

- Basic Information
- Enrollment Settings
- Make Available for Other Instructors to Copy
- Student ID Settings
- Manage Section Instructors
- Learning Outcomes
- Display Settings
- Change the display of all grades from Points to Percentages
- Allow students to see their Total Score
- Forward Student Comments (sent to Pearson) to your Email Address.



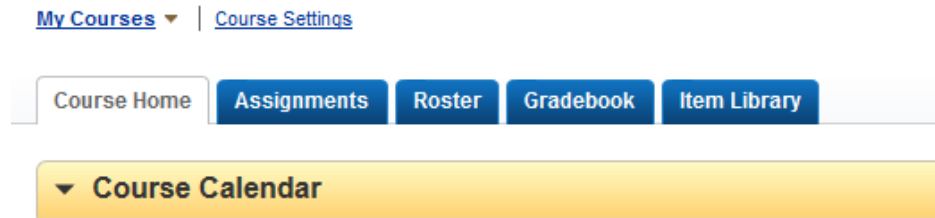
[Edit Course Settings](#)



Pearson

## The Five Main Tabs (Course Home, Assignments, Roster, Gradebook, and Item library)

Under **My Courses** and **Course Settings**, you will see five tabs.



- **Course Home**- this is the default when you enter the course and you can return to the Home page at any time by clicking on this tab.
- **Assignments**- This is where you create and manage assignments. There is a List View and a Calendar View. [More about Assignments](#)
- **Roster**- This tab allows you manage your student roster and create groups. You can also click on a student's name to access their scores from the Roster. [More about the Roster](#)
- **Gradebook**- This tab allows you to view student results, run reports, and manage your gradebook. [More about the Gradebook](#)
- **Item Library**- The homework and quizzing problems you assign are all from the tab. You can click on this tab to see a complete list of all assignable items. [More about the Item Library](#)

## Course Calendar and Announcements

To expand or minimize the Course Calendar and the Announcement areas on the Course Home Page, click the arrow.

Course Home **Assignments** **Roster** **Gradebook** **Item Library**

▶ **Course Calendar**

▼ **Announcements**

You have not posted any announcements to students. Click [Create Announcement](#) to create an announcement on the Course Home page.

[+ Create Announcement](#)

The Course Calendar is filled as you create your assignments in Mastering.

*The Calendar is intended to be an assignment calendar. You can't edit or add items to the course calendar except through the creation of an assignment. If you want offline items to be on the calendar, create an assignment with no items and assign it.*

When in the expanded view, you can click **Create Assignment** or **View All Assignments**.

Course Home **Assignments** **Roster** **Gradebook** **Item Library** **Instructor**

▼ **Course Calendar**

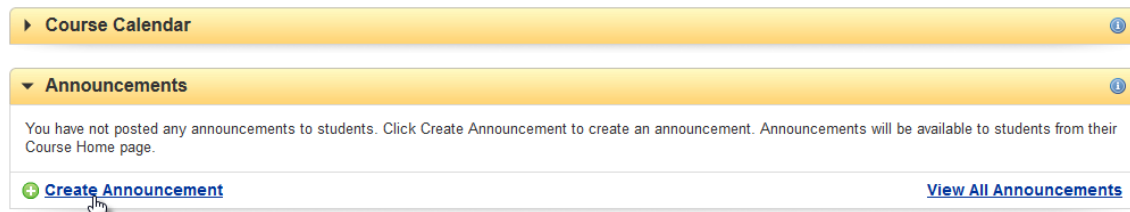
November 2012

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	1
2	3	4	5	6	7	8

[+ Create Assignment](#) [View All Assignments](#)

▼ **Announcements**

Under Announcements, see **Create Announcement** or **View All Announcements**.



Course Calendar

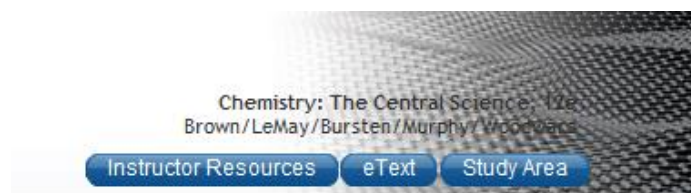
Announcements

You have not posted any announcements to students. Click Create Announcement to create an announcement. Announcements will be available to students from their Course Home page.

[Create Announcement](#) [View All Announcements](#)

## Other Educator Resources

With Mastering, you gain access to textbook-specific resources. Access these resources from the buttons on the top right of the page.



- **Instructor Resources:** Generally what has historically been available in the Instructor DVD, which usually includes images, example PowerPoints®, Active Lecture questions and so on.
- **eText or eText 2.0:** Instructors automatically have access to the accompanying eText or eText 2.0, depending on their book. Students can view the eText or eText 2.0 only if they include it in their purchase of Mastering. eText is available on computer or tablet devices. eText 2.0 is available on computer, tablet, or smartphone. [Information about eText for tablet devices](#)
- **Study Area:** Offers students learning activities for self-paced study. Students can repeat these activities as often as they like. The instructor receives no record of student work in the study area, only on work assigned from the item library. Most often, the questions in the study area are different than the assignable content.


## In-Class Learning

If you choose to use Learning Catalytics with your students, you can:

- Pose questions to students during class.
- Form discussion groups based on student answers.
- Review results in real time to identify student misconceptions.

▼ **In-Class Learning**

Ask students questions during class to assess their understanding in real time.

 [Learning Catalytics](#)

Important Note about Learning Catalytics Requirements for Classroom Use:

- Classroom connectivity: Capacity for all students to be online simultaneously via Wi-Fi or cell providers (Check with your IT department)
- Web-enabled devices: Smartphone, tablet, or laptop for each student
- Learning Catalytics access: Included in Mastering with eText (both online subscriptions and new book packages) or sold separately

When you click **Preview & Set Up** on the Learning Catalytics link for the first time, you can view it in preview mode before inviting students.

The image shows two overlapping screenshots of the Learning Catalytics interface. The top screenshot is a 'Preview & Set Up' modal window. It has a blue header with the 'learning | catalytics' logo and a 'Watch the Video' button. Below the header, it says 'Step 1. Preview & Set Up' with a gear icon. The main content area contains instructions: 'Explore Learning Catalytics and determine how you will use it in your course.' followed by a list of tasks: 'Browse the question library or write your own questions from scratch.', 'Add questions to modules to use in your class.', 'Preview the student experience.', and 'Arrange your classroom seatmap.' A yellow 'Preview & Set Up' button is at the bottom. Below this is a section for '\*Requirements for Classroom Use' with bullet points about connectivity, devices, and access. A red arrow points from this button to the right. The bottom screenshot shows the 'Step 2. Use with Students' interface. It has a blue header with the logo and 'MT Holland | Pearson'. Below the header, it says 'Step 2. Use with Students' with a group icon. The main content area shows 'My Courses > Biology' and a 'Welcome, MT.' message. There are two video thumbnails: 'Getting started' and 'Delivering a module'. Below these are 'Create module' and 'Copy a module' buttons. At the bottom, there is a table with columns for 'Module', 'Type', 'Date', and 'Results', and a search bar. The table is currently empty, showing 'No data available in table' and 'Showing 0 to 0 of 0 entries'. The footer of the interface says 'ALWAYS LEARNING' and 'PEARSON'.

Any work completed in the preview mode remains in the course as you move onto Step 2, Use with Students. After you've decided to use Learning Catalytics in class, you can quickly and easily inform students. Make sure the "Notify students" check box is selected. The automated email explains to students in detail what they need to do to access Learning Catalytics. This message is editable up to 600 characters so you can customize the message. The message also appears as an announcement in Mastering.

**Important:** If you decide to use Learning Catalytics in your course and want to use grade transfer from Learning Catalytics to the Mastering Gradebook, it is very important to click Use with Students to enable your course. You will not see the option to do Grade Transfer until you click Use with Students. Students must also click Learning Catalytics on their Mastering Course Home page to establish their Learning Catalytics connection.

**learning catalytics**

Learning Catalytics is a "bring your own device" web-based student engagement, assessment, and classroom intelligence system. Use open-ended questions to get into the minds of your students to understand what they do and don't know and adjust lectures accordingly.

Watch the Video

**Step 1. Preview & Set Up**

Explore Learning Catalytics and determine how you will use it in your course.

- Browse the question library or write your own questions from scratch.
- Add questions to modules to use in your class.
- Preview the student experience.
- Arrange your classroom seatmap.

**Preview & Set Up**

**Step 2. Use with Students**

Notify students to purchase Learning Catalytics in your course.

- Pose questions to students
- Form discussion groups based on student responses
- Review results in real time to address misconceptions.
- Notify students via email to [view / edit message](#)

**Use with Students**

**Message to Students**

**Subject**

A message from your instructor

**Message** 505/600

We will be using the Learning Catalytics classroom participation tool in our course. Sign in to Mastering and click the "Learning Catalytics" link in the "In-Class Learning" area (top right) to verify your access. If you don't have access yet, you are required to purchase access.

Learning Catalytics access is included when you buy Mastering with an eText subscription or a new book package. If you bought a Mastering subscription without an eText, you will need to purchase Learning Catalytics access.

[Cancel](#) **Save**

After inviting students, the student's Course Home page displays the "In-Class Learning" option so they can cross over and participate in Learning Catalytic sessions.

## Dynamic Study Modules


Dynamic Study Modules are available for specific titles to help students check and improve their knowledge of the material they must master to do well in the course. As a student progresses through sets of questions, these modules provide practice and feedback in areas where the student needs more review.

If this feature is available for your course, you and your students see it on the Course Home page.

**You see:**

**Dynamic Study Modules**


Dynamic Study Modules are always available for student self-study, and are now also available as assignments.

 [Copy Modules into Course to Assign](#)

**Students see (original student Course Home):**

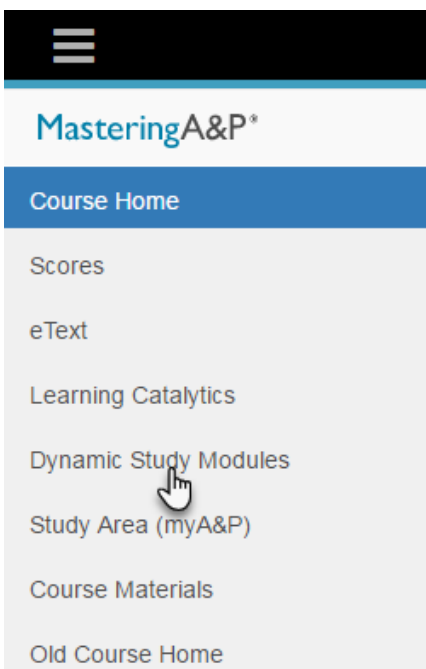
**Test Your Knowledge**

Choose a chapter and work through groups of questions to check your understanding.

 [Dynamic Study Modules](#)

powered by *amplifire™*

[Get the Mobile App](#)

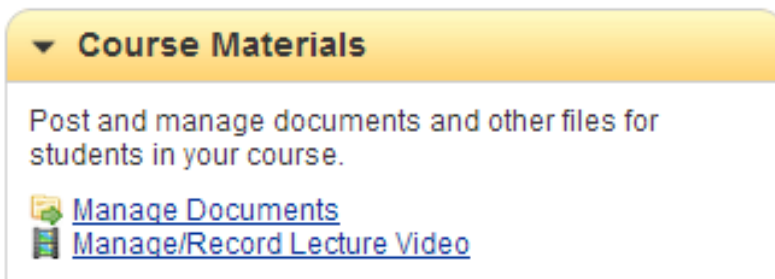
**Students see (Beta student Course Home):**

A vertical navigation menu for the Beta student Course Home. At the top is a black bar with a white hamburger menu icon. Below it is a white bar with the text "MasteringA&P\*" in blue. The main menu is a light gray bar with several items: "Course Home" (highlighted in blue), "Scores", "eText", "Learning Catalytics", "Dynamic Study Modules" (with a mouse cursor icon over it), "Study Area (myA&P)", "Course Materials", and "Old Course Home".

## Course Materials

This area of the home page links to a repository for course documents such as a course syllabus and power point lectures as well as videos.

- Manage Documents
- Manage/Record Lecture Video



### Suggestions for uploaded or recorded course materials:

- Record videos of yourself using any standard webcam.
- Record a screencast for your students using the screen capture feature.
- Record videos with another piece of software (or just choose a video file that will be useful to your students) and then click Upload File. Once it is successfully uploaded, you will need to make sure that the Show to Students button is selected.
- Record audio lectures for students.

### Documents upload limits:

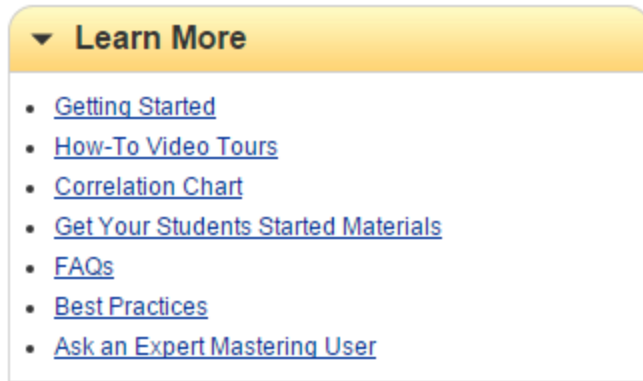
- Individual document file = 10 MB (your course limit may be higher)
- Course maximum = 100 MB

### Media upload limits:

- Individual media file = 500 MB
- Course maximum = 10 hours

## Learn More

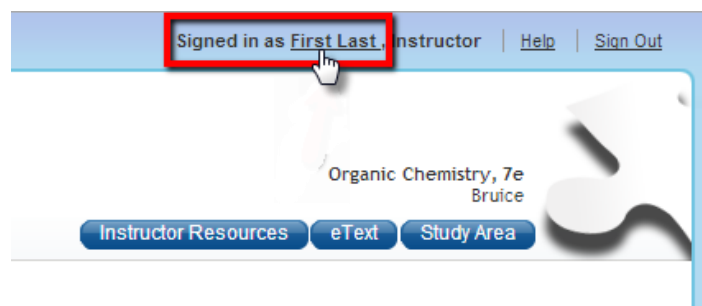
The Learn More box located on the Course Home page contains useful links for Instructors.



- **Getting Started-** This links directly to a step-by-step guide for getting started in Mastering.
- **How-to Video Tours-** This links to the portal page that contains all of the Video Tours in one place.
- **Correlation Chart/Tutorial Lists-** Some textbooks include a correlation chart from one edition to the next or lists of tutorials.
- **Get Your Students Started Materials-** Open an editable presentation and handout for your students. There you'll also find a link to the questions most frequently asked by students.
- **FAQs-** This links directly to the portal page that provides answers to the most commonly asked support questions.
- **Best Practices-** This link takes you to suggestions from experienced professors and instructors who use Mastering.
- **Ask an Expert Mastering User-** This link is designed to help you email your questions to a panel of professors who have used mastering successfully in the classroom. Please use this feature for best practices information from experienced users. Please go to 24/7 tech support for technical issues. For content error corrections, click the Contact the Publisher link within the item.

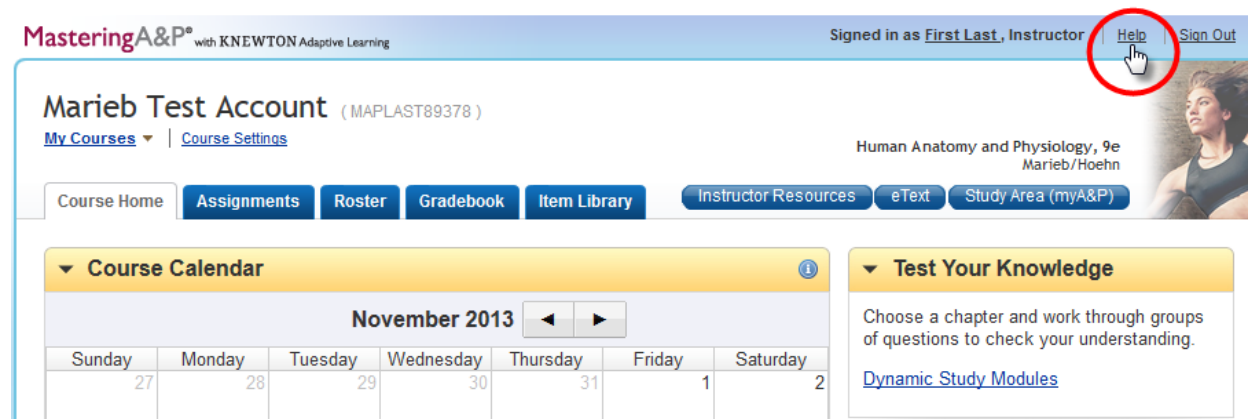
## Mastering Account Information

Click your name to access your profile information. This allows you to change your password and your display preferences, edit your account information, view subscription information, and so on.



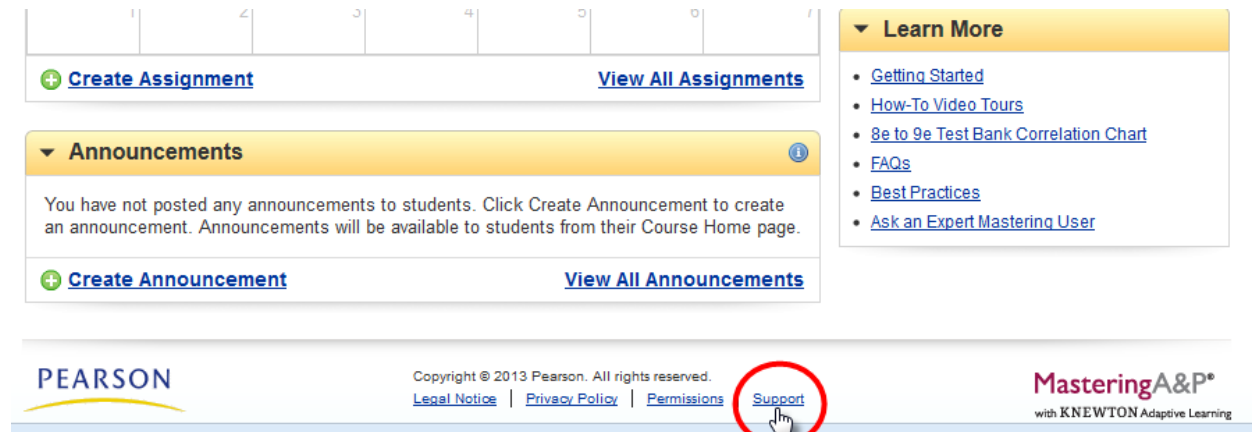
## Support and Help

Click **Help** to access the online Help guide. This is where you'll find the most detailed information about how to use Mastering.

A screenshot of the MasteringA&P interface. The top navigation bar includes the MasteringA&P logo, the text "with KNEWTON Adaptive Learning", and the user's name "Signed in as First Last, Instructor" followed by "Help" and "Sign Out" links. The "Help" link is circled in red with a mouse cursor pointing to it. Below the navigation bar, the course title "Marieb Test Account (MAPLAST89378)" is displayed, along with "My Courses" and "Course Settings" links. The course title "Human Anatomy and Physiology, 9e Marieb/Hoehn" is also visible. Below this, there are several buttons: "Course Home", "Assignments", "Roster", "Gradebook", "Item Library", "Instructor Resources", "eText", and "Study Area (myA&P)". The main content area features a "Course Calendar" section for November 2013 and a "Test Your Knowledge" section with a link to "Dynamic Study Modules".

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
27	28	29	30	31	1	2

Click **Support** from Mastering for access to Educator Support, Student Support, Accessibility information, System Requirements, and Forgot Your Sign-In information. Educator Support provides links to robust training resources.



The screenshot shows a user interface with a top navigation bar containing a grid of numbers (1, 2, 3, 4, 5, 6, 7). Below this are two main sections:

- Assignments:** A yellow bar with a dropdown arrow and the text "Announcements" (though the content below is about assignments). It contains the text: "You have not posted any announcements to students. Click Create Announcement to create an announcement. Announcements will be available to students from their Course Home page." Below this are buttons for "+ Create Announcement" and "View All Announcements".
- Learn More:** A yellow bar with a dropdown arrow and the text "Learn More". It contains a list of links:
  - [Getting Started](#)
  - [How-To Video Tours](#)
  - [8e to 9e Test Bank Correlation Chart](#)
  - [FAQs](#)
  - [Best Practices](#)
  - [Ask an Expert Mastering User](#)

At the bottom of the page is a footer with the Pearson logo, copyright information (© 2013 Pearson), and links for "Legal Notice", "Privacy Policy", "Permissions", and "Support". The "Support" link is circled in red. To the right is the "MasteringA&P" logo with the text "with KNEWTON Adaptive Learning".

## Reporting Content Issues

- [How to report issues](#) guides you in gathering the information you need to report an issue such as a content error for a specific item in Mastering. Please follow the instructions to report issues via Contact the Publisher within an item.
- [Student feedback on assigned items](#) describes the difference between survey feedback to the publisher from students, and issues that need to be addressed more quickly.

## Step-by-Step Directions



[Get Started with Mastering Help Guide](#)



[Introducing the Mastering Interface](#) [3 min 10 seconds]

## Lesson 4: Section Instructors (co-teachers, colleagues, and assistants)

**Important:** *The information in this module applies only to Mastering courses and does not apply to Modified Mastering courses. See the [Modified Mastering Implementation Guide](#) if you use the alternative version of Mastering called Modified Mastering.*

To give section instructors, teaching assistants, or a colleague access to your course, they must first establish their own user account for Mastering.

A Teaching Assistant should use a student access code to register while colleagues should use an educator access code to register. Access codes are available to you from your sales representative.

Once they have registered, they should sign in to Mastering to complete the process. Then, they should send you their login names. You do not need their passwords. Once you have their login names, you can login to Mastering and grant them access to your course as a section instructor through **Course Settings**.

### Tips When Adding Section Instructors

1. Once you upgrade a student account to a Section Instructor, they come out of your roster and can access various parts of your course. Review the table below for details. You may want to keep TAs or tutors in a student account if you don't want them to see grades. All section instructors can view grades and answers. There isn't the ability to hide grades or answers from them.
2. You will have to grant access to section instructors, TAs, and colleagues for each course you teach. Even if you copy a course from one term to another, you still need to allow them access to the newly created course.
3. Some instructors use the Section Instructor feature to share assignments and courses with their colleagues.
4. Instructors often add TAs to their course to access diagnostics for study sessions or manage the roster.
5. No section instructor can delete your course.

## Section Instructors Activities

Any TA or colleague added to your course can access a number of activities without being granted any specific privileges (with noted restrictions for section instructors who registered with a student access code).

See the list below of what section instructors are automatically allowed to access.

Note: You cannot remove access to these activities unless you remove the person as a section instructor in your course.

Activity	Instructor Access	Student Access
Copy this course	✓	✗
Create a new course	✓	✗
Access Instructor Resources for your course (if any)	✓	✗
Access the eText for your course (if any)	✓	✓
View the Roster, send email to a student, and export Roster details	✓	✓
Access and create reports of student progress in the Dynamic Study Modules for your course (if any)	✓	✓
View, print, and export the Learning Outcomes Summary	✓	✓
View all items (including correct answers) in the Item Library	✓	✓
See assignment answers on the Print View with Answers page	✓	✓
Use the Gradebook to view student grades and link to details of student work	✓	✓

## Privileges that can be granted

You can grant privileges to any section instructor to allow them to access additional activities. If you grant a section instructor privileges, then you are giving he/she the ability to manage that feature within Mastering.

Privilege	Activities
<b>Course Settings</b>	Update course information such as the course expiration date, course time zone, and learning outcomes.
<b>Roster</b>	Edit Student IDs and assign students to groups. Change enrollment status of students (including batch changes to enrollment status for large class enrollments).
<b>Groups</b>	Add and remove groups into which students are placed.
<b>Announcements</b>	Add, edit, and delete any Course Home page announcement.
<b>Section Instructors</b>	Add, give privileges to, or delete section instructors. Section instructors given this privilege can't modify their own privileges.
<b>Assignments</b>	Create and modify course assignments, including editing assignment settings, selecting and organizing items for assignments, associating items with learning outcomes, and specifying assignment dates.
<b>Gradebook</b>	Manage Gradebook tasks such as setting preferences, editing categories and weighting; creating and scoring offline activities; and exporting Gradebook data.
<b>Essays</b>	Grade and regrade essays and other free-form text.
<b>Course Materials</b>	Record and upload videos, audio files, and documents.

## Step-by-Step Directions: Section Instructors



[Add or Remove Section Instructors Help Guide](#)



[Add Section Instructors or Colleagues](#) [1 min 28 seconds]

## Lesson 5: Groups in Mastering

You can group students based on course section, teaching assistant name, or any other criteria.

If you have many students that move frequently from section to section, you can have all students enroll into the same course with the same course ID. This way, students don't have to switch sections.

Groups can be created and removed, and students can be assigned or reassigned, anytime. Students can be assigned to more than one group. When you remove a group, students in the group remain enrolled in the course.

### Tips for Organizing Students into Groups

- For courses with many students, it may be easier to create groups and batch assign students to groups using an exported .csv file in a spreadsheet program.
- If you teach multiple sections, have all your students enroll into one course and create groups for each section.
- Look at the gradebook in Mastering to quickly find at-risk students and create a group for these students to help monitor their progress over the semester.
- Create groups for your lab sections. You can ask your sales representative to turn on the assign by group beta feature if you want to create assignments for specific groups of students.
- For filtering your gradebook or exporting data, you might find it useful to organize students into smaller, more workable groups.
- You can request the BETA assign-by-group feature from your sales rep which allows you to make an assignment available to a specific group or groups of students. For more information, refer to [Online Help](#). Please be aware that if you use this feature you need to avoid moving a student to a different group if the student has already completed work assigned by group. If you move the student, the student's work and scores for those assignments are

removed from the Gradebook. You can restore work and scores by adding the student back to the same group.

To get started creating groups, click on Roster then click on **Add/Edit Groups**.

Roster

[+ Add/Edit Groups](#)   [Export/Import Roster Details](#)

Show disenrolled students      Students per page: 100

Once you have created Groups, Click the **Groups** arrow to assign each student to the appropriate group.

Roster

[+ Add/Edit Groups](#)   [Export/Import Roster Details](#)

Show disenrolled students      Students per page: 100

Showing: 19 students

NAME	STUDENT ID	LOGIN NAME	EMAIL	GROUPS	STATUS
<a href="#">Last01_First01</a>	student1	last01_first01	<a href="mailto:First01.Last01@masterinobiology.com">First01.Last01@masterinobiology.com</a>	Group A	Enrolled
<a href="#">Last10_First10</a>	student10	last10_first10	<a href="mailto:First10.Last10@masterinobiology.com">First10.Last10@masterinobiology.com</a>	A plus students Group A	Enrolled
<a href="#">Last11_First11</a>	student11	last11_first11	<a href="mailto:First11.Last11@masterinobiology.com">First11.Last11@masterinobiology.com</a>	Group B	Enrolled
<a href="#">Last12_First12</a>	student12	last12_first12	<a href="mailto:First12.Last12@masterinobiology.com">First12.Last12@masterinobiology.com</a>	Section 1 Section 2 Section 3 Section 4	Enrolled
<a href="#">Last14_First14</a>	student14	last14_first14	<a href="mailto:First14.Last14@masterinobiology.com">First14.Last14@masterinobiology.com</a>	Group B	Enrolled
<a href="#">Last15_First15</a>	student15	last15_first15	<a href="mailto:First15.Last15@masterinobiology.com">First15.Last15@masterinobiology.com</a>	Group A	Enrolled

Students can be associated with more than one group if you click on the green plus sign.

GROUPS	STATUS
Section 4	Enrolled
<div style="border: 1px solid gray; padding: 2px;">                     Add another Group Name box for this student.                 </div>	
Group B	Enrolled
Group A	Enrolled
Group B	Enrolled
Group A	Enrolled

## Step-by-Step Directions: Groups



[Organize Students into Groups Help Guide](#)



[Group Students and Edit Groups](#) [1 min 37 seconds]

## Lesson 6: Upload Documents/Media or Record Media

Engage students by incorporating audio and video lectures into your course. Students appreciate a personalized course experience and the connection with you, their instructor. (Jaggars, 2013)

Suggestions for uploaded or recorded course materials:

- Record videos of yourself using any standard webcam.
- Upload your syllabus, lecture notes, or study guides.
- Record a screencast for your students using the screen capture feature.
- Record videos with another piece of software and upload.
- Record audio lectures for students.

Documents upload limits:

- Individual document file = 10 MB (your course limit may be higher)
- Course maximum = 100 MB

Media upload limits:

- Individual media file = 500 MB
- Course maximum = 10 hours

### Tips for Uploading or Recording Media

- If you upload files, or create media for your course, let your students know! Create an announcement, and use the “Also send as email” feature.
- Keep recordings short – perhaps 2-3 minutes at most. You can use these as introductions to homework assignments, or reviews of key concepts.
- Record a quick screencast or video if you receive the same question from students via email multiple times. If more than one student has asked you a question, there are probably other students with the same question.

- Record a closed-captioned help file to address ADA Section 508 compliance requirements.
- Video you make available in Mastering doesn't have to be perfect! "Even sometimes a dumb little home-made animation or video can give them a laugh and keep them focused on the work." - Gary Glaser, Genesee Community College

*"In 2008 I started using video clips for homework assistance, customizing MasteringPhysics homework problems, and offering extra credit for posting YouTube videos that helped explain key concepts." - - Submitted by Professor Scott Hildreth, Chabot College.*

For more info on how Scott Hildreth's students FCI posttest scores have consistently risen with the use of Mastering despite a decrease in FCI pretest scores during the same period of time, read the [Chabot College case study](#).

## Step-by-Step Directions: Upload and Record Course Materials



[Upload and Record Course Materials](#)



[Upload Audio and Video Files](#) [1 min 35 seconds]

## Lesson 7: Strategies for Managing a Large Course

For large courses, you may want to keep track of students in a spreadsheet. Within Mastering, you or a section instructor with the Roster privilege can do the following tasks in a spreadsheet program (.csv file) as part of managing a course with many students:

[Edit student IDs](#)

[Add groups and assign students to groups](#)

[Change enrollment status of many students at once](#)

(Note: You cannot enroll students using the spreadsheet.)

To do so, click **Export/Import Roster Details** from the Roster tab.

Roster

[+ Add/Edit Groups](#)   [!! Export/Import Roster Details](#)

Show disenrolled students Students per page: 100

Showing: 19 students

NAME	STUDENT ID	LOGIN NAME	EMAIL	GROUPS	STATUS
<a href="#">Last01_First01</a>	<input type="text" value="student1"/>	last01_first01	<a href="mailto:First01.Last01@masteringbiology.com">First01.Last01@masteringbiology.com</a>	Section 4 <span style="float: right;">⬇️ ⬇️ ⬆️ ⬆️</span>	Enrolled <span style="float: right;">⬇️</span>
<a href="#">Last10_First10</a>	<input type="text" value="student10"/>	last10_first10	<a href="mailto:First10.Last10@masteringbiology.com">First10.Last10@masteringbiology.com</a>	Group A <span style="float: right;">⬇️ ⬇️ ⬆️ ⬆️</span>	Enrolled <span style="float: right;">⬇️</span>

Export student data to a spreadsheet file. In this file, you can manage groups and student IDs. Click Export.

**Export/Import Roster Details** Help | Close X

Export/Import Roster Details for Course: Marieb 9E (MAPCCNG21238)

**Tip:** To edit the roster for this course using a spreadsheet, use the buttons below to **export** the data to a .csv file, edit it on your computer, then **import** your edited version to see your changes reflected online. (More tips are provided in the exported file.)

**Export Roster Details**

Export all Roster page information to a .csv file  ➔

**Import Roster Details**

Choose a file to import:

No file chosen

The .csv file will contain Names, Student ID, Login Name, Email, Groups, and Status. Follow the tips in the .csv file for a successful import.

Roster for Course MBDEMOGRADES: BIO 120 General Biology I  
Time: 11/23/13 02:47 pm

To update the roster for this course, edit the Student ID , Groups, and/or Status values below as needed. Then, import this file.

Tips:

- > Do not change Login Name values (or the import will fail).
- > You can create groups during import by including them in the Groups column.
- > Insert a comma between group names if a student is in more than one group.
- > For Status edits, acceptable values are: Enrolled, Suspended, Disenrolled
- > During the import process, you will be asked to confirm the changes that will be made.
- > You can always edit the roster within the course, including after you import this file.

Name	Student ID	Login Name	Email	Groups	Status
Buckley, B	12345	ubuckbrst	brian.buckley@pear		Disenrolled
Last01, Fir	student1	last01_fir	First01.La	Group A	Enrolled
Last02, Fir	student2	last02_fir	First02.La	Group B	Enrolled
Last03, Fir	student3	last03_fir	First03.La	Group A	Enrolled
Last04, Fir	student4	last04_fir	First04.La	Group B	Enrolled
Last05, Fir	student5	last05_fir	First05.La	Group A	Enrolled
Last07, Fir	student7	last07_fir	First07.La	Group B	Enrolled

When you are finished updating your spreadsheet, **Import** the file. The imported spreadsheet will update student data in your Course.

**Export/Import Roster Details** Help | Close X

Export/Import Roster Details for Course: Marieb 9E (MAPCCNG21238)

**Tip:** To edit the roster for this course using a spreadsheet, use the buttons below to **export** the data to a .csv file, edit it on your computer, then **import** your edited version to see your changes reflected online. (More tips are provided in the exported file.)

**Export Roster Details**

Export all Roster page information to a .csv file.

**Import Roster Details**

Choose a file to import:  
 No file chosen

First, **Choose File** to find your updated spreadsheet. Then, click **Import**.

## MODULE 4: MANAGE STUDENTS

### Lesson 1: Best Practices for Student Success

“Teachers need to be actively engaged in, and passionate about, teaching and learning. They need to be aware of, and update their conceptions and expectations of students, and be directive, influential, and visual to students in their learning.” (Hattie, *Visible learning: a synthesis of over 800 meta-analyses relating to achievement*, 2007) Providing students with the right information will help students feel less anxious or confused about class expectations. Below are some important tips and suggestions for managing students:

- **Try to inform students about what is required in your course *before* classes start via email.**

Many experienced professors send students an email before classes start with the textbook, access code card, and purchase options info.

*(Note: If you are requiring Mastering, do NOT post the ISBN you see from the back of your textbook! Students will spend more than is necessary if they purchase the book and Mastering access separately.)* Ask your sales rep to provide you with the right product options for your campus. Typically, we suggest they purchase from the campus bookstore or directly from Pearson to avoid purchasing incorrect materials.

- **Post information about Mastering on your syllabus.** Specifically, let students know how the use of Mastering factors in to their overall grade. Also provide them with the purchase options.
- **Make sure students understand that Mastering access code cards are textbook, author, edition, and version specific.** In addition, make sure they know the URL such as [masteringbiology.com](http://masteringbiology.com) to register and access your course. They need to purchase the correct Mastering access code or the code will not work to enroll into your course. Clearly provide students with the correct author, title, and edition information.

***Important: As of 8/15/2016, students will be able to register and enroll in courses with either a Modified Mastering or regular Mastering access code***

***card as long as the access code card is the same textbook edition, author, and title.***

*For example: If you use Campbell 10E for your Mastering course, students can register for your course with a regular Mastering Campbell 10E access code card or with a Modified Mastering Campbell 10E access code card.*

Notes about interchangeable access codes for Modified Mastering and regular Mastering:

- Once a student redeems their access code for a specific version (i.e. MasteringBiology), then their access will only allow them to enroll into additional courses for that same version. Therefore, if a student has registered for a Mastering course, then they now need a new access code to register for a separate Modified Mastering course for the same textbook and vice versa. Access code interchangeability allows them to register for either version, but access after the code has been redeemed only works for the version they registered with initially.
- Students can register for a LMS integrated course with either a regular Mastering or Modified Mastering access code card. However, in order to use LMS integration, you **must** be using Modified Mastering.
- **Recommend to students that they avoid purchasing Mastering access from 3<sup>rd</sup> parties.**

The local bookstores that serve the campus are the best bet for making sure the materials purchased are the right ones for your course. There are many options on the internet that might save a few dollars, but students have reported many problems with these materials. There are many versions of our textbooks and access codes are textbook, edition, *and* version specific. If students only need the Mastering access code, they can purchase this online either with or without an eText directly from the Mastering registration page.

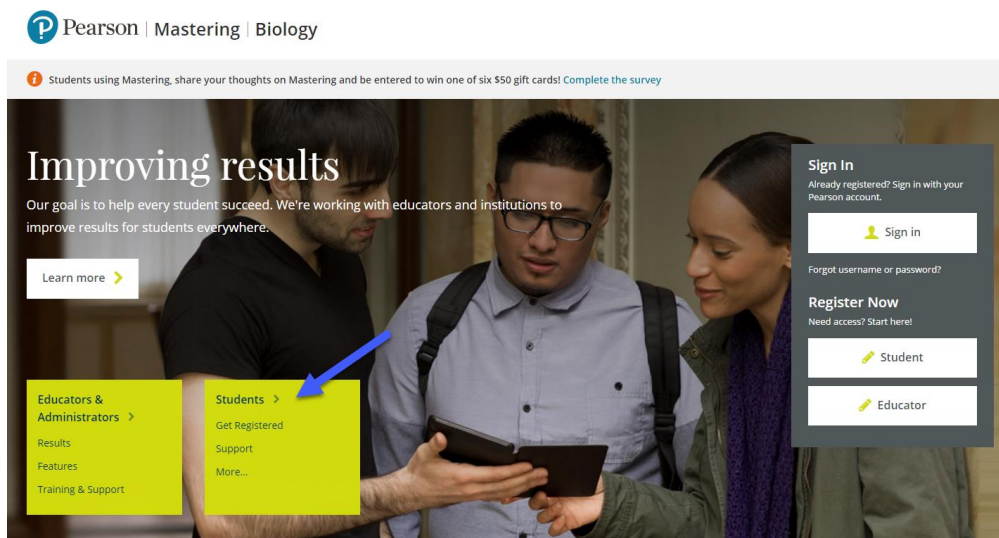
- **Share student registration instructions** (handout, PPT, or the registration video) **and your course ID** in your syllabus, LMS, and in your first class. For details, see the section in this guide on [Student Registration](#). To locate resources to provide students, click **Get Your Students Started materials** from your Mastering Course Home page.

- **If you plan to use Learning Catalytics with Mastering, make sure students know how to confirm or purchase access to Learning Catalytics from within Mastering.** If they don't purchase the eText version of Mastering which includes Learning Catalytics at no additional charge, then they will need to purchase access to Learning Catalytics. To do that, they should purchase Learning Catalytics from within Mastering and be sure to associate their purchase of Learning Catalytics with the same username and password they used for their Mastering course to ensure success with grade transfer from Learning Catalytics to Mastering. For more information, see the section on [Student Registration](#).
- **Encourage your students to register before the first day of class** to get them started with their homework right away.
- **Make assignments due the first week of class** (or the first day of class). It is recommended to first assign the Introduction to Mastering assignment to help students learn how to use Mastering successfully.

*"In order to achieve full student participation in using the Mastering platform, I ask students to purchase and be prepared to complete an Introductory assignment in Mastering during the first week of classes. I give assignments on a weekly basis, with frequent e-mail reminders, so students quickly understand my expectations -- and I make these homework assignments count for a percentage of the overall course grade." Submitted by Craig Lending, SUNY College at Brockport*

- **Provide students with assignments consistently throughout the semester.** It is recommended to make assignments due before each lecture or on specific days each week. It is also recommended to provide multiple assigned learning activities in Mastering.
- **Share the system requirements site on the first day of class,** ideally in your syllabus or LMS for reference throughout the semester. *Note: Courses on different Mastering sites (for instance chemistry and geology) can have different system requirements. From the sign in page, select Training & Support to locate the system requirements page.*

- **Refer students to the Student Support website** where there is a student guide, support information, accessibility information, and more.



- **Share the value of Mastering with students.** Consider showing them case studies demonstrating student success when Mastering is in use. Show students data that demonstrates the correlation between Mastering homework and exam scores. For links to case studies, go to the [topic](#) in this guide or to the [Results](#) website. If you have your own data, share it with them.
- **Set student expectations about Mastering.** Students' experience with Mastering changes markedly over the semester. Many students put more time into Mastering after the first exam, but helping them see the value from the beginning will help them get a more successful start.
- **Set expectations about Web-based programs.** The Internet can go down just before assignments are due. Many students don't start assignments until the last minute and rush through them. Encourage students to start assignments as soon as they are made available. Also, encourage students to check the system requirements and set up their computer. Information can be found under Student Support on the Mastering website.
- **Make the grading process clear at the beginning of the semester or before the semester.** Have students watch the video: [Understanding Grading](#). The video covers how the default grading settings work for Mastering. It is particularly helpful if you apply weighting in your course.

## Lesson 2: Student Registration

**Important:** If you are using Modified Mastering or using Modified Mastering and linking your course to your campus LMS, students DO NOT register the same way. If you use Modified Mastering, refer to the [Modified Mastering Implementation Guide](#) for more info.

For each Mastering discipline, you will find a Get Started flyer which includes important information for your students on how to register and how to contact support. Flyers as well as a PowerPoint presentation to show in class are available on the website sign-in page under **Educator Training & Support > Get Your Students Started**.

Pearson | Mastering | Chemistry SIGN IN REGISTER

Educators & Administrators Results Features Learning Science Titles Available Community **Training & Support**

### Educator Training & Support

This product is available in two versions  
Make sure you're on the right support page for your version >

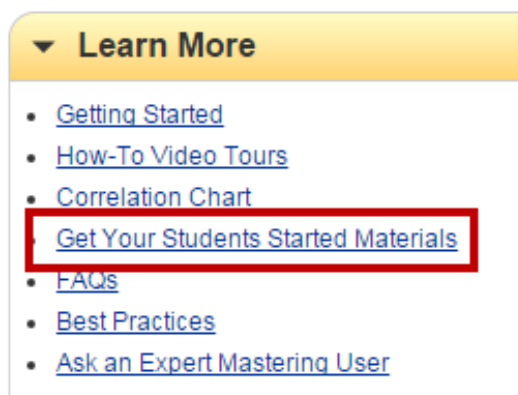
#### Training Resources

- ▶ Quick Start Guide
- ▶ Planning Toolkit
- ▶ Request Training
- ▶ Implementation Guide
- ▶ How Do I? Videos
- ▶ Pre-recorded Sessions

#### Support Resources

- ▶ System Requirements
- ▶ **Get Your Students Started**
- ▶ Sign-in Help
- ▶ Top Questions
- ▶ MarvinSketch Support
- ▶ Accessibility Information
- ▶ Contact Pearson Support

After you create your course, **Get Your Students Started Materials** can also be accessed from the Learn More area on your Course Home page. From the link, you can open the editable handout or presentation which gives students directions on how to register. Add your course ID to the handout.



There is also a student registration video too.



[Student Registration Video](#) [2 min 25 seconds]

In addition, there is a [Student Guide](#) available as well as a Top Questions page on the Student Support website.

### ***If you plan to use Learning Catalytics with Mastering:***

Provide your students with an additional flyer for information on how to confirm or purchase access to Learning Catalytics. To avoid duplicate Pearson accounts and issues with grade transfer if you plan to transfer grades from Learning Catalytics to Mastering, make sure students understand that they need to associate their purchase of Learning Catalytics with the same username and password they use for their Mastering course.



[Student Get Started Instructions for Learning Catalytics](#)  
(PDF)

## Lesson 3: Syllabus Checklist

- ❑ **Let students know the Mastering access code card or online purchase is required and how much of their grade it is worth.**
- ❑ **Share purchasing options with students.** (Your local sales rep can help provide a list of options). Warn students to check the textbook package or access code card carefully.
- ❑ **Share the system requirements for Mastering.** Share a link directly to the appropriate system requirements page so students can make sure their computer is set up correctly.
- ❑ **Since some students like to purchase from online resellers, you might want to consider how you will handle wrong purchases and help students avoid this mistake.** You may want to warn students about this possible issue on your syllabus.
- ❑ **Refer students to the Get Started student registration handout.** The flyer contains registration directions and important links. There are different handouts on each Mastering discipline website (masteringbiology.com, masteringchemistry.com, and so on). Make sure you have the correct handout. If you are not sure, check with your sales representative.
- ❑ **Most importantly- share the VALUE of Mastering.** Students want to know why you chose to require Mastering and what you hope they will get from it.

## Lesson 4: Explore the Student Mastering Interface

The student view of Mastering is different from the instructor view. If you'd like the complete student view, contact your [sales rep](#) for a student access code. When you register as a student, make sure you use a different username than your Educator account. As of 12/18/2016, students can choose a simpler, more accessible view. They can switch back and forth from the default view to the new view anytime.

**Note:** Modified Mastering has a different interface for both instructors and students. Refer to the [Modified Mastering materials](#) if you use Modified Mastering in your course.

### Default Course Home (student view only)

**MasteringBiology** Signed in as Tom Lee | Help | Sign Out

**Biology - Section 121**  
 My Courses | Course ID: MBPANOS88771 | Course Ends: 11/28/17 | [Beta Course Home](#)

Course Home | **Assignments** | Scores | **eText** | Study Area

Campbell Biology (College - U.S. & Canada), 10e  
Reece et al.

**Announcements**

SUBJECT	DATE POSTED
A message from your instructor	12/05/16 at 03:37pm

Showing 1 of 1 - [View All Announcements](#)

**Course Calendar**

December 2016

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
27	28	29	30	1	2	3
		Ch. 3 Water		Ch. 4 Carbon...		
4	5	6	7	8	9	10
	Homework Pra...		Introduction...	Homework Pra...		
11	12	13	14	15	16	17
	Homework Pra...					
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2					6
						7

[View All Assignments](#)

**In-Class Learning**

There is a **Learning Catalytics** session in progress. Join now to participate.

[Join Now](#)

**Test Your Knowledge**

Choose a chapter and work through groups of questions to check your understanding.

**Dynamic Study Modules**  
powered by **amplifire™**  
[Get the Mobile App](#)

**Course Materials**

Get documents and other files posted by your instructor.

[View Documents](#)  
[View Lectures](#)

**Learn More**

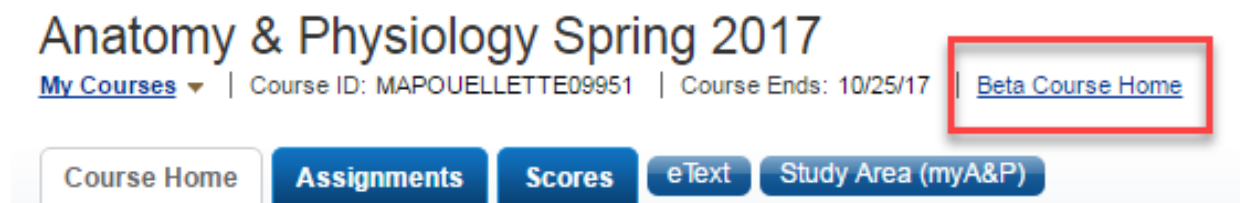
- [Getting Started](#)
- [How-To Video Tours](#)
- [FAQs](#)
- [Five Ways to Improve Your Grade](#)
- [Tutoring Services](#)

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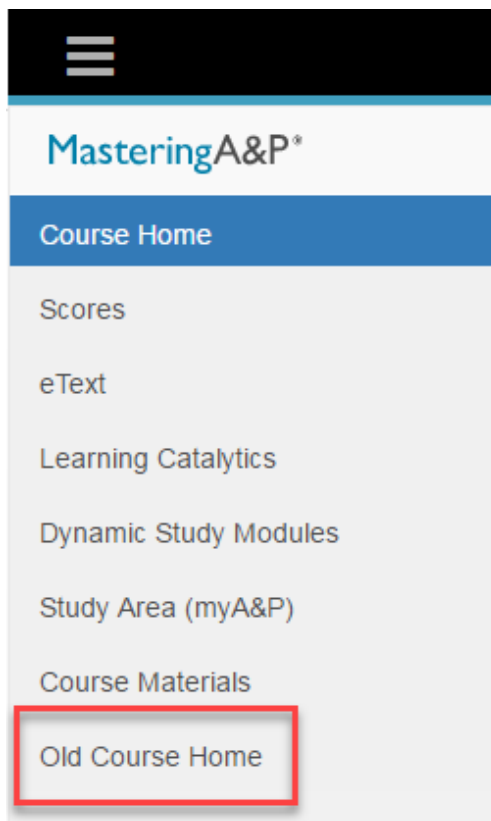
**Contact Pearson Support**

When students first sign in to Mastering on a computer, they see a Course Home page similar to the above image. From there, they can check for announcements and assignments, open the eText or study area, or check their scores. Also, the default course home has areas on the right called In-class Learning (only viewable if you select to use Learning Catalytics with students), Dynamic Study Modules (available for select titles), Course Materials, and Learn More.

Students can now switch to a new, simpler Beta Course Home from the default Course Home. A link to the **Beta Course Home** is located at the top of their default Course Home page.



Once they are in the Beta Course Home, they can go back to the default (original) Course Home by selecting **Old Course Home** on the left navigation menu.



If students sign in from a mobile device, the mobile Course Home is streamlined to focus on assignments and activities (such as Learning Catalytics sessions). See the section below for more information on the Beta Course Home and the mobile view.

***If you plan to use Learning Catalytics:*** Please refer to the section *Get Students Started with Learning Catalytics* for important details related to students using Learning Catalytics with Mastering.

## Student Feedback Quotes:

*“Mastering was a good reinforcement of the textbook. When I needed additional study options, they were at my fingertips.”*

- **Anonymous Student**, Clinton Community College

*“Because MasteringA&P is so easy to use and follow, it made it—dare I say—actually enjoyable to study!”*

- **Victoria Valdez**, Angelo State University

## Beta Course Home (student view only)



Watch the [Beta Course Home video](#).

Hide/show left menu

MasteringBiology<sup>®</sup>

Biology - Section 121 Tom

My Courses ▾

Course Home

Scores

eText

Learning Catalytics

Dynamic Study Modules

Study Area

Course Materials

Old Course Home

Go back to original course home view

Course Home

Announcements (0)

There is a Learning Catalytics session in progress. [Join Now](#)

A message from your instructor

Assignments to complete

Past Due Assignments (1)

Ch. 4 Carbon & Molecular Diversity of Life Dynamic Study Mod... 12/02/2016 11:59 PM

Upcoming Assignments (2)

Homework Practice 3 12/09/2016 11:59 PM 2 of 3 completed

Homework Practice 3 - Adaptive Follow-up 12/12/2016 11:59 PM

Possibly review these

Completed Assignments (2)

MasteringBiology<sup>®</sup>

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Campbell Biology (College - U.S. & Canada), 10e  
Reece et al  
MBPANO88771  
Ends: 11/28/17

The Beta Course Home is a new option as of the December 2016 release. Students can switch back and forth from the Old Course Home to the Beta Course Home at any time.

The Beta Course Home has a simpler design and a clean layout of course announcements (now including Learning Catalytics assignment notifications), past due assignments, upcoming assignments, and completed assignments so that students always know exactly what is expected of them in their Mastering course. In addition, students can use a screen reader or their keyboard to navigate the Beta Course Home.

**If you plan to use Learning Catalytics:** Please refer to the section [Get Students Started with Learning Catalytics](#) for important details related to students using Learning Catalytics with Mastering. Students have two access points from the Beta Course Home to Learning Catalytics. The link on the left navigation menu brings students to past sessions and the link under Announcements either has students confirm or purchase access or join sessions once they have confirmed or purchased access. Note that if a student clicks on the left navigation menu link to Learning Catalytics and they don't yet have access to Learning Catalytics, then they are asked to purchase access if they don't already have it.

Please give your students a student handout on how to [Get Started with Learning Catalytics](#) to help make sure you have a successful start.

The screenshot shows the MasteringA&P interface for the course MARIEB 10E Oct 2016. The left navigation menu includes 'Course Home', 'Scores', 'eText', 'Learning Catalytics' (highlighted), 'Dynamic Study Modules', 'Study Area (myA&P)', 'Course Materials', and 'Old Course Home'. The main content area is titled 'Course Home' and contains several sections: 'Announcements (1)' with a yellow announcement 'There is a Learning Catalytics session in progress. Join Now'; 'Test 1' with a message from the instructor; 'Past Due Assignments (8)' with a list of assignments including 'Ch 05 HW Adaptive Follow-Up' and 'Ch 05 HW'; 'Upcoming Assignments (0)'; and 'Completed Assignments (1)'. A red callout box points to the 'Learning Catalytics' link in the navigation menu, stating: 'To review past sessions, students click Learning Catalytics from the left nav menu.' Another red callout box points to the 'Join Now' link in the announcement, stating: 'Students Confirm or Purchase Access for Learning Catalytics from an announcement. Students click Join Now to join a session in progress.'

**If you use Dynamic Study Modules:** When students click on the link from the left navigation menu, they are brought to the self-study page where they can work on any module. If you assign Dynamic Study Modules, they will appear in their assignments. If students click the link to their Dynamic Study Module assignment, they are brought to that specific module.

## Important Tips: Student Beta Course Home

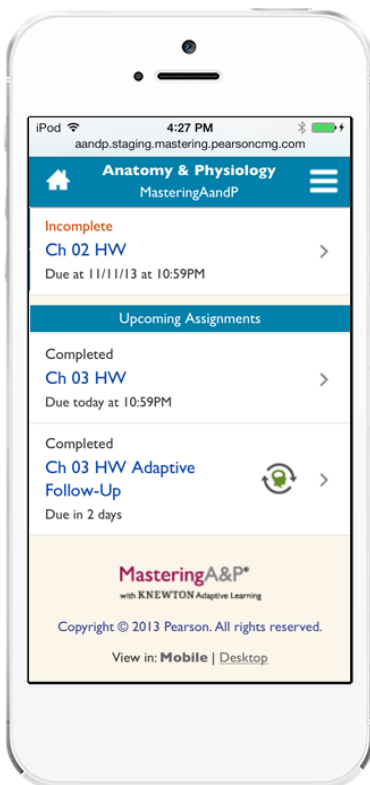
- Students do not have a calendar in the Beta Course Home. Instead, they can see upcoming assignments under the Upcoming Assignment list. If students need access to the calendar, they can switch back to the Old Course Home from the left navigation menu anytime.
- In the Beta Course View, students are shown any past due assignments at the top of the assignments to more easily keep on track with their assigned work.
- The Beta Course Home shows Learning Catalytics from the top of the announcements and from the left navigation menu to make it easier for students to access Learning Catalytics from a computer. In the Old Course Home, students access Learning Catalytics from the In-class Learning area on the right.
- Completed Mastering assignments are easy to find with the new completed assignment list on the Beta Course Home. This allows for easy review of past homework assignments.
- If students join Mastering from a mobile device, they don't see the Old Course Home or the Beta Course Home. Instead, there is a mobile Mastering view that is streamlined for mobile use.
- As an educator, you do not have the complete student view with your Educator account. If you would like to have a student view, please contact your sales rep to get a student access code.
- If students want to review past Learning Catalytics sessions, they should select the Learning Catalytics links on the left navigation menu.
- If you plan to use Learning Catalytics with Mastering, it is important to understand how students confirm and purchase access, join sessions, and review sessions. The experience is different between the two Course Home pages. For more details, refer to Get Students Started with Learning Catalytics.

## Mobile Mastering (student view only)



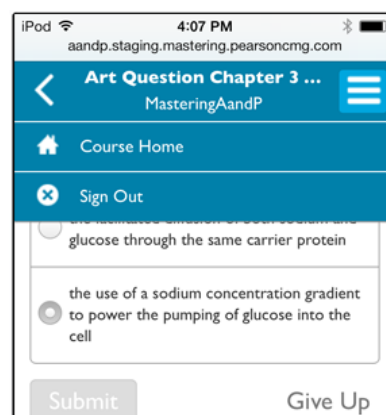
**Video: [Using Mobile Devices \(for students\)](#) [2 min 49 sec]**

The Course Home for both Old Course Home and Beta Course Home have a responsive design that adjusts to the student's device. This is what is referred to as mobile Mastering.



- Mobile-ready assignments can be done on either their device or on their laptop/desktop, so students can complete assignments seamlessly between the two.
- When using a tablet, the text is automatically made larger for improved readability.
- Students can switch to the full desktop view whenever they want.

Menu to return student to the course home or sign out:



## eText or eText 2.0

Students can purchase Mastering with or without eText. If they did not purchase the eText version, they always have the option to upgrade to the eText within Mastering by clicking on the eText button. Note that Learning Catalytics is included at no additional charge with an eText purchase.

PEARSON
ALWAYS LEARNING

**Amerman, Human Anatomy & Physiology, 1e**

### Need eText access?

Need to purchase the eText?

**BUY NOW**

Your eText access includes Learning Catalytics\*

---

Have an access code? Start here!

**REGISTER**

### Don't I have eText access already?

**Yes**    If you have accessed this eText before and are trying to return to it now, sign in to your course at [aandp.staging.mastering.pearsoncmg.com](http://aandp.staging.mastering.pearsoncmg.com) and then click the eText button or link.

**Not Yet**    If you are logged in to MasteringAandP and are seeing this page, then your subscription does NOT include access to this eText. You can purchase access or, if you think there is a problem with your account, contact Support.

#### ABOUT THE ETEXT

An eText is the digital version of a textbook associated with this program. It features videos and other rich media to enhance your learning experience.

Whether an eText or eText 2.0 is available to you can vary, based on the book. eText is available for a computer or tablet. eText 2.0 is available for a computer, tablet, or smartphone.

You can take notes, highlight, bookmark, and search in both eText and eText 2.0.

#### \* ABOUT LEARNING CATALYTICS

Your eText purchase includes a free subscription to Learning Catalytics, a "bring your own device" student engagement, assessment, and classroom intelligence system. If your instructor uses Learning Catalytics and your Mastering subscription doesn't include the eText, you will need to make another online purchase for Learning Catalytics.

**eText 2.0 mobile app** offers offline access for your reading and learning experience. Go to the Apple App Store or Google Play store on your mobile device to download the app for most iOS and Android phones/tablets.

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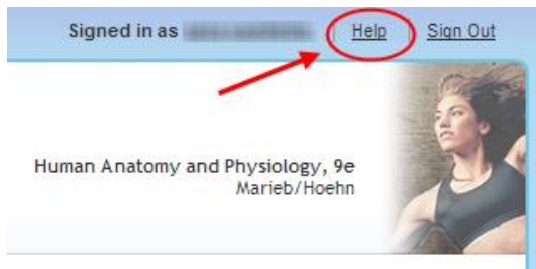
## Lesson 5: The Student Experience: Assignments, Grading, and Results

### Introduction to Mastering Assignment

When you create a course in Mastering, an *Introduction to Mastering* homework assignment is automatically listed in your assignments. It is highly recommended that you make this assignment required so that students have a good understanding of how to use the Mastering program. You can also copy and edit this assignment in case you want to assign it again as a reminder for students during the term.

### Help Students Understand Their Scores

You can point your students to the video and to student online [Help](#) at the beginning of the semester to help avoid questions regarding how to read scores and review their past assignments. Students can access student online [Help](#) from within Mastering by clicking on the link on the upper right.



### Basics of a Student's Score page

Most Mastering assignments are automatically scored, and students can see their scores on their personal Scores page by clicking **Scores**.

## Anatomy and Physiology I

[My Courses](#) ▾ | Course ID: MYLASTNAMEFALL2013AP1 | Course Ends: 12/20/13

Course Home **Assignments** **Scores** eText Study Area (myA&P)

On the Scores page, assignments are listed chronologically by Due Date with Raw Scores shown as either points or percentages, depending on instructor Course Settings. Scores will be included into the subtotal and total after the due date.

DATE DUE	CATEGORY/TITLE	RAW SCORE	NOTES
	<b>HOMEWORK</b>		
07/08/13	<a href="#">Chapter 13/14</a>	<b>144 / 150</b>	
07/15/13	<a href="#">Chapter 15/16</a>	0.00 / 150	Not included in score until 07/15/13 at 12:00pm
08/17/13	<a href="#">Mathematics Review Assignment</a>	-- / 0.00	This assignment is for practice
08/19/13	<a href="#">Introduction to MasteringChemistry</a>	-- / 0.00	This assignment is for practice
	<b>HOMEWORK SUBTOTAL</b>	<b>144 / 150</b>	

Note: Score will not be included until after due date.

Raw scores may be displayed as either points or percentages depending on your settings.

Raw score of an assignment =  $\frac{\text{credit a student received}}{\text{total possible credit}}$

The Notes column provides information about extensions, hidden scores, assignments for practice, assignments not yet counted, and assignments that were reset to be reworked for credit.

### Sample Notes

- **"Not included in score until <due date>"** - Displays only before the assignment is due.
- **"Score hidden by instructor"** - Displays when your instructor is withholding an assignment score from all students in the course.

- **"Extended"** - Applies if the due date for this assignment has been extended for you.
- For an [assignment that has been reset](#) with an extended due date by your instructor, the note says "**Extended Assignment Reset on <date> at <time>**".

## Important Information about Student Scores

- **Hidden scores:** Assignment scores may be hidden based on your assignment settings. To hide scores, you can make an adjustment in your Grading and Presentation Settings. Assignment Score display options include **Always, Never, Only after an assignment is due, and only after completion of the assignment**. Since some scores may be hidden temporarily, students may want to know [about hidden assignment scores](#).
- The default for the Homework Category is to Show Scores always. The default setting for the Quizzes Category is to Show Scores after an assignment is complete. The default for the Test Category is to Show Scores after an assignment is due.

HOMEWORK			
07/30/13	<a href="#">Introduction to MasteringA&amp;P</a>	<a href="#">0.00 / 3.00</a>	
08/05/13	<a href="#">Week 1</a>	<a href="#">0.00 / 15.00</a>	
10/10/13	Test	0.00 / 100	
10/30/13	<a href="#">Ch 02 HW</a>	<a href="#">Hidden / 15.00</a>	Score hidden by instructor
11/01/13	<a href="#">Ch 03 HW</a>	<a href="#">0.00 / 15.00</a>	Not included in score until 11/01/13 at 11:59pm
HOMEWORK SUBTOTAL		Hidden / 133	

- **Score changes:** [Changes you \(the instructor\) make](#) can affect your student's individual assignment scores, as well as his/her [total score](#) for all Mastering assignments in the course.
- With extra credit, students can get an assignment score above 100%.

04/14/09	<a href="#">Ch 35</a>	<a href="#">0.00%</a>	5.56%	0.00%	Assignment Reset on 08/06/13 at 07:14am
04/17/09	<a href="#">Ch 36</a>	<a href="#">96.07%</a>	5.56%	5.34%	
04/24/09	<a href="#">Ch 11</a>	<a href="#">89.50%</a>	5.56%	4.97%	
08/15/12	<a href="#">Ch 2</a>	<a href="#">83.38%</a>	5.56%	4.63%	
01/03/13	<a href="#">Ch 6</a>	<a href="#">98.98%</a>	5.56%	5.50%	
01/07/13	<a href="#">Ch 4</a>	<a href="#">104%</a>	5.56%	5.80%	
01/31/13	<a href="#">Chapter 7b</a>	<a href="#">95.38%</a>	5.56%	5.30%	

Students can drill down for assignment details to review items before exams

1. From the Scores page, students can click any score link or the title of the item to view item details. If they click on the score, they will be brought to the Assignment Grade page.

DATE DUE	CATEGORY/TITLE	RAW SCORE	WEIGHT	WEIGHTED SCORE	NOTES
<b>HOMEWORK</b>					
04/06/09	<a href="#">Ch 8</a>	<a href="#">102%</a>	5.56%	5.66%	Extended
02/18/09	<a href="#">Ch 9</a>	<a href="#">69.98%</a>	5.56%	3.89%	
03/16/09	<a href="#">Ch 23</a>	<a href="#">97.50%</a>	5.56%	5.42%	
03/23/09	<a href="#">Ch 24</a>	--	0.00%		This assignment is for practice
03/27/09	<a href="#">Evolution</a>	<a href="#">67.56%</a>	5.56%	3.75%	
04/09/09	<a href="#">Ch 30</a>	<a href="#">70.45%</a>	5.56%	3.91%	
04/14/09	<a href="#">Ch 35</a>	<a href="#">0.00%</a>	5.56%	0.00%	Assignment Reset on 08/06/13 at 07:14am
04/17/09	<a href="#">Ch 36</a>	<a href="#">96.07%</a>	5.56%	5.34%	
04/24/09	<a href="#">Ch 11</a>	<a href="#">89.50%</a>	5.56%	4.97%	
08/15/12	<a href="#">Ch 2</a>	<a href="#">83.38%</a>	5.56%	4.63%	
01/03/13	<a href="#">Ch 6</a>	<a href="#">98.98%</a>	5.56%	5.50%	

2. On the Assignment Grade page, students can see their points earned for each item, their score, and when they finished the item in the assignment.

#### Assignment Grade for HW #3

Due 09/12/13 at 08:00am

You will receive no credit for items you complete after the assignment is due. [Grading Policy](#)

TITLE	POINTS	SCORE %	FINISHED
<a href="#">Projectile Motion Tutorial</a>	0.96 / 1.00	96.00%	09/11/13 at 10:55am
<a href="#">± Delivering a Package by Air</a>	practice	--	--
<a href="#">An Object Accelerating on a Ramp</a>	practice	--	--
<a href="#">Problem 4.13</a>	1.00 / 1.00	100%	09/12/13 at 12:33am
<a href="#">± Two Forces Acting at a Point</a>	-- / 1.00	--	--
<a href="#">Conceptual Questions on Newton's 1st and 2nd Laws</a>	0.80 / 1.00	80.00%	09/12/13 at 12:44am
<a href="#">Force and Velocity Conceptual Question</a>	practice	--	--
<a href="#">Velocity from Force Diagram Ranking Task</a>	1.00 / 1.00	100%	09/12/13 at 12:45am
<a href="#">Problem 5.3</a>	1.00 / 1.00	100%	09/12/13 at 12:46am
<a href="#">Problem 5.9</a>	1.00 / 1.00	100%	09/12/13 at 12:48am
<a href="#">Problem 5.13</a>	1.00 / 1.00	100%	09/12/13 at 12:50am
<b>TOTAL ASSIGNMENT GRADE</b>	<b>6.76 / 8.00</b>	<b>84.50%</b>	

#### Part A

What is the direction of the net force acting on the object at p

upward  
 downward  
 to the left  
 to the right  
 The net force is zero.

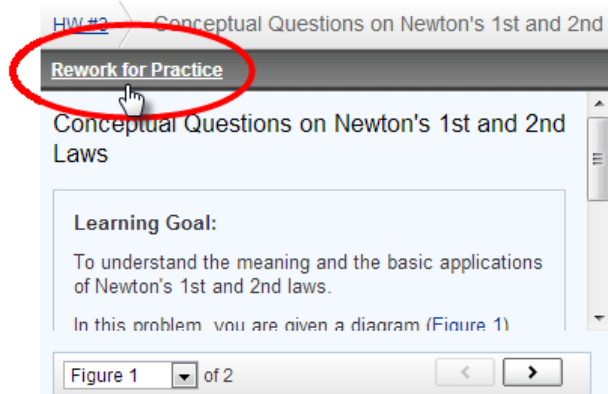
Submit Hints [My Answers](#) Give Up [Review Part](#)

#### Correct

The velocity vectors connecting position A to the adjacent ... magnitude and direction. Therefore, the acceleration is zero.

After a student clicks the item title, they can also review their answers submitted and deductions by clicking **My Answers**. If a student has completed an item, they can click **Review Part** to review all of the hints and the correct answers.

Students can click **Rework for Practice** depending on the instructor settings. The default grading setting for the Homework category allows students to **Rework for Practice**. Links to **Review Part, Rework for Practice, My Answers**, and so on can be turned off by the instructor in the Grading and Presentation settings.



**Note:** If you allow **Rework for Practice** in your assignment settings, students can rework completed items for practice as many times as they like after the assignment due date. **Rework for Practice** is not saved and does not change the student's original score, the diagnostic statistics for the assignment, or the learning outcome results for the course. Students can also click the title of the item to see the **My Answers** link. **My Answers** shows students what they submitted for answers as well as any deduction received on that item.

If you have a late penalty applied to your assignments, students will see the penalty on the Assignment Grade page.

### Ch 30

Due 04/09/09 at 12:00pm

To understand how points are awarded, read the [Grading Policy](#) for this assignment.

TITLE	POINTS	LATE PENALTY	SCORE %	FINISHED
<a href="#">Activity: Pine Life Cycle</a>	2.89 / 3.00	-26.76%	70.63%	04/09/09 at 05:21pm
<a href="#">Gymnosperms</a>	4.18 / 4.00	-30.98%	72.13%	04/09/09 at 06:11pm
<a href="#">Activity: Angiosperm Life Cycle</a>	3.00 / 3.00	-31.98%	68.03%	04/09/09 at 06:23pm
<b>Grade Adjustment:</b>		<b>-3.03</b>		
<b>TOTAL ASSIGNMENT GRADE</b> (includes adjustments)	<b>7.04 / 10.00</b>		<b>70.45%</b>	

## Scores listed by Category

Many instructors place assignments into categories. If a student's scores are displayed in points as shown below, the raw score subtotal for a category shows the number of points the student received for all assignments already due.

DATE DUE	CATEGORY/TITLE	RAW SCORE	NOTES
<b>HOMEWORK</b>			
07/08/13	<a href="#">Chpt 3 Homework</a>	<a href="#">23.18 / 24.00</a>	
07/08/13	<a href="#">Chpts1&amp;2 Homework</a>	<a href="#">33.17 / 40.00</a>	
07/08/13	<a href="#">Introduction to MasteringBiology</a>	<a href="#">3.00 / 3.00</a>	
07/09/13	<a href="#">Chpt 4 Homework</a>	<a href="#">21.74 / 23.00</a>	
07/09/13	<a href="#">Chpt 5 Homework</a>	<a href="#">21.70 / 23.00</a>	
07/10/13	<a href="#">Chpt 6 Homework</a>	<a href="#">29.29 / 33.00</a>	
07/11/13	<a href="#">Chpt 7 Homework</a>	<a href="#">24.71 / 25.00</a>	
07/14/13	<a href="#">Chpt 8 Homework</a>	<a href="#">0.00 / 30.00</a>	Not included in score until 07/14/13 at 11:59pm
07/15/13	<a href="#">Chpt 41 Homework</a>	<a href="#">0.00 / 27.00</a>	Not included in score until 07/15/13 at 11:59pm
	<b>HOMEWORK SUBTOTAL</b>	<b>157 / 171</b>	
<b>QUIZ</b>			
07/08/13	<a href="#">Chpt 1&amp;2 On-line Quiz</a>	<a href="#">28.00 / 30.00</a>	
07/09/13	<a href="#">Chpt 3 Quiz</a>	<a href="#">29.33 / 30.00</a>	
07/09/13	<a href="#">Chpt 4 Quiz</a>	<a href="#">26.00 / 30.00</a>	
07/10/13	<a href="#">Chpt 5 Quiz</a>	<a href="#">23.08 / 25.00</a>	
07/10/13	<a href="#">Chpt 6 Quiz</a>	<a href="#">42.00 / 45.00</a>	
07/11/13	<a href="#">Chpt 7 Quiz</a>	<a href="#">17.33 / 18.00</a>	
07/14/13	<a href="#">Chpt 8 Quiz</a>	<a href="#">0.00 / 25.00</a>	Not included in score until 07/14/13 at 11:59pm
07/15/13	<a href="#">Chpt 41 Quiz</a>	<a href="#">0.00 / 29.00</a>	Not included in score until 07/15/13 at 11:59pm
	<b>QUIZ SUBTOTAL</b>	<b>166 / 178</b>	
	<b>TOTAL SCORE</b>	<b>323 / 349</b>	

## About Weighted Scores

When you first create a new course, no weighting scheme is applied; assignments are worth their raw point value. This is the default weighting scheme and recommended if you are new to Mastering.

If you plan to add offline items and weight categories and assignments within your Mastering course, it is important to go over how weighting works in your course at the beginning of the semester.

Also, in a course copied from another instructor, weighting may already be applied. If you select equal or custom weighting for categories or assignments in the course,

the effect is visible on the student's Scores page to you and to the student. The Scores page displays both raw scores and weighted scores.

**Note:** You should caution students that the Assigned Weight is the factor that will govern their final Mastering score. If a test late in the term will determine 40% of the final score, a Weighted Total Score (to date) of 82% could end up being significantly higher or lower after the test.

## Assignment weighting

In the image below, equal assignment weighting is in effect in the Homework category.

Note: Only assignments past the due date are counted towards each category subtotal.

DATE DUE	CATEGORY/TITLE	RAW SCORE	WEIGHT	WEIGHTED SCORE	NOTES
	<b>HOMEWORK</b>				Current Weight: 100% Assigned Weight: 100% ⓘ
07/31/05	<a href="#">Homework 2</a>	<a href="#">11.14 / 10.00</a>	25.00%	27.86%	
09/18/08	<a href="#">Homework 3</a>	<a href="#">5.94 / 16.00</a>	25.00%	9.28%	Extended
07/31/05	<a href="#">Homework 1</a>	<a href="#">4.89 / 11.00</a>	25.00%	11.11%	
04/29/09	<a href="#">Homework 4</a>	<a href="#">8.96 / 14.00</a>	25.00%	16.00%	Extended
	<b>HOMEWORK SUBTOTAL</b>	30.93 / 51.00			
	<b>WEIGHTED HOMEWORK SUBTOTAL</b>	<a href="#">32.77 / 51.00</a>		<a href="#">64.25%</a>	
	<b>TOTAL SCORE</b>	30.93 / 51		<a href="#">32.77 / 51</a>	
	<b>WEIGHTED TOTAL SCORE (to date)</b>			<a href="#">64.25%</a>	

[Learn more](#) about assignment scores.

When assignments are weighted equally within a category, the number of points a given assignment is worth doesn't matter in a student's scores. Here again, weighting changes over time. As more assignments in the same category become due, the individual assignment weights change. For example: If assignments are weighted equally, when four assignments have passed their due dates each assignment weight is 25% (100%/4). As soon as a fifth assignment is due, each assignment weight is reduced to 20% (100%/5).

In the example below, the Homework Category has 100% Assigned Weight. Each homework assignment has 'equal' weight within the category. Students can click on the Weighted Homework Subtotal to see how the score is calculated.

Note: Only assignments past the due date are counted towards each category subtotal.

DATE DUE	CATEGORY/TITLE	RAW SCORE	WEIGHT	WEIGHTED SCORE	NOTES
					Current Weight: 100% Assigned Weight: 100% ⓘ
<b>HOMEWORK</b>					
07/31/05	<a href="#">Homework 2</a>	<a href="#">11.14 / 10.00</a>	25.00%	27.86%	
09/18/08	<a href="#">Homework 3</a>	<a href="#">5.94 / 16.00</a>	25.00%	9.28%	Extended
07/31/05	<a href="#">Homework 1</a>	<a href="#">4.89 / 11.00</a>	25.00%	11.11%	
04/29/09	<a href="#">Homework 4</a>	<a href="#">8.96 / 14.00</a>	25.00%	16.00%	Extended
HOMEWORK SUBTOTAL		30.93 / 51.00			
WEIGHTED HOMEWORK SUBTOTAL		<a href="#">32.77 / 51.00</a>			
TOTAL SCORE		30.93 / 51			
WEIGHTED TOTAL SCORE (to date)					

$$((11.14 / 10.00) \cdot 25.00\% + (5.94 / 16.00) \cdot 25.00\% + (4.89 / 11.00) \cdot 25.00\% + (8.96 / 14.00) \cdot 25.00\%) \cdot 51.00 = 32.77$$

[Learn more](#) about assignment scores.

## Category weighting (Assigned and Current)

When category weighting is in effect, each student's weighted score for the category is his/her raw score multiplied by the current weight of the category. When students click links in the Weighted Score column, information appears about how these subtotals and total scores are calculated.

WEIGHTED SCORE	NOTES
	Current Weight: 100% Assigned Weight: 100% ⓘ
27.86%	
9.28%	Extended
11.11%	
16.00%	Extended
<a href="#">64.25%</a>	
<a href="#">32.77 / 51</a>	
<a href="#">64.25%</a>	

**Current Weight %** - Weight used to calculate your weighted scores. If a category has no assignments due yet, categories with assignments already due gain weight from the empty category.

**Assigned Weight %** - Weight designated by your instructor. The Current Weight will match this weight when every category has at least one assignment that is already due.

To avoid penalizing you for categories with no scored assignments, category weights are distributed only among categories with already due assignments. This can cause category weights to be different from those originally assigned by your instructor.

[Learn more](#) about assignment and category weighting.

In the image below, three categories have the following Assigned Weights:

- Homework 30%
- Midterm 30%
- Tests 40%

**Note assignment weighting is in effect. Current weight is 25%. As soon as fifth assignment is due, the weight is reduced to 20%.**

DATE DUE	CATEGORY/TITLE	RAW SCORE	WEIGHT	WEIGHTED SCORE	NOTES
HOMEWORK		Current Weight: 100% Assigned Weight: 30.00%			
07/31/05	<a href="#">Homework 2</a>	<a href="#">90.71%</a>	25.00%	22.68%	
09/18/08	<a href="#">Homework 3</a>	<a href="#">56.42%</a>	25.00%	14.10%	Extended
08/31/11	<a href="#">Homework 1</a>	<a href="#">100%</a>	25.00%	25.00%	Extended Assignment Reset on 08/15/11 at 03:37pm
09/26/08	<a href="#">Homework 4</a>	<a href="#">57.06%</a>	25.00%	14.26%	Extended
07/18/13	<a href="#">math review</a>	--			Not included in score until 07/18/13 at 08:07pm
HOMEWORK SUBTOTAL		73.40%			
WEIGHTED HOMEWORK SUBTOTAL		<a href="#">76.05%</a>		<a href="#">76.05%</a>	
MIDTERM		Current Weight: 0.00% Assigned Weight: 30.00%			
TESTS		Current Weight: 0.00% Assigned Weight: 40.00%			
TESTS SUBTOTAL		--			
WEIGHTED TESTS SUBTOTAL		--			
TOTAL SCORE		73.40%			
WEIGHTED TOTAL SCORE (to date)				<a href="#">76.05%</a>	

**Any individual adjustments for the student are noted here.**

**Note the current weight (to date) and assigned weight**

Their Current Weights are different, however. The Current Weight is the weight being used to calculate your student's weighted subtotal score now.

Currently no scores are recorded in the Midterm or Tests categories for this student, so their Current Weight is 0%. As of now the Homework scores account for 100% of the Weighted Total Score (to date). As the name implies, this weighting distribution can be temporary. After scores are recorded in all categories, the Current Weights will change to match the Assigned Weights. [More about weighting](#)

When category weighting is in effect, each student's weighted score for the category is his/her raw score multiplied by the current weight of the category. When students click links in the Weighted Score column, information appears about how these subtotals and total scores are calculated.

The current weight can change. To avoid making your student's grade artificially low, Mastering distributes current category weights only among categories with assignments that are already due. In this above screen shot, the test category has no assignments due, so the current weight of the category is zero. When the first assignment becomes due in the test category, the test category starts to count in the weighting.

Your students' Mastering grade is the total of their weighted scores. As current weights change, your student's grade can change too. For example, the assigned weight of 40% for the test category tells your student that the tests are worth almost half of the Mastering grade. For more on Weighting Assignments, see online [Help](#).

## Step-by-Step Directions



[Student Help](#)



[How to Read Your Scores \[3 min 4 seconds\]](#)

[Understand Grading \[2 min 57 seconds\]](#)

## Lesson 6: Student Intervention Strategies

After you analyze student performance data, you will determine what intervention strategies are needed to increase success during the term and address any performance issues. Based on learning sciences research, there are strategies that instructors can use that can improve implementation.

### What intervention strategies are best at the beginning of the term?

- Familiarize students with course features/resources before course start (Robinia, 2012)
- Schedule interactive materials for the classroom to promote learner interaction
- Create course orientation
- Provide help resources and information on how to submit answers. (Note: You can assign the Introduction to Mastering assignment to teach students how to submit answers.)
- Use consistent processes (use of email, technology, announcements)
- Communicate special reminders (announcements) about course deadlines

### What student intervention and communication strategies should you consider implementing during the term?

- Integrate study skills coverage into your curriculum to help students learn these skills. For example, you can provide them with tips on how to approach the work load daily and how to manage their time better. You can also assign your assignments consistently on the same days throughout the term so students see them on their calendar and can plan their time accordingly.
- Share the student misconception data you see in the [Mastering Diagnostics](#) with teaching assistants and tutors so they can work with students in need of extra practice or help students who are struggling with particular topics.

- Hold review sessions or study group sessions covering topics students struggle with most after reviewing the [Mastering Diagnostic](#) data.
- Place students in groups of mixed abilities to complete an activity to promote peer learning. (Note: You can do this with [Learning Catalytics](#) during sessions you run in class by grouping students by their answer.)
- Utilize university staff and campus resources to help with intervention.
- Offer online office hours during peak times when students are working on their Mastering assignments.
- Monitor student comprehension by assigning [pre-lecture assignments](#) and adjust your lectures based on the data you see in the Mastering Diagnostics to address student misconceptions and struggles.
- If you use Learning Catalytics, adjust your modules to cover topics students struggled with on their homework and group students for peer instruction in class. This will help to engage students that are less likely to seek out help on their own.
- For any at-risk students you identify, target them for academic support services.
- Promote and remind students about the campus resources available to help struggling students.
- If you have one-on-one meetings with students, use the [time-on-task information in Mastering](#) during your meeting to talk about the time they are spending on their work and how they might want to improve their study habits.
- If you have correlated your Mastering homework to exam scores, show students this data so they see why it is important to spend time in Mastering working on the assignments prior to exams. You can also show them the data from the Mastering case studies as needed.
- Discuss the data and the topics they struggled with in your class lectures. That way students make a connection of how important it is for them to spend time working in Mastering and will be more engaged during lectures.

- Clarify what you expect and what good performance is throughout the semester. Talk about goals, criteria, and expected standards consistently. Make goals quantifiable and clear, not just “do your best”. When you discuss goals, include students in the process and align your goals with theirs so they see the relevance. For example, talk about how they will use the knowledge they learn on a specific topic in their life and profession.
- Explain to students that they receive immediate, answer-specific feedback and hints within Mastering for many questions. Students are less likely to ignore or misconstrue individualized feedback over feedback aimed at groups of learners. (Hattie & Timperley, 2007)
- Have students commit to goals in a written document early in the semester and circle back to self-assess their progress on a weekly basis.
- Make sure to provide choices in learning to help increase motivation.
- Incorporate games in class to increase engagement such as jeopardy and other ways to improve motivation.
- Increase curiosity via incongruous/surprising information to help increase interest in course material.

If a student is spending time doing homework and improving, praise “process”, e.g. “Your practice is paying off”. Explain to students that the brain is a muscle that “get stronger” with exercise, or practice. Emphasize with your students that they can improve performance with effort and persistence. (Christensen & Knezek, 2014) (Hochanadel & Finamore, 2015)

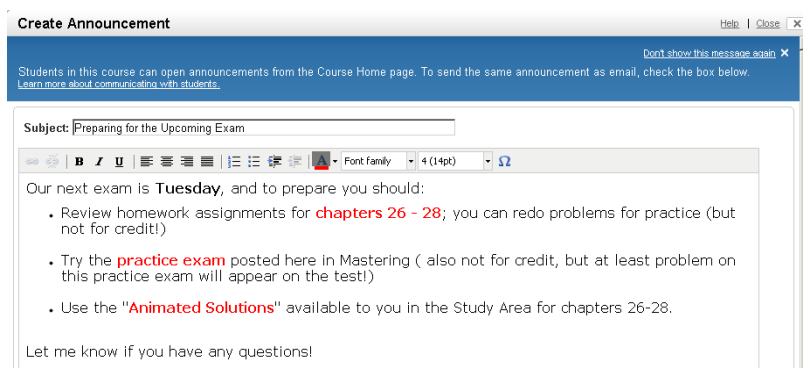
## Lesson 7: Communicate with Students

“Teachers need to be actively engaged in, and passionate about, teaching and learning. They need to be aware of, and update their conceptions and expectations of students, and be directive, influential, and visual to students in their learning.” (Hattie, Visible learning: a synthesis of over 800 meta-analyses relating to achievement, 2007)

To keep students updated, Mastering allows you to create announcements as well as add notes to assignments as a way of communicating with students. You can also email students through Mastering. To get the best results, communication should be on a regular basis. It is also helpful to reach out to particular students to provide them with feedback related to their work.

### Tips for Communication with Students

- Create announcements to let students know about important course information.
- Post an announcement on the first day of class.
- Communication with students via announcements regularly.
- It is recommended you also send the announcement via email to your students by checking the box at the bottom of the announcement.
- When students register for Mastering they enter their email address. To make sure students see your emailed announcements, suggest they use an email address they check regularly when they register for Mastering.
- Send announcements with reminders of offline work or exam dates.



## Step-by-Step Directions: Communication



[Communicate with Students Help Guide](#)



[Communicate with Students](#) [1 min 15 seconds]

## MODULE 5: CREATE AND MANAGE ASSIGNMENTS

### Lesson 1: Identify Successful Assignment Types to Achieve Results

There are many different types of assignments you can create in Mastering. Homework activities are great formative assessments. They are typically untimed, allow multiple attempts, and allow hints and answer-specific feedback. Quizzing and testing activities are often used for summative assessment, either low-stakes or high-stakes. They are often timed and use security features to avoid cheating. If available for your course, Adaptive Follow-Ups and Dynamic Study Modules can be assigned to give students enhanced personalized remediation and provide customized content through adaptivity.

The following are suggested assignment types based on successful implementations of Mastering.

- [Pre-lecture or pre-lab assignments](#)
- [Assignments with a mix of tutorials and end-of-chapter items](#)
- [Quizzes \(often timed with anti-cheating features in place\)](#)
- [Adaptive Follow-Ups](#)
- [Dynamic Study Modules](#)

#### Pre-lecture or Pre-lab Assignments

Pre-lecture assignments in particular are very valuable for formative assessment. You can assess students' knowledge base as a class so that you can best use lecture time for instruction. The diagnostics in Mastering are particularly valuable for this. Pre-lecture assignments make students accountable for their own learning and allow for more interactive classes. They can also enable you to skip content they understand or allow you to refocus on difficult items and move up Bloom's pyramid. Many titles have content available designed specifically for pre-lecture including reading items, pre-lecture items, video questions, and so on. In addition, many educators assign Dynamic Study Modules for pre-lecture assignments.

It is recommended by Mastering users to create pre-lecture or pre-lab assignments with an estimated time of 30-60 minutes. If you are just starting out with Mastering and want to start out with just homework, assign pre-lecture homework to promote student engagement and success in your course.

See how [Texas State University](#) and [Robeson Community College](#) use pre-lecture assignments to yield great results.

*“The most significant improvement occurred when I started assigning pre-lecture assessments (see figure 1). Students who both did and did not use MasteringBiology showed no significant difference in final exam scores before I started assigning pre-lecture quizzes. However, final exam scores improved significantly once I implemented the pre-lecture assignments.”*

- Submitted by Andrea Aspbury, Texas State University

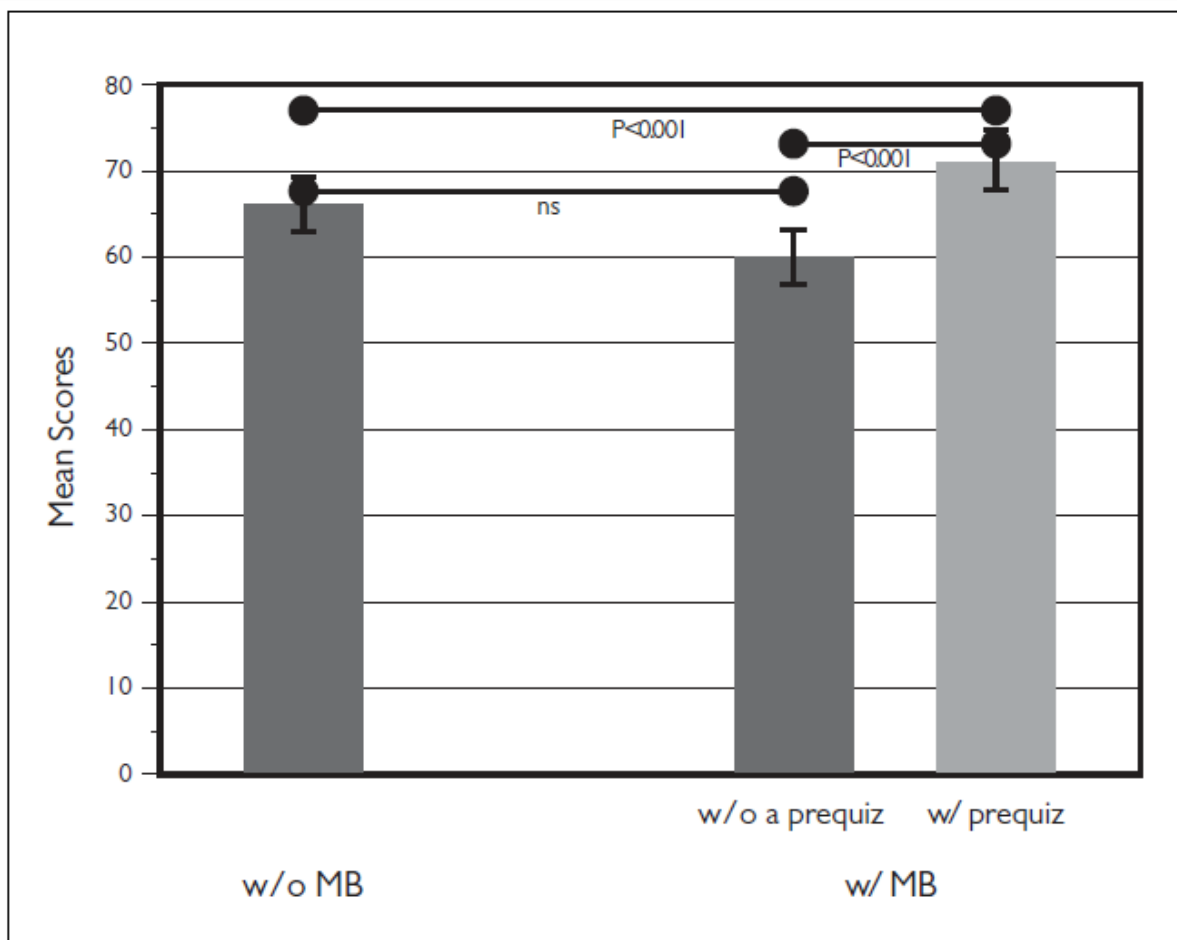


Figure 1. General Biology mean final grades with and without MasteringBiology

*“We redesigned our science courses adding Mastering to provide students with a tool to help them prepare for class and get help when they need it the most. Pre-lecture homework assignments engage students in course content outside of class and better prepare them for lecture. This in turn enables us to increase the amount of interactive learning and critical thinking activities during class.”*

- Submitted by Louis McIntyre, Science Department Chair, Robeson Community College

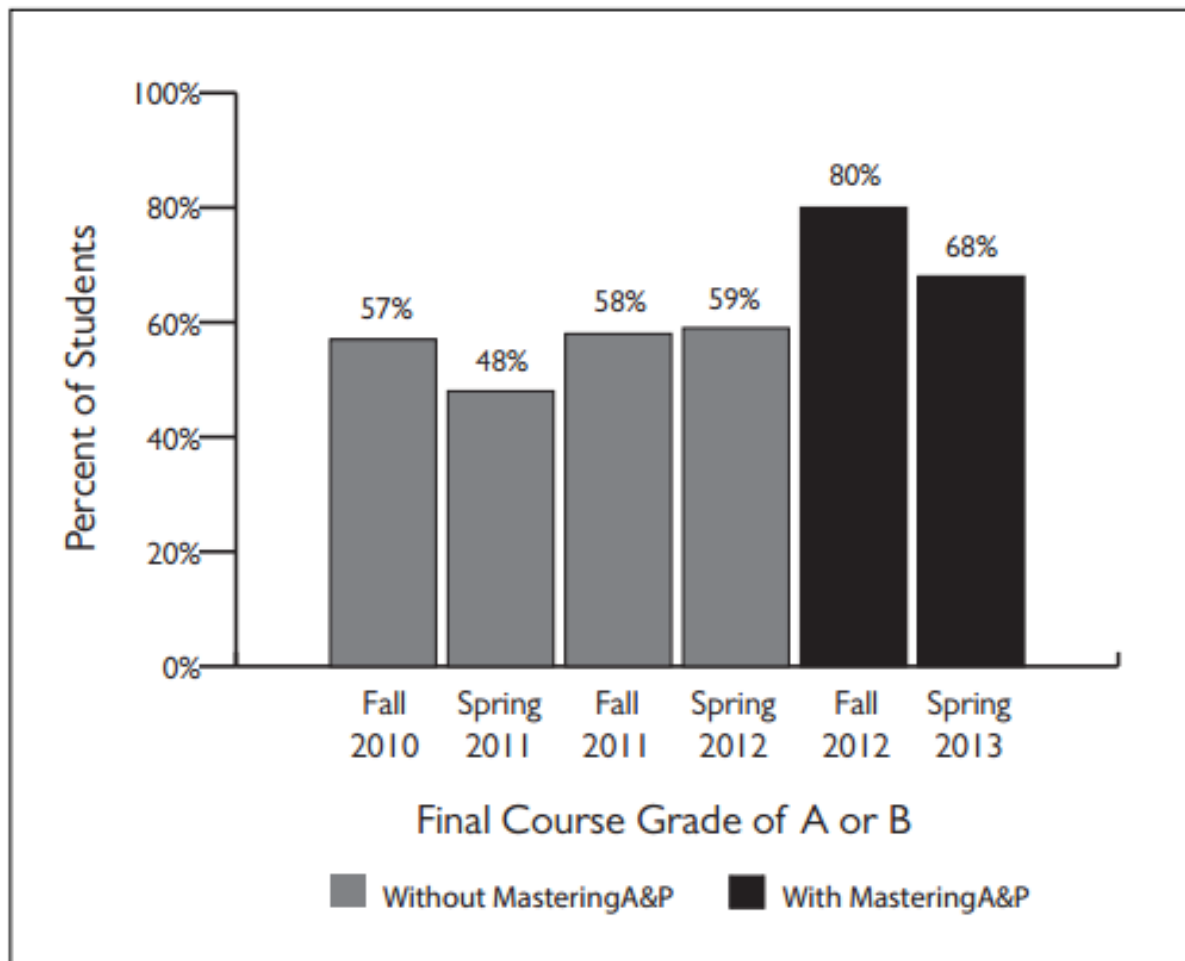


Figure I. Anatomy and Physiology II Final Course Grades of A or B with and without MasteringA&P, Fall 2010–Spring 2013 (Fall 2010  $n=49$ , Spring 2011  $n=87$ , Fall 2011  $n=64$ , Spring 2012  $n=73$ , Fall 2012  $n=48$ , Spring 2013  $n=114$ )

## Assignments with Tutorials and End-of-Chapter Items

Help students learn how to solve problems. Tutorials provide answer-specific feedback and hints while End-of-Chapter items do not supply feedback and hints. Adding both to the same assignment gives students the ability to learn how to do the problem with the tutorials; End-of-Chapter problems then provide practice without the feedback and hints to make sure they can do it on their own later.

[Louisiana State University](#) included tutorials with answer-specific feedback and hints before End-of-Chapter questions without feedback and hints to help students learn how to solve problems. [Missouri University of Science and Technology](#) pair tutorials with End-of-Chapter items in their assignments to reinforce practice.

*“For online homework, we assign a tutoring problem and pair it with one or two end-of-chapter (EOC) problems. The tutoring problems reinforce our philosophy that the primary purpose of homework is to practice. For assessment and self-testing, we use EOC problems because they closely align with exam problems—no hints or feedback. Because of the positive impact MasteringChemistry has had on our teaching and on our students’ success, as well as our students’ positive perception of the program’s value, we are partnering with the National Center for Academic Transformation on redesign of our general chemistry education track. As part of it, we’ll be increasing our use of MasteringChemistry.”- Submitted by Klaus Woelk, Ph.D., Emmalou T. Satterfield, Dan Cernusca, Ph.D., Missouri University of Science and Technology*

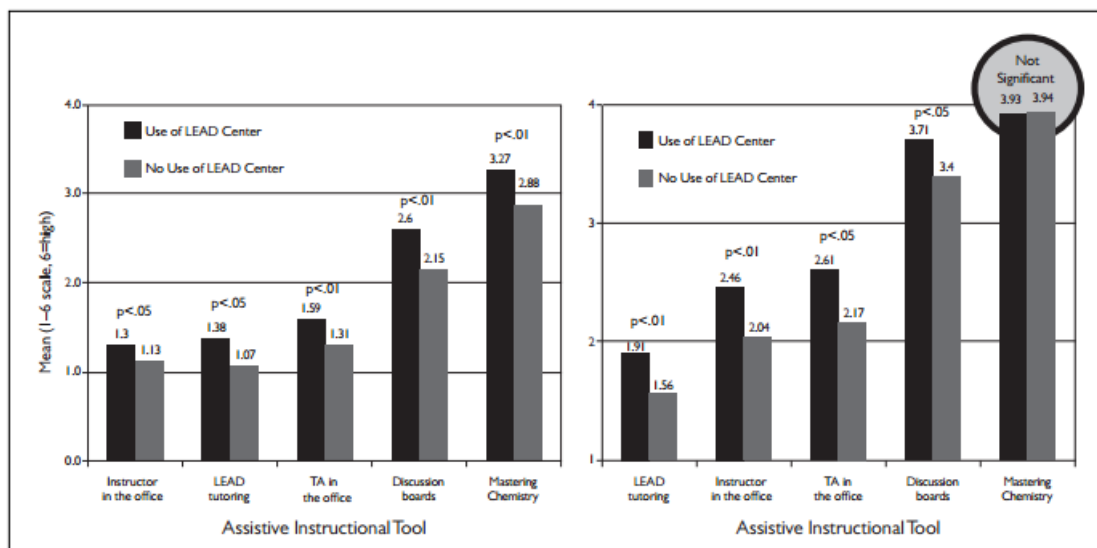


Figure 3. Usage/Assistive Instructional Tool (left), Value/Assistive Instructional Tool (right)

## Online Quizzes

Quizzes are often used as a low-stakes summative assessment on the most challenging topics. This can be helpful for students before a high-stakes exam. High-stakes exams are also used in Mastering for online courses and in proctored lab settings.

The [University of Ottawa case study](#) demonstrates how a simulated test in Mastering helped students learn how to manage time during exams. In the [Collin College peer-reviewed journal article](#), read about how frequent online quizzing can be a successful approach in increasing students' ability to retrieve information and subsequent performance in the introductory (majors) biology classroom. Timed pre-lab quizzes at [Florida State College at Jacksonville](#) shifted the lab experience from a 'cookbook' session to a more integrated and reflective experience.

*"The combination of tutorial and timed end-of-chapter questions helps students learn, understand, and practice the course materials. The timed quizzes allow students to simulate actual test conditions and better prepare for the midterms and the final exam."*

*-Submitted by Kathy-Sarah Focsaneanu, Ph.D., University of Ottawa*

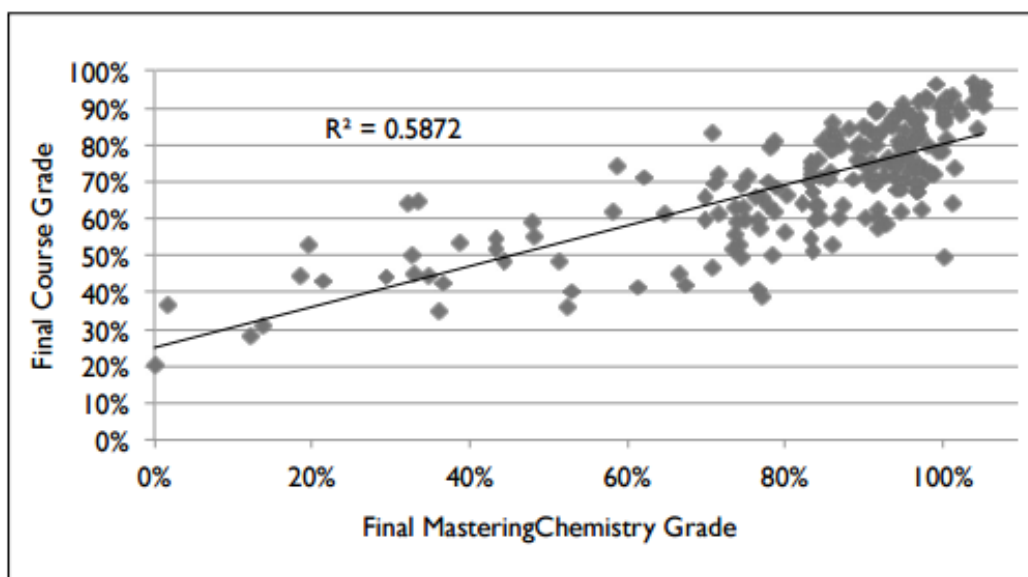


Figure 2. Correlation between MasteringChemistry Homework and Quiz Scores and Final Course Grades, 2011 ( $n=193$ )

## Adaptive Follow-Up Assignments

Based on each student's past performance to date, Adaptive Follow-Up Assignments provide additional coaching and targeted practice as needed to help students become proficient in a full range of skills. Beneficial in mastery of concepts, Adaptive Follow-Ups can also motivate students to work harder on the Mastering parent homework assignments.

See the [Collin College](#) case study below on the implementation of Adaptive Follow-Up Assignments. In this study, students did better on exams as a result of adding the Adaptive Follow-Ups to the course. Selected textbooks have Adaptive Follow-Up Assignments available.

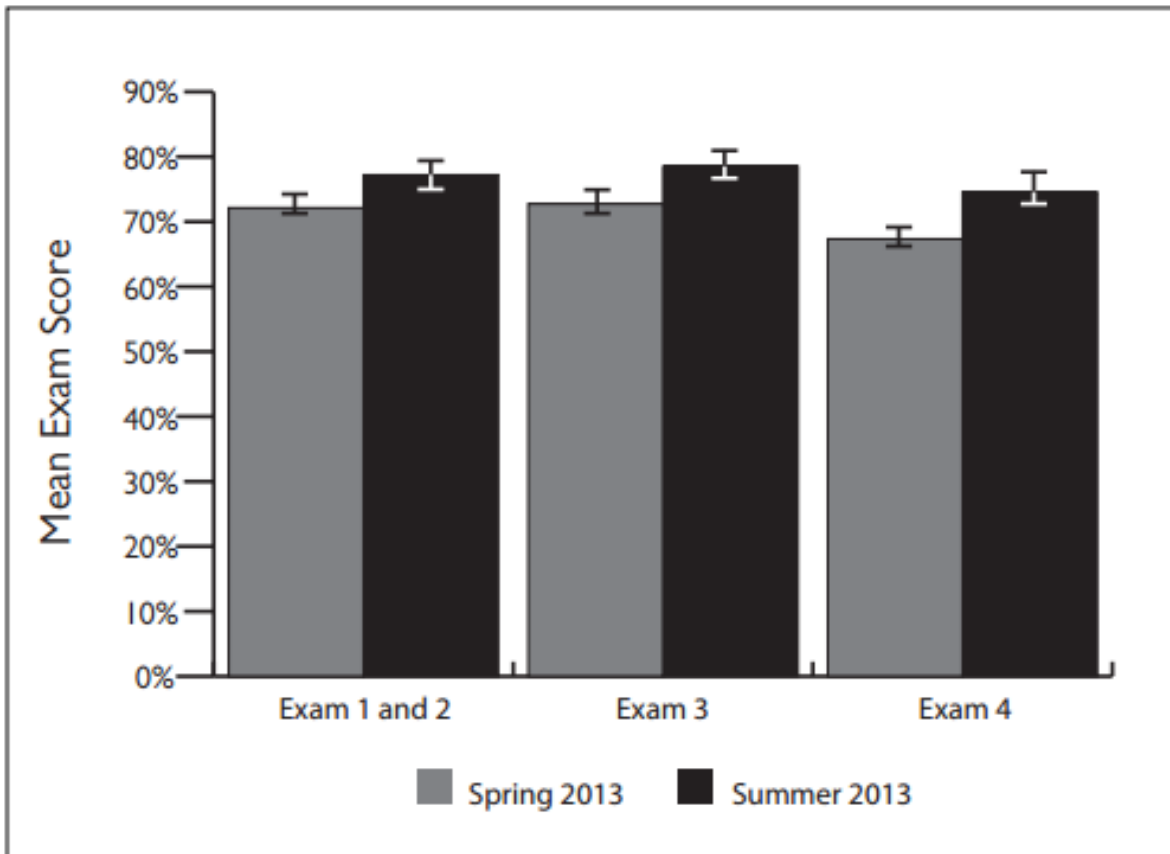


Figure 1. Effect of Adaptive Follow-Up on Exam 3 and Exam 4 Class Average (error bars indicate standard error). (Spring 2013: No Adaptive Follow-Up for Exam 3 and 4,  $n=121$ ; Summer 2013: Adaptive Follow-Up for Exams 3 and 4,  $n=37$ )

## Dynamic Study Modules

Dynamic Study Modules help individual students consolidate what they know, and provide extra practice opportunities — and remediation when necessary — around items with which they are struggling. Dynamic Study Modules are assignable or available for self-study. Dynamic Study Modules can be accessed anytime, anywhere, and from any device. Assigning a module provides the additional advantage of motivating students and focusing their study time. If you assign Dynamic Study Modules before a lecture, it can help students come prepared for lecture with a basic understanding of chapter concepts.

See the [Broward College MasteringBiology educator study](#) where they used different Mastering resources to engage students: Dynamic Study Modules for pre-lecture, Tutorials, and Adaptive Follow-Up assignments. An analysis was done to compare students who tended to do more Mastering homework to students who tended to skip more homework. Of the 55 total Mastering assignments, the mean number skipped was 15 (27 percent). Figure 1 shows that students who skipped fewer than 15 had statistically significantly higher final exam scores than students who skipped 15 or more assignments (using a two-tailed t-test assuming equal variance).

Final exam average based on number of MasteringBiology assignments skipped

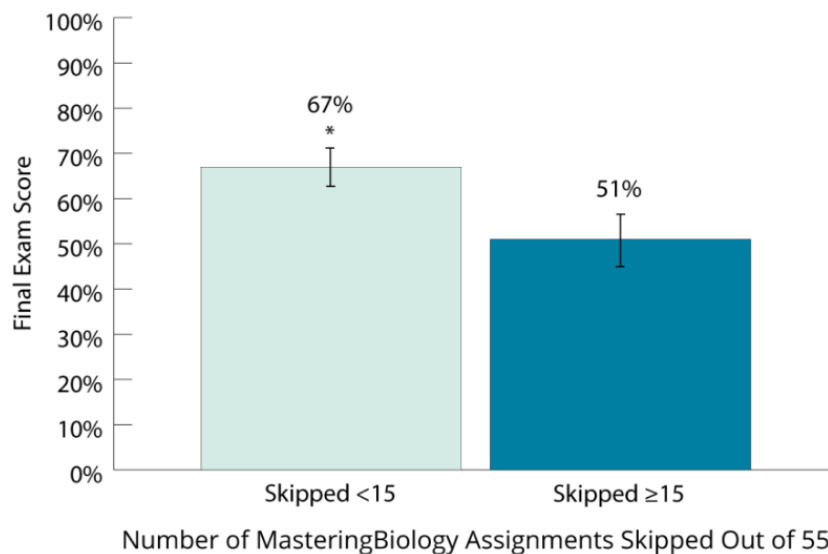


Figure 1. Final Exam Average Based on Number of MasteringBiology Assignments Skipped, Fall 2015. Skipped <15 ( $n=17$ ); Skipped 15 or more ( $n=12$ ); Err Bars=Standard Err, \* indicates  $p<0.05$

## Lesson 2: Best Practices for Assignments

See the table below for suggested assignment tips based on data from the Mastering case studies and feedback from experienced educators using Mastering.

### Best Practices: Mastering Assignments

Require the *Introduction to Mastering* assignment (automatically assigned) as the first assignment in the semester. Keep this assignment available so students can refer to it during the term.

Use the time and difficulty information as you select content to create a feasible weekly assignment.

Assign a timed quiz before exams to help students prepare for their tests.

Work through assignments before you assign them (to make sure you have introduced the needed concepts in your lectures; and to see what your students are working on.)

Conduct shorter, frequent assignments. Students receive personalized feedback and Mastering's gradebook shading alerts you of any students falling behind. Most case studies have students doing assignments more than once a week.

Use pre-lecture assignments to encourage student preparedness and increased engagement in lectures. A recommended total estimated time is 30 minutes to 1 hour to avoid student complaints.

Employ personalized learning through Dynamic Study Modules. Consider using Dynamic Study Modules as a way to help students maximize study efficiency and improve long term retention of the material.

Employ personalized learning through tutorials. Select tutorials for assignments as they provide students with answer-specific feedback and hints. End of Chapter problems do not provide hints.

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Employ personalized learning through Adaptive Follow Ups. Add an Adaptive Follow-Up assignment if available for your course for remediation and detection of concept gaps to avoid students falling behind.

---

Make assignments due right at the beginning of the semester and try to set due dates consistently throughout the term (every Monday and Wednesday for example).

---

When creating an assignment, search for content by learning outcome. You will then be able to see and export student attainment of specific learning outcomes after the due date of the assignment.

---

Make assignments shorter at the beginning of the term when students are learning how to enter their answers.

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Want to learn about best practices for personalized assignments (Adaptive Follow-Ups and Dynamic Study Modules)?

- [Best Practices for Adaptive Follow-Ups](#)
- [Best Practices for Dynamic Study Modules](#)

Want to learn about additional best practices for homework assignments? For low-stakes or high-stakes quizzes? What about best practices to mitigate cheating?

- [Create or Edit a Homework Assignment](#)
- [Create a Low-stakes or High-stakes Quiz \(settings to help prevent cheating\)](#)
- [Methods to Prevent Cheating](#)

## Lesson 3: Create or Edit a Homework Assignment

**Make sure to assign the Introduction to Mastering assignment.** When you first enter your Assignments area of your Mastering course, you will see an Introduction to Mastering assignment already created. This assignment is designed to get students started in Mastering. Require students to do this assignment to ensure they know how to enter answers, how the hints work, and so on. Not only is it helpful to get students started, but it might be a helpful indicator of student motivation. While no actual course content is covered in the assignment, data from a Broward College case study indicates that the average final exam score for students who skipped that assignment was six percentage points lower than those who did the assignment. This may be a leading indicator of student motivation or commitment to being in the course, and is a data point that can provide additional information at the start of the class about which students are ready to get started on the homework (Table 1).

[Fall 2015 average final exam scores and course scores by Introduction to Mastering assignment participation](#)

	Final Exam	Course Score
Skipped	58%	74%
Attempted	64%	77%

Table 1. Fall 2015 Average Final Exam Scores and Course Scores of Students Who Skipped the Introduction to Mastering Assignment ( $n=16$ ) and Students Who Attempted the Introduction to Mastering Assignment ( $n=13$ )

**Before you create an assignment, consider your goal of the homework assignment.** For example, do you want to promote students to prepare for lecture and read the textbook before class with a pre-lecture assignment? Are you creating a post-lecture assignment with more difficult questions to move up Bloom's Taxonomy after lecture? Once you've decided on what you want to accomplish with the assignment, there is a five step process to creating an assignment: Set grading and presentation settings, add content, organize content, assign learning outcomes (if applicable), and set availability and due date. You can skip the fourth and fifth steps. To assign due dates, it is a time saver to use the calendar to drag your

assignments to the due date. By using the calendar to assign due dates, you can quickly manage all of your assignments on the Mastering calendar.

To get started creating your own assignments, click **Create Assignment** from the Course Home or the Assignments area in your course.



 [Create Assignment](#)

Decide if you will create a new assignment or copy an existing assignment. If you copy one, it is recommended you preview and edit the assignment to make sure you understand the content in your copied assignment.

## Create an Assignment

**Do you want to create or copy an assignment?**

- Create a New Assignment**
- Copy an Assignment from one of My Courses**
- Copy a Pre-Built Assignment from the Publisher**

**Continue**

[Cancel](#)

## Five Steps to Create an Assignment:

1 Start — 2 Select Content — 3 Organize Content — 4 Specify Outcomes — 5 Assign and Add Follow-Up

**Note: If you are editing an assignment, it is suggested to go through the steps below.** In Step 1, you can edit assignment settings (grading and presentation). In Step 2, you can add content to a current assignment. In Step 3, you can view what is currently in the assignment and remove items as needed from the assignment.

### 1 Start

**Start** is where you title your assignment; select your category or create a new one; and confirm or edit the **Grading and Presentation Settings** for the assignment. The changes you make will only impact this one assignment.

Assignment Title:

Category: ⓘ

Homework ▾

[+ Add/Edit Categories](#)

Grading and Presentation Settings:

[\[ Edit Settings \]](#) Default settings have been applied based on the category selected above.

Staff Notes:

(Visible only to instructors and section instructors)

If you plan to change the settings for all assignments in that category, you can go to **Gradebook>Manage>Categories and Weighting** and edit the default settings for the category.

The homework default category settings have been proven to motivate students, so it is suggested to use the default category grading and presentation settings for your homework assignments. With the homework category defaults, students are

able to see whether an answer is correct. This setting is important because tutorials provide answer-specific feedback and hints in homework assignments. If you take away the ability for students to see the correct answer, they will not see the helpful feedback and hints available when they need help. The PDF document, [Default settings in Homework, Quiz, and Test categories](#), shows images of the Basic, Advanced, and Security tabs, which you can compare side by side.

### **Notes on Assignment Settings**

1. *Students often appreciate the chance to Rework an assignment to help them review for exams. This setting is available under the Basic tab and it is a default for assignments in the homework category.*
2. *Late Penalty: Consider this setting if you want to allow some credit for the procrastinators in your course. This setting penalizes only items that are submitted late, not the entire assignment. Late penalties are not set up by default.*

You can change the grading settings for an assignment at any time by clicking Edit Settings. If students have already done work when grading settings are changed, their grades are recalculated. Be careful what you edit after students have done work to avoid changing their scores! See the grading and presentation setting tips from Mastering case studies below.

**Tip:** *New users are advised to use the default settings for homework and experiment after a semester as needed.*

### **Tips for Assignment Grading Settings**

With tutorials via homework, students are offered the opportunity to practice and learn in a low-stakes environment with immediate, error-specific feedback.

[Metropolitan State University of Denver Case Study](#) – College Physics

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Consider limiting attempts. This may help avoid guessing and encourage students to put more thought into the assignment.

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[Rochester Institute of Technology Case Study](#) - Non-majors Biology

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Although this is contrary to the default, consider neither giving students extra credit nor penalizing them for using or not using hints. Try this setting if you notice students not opening tutorial hints and encourage students to take advantage of the hints within the questions.

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[Butler University](#) - Chemistry

## Step-by-Step Directions: Create an Assignment and Change Assignment Settings



[Create or Edit an Assignment](#)

[Edit Assignment Settings](#)

[Adjust Assignment Settings or Scores per Student](#)



[Create an Assignment and Set Basic Properties](#) [1 min 26 seconds]

[Change Default Assignment Settings](#) [1 min 18 seconds]

### **2** Select Content

You can select content after you create an assignment, or later by opening and editing the assignment. The assignable items are from the course's Item Library, and are designed specifically for the textbook or other source that is selected for the course. Filter by chapter, learning outcome, and publisher item type to find content that fits your needs for the assignment. In Mastering, you can point your mouse to bars and icons to get more information while in the system.

## Item Filters

You can now filter the Item Library to locate items by New Items, Mobile Items, Item Difficulty, Item Type, Answer Type, and Special Features (if available). In addition to filtering by source (for example, Book, Chapter, and Section), these options allow you to target your search for specific teaching purposes when you are creating assignments.

- Use the filters to help you create assignments more quickly.
- Find items using multiple criteria during assignment creation.
- Use filters to help you find content that fits your implementation model or pedagogical goal. The special features filter (if available for your specific title) may include pre-lecture, post-lecture, pre-lab, post-lab, behavior change, or data analysis.

**Source**

Book/Source Reeca et al, Campbell Biology (College - ▾)	Chapter 1. Evolution, the Themes of Biology, and : ▾	Display By Concept ▾	Concept All ▾
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**Item Filters and Answer Types**

Select filters below to refine your search results. Apply Filters

Choosing across columns results in matches that meet both criteria, such as test bank items with the multiple choice answer type. To broaden your search, select multiple boxes within a column for items that meet either criteria.

New Items   
  Mobile Items   
 Item Difficulty  1 2 3 4 5

Item Types	Answer Types	Special Features
<input type="checkbox"/> Tutorial	<input type="checkbox"/> Graphing	<input type="checkbox"/> Current Events/Applications
<input type="checkbox"/> Activities	<input type="checkbox"/> Labeling	<input type="checkbox"/> Data Analysis
<input type="checkbox"/> Coaching Activities	<input type="checkbox"/> Matching / Vocab	<input type="checkbox"/> Science Process
<input type="checkbox"/> Misconception Questions	<input type="checkbox"/> Multiple Choice/Select	<input type="checkbox"/> Videos/Animations
<input type="checkbox"/> Reading Questions	<input type="checkbox"/> Simple Text	<input type="checkbox"/> Vocabulary Review
<input type="checkbox"/> End-of-Chapter	<input type="checkbox"/> Sorting	
<input type="checkbox"/> Test Bank		
<input type="checkbox"/> My Items		

i Selected Filters: Difficulty 1-5 [Clear All](#)

**Publisher Item Suggestions for Homework:** Tutorials, coaching activities, activities, misconception questions, and reading questions will often provide students with answer-specific feedback and hints. Some professors like to mix tutorials with End-of-Chapter questions to give students practice first.

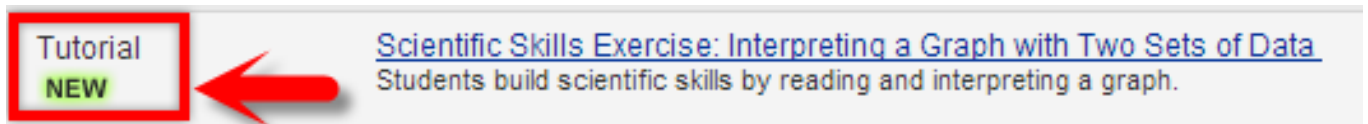
**Publisher Item Suggestions for Quizzes or Tests:** End-of-Chapter and test bank items often do not provide answer-specific feedback and hints. Some textbooks

contain Enhanced End-of-Chapter questions that are the 'bridge' between tutorials and End-of-Chapter questions because they provide some feedback, but no hints.

**Publisher Item Suggestions for Pre-lecture:** Reading questions, pre-lecture questions, video questions, misconception questions, and conceptual questions. Many of these item types also provide answer-specific feedback as well.

**Publisher Item Suggestions for Lab:** Look for lab content by selecting Microbiology Lab, PhysioEx, PAL, or various versions of Lab Manuals in Book/Source if available for your discipline. (Note: Virtual Biology Labs require a subscription for students to access them.)

New Items such as Tutorials, Activities, End-of-Chapter, and Reading Questions are marked as **NEW** for 12 months after they are added to the Item Library. You might want to evaluate these items for possible inclusion in your course.



The image shows a user interface element. On the left, there is a red-bordered box containing the text 'Tutorial' and 'NEW' below it. A red arrow points from this box to the right, where there is a blue underlined link: 'Scientific Skills Exercise: Interpreting a Graph with Two Sets of Data'. Below the link is a smaller line of text: 'Students build scientific skills by reading and interpreting a graph.'

🔄 If you will be using Adaptive Follow-Up assignments in your course, it's important to assign the latest published version of items. If you copied your course from a previous edition, you may want to review the new content available and replace older content.

The ⓘ information icon next to an item means that the item is in another assignment in the same course. Click the icon to see the details.

## Time, Difficulty ratings, and Usage Statistics

The **Time** will give you an idea of how long it should take your students to work on the item.

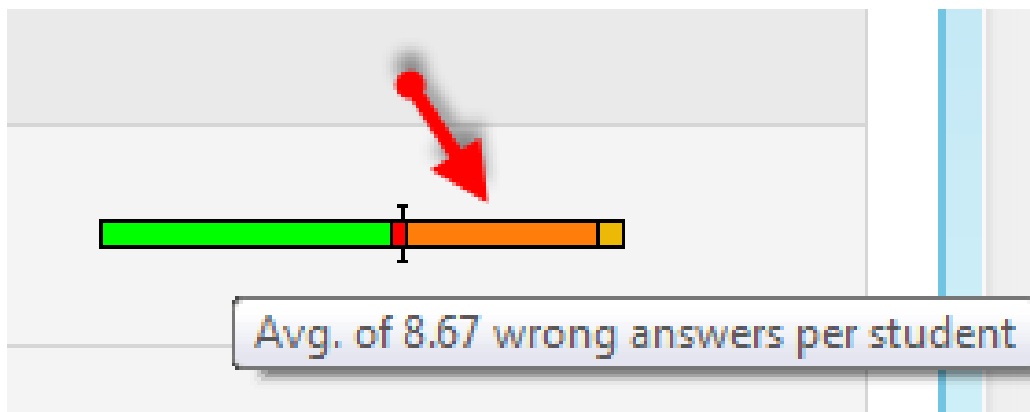
The **Difficulty** rating is based on the Time and Usage Statistics.

The colored bar displays **Usage Statistics**. For example, green shows the percentage of students who have answered item this correctly.

Note students may not have answered the item correctly on the first attempt. Items with more orange and yellow in the bar demonstrate that students used answer-specific feedback and hints to get coached to the correct answer.

ASSIGN	ITEM TYPE	TITLE <a href="#">[Hide Descriptions]</a>	TIME	▲ DIFFICULTY (5=hardest)	USAGE STATISTICS (Roll over any colored segment)	
<input type="checkbox"/>	-	Global: Demonstrate the ability to think critically and employ critical thinking skills.				
<input type="checkbox"/>	Coaching Activities	<a href="#">Video Tutor: Cross Bridge Cycle</a> Video instruction on the cross bridge cycle involved in skeletal muscle fiber contraction. Includes 9 multiple-choice questions with optional video hints.	9m	1		
<input type="checkbox"/>	Coaching Activities	<a href="#">Video Tutor: Events at the Neuromuscular Junction</a> Video instruction on neuromuscular communication. Includes 8 multiple-choice questions with optional video hints.	7m	2		
<input type="checkbox"/>	Coaching Activities <b>NEW</b>	<a href="#">Focus Figure 9.11: Excitation-Contraction Coupling</a> [[ Bloom's Taxonomy: Application/Analysis ]] Focus Figure 9.11: Excitation-Contraction Coupling. Includes four activities and four multiple-choice questions, all with feedback and optional hints.	14m	3		

If you want to assign items with feedback and hints, look for orange and yellow in the **Usage Statistics**. Assign tutorials and coaching activities for homework to provide immediate answer-specific feedback and/or hints so students can learn from their mistakes. With your mouse, roll over any bar to see associated figures. Figures come from all students in the Mastering system.



You can also sort by a column heading, such as Difficulty, Usage Statistics, Time, Title, or Item Type by clicking the column heading. You will see an arrow based on your sorting preference.

See the table below for suggested tips for selecting content based on data from the Mastering case studies and feedback from experienced educators using Mastering.

## Tips for Selecting Content in Assignments

Select items based on learning outcomes to assess student knowledge and skills.	<a href="#">Florida State College at Jacksonville</a> – A&P
Assign a mix of tutorial and end-of-chapter questions to help develop problem-solving skills.	<a href="#">Metropolitan State University of Denver Case Study</a> – College Physics
Use end-of-chapter questions to help students prepare for exams.	<a href="#">University of Ottawa</a> - Chemistry
Assign visual and interactive items to help students understand spatial reasoning and learn map-reading skills.	<a href="#">Texas A&amp;M University Case Study</a> – Geography
Focus on the comprehension questions in Mastering to help students develop the kind of critical-thinking skills they need to analyze information and work through a problem.	<a href="#">University of Arizona Case Study</a> - Microbiology
Add essay review questions to mirror questions on your exams to promote critical thinking. Provide feedback on the written homework questions before the exam to help students identify those concepts they need to study.	<a href="#">Roane State Community College Case Study</a> – A&P
Assign the basic concepts outside of class, so you can spend class time doing interactive learning, such as discussion and writing exercises.	<a href="#">Bowling Green State University – Fireland College Case Study</a> - Geology
Use a reading quiz as a pre-lecture assignment to encourage students to read the book before lecture.	<a href="#">Texas State University</a> - Biology

Assign video and pre-lab questions before lab to shift the lab experience from a “cookbook” session to a more integrated and reflective experience.

[Florida State College at Jacksonville](#) – A&P

## Step-by-Step Directions: Select Content



### Select Content



### Select Assignment Content [2 min 19 seconds]



## Organize Content

Now it's time to review the details of the items you selected to assign, and make any changes. At the bottom of the Organize Content page, you can see the **Estimated Time and Difficulty** for the assignment. The program calculates the average estimated difficulty (on a 1–5 scale) and total median time for the assignment. This information is very helpful to manage your students' time on task. You can change the number of items and points by removing items from the assignment and by changing the point value for selected items.

1 Start — 2 Select Content — 3 Organize Content — 4 Specify Outcomes — 5 Preview and Assign

Pool Assignment
  Randomize Item Sequence

SELECT	#	ITEM TYPE	TITLE <a href="#">[Show Description]</a>	DIFFICULTY	MEDIAN TIME	POINT VALUE	REQUIRE PREVIOUS	RANDOMIZE VARIABLES	REQUIRE UNITS
<input type="checkbox"/>	The purpose of the following exercises is to familiarize you with the system you will be using for the rest of your course. These exercises are not intended to teach or test your knowledge of any specific subject material. Therefore, you will not be penalized for using hints or submitting incorrect answers. <span style="float: right;">3492 Character(s) remaining</span>								
<input type="checkbox"/>	1	Coaching Activities	<a href="#">Welcome to Mastering Questions</a> (full credit)	2	5m	<input type="text" value="1"/> credit			
<input type="checkbox"/>	2	Coaching Activities	<a href="#">Introduction to Multimedia in Mastering</a> (full credit)	1	3m	<input type="text" value="1"/> credit	<input type="checkbox"/>		
<input checked="" type="checkbox"/>	3	Coaching Activities	<a href="#">Introduction to Vocabulary, Labeling, Sorting, and Ranking Questions</a> (full credit)	2	6m	<input type="text" value="1"/> credit	<input type="checkbox"/>		
3 items (3 points)				Estimated Difficulty: 1.7		Estimated Time: 13m			

[← Back](#)

You can also reorder the items, add messages, change the point value, require a previous item, require units, and so on.

To discourage answer sharing, randomize item sequence, pool the assignment, or randomize variables. Choose whether you want randomization on or off:

- Check mark = Randomization is ON (the default).  
The value of variables in the item will be different, resulting in varied correct answers for students in the course. The particular question any student sees will vary. Randomized values in questions can help reduce student answer-sharing.
- No check mark = Randomization is OFF. All variables have fixed values, so that all students will see the same values.

See the table for suggested tips for organizing content based on data from the Mastering case studies and feedback from experienced educators using Mastering.

### Tips for Organizing Content in Assignments

Use estimated time to plan content coverage throughout the semester and manage students' time-on-task.

[Butler University](#) -  
Chemistry

Organize tutorials before End-of-Chapter questions. Students will have the ability to learn from their mistakes with the tutorials and the End-of-Chapter questions will provide a way for students to make sure they can also work through problems on their own (without help and feedback).

[Louisiana State University](#)  
- Chemistry

Use estimated time to design short pre-lecture assignments (20-30 minute).

[Rollins College](#) - Biology

Randomize question order or use pooling to discourage answer sharing.

[Collin College](#) - Biology

## Step-by-Step Directions



### [Organize Content](#)



### [Organize Assignment Content](#) [56 seconds]



## Specify Outcomes

This next area of the Assignment Creation process allows you to match your Learning Outcomes to the assigned items. This is covered in detail in Lesson 4, Create an Assignment to Assess Student Learning Outcomes.



## Preview and Assign/Assign and Add Follow-Up

For courses with Adaptive Follow-Ups, you will see Assign and Add Follow-Up instead of Preview and Assign. Select courses in biology, chemistry, physics, and anatomy and physiology have Adaptive Follow-Ups.

Each assignment has three dates that must all be set together.

- **Due Date/Time** (must be later than the current date and no later than the course end date). This the date that students see on the Assignments list and calendar.
- **Available From** (must precede the due date). This is the date when an assignment becomes visible and workable by students.
- **Available Until** (must be later than the current date and no later than the course end date). This is the last date that students can open an assignment for review.

The Course Calendar is filled as you create your assignments in Mastering and set the availability and due date.

### **Notes on Assignment Dates**

- *If you are creating multiple assignments or copying multiple assignments, drag your assignments onto the calendar to save time.*
- *Consider setting the “Available Until” date to match the course end date. Students can then review them later.*
- *If you set your dates for assignments even before students enroll, you will be able to display all your assignments in the Gradebook and plan your semester. If you do need to change due dates after you set them, you can quickly do this with the drag feature in the Calendar View.*
- *As you enter due dates for unscheduled assignments, Mastering suggests an “Available From” date one week before the due date, but you can change this for any assignment. If all or many assignments are made available to students at the beginning of the semester, you may find they are not prepared for the assignment.*

## **Step-by-Step Directions: Preview Assignment and Assign Dates**



[Preview an Assignment and Assign Dates](#)



[Preview Assignment and Assign Due Dates](#) [1 min 55 seconds]

## Lesson 4: Create a Low-stakes or High-stakes Assignment to Discourage Answer Sharing

In the Collin College [peer-reviewed journal article](#), read about how frequent online quizzing can be a successful approach in increasing students' ability to retrieve information and subsequent performance in the introductory (majors) biology classroom. Rebecca Orr at Collin College uses quizzing as a low-stakes summative assessment to give students information on what they don't know before a high-stakes exam.

Mastering can be used for low-stakes summative assessment as well as high-stakes summative assessment. For an assignment you can discourage answer-sharing with various security settings. The Assignment Grading and Presentation settings let you hide correct answers, hide item titles, randomize item sequence, require a password, pool items, or lock students out of a completed assignment until after its due date. You can also make an assignment timed in order to avoid students having the time to look up answers to the questions in their book or online. If available for your course, you can also add an Adaptive Follow-Up assignment to a assignment for remediation right after the assignment is complete. Settings and strategies used are covered below.

### Security Features to Discourage Answer Sharing

The **Quiz** or **Test** assignment category default settings have the most secure default settings. Note that you can edit the defaults for these categories and save those changes as a new default for all future assignments in that category. In addition, you can edit the defaults for the **Homework** category and add some of these security settings.

Default Quiz and Test category settings are below and default settings can be edited at any time.

**Quiz category defaults**—Assignments assess students' knowledge

- Students receive no feedback or hints.

- Correct answers are not shown, and the student's score is not visible until the student has completed the assignment.
- Students cannot print quizzes or rework them for practice.

**Test category defaults**—Assignments assess students' knowledge under tighter security restrictions

- Students receive no feedback or hints.
- Correct answers are not shown, and the assignment score is not visible until the assignment is due.
- Students cannot print tests or rework them for practice.
- The sequence in which items are presented is randomized for each student.
- Titles of all items are replaced with a generic label that you specify, such as "Item [number]."
- Students cannot reopen a completed assignment until after its due date.

Click on **Edit Settings** under Grading and Presentation settings to make adjustments.

The screenshot shows the 'Create/Edit Assignment' interface for an 'Untitled' assignment. The interface includes a progress bar with five steps: 1 Start, 2 Select Content, 3 Organize Content, 4 Specify Outcomes, and 5 Assign and Add Follow-Up. A 'Tips' icon is visible in the top right corner. The 'Assignment Title' field contains 'Maximum Security Assignment'. The 'Category' dropdown is set to 'Quiz', with an 'Add/Edit Categories' link next to it. The 'Grading and Presentation Settings' section is highlighted with a red box and contains the text: '[ Edit Settings ] Default settings have been applied based on the category selected above.' Below this is the 'Staff Notes' section, which is currently empty. At the bottom of the interface, there are 'Cancel', 'Save', and 'Continue' buttons.

For Quiz or Test assignments, you might want to consider applying two other settings that aren't part of the default set: **Time Limit** (can be saved with a category) and **Require Password** (per assignment, not saved with a category). You can change these settings anytime, for any category or for a specific assignment.

You can also change settings for any assignments in other categories to fit your needs and security concerns.

Under the **Basic** tab, set a time limit.

Basic **Advanced** Security [Reset all settings](#)

**Allow Rework for Practice**  
Let students rework completed items after the due date. This work **will not be saved** and will not affect the students' grades.

Show Assignment Score:  
Always

**Assignment Has a Time Limit**  
Allow 40 minutes for this assignment.  
If you don't want students to be able to preview this assignment before they start the timer, clear the Allow Students to Print checkbox on the Security tab.

**Penalize Late Submissions**

No Credit (Late submissions of timed assignments receive no credit.)

Reduce credit by 0% over each hour late.

Save Cancel  Use the above settings a

You may also want to **hide the Score** until after the due date. Show Assignment Score display options include **Always, Never, Only after an assignment is due, and Only after completion of the assignment.** If you select Only after completion of the assignment for example, students would see in their Notes on their Scores page "Score hidden by instructor" until they have completed the assignment. Since some scores may be hidden temporarily, students may want to know about hidden assignment scores. (Adaptive Follow-Up assignment scores are never hidden. Students can always see their Raw Score for the Adaptive Follow-Up assignments.)

### Notes on Timed Assignments

1. In a timed assignment, the time represents the time students have to complete the assignment after they first click Start Now. If students do attempt to open any other Mastering assignment in their course after starting a timed assignment, they lose all remaining time. The timer runs continuously, even if they leave the assignment. This both limits students' time on the assignment and prevents them from consulting other assignments. Be sure to remind students of this restriction.

2. You can try out the timed assignment experience by working through an assignment as a student. Only instructors see the Reset Timer button, provided as a convenience as you complete timed assignments.

Under the **Advanced** tab, select whether students see correct answers, or view hints. For a quiz or test with security features, show the correct answer and hints after it is due or never. If you select **Show whether an answer is correct only after assignment due**, you can check whether you want students to see the correct answer if they answered incorrectly as well.

Note that you wouldn't want to hide whether the answer is correct for some assignments, especially the assignments where you want students to have answer-specific feedback.

### Assignment Grading and Presentation Settings

**Basic**

Advanced

**Security**

#### Show Whether an Answer is Correct:

Question-specific feedback and follow-up text only appear when students are shown whether their answer is correct.

Only after assignment due ▼

If students answer incorrectly, show correct answer after assignment due date.

Limit number of attempts per question to

#### Students Can View Hints:

Only after assignment due ▼

[Cancel](#)

Under the **Security** tab, see **Allow Students to Print**. Uncheck the check box to turn off the ability to print and share answers with other students. Hide item titles to deter students from looking for answers online. **Limit Student Access**, which will block students from opening the assignment again after they complete it. They won't be able to see the questions and their answers again until after the due date.

You can require a password for students to access the assignment. This feature can be used in testing centers and other proctored settings. **Save** any changes you make to the settings on *each tab* of the grading settings before exiting.

### Assignment Grading and Presentation Settings

Basic **Advanced** Security

Allow Students to Print

Hide Item Titles  
Replace titles with  and a number showing the item's position in the assignment, such as "Item 1".

Require Password  
Students must enter this password to access this assignment:

Limit Student Access  
Do not allow students to access assignment content between completion and due date.

Save Cancel

You can use the settings as defaults for new assignments in the category by clicking the checkbox **Use the above settings for new assignments in this category**.

### Assignment Grading and Presentation Settings

Help | Close X

Basic **Advanced** Security [Reset all settings for this assignment to Homework category defaults.](#)

Assignment Has a Time Limit  
Allow  minutes for this assignment.  
*If you don't want students to be able to preview this assignment before they start the timer, clear the Allow Students to Print checkbox on the Security tab.*

Penalize Late Submissions

- No Credit (Late submissions of timed assignments receive no credit.)
- Reduce credit by  % over each  late.

Save Cancel  Use the above settings as defaults for new assignments in this category.

## Additional Settings for Security in **3** Organize Content

You can also enhance assignment security in the **Organize Content** step of creating an assignment, including randomizing item sequences and pooling assignments. With the assignment open, click **3 Organize Content**. Check **Pool Assignment** in the check box and select the number of items to give each student. You can also edit the points for each question.

Create/Edit Assignment: *Get Ready For A&P - Post-Quiz*

1 Start — 2 Select Content — **3 Organize Content** — 4 Specify Outcomes — 5 Preview and Assign

Move Up Move Down Add Message Above Remove

Pool Assignment  Randomize Item Sequence

Give each student **20** of 50 items worth 1 credit each

SELECT	#	ITEM TYPE	TITLE <small>(Show Description)</small>	DIFFICULTY	MEDIAN TIME	POINT VALUE	REQUIRE PREVIOUS	RANDOMIZE VARIABLES	REQUIRE UNITS
<input type="checkbox"/>	1	Reading Questions	<a href="#">Get Ready for A&amp;P Cumulative Test Question 1</a>	--	<1m	1 credit	<input type="checkbox"/>		
<input type="checkbox"/>	2	Reading Questions	<a href="#">Get Ready for A&amp;P Cumulative Test Question 2</a>	1	<1m	1 credit	<input type="checkbox"/>		

Use pooling to give each student only a specified number of items from the total pool of items you select for the assignment. In a pooled assignment, each student is given a random subset of the items, which further complicates attempts to share answers.

Look at the **Estimated Time** and **Estimated Difficulty** for the pooled assignment that students would face at the bottom of the page.

<b>5 of 11 items (25 points)</b>	<b>Estimated Difficulty: 1-1.8</b>	<b>Estimated Time: 32-36m</b>
----------------------------------	------------------------------------	-------------------------------

The range of estimated time values reflects the shortest and longest estimated time to complete the assignment. If you are creating pooled assignment that will be timed as well, the time you give students to complete it should be longer than the longest estimated time.

### Notes on Pooled Assignments

- Pooling is an assignment option – and once selected, all questions in an assignment will be pooled. You cannot have a mix of fixed questions that every student is guaranteed to see, and a set of pooled questions that will be randomly selected from. To ensure students get similar assignments, make sure all of the items in the pooled assignment are similar (difficulty and time).

- In the Preview, Student View, and Print View with Answers: You see all of the items in the pool.
- In the Summary View and Diagnostics View: Statistics for a specific item reflect the performance of only the students to whom the item was assigned.
- In the Gradebook: *For a specific student, you see only the subset of items* that the student was given, along with how the student performed on those items.
- In the Learning Outcomes Summary: The % Complete and % Average Score reflect the performance of only the students to whom items associated with each outcome were given.

Also, check **Randomize Item Sequence** in the check box.

Create/Edit Assignment: *Maximum Security Assignment* 

1 Start — 2 Select Content — 3 **Organize Content** — 4 Specify Outcomes — 5 Assign and Add Follow-Up

Pool Assignment
  **Randomize Item Sequence**

Give each student 11 of 11 items worth 1 credit each

SELECT	#	ITEM TYPE	TITLE <a href="#">[Show Descriptions]</a>	DIFFICULTY	MEDIAN TIME	POINT VALUE	REQUIRE PREVIOUS	RANDOMIZE VARIABLES	REQUIRE UNITS
<input type="checkbox"/>	1	Reading Questions	<a href="#">Chapter 2 Pre-Test Question 1</a>	1	<1m	1 credit			

**Randomize Item Sequence** displays assignment items in random order to students, and **hide item titles**, which replaces item titles with something like "Item 1" or "Question 1". When both of Hide Titles and Randomize Item Sequence are used together, it makes it more difficult for students to tell others the answer for a particular item, by position in the assignment or by title.

When selecting content, consider choosing randomizable items if available or create your own items. Make sure to randomize all possible items by checking **Randomize Variables**.

Pool Assignment
  Randomize Item Sequence

SELECT	#	ITEM TYPE	TITLE <a href="#">[Show Descriptions]</a>	DIFFICULTY	MEDIAN TIME	POINT VALUE	REQUIRE PREVIOUS	RANDOMIZE VARIABLES	REQUIRE UNITS
<input checked="" type="checkbox"/>	7	End-of-Chapter	<a href="#">Enhanced EOC: Exercise 13.8</a>	2	7m	1 credit		<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	8	End-of-Chapter	<a href="#">Exercise 13.19</a>	2	7m	1 credit	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

See the table below for suggested tips for obtaining results with online quizzes from the Mastering case studies.

## Tips

Timed quizzes can help students learn how to budget their time during chemistry exams.

[University of Ottawa case study](#) - Chemistry

Randomize question order or use pooling to discourage answer sharing.

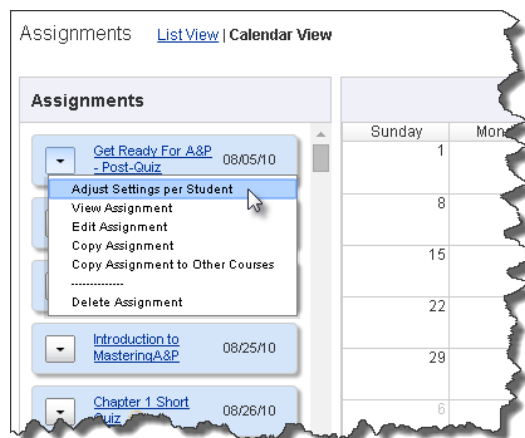
[Collin College](#) - Biology

Make pre-lab quizzes timed and available a week before lab so students come prepared for lab. Timed pre-lab quizzes shifted the lab experience from a 'cookbook' session to a more integrated and reflective experience.

[Florida State College at Jacksonville](#) - Microbiology

## Adjust Settings per Student

One of your students might need extra time on an assignment, perhaps as an accommodation, or because of a computer problem. It is easy to extend the time for an assignment to selected students *privately*, and without the need for creating separate exams. This is done through the option called **Adjust Settings per Student** found in the Assignment drop down menu.



## Create a New Category

If you use additional settings frequently, you may wish to create a new category with those settings. If you choose to create a new category for your high stakes

assignments or want to adjust your category settings, you would go to **Gradebook>Manage>Categories and Weighting**. To edit category default settings, click **Edit Default Settings** next to the category title and make the changes to the default settings.

**Manage Gradebook** Help | Close X

**Gradebook Preferences** **Categories and Weighting** **Offline Activities** **Export Gradebook Data**

Categories and Weighting

**Tip:** Categories determine default presentation and grading settings for new assignments. They can also be used to organize and weight scores in the gradebook. [Learn more about categories.](#)

**Add a Category**  
Add a category called  with the same settings as **Homework**

Category Weighting: **By Points** ▼

**Homework** [Edit Default Settings](#) **Category Weight:** 100%

**Assignment Weighting:** **By Points** ▼

Assignment or Offline Activity	Assignment Weight
Introduction to MasteringA&P	100%

**Quiz** [Edit Default Settings](#) [Delete](#) **Category Weight:** 0%

**Assignment Weighting:** **By Points** ▼

Assignment or Offline Activity	Assignment Weight
<i>You have no assignments or offline activities in this category.</i>	

To Add a Category, title the new category in the field. Select the existing category with presentation and grading settings that are most like your new category.

**Manage Gradebook** Help | Close X

**Gradebook Preferences** **Categories and Weighting** **Offline Activities** **Export Gradebook Data**

Categories and Weighting

**Tip:** Categories determine default presentation and grading settings for new assignments. They can also be used to organize and weight scores in the gradebook. [Learn more about categories.](#)

**Add a Category**  
Add a category called  with the same settings as **Quiz**

Category Weighting: **By Points** ▼

**Adaptive** [Edit Default Settings](#) **Category Weight:** 0%

**Assignment Weighting:** **By Points** ▼

Assignment or Offline Activity	Assignment Weight
<i>You have no assignments or offline activities in this category.</i>	

The settings are now the new default settings for this category. Any existing assignments will keep their original settings; if you want to change the settings of an existing assignment, edit that assignment specifically. If you want to change the settings for multiple existing assignments, consider creating a new category, and copying those assignments to that category. When you create new assignments and select the category where you've made the adjustments, you will have the same time limit applied to any new assignment in this category. When you create new assignments in a timed quiz category, you may need to customize your time limit setting as needed based on the amount of questions you add to the quiz or test.

## Step-by-Step Directions: Pooled Assignments, Timed Quizzes, and Security Settings



[Create a Timed Assignment](#)

[Create a Pooled Assignment](#)

[Discourage Cheating with Mastering Features](#)

[Adjust Settings per Student](#)



[Create New Assignment Category and Timed Quiz](#) [2 min 34 seconds]

[Create a Pooled Assignment](#) [2 min 40 seconds]

[Mastering Security Features](#) [2 min 33 seconds]

## Lesson 5: Create an Assignment to Assess Student Learning Outcomes

*“The student learning outcome data gathered in MasteringA&P help me improve my craft as a teacher. By continually evaluating course results and student attainment of learning outcomes, I engage in a cycle of reflection and improvement that ensures that I’m meeting my course learning objectives.”*

*Submitted by Lourdes Norman-McKay, Ph.D. Florida State College at Jacksonville*

Learning outcomes help you assess student skills and understanding, based on assignment results. Quantifiable and reportable learning outcomes help you assess student understanding or skills. In Mastering, you can specify learning outcomes for items in your assignments. You can also view and export student learning outcome results. To read about some department’s experiences with learning outcomes, click on these links:

- [Butler University](#)
- [Florida State College at Jacksonville](#)
- [Santiago Canyon College](#)

Learn about Publisher-provided Learning Outcomes or Create Your Own Learning Outcomes

To get started, view a list of the publisher-provided learning outcomes or create your own learning outcomes by going to the **Course Settings**.

The screenshot shows a portion of a software interface with three main sections:

- Section Instructors**: Contains a link [+ Manage Section Instructors](#) and the text "None".
- Learning Outcomes**: This section is highlighted with a red border. It contains the text "Learning outcomes help you assess student understanding and skills, based on assignment results." followed by a help icon. Below this is a link [Show Me the List of Learning Outcomes Provided for this Course](#) (depends on the book selected during course creation) and another link [+ Add/Edit My Learning Outcomes](#).
- Display Settings**: Contains the question "Display Grades as Points or Percentages?" with two radio button options:  Points and  Percentages.

Some courses have publisher-provided learning outcomes automatically provided and assigned to items. This is a great time saver as you can search for items by learning outcome when creating your assignments.

If you prefer to add your own student learning outcomes, you can add them to any questions you assign within Mastering. You can also copy your Learning Outcomes from Another course by clicking **Copy My Learning Outcomes from Another Course**.

[+ Add New Learning Outcome](#)   [Copy My Learning Outcomes from Another Course](#)

MY LEARNING OUTCOMES	# OF ITEMS	REMOVE
Students will understand 5 key observations and why each was so important to establishing a ...	4	<input type="checkbox"/>
Students will understand the key work done by ..... in the development of the science.	4	<input type="checkbox"/>
Students will understand the key pieces of evidence that support the theory of .....	23	<input type="checkbox"/>
Students will understand the process of science, illustrated through specific examples	14	<input type="checkbox"/>
<input type="text"/>	0	<input type="checkbox"/>

     [Cancel](#)

Below we will talk about how to create an assignment based on the publisher-provided learning outcomes as well as how to add your own learning outcomes to items within your assignments.

## Create an Assignment to Assess Learning Outcomes

During the assignment creation process, you can select content based on publisher-provided learning outcomes. In **Select Content**, filter the display by **Learning Outcomes**. Make sure you are in the correct Book/Source and Chapter.

Create/Edit Assignment: *Chapter 1 Reading Quiz*

1 Start — 2 **Select Content** — 3 Organize Content — 4 Specify Outcomes — 5 Preview and Assign —

[+ C](#)

<p>Book/Source: <span>Marieb/Hoehn, Human Anatomy and Phys</span></p> <p>Chapter: <span>5 The Integumentary System</span></p> <p>Display By: <span>Learning Outcomes</span></p> <p>Learning Outcomes: <span>Section</span></p> <p style="background-color: #007bff; color: white; padding: 2px;">Learning Outcomes</p>	<p><b>Publisher Items</b></p> <p><input checked="" type="checkbox"/> Activities      <input checked="" type="checkbox"/> Coaching Activities</p> <p><input checked="" type="checkbox"/> Reading Questions      <input checked="" type="checkbox"/> Test Bank</p>
--	--

153 items found (To sort, click any column heading)

ASSIGN	ITEM TYPE	TITLE <a href="#">[Hide Descriptions]</a>	TIME	DIFFICULTY (5-hardest)
<input type="checkbox"/>	-	Global: Demonstrate the ability to think critically and employ critical thinking skills.		
<input type="checkbox"/>	Reading Questions	<a href="#">Chapter 5 Homeostatic Imbalance Question 1</a> (a) The source of the fluid that accumulates in a blister is _____.	1m	2

From here you can see a list of the publisher-provided learning outcomes for that chapter and select one specifically as needed.

### Create/Edit Assignment: Chapter 1 Reading Quiz

1 Start — 2 **Select Content** — 3 Organize Content — 4 Specify Outcomes — 5 Preview and Assign

[+ Create New Item](#) [+ Import](#)

Book/Source: Marieb/Hoehn, Human Anatomy and Phys  
 Chapter: 5 The Integumentary System  
 Display By: Learning Outcomes  
 Learning Outcomes: All

**Publisher Items**  
 Activities  Coaching Activities  
 Reading Questions  Test Bank

**My Items**  
 My Items

153 items found

**Global: Demonstrate the ability to think critically and employ critical thinking skills.**

5.1 Name the tissue types composing the epidermis and dermis. List the major layers of each and describe the functions of each layer.  
 5.2 Describe the factors that normally contribute to skin color. Briefly describe how changes in skin color may be used as clinical signs of certain disease states.  
 5.3 List the parts of a hair follicle and explain the function of each part. Also describe the functional relationship of arrector pili muscles to the hair follicles.  
 5.4 Name the regions of a hair and explain the basis of hair color. Describe the distribution, growth, replacement, and changing nature of hair during the life span.  
 5.5 Describe the structure of nails.  
 5.6 Compare the structure and locations of sweat and oil glands. Also compare the composition and functions of their secretions.  
 5.7 Compare and contrast eccrine and apocrine glands.  
 5.8 Describe how the skin accomplishes at least five different functions.  
 5.9 Summarize the characteristics of the three major types of skin cancers.  
 5.10 Explain why serious burns are life threatening. Describe how to determine the extent of a burn and differentiate first-, second-, and third-degree burns.  
 5.11 Describe and attempt to explain the causes of changes that occur in the skin from birth to old age.

Once you select items for the assignment based on specific publisher-provided learning outcomes, you can confirm this information in **Specify Outcomes** or add your own learning outcomes to items.

1 Start — 2 Select Content — 3 Organize Content — 4 **Specify Outcomes** — 5 Preview and Assign

To see student results organized by learning outcomes, choose learning outcomes to associate with these items. [Learn more.](#)

Not using learning outcomes? [Skip this step.](#)

Hide Provided Learning Outcomes [+ Add/Edit My Learning Outcomes](#)

ITEM <a href="#">[Show Descriptions]</a>	LEARNING OUTCOMES
<a href="#">Chapter 1 Chapter Test Question 1</a>	1.1 Define anatomy and physiology and describe their subdivisions. <span>Choose...</span>
<a href="#">Chapter 1 Reading Quiz Question 10</a>	1.2 Explain the principle of complementarity. <span>Choose...</span>
<a href="#">Art-labeling Activity: Figure 1.1</a>	1.3 Name the different levels of structural organization that make up the <span>Choose...</span>
<a href="#">Chapter 1 Chapter Test Question 5</a>	
<a href="#">Art-labeling Activity: Figure 1.2</a>	
<a href="#">Chapter 1 Chapter Test Question 7</a>	
<a href="#">Art-labeling Activity: Figure 1.4</a>	

**My Learning Outcomes**

Demonstrate scientific literacy and apply it to contemporary health care issues.  
 Describe and analyze biological issues in the media  
 Interpret and use graphs and diagrams

**Learning Outcomes**

1.3 Name the different levels of structural organization that make up the human body, and explain their relationships.

Save Cancel

## Add Your Own Learning Outcomes to Your Assignments

Once you have created the learning outcomes for your course, you can now associate specific assignments and items to your own learning outcomes. This is done through the **Specify Outcomes** section of the Assignment Creation or Editing process.

Create/Edit Assignment: *Chapter 1 Assignment*

1 Start — 2 Select Content — 3 Organize Content — **4 Specify Outcomes** — 5 Preview and Assign

Assignment Title:  
Chapter 1 Assignment

Category: Homework [Add/Edit Categories](#)

Grading and Presentation Settings:  
[\[ Edit Settings \]](#) Default settings have been applied based on the category selected above.

Staff Notes:  
(Visible only to instructors and section instructors)

[Cancel](#) [Save](#) [Continue »](#)

Here you can uncheck the publisher-provided outcomes or check your learning outcome (s).

<a href="#">Art-Labeling Activity: Figure 1.1</a>	1.3 Name the different levels of structural organization that make up the	<a href="#">Choose...</a>
<a href="#">Chapter 1 Chapter Test Question 5</a>	<p><b>My Learning Outcomes</b></p> <p><input checked="" type="checkbox"/> Demonstrate scientific literacy and apply it to contemporary health care issues.</p> <p><input type="checkbox"/> Describe and analyze biological issues in the media</p> <p><input type="checkbox"/> Interpret and use graphs and diagrams</p> <p><b>Learning Outcomes</b></p> <p><input type="checkbox"/> 1.3 Name the different levels of structural organization that make up the human body, and explain their relationships.</p> <p><a href="#">Save</a> <a href="#">Cancel</a></p>	
<a href="#">Art-Labeling Activity: Figure 1.2</a>		
<a href="#">Chapter 1 Chapter Test Question 7</a>		
<a href="#">Art-Labeling Activity: Figure 1.4</a>		
<a href="#">Chapter 1 Chapter Test Question 10</a>	1.8 Describe how negative and positive feedback maintain body homeostasis.	<a href="#">Choose...</a>

If you need to add or revise any learning outcomes, from this view, click **Add/Edit My Learning Outcomes**. This opens the same page available from Course Settings.

**Note:** Consider whether your assessment of learning outcomes should be based on **one** or **multiple** attempts. If just one attempt is desired, consider using the Quiz assignment category, which gives students only one answer attempt without Hints.

For greatest accuracy in the learning outcome data, try to have 100% of your students complete the assignment.

## View or Export Learning Outcomes

To view, click on **Gradebook**, then **View Learning Outcomes Summary**.

Gradebook


[Manage](#) [View Learning Outcomes Summary](#)

Filter ▾ Showing Score in All Categories for All Students

Score Time Difficulty

Students per page: 100 ▾

NAME	STUDENT ID	Ch 8	Ch 9	Ch 23	Ch 24	Evolution	Ch 29	Ch 30	Ch 35	TOTAL
Essays										
Class Average		88.4	78.5	78.9	--	48.6	79.5	53.2	11	28.6
Last01, First0...	student1	0.0	87.4	97.5	--	68.9	94.6	98.9		31.1









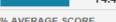







Overall student results for each learning outcome will be displayed. Click  to view the details for each specific learning outcome, including which assignments and items related to that outcome. For each item, Mastering displays the percent complete and the percent average score.

### Learning Outcomes Summary

The list below contains learning outcomes specified for items assigned in this course. The initial order reflects the sequence of outcomes as they appear in assignments, but you can sort them by any column. [Learn more about using learning outcomes.](#)

Hide Provided Learning Outcomes

[Print](#) [Export](#)

#	LEARNING OUTCOMES	# OF ITEMS	% COMPLETE	% AVERAGE SCORE
1	 Identify how common techniques of microscopy and biochemistry are used in cell biology.	2	0.0	--
2	 Use examples to illustrate each theme of this book.	4	0.0	--
5	 Explain how hydrogen bonding results from polar covalent bonds.	1	0.0	--
32	 Trace the pathway of glucose oxidation during glycolysis.	2	0.0	--
33	 Describe the oxidation of pyruvate and the process by which further oxidation occurs in the citric acid cycle.	2	0.0	--
7	 Identify the steps of oxidative phosphorylation and account for the total ATP produced per glucose molecule during cellular respiration.	11	27.3	 74.9
46	 Discuss the scientific process.	1	84.2	 74.4
47	 Global: Demonstrate the quantitative skills needed to succeed in Introductory Biology.	1	84.2	 74.4
	ASSIGNMENTS	ITEMS	% COMPLETE	% AVERAGE SCORE
	Lab 2	<a href="#">GraphIt!: An Introduction to Graphing</a>	84.2	 74.4
9	 Global: Demonstrate the ability to think critically and employ critical thinking skills.	4	47.4	 75.5
14	 Global: Read and interpret graphs and data.	2	86.8	 77.9

By default, learning outcomes are listed sequentially according to the assignment due date to help you track student progress throughout the semester. You can click any column heading to sort data by that column. No learning outcomes are displayed until students enroll in the course. For pooled assignments, outcomes and results are displayed based on the items that are actually assigned from the pool.

In the detailed view for each learning outcome, click an assignment title to view the assignment. Click an item title to see student responses for the particular item.

#### Learning Outcomes Summary

The list below contains learning outcomes specified for items assigned in this course. The initial order reflects the sequence of outcomes as they appear in assignments, but you can sort them by any column. [Learn more about using learning outcomes.](#)

Hide Provided Learning Outcomes

[Print](#) [Export](#)

#	LEARNING OUTCOMES	# OF ITEMS	% COMPLETE	% AVERAGE SCORE
1	+ Identify how common techniques of microscopy and biochemistry are used in cell biology.	2	0.0	--
2	+ Use examples to illustrate each theme of this book.	4	0.0	--
5	+ Explain how hydrogen bonding results from polar covalent bonds.	1	0.0	--
32	+ Trace the pathway of glucose oxidation during glycolysis.	2	0.0	--
33	+ Describe the oxidation of pyruvate and the process by which further oxidation occurs in the citric acid cycle.	2	0.0	--
7	+ Identify the steps of oxidative phosphorylation and account for the total ATP produced per glucose molecule during cellular respiration.	11	27.3	74.9
46	+ Discuss the scientific process.	1	84.2	74.4
47	- Global: Demonstrate the quantitative skills needed to succeed in Introductory Biology.	1	84.2	74.4
	ASSIGNMENTS		% COMPLETE	% AVERAGE SCORE
	<a href="#">Lab 2</a>		84.2	74.4
	ITEMS		% COMPLETE	% AVERAGE SCORE
9	+ Global: Demonstrate the ability to think critically and employ critical thinking skills.	4	47.4	75.5
14	+ Global: Read and interpret graphs and data.	2	86.8	77.9
36	+ Identify the parts of the endomembrane system and describe their roles in the cell.	1	100	80.3
40	+ Describe the process of active transport.	1	94.7	80.6
15	+ Use examples to show how evolution is supported by scientific evidence.	1	89.5	81.4
19	+ Characterize osmosis and their life cycles.	2	89.5	84.4

You can print and export the data in this report. Decide whether you want to hide the publisher-provided learning outcomes for your printout or export.

Exports available include:

- **Summary** exports high-level data for each learning outcome.
- **Item Details** exports data for each assignment item that is associated with every outcome.
- **Student Item Details** exports every student's score for each item associated with every learning outcome.

See the table with a comparison of the data exported for each student learning outcome report in .csv format.

Data column	Summary	Item Details	Student Item Details
First Name			✓
Last Name			✓
Student ID			✓
Username			✓
Email			✓
Group(s)			✓
#	✓		
Type	✓	✓	✓
Learning Outcome	✓	✓	✓
# of Items	✓		
Assignment		✓	✓
Item		✓	✓
% Complete	✓	✓	
% Avg Score	✓	✓	
% Score			✓

## Step-by-Step Directions



[Create and Assess Learning Outcomes](#)



[Create/Assign Learning Outcomes](#) [3 minutes 10 seconds]



Pearson

## Lesson 6: Copy Assignments

You can copy assignments from a standard Mastering course into a Modified Mastering course (and vice versa), as easily as you can copy assignments between two Mastering courses or between two Modified Mastering courses.

Examples of why you might want to copy assignments into another course are listed below:

- You are transitioning to a new edition of the textbook but want to preserve some of your past assignments.
- You are transitioning from Mastering to Modified Mastering (or vice versa).
- You are teaching two or more classes that are unique enough that copying an entire course would not be beneficial, but you want some shared assignments.
- You are using assignments created by another instructor but do not want to copy the instructor's entire course.
- You have a need to use a few Pre-built Assignments from the publisher (if available) but you do not want to copy a Pre-built course (or one is not available.)

### Copy an Assignment to/from Other Courses

Before you can make copies between Modified Mastering and Mastering, you must have access to both websites with the same login information. Contact your sales representative if you need access to Mastering or Modified Mastering.

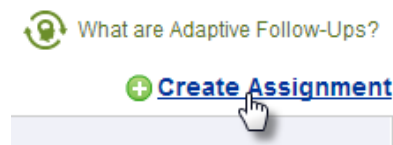
To get started, take a moment to look at the category and settings of the assignment you are copying. To ensure that grading and weighting for the assignment in the other courses stays the same, make sure the same category already exists in the receiving course, with the same weighting if you apply weighting to your categories. If the same category doesn't exist in the receiving course, a copied assignment will be posted to the first category alphabetically and its grading and presentation settings will match that category. Also, the copied assignment will use the settings of the category in the receiving course. If the

original course had special settings for the assignment that are different from those in the receiving course, they will default to the settings of the receiving course.

You can move assignments either from the receiving course or the original course. You might find one option better than the other based on the task you are trying to perform. For example, if you are copying an assignment into multiple courses at once, you will want to do this through the original course. If you are pulling many assignments from various locations into one new course, you will find it easier to work from the new course.

## Option 1: Copy assignments from the Receiving Course

From the Assignments area of the receiving course, click **Create Assignment**.



Choose whether to copy assignments from one of your courses or copy pre-built assignments from the publisher (if available).

Create an Assignment

Do you want to create or copy an assignment?

Create a New Assignment

Copy an Assignment from one of My Courses

Copy a Pre-Built Assignment from the Publisher

Copy a Pre-Built Assignment from the Publisher:

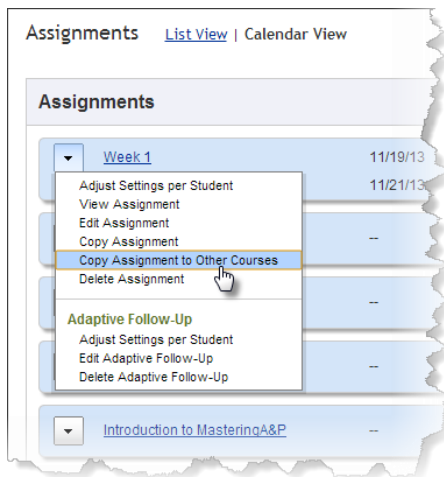
1. Select an Assignment Type:

[Cancel](#)

Once the assignment has been copied, you can edit settings and assign Dates.

## Option 2: Copy Assignments from within the Original Course

From the assignment drop down menu in the original course, select **Copy Assignment to Other courses**.



You see a list of all the active courses in which you can edit assignments, either your own courses or other instructors' courses in which you can create and change assignments. Select the other course(s) where you want to post this assignment.

### Copy Assignment: *Week 1*

Due: 11/19/13 at 11:59pm

Available to Students: 11/12/13 at 11:59pm - 05/24/14 at 11:59pm

Select the other courses where you want to post this assignment. For those courses, you can change the assignment's title and dates below, if desired. Note that if you edit this assignment later, the changes will not be automatically updated in the other courses you select. [Learn more.](#)

SELECT	COURSE ID	COURSE TITLE	COURSE END DATE	ASSIGNMENT TITLE	ASSIGNMENT DUE DATE/TIME
<input checked="" type="checkbox"/>	MYLASTNAMEFALL2013AP1	Anatomy and Physiology I	12/20/13	Week 1	11/19/13 at 11:59pm
<input type="checkbox"/>	ouellette83708	Mastering A&P	12/23/13		
<input type="checkbox"/>	LASTNAMEFALL2013BIO131	Your First Course	12/23/13		
<input checked="" type="checkbox"/>	UBANATOMYFALL2013	UB Human Anatomy	12/24/13	Week 1	11/19/13 at 11:59pm

**Tip:** If you want to copy the same assignment to all courses, just click the **Select** box at the top of the column.

Once you have selected the destination course(s), you can now change the copied assignment's title and dates, if desired. If you are copying an assignment that other instructors will preview before making it available to students, make sure the assignment has no dates before you copy it, or remove its dates as you copy it.

ASSIGNMENT TITLE	ASSIGNMENT DUE DATE/TIME	AVAILABILITY TO STUDENTS
Week 1	11/19/13 at 11:59pm	From: 11/12/13 at 11:59pm Until: 12/20/13 at 11:59pm

### Notes on Copied Assignments

- You can copy an assignment only to courses whose end date has not passed.
- If you edit the original assignment later, the changes are not automatically updated to the copied assignments.

## Copy within Your Course

You can copy assignments within your course simply by clicking on the copy option found in the drop down menu of each assignment.

The screenshot shows the 'Assignments' section of a course management interface. A dropdown menu is open for the assignment 'Pre-Lecture Assignment 1.2' (due 01/10/14). The menu options are: Adjust Settings per Student, View Assignment, Edit Assignment, Copy Assignment (highlighted), Grade Essays, Add Adaptive Follow-Up, and Delete Assignment. Other assignments visible include '1.3' (due 01/13/14) and '2.1' (due 01/15/14). At the bottom, there is a link for 'Introduction to MasteringPhysics' (due 01/15/14).

## Republished items

The items in copied assignments remain true to their original textbook edition. They do not default to different item content that may be available for a new edition of the book. When you choose a new edition of a textbook,, items available in the Item Library may contain updated content, even if the item name is the same as in the previous edition. For example, a part question might be different. Some textbooks have a correlation grid to show which items have changed between editions. Check under Learn More on the Course Home page to see if a grid exists for your book.

Any publisher corrections or enhancements are included when you copy assignments. Mastering automatically updates publisher items in the copied assignment to include any fixes and improvements made since the time the original assignment was created. (The original assignment does not get updated.) These publisher corrections are applied to items based on the same edition text. If, instead, you prefer to keep an exact copy of an assignment item in another course, make a copy of the item and assign the copy, or customize it for your students.

[Characteristics of copied republished items](#)

### Step-by-Step Directions



#### [Copy Assignments](#)



#### [Create or Copy an Assignment](#) [1 minute 30 seconds]

#### [Copy an Assignment to Multiple Courses](#) [1 minute 52 seconds]

## Lesson 7: Manage Assignments Effectively on the Calendar

You can set and edit assignment dates for the entire course from the Assignments page. This can be handy if you have copied a course and need to set new dates for multiple assignments. With the calendar view, you can map out your entire semester. Setting dates for assignments even before students enroll provides the advantage of displaying all assignments in the Mastering Gradebook, and enabling you to align the total points for Mastering assignments with your syllabus.

To edit multiple due dates in the Calendar View, drag each unscheduled assignment to a due date. In necessary, advance the calendar to the month in which you want one or more assignments to be due.

When you drop the assignment onto the date, you can edit its dates in detail. Fill in fields and click **Save**.

- To avoid student confusion over 12 AM and 12 PM, assignments are available and due at 11:59 PM by default.
- The default date when an assignment becomes available is a week before it's due.
- The default available "until" date matches the course end date. Consider accepting this date so students can review the assignment later.

### **Notes on Using the Assignments Calendar**

- *Assignments with existing due dates are displayed on the calendar.*
- *Regular assignments (homework, quizzes, and so on) that are not yet due look blue on the calendar. Adaptive Follow-Up assignments look green on the calendar. Dynamic Study Module assignments look orange on the calendar.*
- *All past due assignments appear gray on the calendar.*
- *You can drag an assignment to a new due date within the calendar.*
- *When you point to an assignment in the Calendar view, you see its status, when it's available to students, its due date, and its category.*

## **Step-by-Step Directions**




[Use the Assignment Calendar](#)



[Preview Assignment and Assign Due Dates](#) [1 min 55 seconds]

## Lesson 8: Import, Create, or Customize Content for Assignments

In addition to using publisher-provided content, you can add your own items to the course's Item Library by editing, creating, and importing your own assignable items. In Mastering, these are known as  My Items.

*Note: To learn about strategies on using the Enhanced Simple Editor, sign up for the Online Training workshop called [Strategies for Using the Enhanced Simple Editor](#).*

### Edit or Create content using the Simple Editor

Before you begin: The Simple Editor uses pop-up windows for some of its features. To access all of its features, please set your browser security to allow pop-ups (from [itemedit.mastering.pearsoncmg.com](http://itemedit.mastering.pearsoncmg.com)). More about [finding and turning off pop-up blockers](#).

Reasons to create and edit your own items:

- Combat cheating. You can change the wording of the problems enough that students would have a difficult time finding the solution online.
- Focus your Students on what you want covered. You can write problems that emphasize the material you emphasize in class.
- Add more layers of help. You can add your own hints written in your style.

You can make the following edits to items using the Simple Editor:

- Change the structure of an item. Add, delete, or reorder parts, hints, and transitions.
- Edit part content, including question text and instructions, answers, wrong answer feedback, and follow-up text.
- Revise and format text. Add and edit hyperlinks and tables.
- Copy and paste (text, links, or tables) between text boxes within an item or between items, including items in different Mastering products. For images and media, copy and paste within an item.

- Add images and media, including playlists.
- Add variables to vary item content.
- Edit column display and math settings for an item.
- Adjust tolerance and significant figures for numeric and symbolic answers.

The following question types are supported in the simple editor: multiple choice, multiselect, essay, numeric value or symbolic expression, numeric value with units of measurement, chemical formula or expression, and simple text input.

To edit an item, go to **Manage this Item>Copy and Edit Item**.

Item Type: Reading Questions | Difficulty: 2 | Time: 1m | [Learning Outcomes](#) | [Contact the Publisher](#) | Manage this Item: Standard View

Chapter 3 Reading Quiz Question 10

Part A

What molecules are formed when two simple sugars are linked?

- methane and a disaccharide
- a disaccharide
- water and two different sugars
- water and a disaccharide

[Submit](#) [Hints](#) [My Answers](#) [Give Up](#) [Review Part](#)

Standard View  
Standard View  
Solution View  
Comments View  
Print View  
-----  
Restart Work  
Copy and Edit Item

Simple Editor:

Edit Item [Open Advanced Editor](#) [Save & Preview](#)

Chapter 1 Chapter Test Question 1 - Copy

Description Not seen by students

[[Bloom's Taxonomy: Knowledge/Comprehension]] (a) Which of the following best defines anatomy?

INTRODUCTION

Learning Goal

Mobile ready items: You can use the Simple Editor to edit or create mobile-ready items authored with the above answer types, with the exception of essay questions. [Guidelines for mobile-ready content](#) (includes requirements and restrictions)

To create answer types other than what is editable with the Simple Editor, you must use the Advanced Editor.

When is the Advanced Editor used instead of the Simple Editor?

- Create question content with answer types other than the ones listed in section above, "Use the Simple Editor to create these kinds of questions".
- Add and edit any subhints (A subhint is a hint inside of another hint.)
- Add and edit links to the eText (You can delete eText links with the Simple Editor.)

Use this [Advanced Editor Guide](#) to walk you through the steps.

## Step-by-Step Directions



[Simple Editor Online Help](#)



[The Simple Editor: Basics](#) [2 min 38 seconds]

[The Simple Editor: Add Hints, Hyperlinks, Images, and Tables](#) [1 min 53 seconds]

[The Simple Editor: Randomization](#) [7 min 07 seconds]

## Import Content

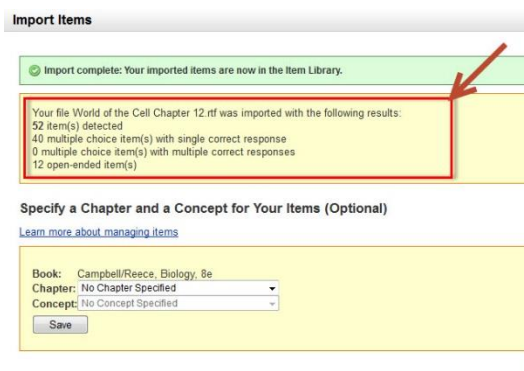
Use the [import requirements and guidelines](#) information found in the Help Menu to prepare your file for import.

You can import files that are 6 MB or less. If a file is larger than 6 MB, do one of the following:

- Break it into several files and import each one separately.
- Save the file in .zip format. If the .zip file is less than 6 MB, then you can import it.

The Import Tool creates one item in the Item Library for each question/answer set in a file. By default, item names are the name of the imported file, followed by a three-digit number (for example, filename-001 filename-002, and filename-003). If you import a file more than once, items have the same name in the library as those originally imported, but the originals are not overwritten.

To import your prepared files go to the Item Library, click on Import Items and follow the instructions. When the import is complete, the system displays the number and type of items imported.



**Import Items**

Import complete: Your imported items are now in the Item Library.

Your file World of the Cell Chapter 12.rtf was imported with the following results:  
52 item(s) detected  
40 multiple choice item(s) with single correct response  
0 multiple choice item(s) with multiple correct responses  
12 open-ended item(s)

**Specify a Chapter and a Concept for Your Items (Optional)**  
[Learn more about managing items](#)

Book: Campbell/Reece, Biology, 8e  
Chapter: No Chapter Specified  
Concept: No Concept Specified

Save

*Note: For security reasons, some browsers display a message with "fakepath" and "filename.rtf" instead of the real path and file name: "Your file c:\fakepath\filename.rtf is being imported. Please wait." The file should be imported correctly. This message does not indicate a problem.*

## Step-by-Step Directions



[Import your own content items](#)



[Import Content](#) [2 min 45 seconds]

## MODULE 6: USE ADAPTIVE LEARNING FOR A PERSONALIZED STUDENT LEARNING EXPERIENCE

Let's briefly provide some basic information around what adaptive learning is and why is it important.

- A one-size-fits-all approach can lead to frustration, difficulties in learning, and low retention rates
- Adapting to learners differences can lead to:
  - 1) improved learning outcomes
  - 2) increased efficiency (effort and time required)
  - 3) higher learner satisfaction
- Learner differences include:
  - prior knowledge, learner aptitudes, cognitive abilities, affective states, current learning context/situation

A common perspective is that adaptive learning is the ability of a learning system to automatically provide different courses, learning material, or learning activities for different learners. From a broader perspective, adaptive learning technologies provide an environment that intelligently adjusts to a learner's needs by presenting suitable information, instructional materials, feedback, and recommendations based on one's unique individual characteristics and situation.

Mastering has always been adaptive to some extent with answer-specific feedback in the tutorial and coaching activities. Additional adaptive learning features have been added to provide even more individualized remediation based on objective mastery.

Adaptive Follow-Up Assignments are based on each student's past performance on their course work to date, including homework, tests, and quizzes. The Follow-Ups provide additional coaching and targeted practice as needed, so students can master the material.

Dynamic Study Modules help students study effectively on their own by continuously assessing their activity and performance in real time. Here's how it

works: students complete a set of questions with a unique answer format that also asks them to indicate their confidence level. Questions repeat until the student can answer them all correctly and confidently. Once completed, Dynamic Study Modules explain the concept using materials from the text.

## Lesson 1: Use Adaptive Follow-Ups

Adaptive Follow-Up assignments aid the detection of concept gaps and provide an opportunity for personalized learning and remediation. The Adaptive Follow-Ups recommendation engine considers the following factors: student performance on the parent homework and all previous work in the course including prerequisite concepts, difficulty of items, time the student spent on each item, concepts covered earlier that a student may have forgotten, urgency that focuses questions on what students need to know \*now\*, and what items were most helpful to other students on the topic.



### [What are Adaptive Follow-Up Assignments?](#) [1 min 48 seconds]

Click to learn [how the Knewton recommendations work](#). Adaptive Follow-Ups are available for select titles in biology, anatomy and physiology, chemistry, and physics. To find out if your textbook has Adaptive Follow-Ups, look in your Mastering course or check on the Mastering discipline website under Titles Available.

Learn more about an implementation of Adaptive Follow-Ups at [Collin College](#), where there was an increase in exam scores observed. Student feedback indicated that Adaptive Follow-Ups were beneficial in mastery of concepts and motivated them to work harder on the Parent assignment.

## Best Practices for Adaptive Follow-Ups

- **Keep as many items available as possible in the pool for the Adaptive Follow-ups by doing the following:**
  - i. Delete assignments that will not be used in the course. Items in unscheduled, extraneous assignments are not available to be recommended in the Adaptive Follow-ups.

- ii. If you add publisher-built assignments when creating a course, delete any individual assignment(s) and/or remove any questions within those assignments that you don't plan to use.
- **Sequester items that you do not want students to see in the Adaptive Follow-Up.** Adding them to an unscheduled assignment ensures they will be off-limits to the Adaptive Follow-ups.
  - **If you are using category weighting, make all the Follow-Ups either regular credit or extra credit.** Do not mix credit types.
  - **Like any other assignment, the Adaptive Follow-Ups have a particular/specific grade value which you as the instructor set.** The point value cannot '*vary per student*'.
  - **Students cannot access the Follow-Ups until after they have completed the Parent assignment, or after the Parent assignment due date.**
  - **You can select the “Test Out” option and allow your high performing students to get full point value without having to do the assignment.** You set the performance level; default is 95% or better. This is a useful motivator to encourage students to do well initially on the Parent assignment.
  - **Consider warning students not to leave working on the Parent assignment until the last minute.** If they rush through it and do poorly, they could face more Follow-Up work. You can add a note in the Parent Assignment or post an announcement.
  - **Assign the AFU as soon as possible after the parent assignment so as to address the student misconceptions right away, before they take hold.**
  - **You might want to reconsider the due dates for Parent assignments to allow time for the individual Follow-Up work.** Give your students at least 1 day (24 hours) so they have enough time to complete the Adaptive Follow-Up but not too much time so that their misconceptions take root. We recommend 2 days.
  - **Some content has been automatically excluded from Adaptive Follow-Ups.** These questions have been tagged so that student performance on Parent

assignments is fully understood and captured, but these items will not appear in the Follow-Up assignments.

- Test bank questions
- Items with essay parts
- Math Review and Chemistry Review items
- “Challenge” End-of-Chapter questions
- **On the calendar of the course homepage and in the Gradebook, Adaptive Follow-Ups show up in green so they are easy to distinguish from other assignments.**

## Design Your Parent Assignment to have an Optimal Student Adaptive Follow-Up Experience

- **Select [publisher items](#) from the main textbook and the current edition’s Item Library.** Only these items provide necessary information for Mastering’s continuously adaptive learning. If you have copied an assignment that was created with an earlier edition of your course’s textbook, be sure to replace items with the [latest published version](#) of each item.
- **Make sure you pair any of your “My Items” with publisher items, if you intend to assign an Adaptive Follow-Up.** The only way to ensure that the Follow-Up will remediate the topics covered by “My Items” is to also include publisher items that assess the same topic.
- **Consider trimming down your Parent homework a bit to compensate for the extra time taken to complete the Adaptive Follow-Ups (approximately 15 minutes worth of content for each question set.)**
- **Consider creating your Parent homework with the “end result” learning in mind using higher-level questions.** The Adaptive Follow-Up can cover basic, knowledge-based questions and address any identified gaps.
- **Consider giving a test prep assignment that covers the full breadth of material on an upcoming exam and pairing those with Adaptive Follow-Ups to help personalize exam prep.**

- **The Grading and Presentation Settings for the Parent assignment do not affect the [settings for the Adaptive Follow-Up](#).** The Adaptive Follow-Ups never affect the grade on the Parent assignment. Instead, each is a separate item in the grade book.
- **If you keep the Parent Assignment Title short, the Adaptive Follow-Up title, which is based on the Parent title, will be shorter, too.** Your Adaptive Follow-Up title will be the same as the Parent Assignment title with “Adaptive Follow-Up” added at the end.
- **If you plan to [pool the Parent assignment](#) (which gives each student a random subset of items), be sure you have selected enough qualified publisher items to ensure that each student is given at least one such item.**
- **After you have added a Follow-Up, avoid making any changes to the items you have selected.**

## Add an Adaptive Follow-Up to an Assignment

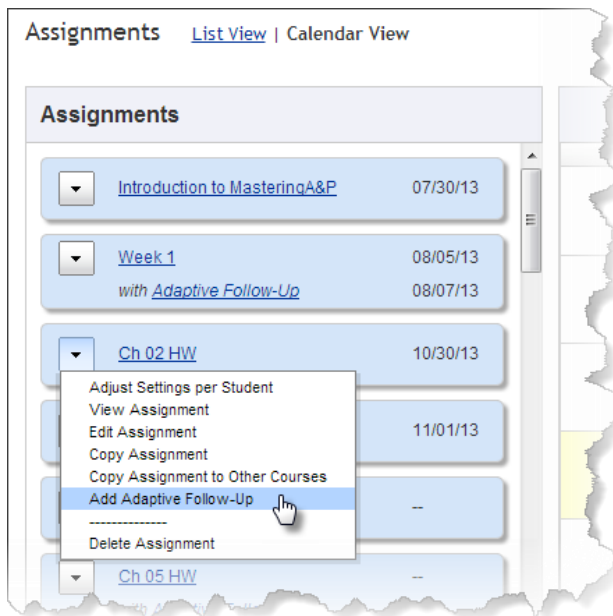


### [Assign Adaptive Follow-Ups](#) [3 min 38 seconds]

In courses that provide Knewton adaptive learning, the option to add an Adaptive Follow-Up assignment is available for any Mastering assignment that doesn't already have an Adaptive Follow-Up. Any assignment with an Adaptive Follow-Up is called the "Parent" assignment. A Parent assignment can be in any category such as homework, quizzes, or tests.

You can add an Adaptive Follow-Up before or after you schedule the Parent assignment, or before or after students begin work on the Parent. The advantage of adding the Follow-Up before students begin work on the Parent is that the Follow-Up is assembled and presented to students as soon as they finish the Parent, before misconceptions take root.

Select **Add Adaptive Follow-Up** for a given Mastering assignment.



Alternatively, you can add an Adaptive Follow-Up during the assignment creation process. Enter the Parent assignment due date and availability then select **Yes! I want to add an Adaptive Follow-Up assignment** check box.

1 Start — 2 Select Content — 3 Organize Content — 4 Specify Outcomes — 5 Assign and Add Follow-Up


**Preview**  
Before assigning, you can [preview the assignment in the student view](#).

**Assign**

Due Date/Time:  Availability to Students: From:  Until:

Assign To Groups:  
(no groups)

**Continuously Adaptive Learning**  
Harness the power of Mastering's content paired with Knewton's adaptive learning engine to provide personalized help to your students before misconceptions take hold.  
Set the options below, and content will be automatically selected for each student to target his or her areas of weakness. [Learn more](#)

 View Student Demo

**Yes! I want to add an Adaptive Follow-Up assignment**  
Check the box and fill out the information in the form below.

Title: Parent Assignment 1 Adaptive Follow-Up

Length:  question set(s), based on student need. (1 question set = approximately 15 minutes)

Total Points:  credit  [ [Grading Settings](#) ]

Due:  days after the Parent assignment is due.

## Tips about the Adaptive Follow-Up Settings

- The initial default settings for the Adaptive category are selected to emphasize learning. If you keep the defaults, you can set the number of points you want to give for doing the Adaptive Follow-Up assignment.

Yes! I want to add an Adaptive Follow-Up assignment  
Check the box and fill out the information in the form below.

Title: Parent Assignment 1 Adaptive Follow-Up

Length: 3 question set(s), based on student need. (1 question set = approximately 15 minutes)

Total Points:  credit [\[ Grading Settings \]](#)

Due: 2 days after the Parent assignment is due.

Test Out:  Allow students to test out of this Adaptive Follow-Up.  
95% or higher on the Parent assignment grants full points for the Adaptive Follow-Up.

Use the above options as defaults for new assignments in the Adaptive category.

- When you create an Adaptive Follow-Up Assignment, then they are automatically in the Adaptive Category. Default settings for Adaptive Assignments in the Adaptive Category include 3 Question Sets due 2 days after the Parent Assignment with a Test Out of 95% or above. With the default setting, points are blank until you add them.
- It is recommended to make Adaptive Follow-Up Assignments for credit or extra credit. Most students won't do optional (practice items) because they are not worth points.

If you want to change the Adaptive Follow-Up settings options, then you can adjust length, total points, due, and test-out. If you click **Grading Settings**, you can also penalize for late submissions, limit attempts, edit deductions, and edit hint settings.

**Length** – Maximum number of question sets any student will be given. Each question set includes one or more items, and is designed to take a student about 15–20 minutes, based on Mastering item-duration data. Actual time to complete will vary by student. Initial settings for the Adaptive category: 3 question sets

**Yes! I want to add an Adaptive Follow-Up assignment**  
Check the box and fill out the information in the form below.

**Title:** Parent Assignment 1 Adaptive Follow-Up

**Length:** 4 question set(s), based on student need. (1 question set = approximately 15 minutes)

**Total Points:** 3 credit [ [Grading Settings](#) ]

**Due:** 4 days after the Parent assignment is due.

**Test Out:**  Allow students to test out of this Adaptive Follow-Up.  
95% or higher on the Parent assignment grants full points for the Adaptive Follow-Up.

Use the above options as defaults for new assignments in the Adaptive category.

**Total Points** - Number of points and whether the Adaptive Follow-Up counts for practice (0 points), credit, or extra credit. Total points are divided across question sets, and the points in each question set are divided across the Part questions in that set. Initial settings for the Adaptive category: Blank points for credit

**Yes! I want to add an Adaptive Follow-Up assignment**  
Check the box and fill out the information in the form below.

**Title:** Parent Assignment 1 Adaptive Follow-Up

**Length:** 4 question set(s), based on student need. (1 question set = approximately 15 minutes)

**Total Points:** 5 credit [ [Grading Settings](#) ]

**Due:** 2 days after the Parent assignment is due.

**Test Out:**  Allow students to test out of this Adaptive Follow-Up.  
95% or higher on the Parent assignment grants full points for the Adaptive Follow-Up.

Use the above options as defaults for new assignments in the Adaptive category.

**Due** - Relative due date, expressed as the number of days (24-hour periods) after the Parent assignment is due. If this value is 2 days, the Adaptive Follow-Up will be due 48 hours after the Parent is due. Give your students at least 1 day (24 hours) so they have enough time to complete the Adaptive Follow-Up. Initial settings for the Adaptive category: 2 days

**Yes! I want to add an Adaptive Follow-Up assignment**  
Check the box and fill out the information in the form below.

Title: Parent Assignment 1 Adaptive Follow-Up

Length: 4 question set(s), based on student need. (1 question set = approximately 15 minutes)

Total Points: 5 extra credit [ [Grading Settings](#) ]

Due: 2 days after the Parent assignment is due.

Test Out:  Allow students to test out of this Adaptive Follow-Up.  
3 or higher on the Parent assignment grants full points for the Adaptive Follow-Up.

the above options as defaults for new assignments in the Adaptive category.

**Test Out** - Students who achieve this score on the Parent assignment see a congratulatory note saying that they are given full credit for the Adaptive Follow-Up, and they do not receive any question sets to complete. Allowing high performing students to test out of the Adaptive Follow-Up avoids assigning them busy work. Initial settings for the Adaptive category: Allow test out at or above 95%.

**Yes! I want to add an Adaptive Follow-Up assignment**  
Check the box and fill out the information in the form below.

Title: Parent Assignment 1 Adaptive Follow-Up

Length: 4 question set(s), based on student need. (1 question set = approximately 15 minutes)

Total Points: 5 extra credit [ [Grading Settings](#) ]

Due: 2 days after the Parent assignment is due.

Test Out:  Allow students to test out of this Adaptive Follow-Up.  
95% or higher on the Parent assignment grants full points for the Adaptive Follow-Up.

the above options as defaults for new assignments in the Adaptive category.

**Grading Settings** include late penalty, number of attempts allowed, deduction amounts, hint credit or deductions, and whether you require students to enter units with values. It is recommended to accept the default grading settings.

**Yes! I want to add an Adaptive Follow-Up assignment**  
Check the box and fill out the information in the form below.

**Title:** Parent Assignment 1 Adaptive Follow-Up

**Length:**  question set(s), based on student need. (1 question set = approximately 15 minutes)

**Total Points:**   [\[ Grading Settings \]](#)

**Due:**  days after the Parent assignment is due.

**Test Out:**  Allow students to test out of this Adaptive Follow-Up.  
 or higher on the Parent assignment grants full points for the Adaptive Follow-Up.

Use the above options as defaults for new assignments in the Adaptive category.

### Adaptive Assignment Grading Settings

**Penalize Late Submissions**

No Credit

Reduce credit by % over each  late.

---

Limit number of attempts per question to

Deduct credit for incorrectly answering a multiple-choice or true/false question before the last attempt.  
Deduction per incorrect answer:

100%/(# of answer options - 1)

%

Deduct credit for incorrectly answering any other type of question before the last attempt.  
Deduction per incorrect answer: %

---

Give credit for correctly answering a question in a Hint.

Give bonus credit for not opening a Hint.

Deduct credit for opening a Hint.

Deduct credit for exhausting all attempts or giving up on a question in a Hint.

---

**Require Students to Enter Units for all Questions**  
Applies only to item content that asks for a value and a unit. ⓘ

For Adaptive Follow-Up assignments, there are no restrictions on when or whether students see item scores or assignment scores.

Select **Use the above options as defaults for new assignments in the Adaptive category** if you want the options selected to become the defaults for new assignments in the Adaptive category.

**Yes! I want to add an Adaptive Follow-Up assignment**  
Check the box and fill out the information in the form below.

---

**Title:** Parent Assignment 1 Adaptive Follow-Up

**Length:**  question set(s), based on student need. (1 question set = approximately 15 minutes)

**Total Points:**   [ [Grading Settings](#) ]

**Due:**  days after the Parent assignment is due.

**Test Out:**  Allow students to test out of this Adaptive Follow-Up.  
 or higher on the Parent assignment grants full points for the Adaptive Follow-Up.

Use the above options as defaults for new assignments in the Adaptive category.

## View Adaptive Follow-Up on the Calendar

You will see the two assignments on the calendar if you set a Parent Assignment due date. In the image below, the Adaptive Follow-Up assignment (highlighted green) is due two days after the Parent Assignment (highlighted blue).

Course Calendar						
November 2013						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	Parent	Week 1	26	Week 1 Adapt...	29	30
1	2	3	4	Adaptive Follow-Up	6	7

[+ Create Assignment](#) [View All Assignments](#)

## Scoring Details (point value for items)

When you set up the Adaptive Follow-Up assignment, you specify the number of possible points and the maximum number of question sets. The possible points are divided equally among all possible questions sets, and the points allocated to each question set are divided equally among all the Parts in the question set.

Example: In the illustration below, the Adaptive Follow-Up assignment is worth 10 points and contains a maximum of two question sets (5 points for each question set). The number of items doesn't matter, but within a single question set, all item Parts are worth the same point value. Because different questions sets can have different numbers of Parts, the individual Part values in one question set can differ from those of another question set.

Each question set is worth 5 points		All Parts <i>in the same question set</i> have the same value
First question set worth <b>5 points</b> has <b>4 parts</b>  $5 \div 4 = 1.25$ per Part	(First item)	Part A = 1.25 points Part B = 1.25 points
	(Second item)	Part A = 1.25 points Part B = 1.25 points
Second question worth <b>5 points</b> has <b>5 parts</b>  $5 \div 5 = 1.00$ per Part	(First item)	Part A = 1.00 points
	(Second item)	Part A = 1.00 points Part B = 1.00 points Part C = 1.00 points
	(Third item)	Part A = 1.00 points

## Student Workflow and Scoring

Students complete the Parent assignment as they normally would. They are then immediately given access to the Adaptive Follow-Up assignment after they complete the Parent assignment, which consists of one or more sets of questions, according to the assignment settings. Each student's question sets include activities that specifically address the areas where he or she had difficulty with the Parent assignment.

Adaptive Follow-Up grading settings do not inherit values from Parent assignment's grading settings. Settings for all Follow-Ups are governed by settings for the Adaptive category, along with any Follow-Up-specific settings you select. Grading settings for Parent assignments are likewise governed by the category to which the assignments belong (typically Homework), and any assignment-specific changes you make.

If a student completely skips the Parent assignment and starts the Adaptive Follow-Up after the Parent assignment is due, Mastering “primes the pump” with one question set of items that cover the same learning outcomes included in the Parent assignment. The Knewton engine can then react to the student responses in the first question set in the recommendations for the second question set.

## View Adaptive Follow-Up in the Gradebook

Adaptive Follow-Up assignments are easy to find in the Gradebook. They appear with a green highlight in the title. Diagnostic and summary data are not available for Adaptive Follow-Up assignments. You can view student answers to each item in the Adaptive Follow-Up as well as see all of the items they received in their Adaptive Follow Up question sets if you click a student score.

Filter ▾
Showing Score in All Categories for All Students

Score
Time
Difficulty

Adaptive Follow-Up

Students per page: 100 ▾

NAME	Ch 9	Ch 23	Ch 23 ..Up	Ch 24	Evolution	Ch 29	Ch 30
Essays	--	--	--	--		--	--
Assigned Points	10	10	10	1	15	7	
Class Average	7.9	7.9	0.0	0.9	7.3	5.6	5.6
Last01, First0...	8.7	9.8	0.0	1.0	10.3	6.6	9.9
Last02, First0...	7.9	9.0	0.0	0.6	9.5	6.6	3.0
Last03, First0...	6.7	9.4	0.0	1.0	0.0	6.9	0.0

## View Student Work for an Adaptive Follow-Up

To view student scores, click a student's score to see score details.

NAME	Ch 02 HW	Ch 02 ..Up	Ch 01 HW	Ch 01 ..Up	Introd..&P
Assigned Points	6	0	6	0	3
Class Average	4.0	--	0.0	0.7	0.0
Last01, First0...	4.0	--	0.0	0.7	0.0

You see student score details and the questions received in the Adaptive Follow-Up question set or sets. Click a title to see answers submitted, time stamps, and hints requested.



### Ch 01 HW Adaptive Follow-Up

Due 08/04/13 at 08:10am

Parent Assignment: [Ch 01 HW](#)

Question Sets: 3

Students will receive no credit for items they complete after the assignment is due. [Grading Policy](#)

TITLE	# OF PARTS	POINTS	SCORE %	FINISHED
<b>QUESTION SET 1</b>				
<a href="#">Art Question Chapter 1 Question 10</a>	1	0.07 / 0.10 extra credit	66.67%	08/04/13 at 07:53am
<a href="#">Chapter Practice Test 1.12</a>	1	0.00 / 0.10 extra credit	0.00%	08/04/13 at 07:53am
<a href="#">Multiple Choice Quiz 1.18</a>	1	0.10 / 0.10 extra credit	100%	08/04/13 at 07:54am

Like other assignments, you can see student answer details, system feedback, and time stamps for each item in the Adaptive Follow-Up assignment.

Item: Chapter 1 Chapter Test Question 7  
Assignment: Ch 01 HW Adaptive Follow-Up

COMPLETED: Score=67% (raw=67%, late penalty=0%) – Correct=1, Wrong=1, Hint Reqs=0, Solution Reqs=0, Rating=?  
Started: 4 Aug 2013 7:56AM  
Finished: 4 Aug 2013 7:57AM  
Duration: 0h 0m 14s

#### Chapter 1 Chapter Test Question 7

Description: [[Bloom's Taxonomy: Knowledge/Comprehension]] (a) The regulation of body temperature is an example of which type of homeostatic control?

Part A

The regulation of body temperature is an example of which type of homeostatic control?

ANSWER:

- homeostatic imbalance
- hormonal control
- negative feedback
- positive feedback

Time	Proposed	Response
4 Aug 2013 7:57:00AM	positive feedback	In positive feedback mechanisms, the response enhances the original stimulus so that the response is accelerated. Positive feedback would cause a further increase in body temperature if the problem was being over-heated in the first place.
4 Aug 2013 7:57:02AM	negative feedback	[ CORRECT ]

Most homeostatic control mechanisms are negative feedback mechanisms. In these systems, the output shuts off the original effect of the stimulus or reduces its intensity. Your body "thermostat" operates in this fashion.

## About the Adaptive Category

Like other categories in a Mastering course, the Adaptive category serves as a collection of default settings that are inherited by new assignments—in this case, by each new Adaptive Follow-Up assignment that you add to a Parent assignment.

The initial default settings for the Adaptive category are selected to emphasize learning. If you want to [change Adaptive Follow-Up settings](#), you can do either of the following:

- Change the default settings for the category to apply these settings for all *new* Adaptive Follow-Up assignments.
- Edit settings for a particular Adaptive Follow-Up.

## Other uses for the Adaptive category

In addition to making it easy for you to apply settings consistently, the Adaptive category enables you to:

- [Weight Adaptive Follow-Up assignments differently](#) to control students' final grades in the Gradebook and on the Scores page that students see.

For example, you might want all Follow-Up assignments to be worth 15% of the grade, all Homework assignments to account for 20%, all Quiz scores to account for 45%, and all Tests to be worth 20%.

Another example might be to have Adaptive Follow-Up assignments count as extra credit. You might want Adaptive Follow-Ups to be worth only 30% of the Parent assignment total points. Thus, if your Parent assignment has 10 questions worth 1 point each (total 10 points), set your Adaptive Follow-Up to be worth a total of 3 extra credit points. If you keep the default (by points) for categories and assignment weighting, then each assignment's worth is determined by the total points and each category's worth is determined by the total points in the category. A category with items totaling 400 points in all assignments counts twice as much as a category totaling 200 points. An assignment worth 20 points counts twice as much as an assignment worth 10.

- [Filter your view of a course Gradebook](#) to include only Follow-Up assignments.

## Adaptive category restrictions

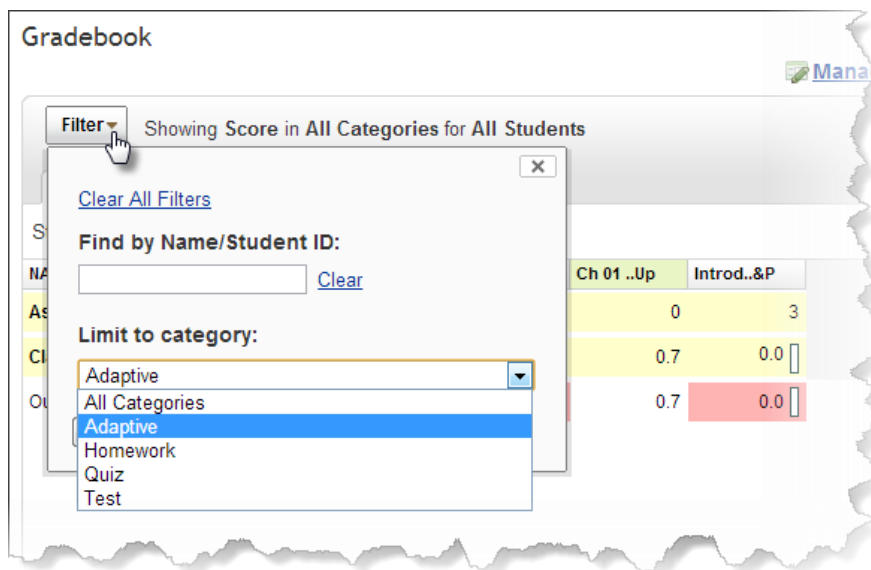
The Adaptive category is not included with every Mastering course. If you are using a course that provides [Adaptive Follow-Up assignments](#), the Adaptive category is added to your course as you create assignments.

Other restrictions surrounding the Adaptive category are:

- You can't delete or rename the Adaptive category.
- You can't add a category named "Adaptive"; it can only be added automatically, as described above.
- You can't change the category of an Adaptive Follow-Up assignment. A Follow-Up is always associated with the Adaptive category.

## Filter Adaptive Category in the Gradebook

You can also filter your Gradebook to view only Adaptive Follow-Ups. Click **Filter** and select the **Adaptive** category. Click **Save**.



Gradebook

Showing Score in All Categories for All Students

Filter

Clear All Filters

Find by Name/Student ID:

Limit to category:

- Adaptive
- All Categories
- Adaptive
- Homework
- Quiz
- Test

Ch 01 ..Up	Introd..&P
0	3
0.7	0.0
0.7	0.0

## Students Resources for Adaptive Follow-Ups



[Adaptive Follow-Ups explained in Student Help](#)



[Adaptive Follow-Ups \(for students\) \[2 min 20 seconds\]](#)

## Lesson 2: Use Dynamic Study Modules

Dynamic Study Modules are powered by the *amplifire* application. They help students check and improve their knowledge of material they must master to do well in the course. Dynamic Study Modules are assignable or available for self-study. Dynamic Study Modules can be accessed anytime, anywhere, and from any device.



### [What are Dynamic Study Modules?](#) [5 min 34 seconds]

Assigning a module provides the additional advantage of motivating students and focusing their study time; and it allows you to track students' progress in Mastering. Assigning Dynamic Study Modules before a lecture can help students come prepared for lecture with a basic understanding of chapter concepts.

### How do Dynamic Study Modules help students learn?

Dynamic Study Modules are designed to help students acquire the information they need to learn faster and remember it long term. The scientists and software engineers that built the *amplifire* application behind the Dynamic Study Modules have pulled together more than 10,000 papers, studies and articles on the topic of learning and memory.

They have applied 25 key learning techniques throughout the software. For more information about the science and research behind the application integrated within Mastering, go to <http://www.knowledgefactor.com/science>.



### [Dynamic Study Modules Introduction](#) [2 min 36 seconds]

### How Dynamic Study Modules help students learn:

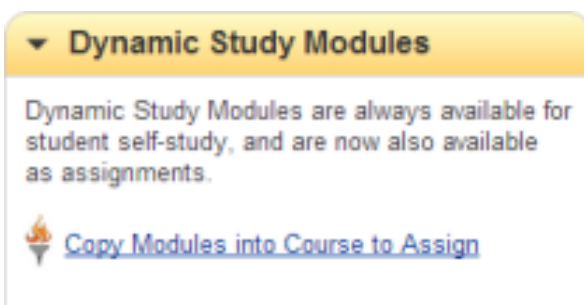
- Asking questions first triggers the brain to learn faster.
- Each question provides immediate feedback without giving the answer. Spacing between feedback and full explanation heightens curiosity and helps students' brains store more of the content into memory.

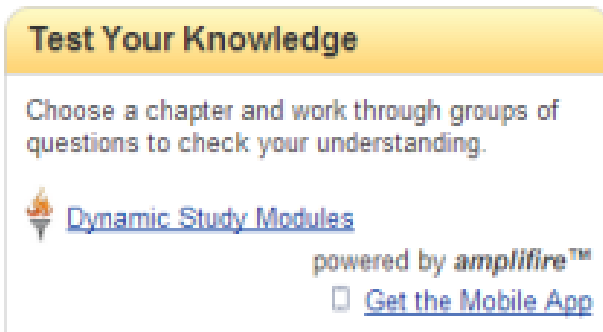
- Answer format asks how confident students are about the answer to activate the brain to help store information as long-term memory.
- Follow up feedback breaks down information for better understanding of the material. Images, tables, and diagrams in explanations are pulled from the corresponding textbook.
- Students cycle through test, learn, and retest until they achieve mastery of the material.
- Over a series of question sets, the system dynamically and seamlessly assesses each user's working memory capacity (WMC), and adjusts the amount of material each user engages with, within each question set. By optimizing content to each user's demonstrated WMC, *amplifire* not only maintains an ideal balance of challenge and progress, but provides a much more efficient learning plan for each individual.
- Helps students focus on the information they need most to help reduce study time.
- While cues are helpful in learning new information, they can be detrimental for long-term recall. The software adaptively removes the cue and dynamically retests users' understanding of the learning concepts.

## Where to find Dynamic Study Modules

Dynamic Study Modules are provided for specific textbooks. If this feature is available for your Mastering course, you and your students see it on the Mastering Course Home.


### You see:



**Students see (original student Course Home):**

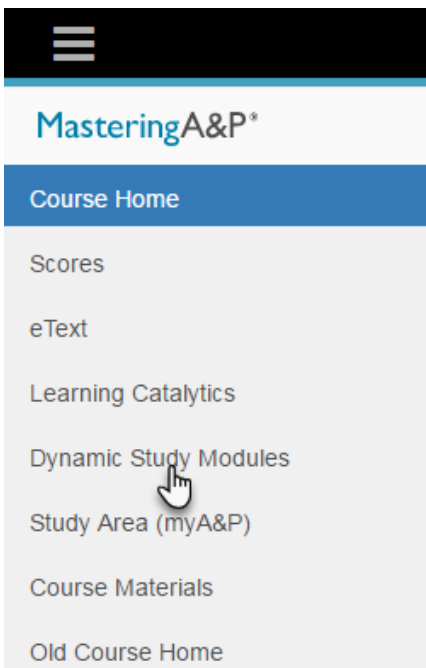
**Test Your Knowledge**


Choose a chapter and work through groups of questions to check your understanding.

 [Dynamic Study Modules](#)

powered by *amplify*™

[Get the Mobile App](#)

**Students see (Beta student Course Home):**



MasteringA&P\*

Course Home

Scores

eText

Learning Catalytics

Dynamic Study Modules

Study Area (myA&P)

Course Materials

Old Course Home

**Self-study** modules are always available to students from the **Dynamic Study Modules** link on the Course Home and through the Dynamic Study Modules mobile app. From those locations, students select from the list of all modules available for the textbook. Unlike Mastering assignments for which you control when students can begin or review work, the Dynamic Study Modules that are provided with your textbook are always available. Students can access them for self-study as soon as they sign in to your course. If you later assign a module that they have worked on in this course, their earlier work is counted in the Mastering Gradebook.

**Assigned** modules can also be opened by students from a module list like *self-study* modules. In addition, they can be accessed directly from the assignments area or from the course home calendar where they see all of the assignments. Any points earned for assigned and completed modules are also tracked in the Mastering gradebook.

### **Duration of student access to Dynamic Study Modules:**

Students can continue to work in these study modules for as long as they are able to sign in to their course.

## **Dynamic Study Modules App for Mobile Devices**

Dynamic Study Modules are available from the Mastering course or from the mobile app. Students love that the Dynamic Study Modules are mobile-friendly. They can work on them anytime on the go.

After students have clicked the Dynamic Study Modules link at least once from their Mastering course, they may also be able to work on or study using these modules on their mobile device. Their work is synced, whether they access Dynamic Study Modules using the app or a web browser.

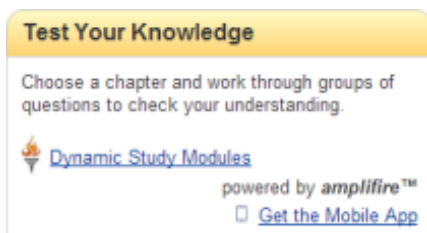


### **[Dynamic Study Modules on Mobile Devices](#) [53 seconds]**

Click the App Store or Google Play below to get the App on your device:



Students can also get the mobile app if they click **Get the Mobile App** link within their Mastering course (Old Course Home):



## Best Practices with Dynamic Study Modules

### Assigning Dynamic Study Modules

- Modify Dynamic Study Modules to correlate with the coverage of topics in your assessments outside of Mastering (tests and quizzes).
- Remove questions from Dynamic Study Modules prior to students enrolling into your course to avoid being locked out of the ability to modify a Dynamic Study Module.
- Consider assigning Dynamic Study Modules for pre-lecture assignments to get students to come to class more prepared. After your lecture, consider assigning Mastering tutorials and/or Adaptive Follow-Ups (if available for your textbook) to address student misconceptions and provide an opportunity for remediation.

For an example of this implementation, see the [Broward College MasteringBiology educator study](#) where they used different Mastering resources to engage students: Dynamic Study Modules for pre-lecture, Tutorials, and Adaptive Follow-Up assignments.

- Assign Dynamic Study Modules for credit or extra credit to provide students with an incentive to work on the modules by the due date.
- If you don't want to assign points, assign a module for practice. Scoring for a practice module is then the same as working on the modules for self-study, but by assigning the module you guide students' study time to the most appropriate module and you give them a target date for mastering it. Also, when you assign a Dynamic Study Module, students are brought to that specific module from their assignment area to help them target their study.
- Suggest students work on Dynamic Study Modules again as a refresher before exams. They can "refresh" a mastered module for more practice. Refreshing a module does not change a student's score. There are two options. One option is the "Smart Refresh", which allows them to practice answering only questions that they didn't answer initially both correctly and with confidence. The other option is "Refresh" which will reset the module so students can practice answering all questions.

## Using Dynamic Study Module Reports

- Review [Dynamic Study Modules reports](#) available from the Mastering Gradebook to get a better understanding of student comprehension.
- If you assign DSMs for pre-lecture, review the **Initial Knowledge by Question** report. It provides detailed information on how all students in the course answered each question. For example, you can pinpoint specific questions students found the most challenging or where students have the most confidently-held misconceptions. Look for red and/or orange as this means the students were often sure and incorrect or partially sure and incorrect. This topic might need more reinforcement in class or additional coverage in assignments to remediate students post-lecture (tutorials and Adaptive Follow-Ups).
- If you assign multiple modules, use the **Course Summary by Module** report to see which modules students find the most challenging and where they spent the most time. You can also see for a given module how much content students knew confidently and correctly and how many misconceptions they had.
- For student intervention meetings, review the **Course Summary by Learner** report to get a summary of DSM performance across the entire course. For a breakdown of the student's performance by module (time spent, modules completed, content student is struggling with), refer to the **Learner Details by Module**.

### Preview or Assign a Dynamic Study Module

You can explore the Dynamic Study Modules as students experience them by copying a Dynamic Study Module into your course. When you copy a Dynamic Study Module into your course, you are given the option to assign it for practice, extra credit, or credit. Once you copy a module, you can also modify it by removing questions.



[To Preview Answers](#) [51 seconds]

[To Assign Dynamic Study Modules](#) [42 seconds]

You must copy a Dynamic Study Module into your course to view the student experience, edit the module, or assign a module to students.

Click **Copy Modules into Course to Assign** and copy it into your course. Note: You don't need to pick a due date to copy and preview the student experience or edit the module.

The screenshot shows a course management interface. On the left is a 'Course Calendar' for June 2014. The calendar grid shows dates from Sunday 1 to Saturday 7. A dropdown menu is open for Wednesday, June 18, showing 'Ch. 18 First...'. On the right is a sidebar with three sections: 'In-Class Learning', 'Dynamic Study Modules', and 'Course Materials'. The 'Dynamic Study Modules' section is highlighted with a red box and contains the text: 'Dynamic Study Modules are always available for student self-study, and are now also available as assignments.' Below this text is a button with a flame icon and the text 'Copy Modules into Course to Assign'. A mouse cursor is pointing at this button.

Select the Chapter/Topic with the drop down menu.

The screenshot shows a 'Create an Assignment' dialog box. At the top, it asks 'Do you want to create or copy an assignment?' with four radio button options:
 


- Create a New Assignment
- Copy an Assignment from one of My Courses
- Copy a Pre-Built Assignment from the Publisher
- Copy a Dynamic Study Module into This Course** (selected)

 Below the selected option, there is a section titled 'Copy a Dynamic Study Module into This Course:' which includes a paragraph of text: 'With Dynamic Study Modules, students quiz themselves and learn content specifically selected for this book. Every module includes approximately 25 questions from across the chapter in a format optimized for long-term retention. [Learn more](#)'. Below this text, there are two fields: 'Book/Source: Marieb/Hoehn, Human Anatomy and Physiology, 9e' and 'Chapter/Topic: Choose...'. The 'Chapter/Topic' field is a dropdown menu with a downward arrow and a blue information icon. A mouse cursor is pointing at the dropdown arrow. At the bottom of the dialog box are two buttons: 'Continue' and 'Cancel'.

Click on a title of the module within the Chapter/Topic to see a preview of the questions in that specific module. This allows you to see all of the questions in the

module. When you assign a module, students need to master all of the questions to receive all of the mastery points. To select a group, click the radio button.

#### Copy a Dynamic Study Module into This Course:

 With Dynamic Study Modules, students quiz themselves and learn content specifically selected for this book. Every module includes approximately 25 questions from across the chapter in a format optimized for long-term retention. [Learn more](#)

Book/Source: Marieb/Hoehn, Human Anatomy and Physiology, 9e


Chapter/Topic:  

SELECT	TITLE (click to view assignment content)	QUESTIONS	TIME
<input type="radio"/>	<a href="#">First Group</a>	25	15m
<input type="radio"/>	<a href="#">Second Group</a>	25	15m
<input type="radio"/>	<a href="#">Third Group</a>	26	17m
<input type="radio"/>	<a href="#">Fourth Group</a>	25	14m
<input type="radio"/>	<a href="#">Fifth Group</a>	25	15m
<input type="radio"/>	<a href="#">Sixth Group</a>	25	12m
<input type="radio"/>	<a href="#">Seventh Group</a>	25	13m
<input type="radio"/>	<a href="#">Eighth Group</a>	25	13m

When you assign a module, select for practice (0 points), extra credit or credit. Scores flow to the Mastering gradebook. You can set a Total Points value for completing the entire module, i.e. demonstrating mastery of all questions by a due date. Since scores flow through to the Mastering gradebook only as students complete an entire question set, be sure students understand that they must **complete** the entire question set to receive mastery points.

**Note:** On this screen below, you are asked to provide a due date as well. If you just want to view the student experience or edit the module, leave the due date blank for now. You can always assign a due date later.


Edit Assignment: Ch. 07 First Group Dynamic Study Module



**Dynamic Study Modules**

With Dynamic Study Modules, students quiz themselves and learn content specifically selected for students using this book. As students work through the questions, the Dynamic Study Modules will assess their knowledge and only show questions they still need to practice.

Each module includes approximately 25 questions from across the chapter in a format optimized for long-term retention. [Learn more](#)



Video Demo

---

**Module Information:**  
25 questions  
15 minutes on average to completion

**Total Points:**  
Students receive points at the end of each question set for every question that they master within a Dynamic Study Module. Mastery is achieved for a question after a student answers it correctly and with confidence two times in a row. [Learn more](#)

10  extra credit  
practice  
credit  
extra credit for mastery of all questions in the module

Due Date  extra credit Availability to Students:  
Dynamic Study Modules are always available to students. ⓘ

**Category:** ⓘ  
Dynamic Study Module [Manage Dynamic Study Module Category Weighting](#)

To get all mastery points for a Dynamic Study Module assignment, they must complete all of the question sets in the entire module. Scores are sent to the Mastering course only after they complete each question set. In order to get all mastery points for assigned questions, they must master all questions. Students receive a score proportional to the total available if they master some of the questions in a module that is assigned for credit or extra credit.

Example: If a module worth 10 points contains 25 questions, a student who masters 23 questions (92%) before the deadline receives a score of 9.2 or 92%, depending on whether you display scores as points or percentages. Students can always continue working on the module toward 100% mastery, but no points are earned after the deadline.

## Modify a Dynamic Study Module

After you have copied a module into your course, you can edit the module by removing questions. For a step-by-step walk-through of the process, refer to the PDF below.



[Modify Dynamic Study Modules \(PDF\)](#): How to modify DSMs and how to copy modified DSMs to new course



[Modify a Dynamic Study Module](#)

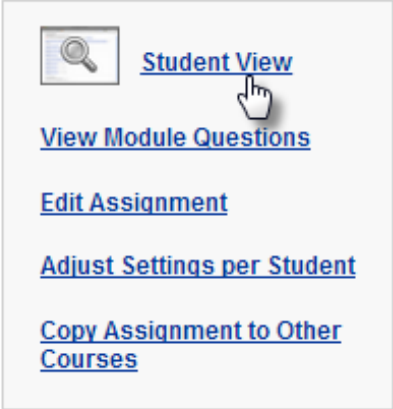
## View the Student Experience

After you have copied a module into your course, click on the assignment title and then click **Student View** to view the Dynamic Study Module student experience.

Ch. 02 First Group Dynamic Study Module [\[ Edit \]](#)

### Overview

#### Actions



- [Student View](#)
- [View Module Questions](#)
- [Edit Assignment](#)
- [Adjust Settings per Student](#)
- [Copy Assignment to Other Courses](#)

#### Assignment Information

**Due:** May 30, 2014 at 3:47pm \*PAST DUE\*

Dynamic Study Modules are always available to students. ⓘ

Contains 26 questions worth a total of 10 points

To give you a better idea of the student experience, let's walk through a few questions and the review of answers and explanations to see the student experience. For each module, students are presented with questions in question sets. Each question set has 8 questions and each module has roughly 25-29 questions.

When students first open the Dynamic Study Modules, they see the pop-up showing them how to answer questions. For example, to answer with confidence, they must click their answer twice. If they are not sure, they click two answers. If they don't know, they click **I don't know yet**.

The screenshot shows a Pearson learning interface. At the top, there is a blue header with the Pearson logo and the text "save & return" and "sara ouellette". Below the header, there is a progress bar and a "my progress" button. The main content area is divided into two sections: "QUESTION" and "ANSWER".

**QUESTION:** Which nucleic acid molecule is involved in translation in the synthesis of a protein?

**ANSWER:**

- DNA
- tRNA
- mRNA
- rRNA
- I DON'T KNOW YET

A "submit" button is located at the bottom right of the answer section.

A feedback overlay is present in the center of the screen. It contains the following text:

- To answer the question, click the circle.
- If you are sure, click your answer twice.
- If you are unsure, click two answers.

The overlay also shows a sequence of three circles: a white circle, a half-white/half-blue circle, and a blue circle, connected by arrows. Below this, it shows two white circles and one half-white/half-blue circle, also connected by arrows.

As they move through the question set students get immediate, high-level feedback on the accuracy of answer choices; yet, the system presents the full explanation/additional context of the answer only after an interval of time. This engineered spacing between initial feedback and full explanation heightens curiosity and helps users' brains encode and store more of the content into memory.

Students receive the detailed feedback once all eight questions are complete. The system adapts to the student after the first set of questions to deliver a second set of questions. Students can always view where they are within the module.

## Student Progress Bar

As students work through the module, they see how many questions they have mastered in the module.

ANSWER

- Claritas est etiam processus dynamicus, qui se consuetudium lectorum. Mirum est notare qua
- Typi non habent claritatem insitam; est usus le eorum claritatem.
- Nam liber tempor cum soluta nobis eleifend op imperdiet doming id quod mazim placerat face

module progress

26 questions

9 completed

7 in progress

Close X

## Question Presentation

A question is presented and students decide how confident they are by clicking or tapping into the answer circles. In the example below, the student was unsure and clicked on two possible answers. In this case below, the answers are both incorrect. The student would need to get the question correct twice with confidence in order to master the question. When students are retested, visual cues are removed to help trigger long-term recall.

First Group

QUESTION

Identify the stage of mitosis indicated by "C".

ANSWER

- telophase and cytokinesis
- anaphase
- metaphase
- I DON'T KNOW YET

INCORRECT

next question >>

If one answer is correct, students see the feedback below. Note that the content in many questions includes text specific illustrations and images. If students are not confident and one of their answers is correct, they need to answer the question with confidence once to master the question.

First Group



## QUESTION

Match the organelle with its characteristic: **ribosome**.

## ANSWER

- cristae; matrix
- composed of two subunits; can be "free" in the cytosol or attached to rough ER
- composed of microtubules arranged in nine groups of three
- produces protein transport vesicles
- possesses a cis and trans side; composed of cisternae
- I DON'T KNOW YET

ONE IS CORRECT

next question

If students are certain the answer is correct, they click twice in the same circle and click **Submit**. If the student is correct, they see the feedback below. After all eight questions in the set are answered, students click **Learn**.

First Group



## QUESTION

Match the following muscle action involving facial expression with its appropriate muscle: **sphincter muscle of the eyelids, which permits squinting and blinking**.

## ANSWER

- orbicularis oculi
- epicranius
- depressor labii inferioris
- zygomaticus major and minor
- I DON'T KNOW YET

CORRECT

learn

Answers are combined with “What You Need to Know” for accelerated learning. The student must review incorrect answers before the question set is considered complete. After students have reviewed the questions that were not answered correctly, they can begin the next question set.

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My Courses ▾ Jane Smith ▾


amplifire's Trivia Course My progress

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### LEARN

**QUESTION** 3 of 8

Whether you are a Naval officer or a weekend sailing warrior, the exact sea depth along the shoreline is critical for navigation. Those that don't have this knowledge will find themselves **run aground**.



What is the nautical measurement of depth equal to 12 feet called?

**ANSWER** PARTIALLY CORRECT

**THE CORRECT ANSWER:**

Claritas est etiam processus dynamicus, qui sequitur mutationem consuetudinum lectorum. Mirum est notare quam littera gothica.

Typi non habent claritatem insitam; est usus legentis in is qui facit eorum claritatem.

**YOUR ANSWER WAS INCORRECT**

Nam liber tempor cum soluta nobis eleifend option congue nihil imperdiet doming id quod mazim placerat facer possit assum.

Duis autem vel eum irure dolor in hendrerit in vulputate velit esse molestie consequat.

I DON'T KNOW YET

## WHAT YOU NEED TO KNOW

---

**A Mark Twain**

A Mark Twain is a nautical measurement of depth equal to 12 feet. When Samuel Clemens spent time on a river boat, the depth finder would callout "mark, twain" and other nautical depth references when asked for the depth of the river in relation to the bottom. Clemens was so taken with the sound of "mark twain" that he adopted it as his pen name.

A fathom is another nautical measurement of depth but it only indicates the measurement of six feet.

A knot is another unit of nautical measurement, however, it measures speed instead of depth. If you are traveling at a speed of one nautical mile per hour, you are said to be traveling at a speed of one knot.

- A list item
- Another list item
- One more!

[Additional Learning](#)

---

previous

begin next question set

review correct answers

## Mastery and Grading



### [Mastery and Grading](#) [1 min 54 seconds]

A student can demonstrate mastery of a question:

- The first time a question is presented if they answered correctly with confidence twice.
- If a student is confident and wrong, then the student has to demonstrate confidence by answering a question correctly with confidence twice in order to master the question.
- If a student is doubtful (i.e. one answer is correct), then the student only needs to demonstrate confidence by answering the question correctly with confidence once to master the question.

In Student Help, the table below provides a guide for students on how they can master a question (so it no longer appears in a module). If all questions in the module are mastered, the module is also considered “mastered” (completed).

If your answer the first time is	Do this to master the question
CORRECT	Nothing—you're done! You will not be asked the same question again in the module, unless you refresh the module.
INCORRECT, with one or two responses	Answer the question correctly with a single response <b>two times in a row</b> . The count restarts if you answer correctly once and then answer incorrectly.
ONE IS CORRECT, with two responses	Answer the question correctly with a <b>single response the next time</b> it is presented. *
I DON'T KNOW	Answer the question correctly with a <b>single response the next time</b> it is presented. *

\* *If you answer correctly the next time:* You must then answer the question two times in a row (that is, the same as for INCORRECT above).

## Dynamic Study Module Reports

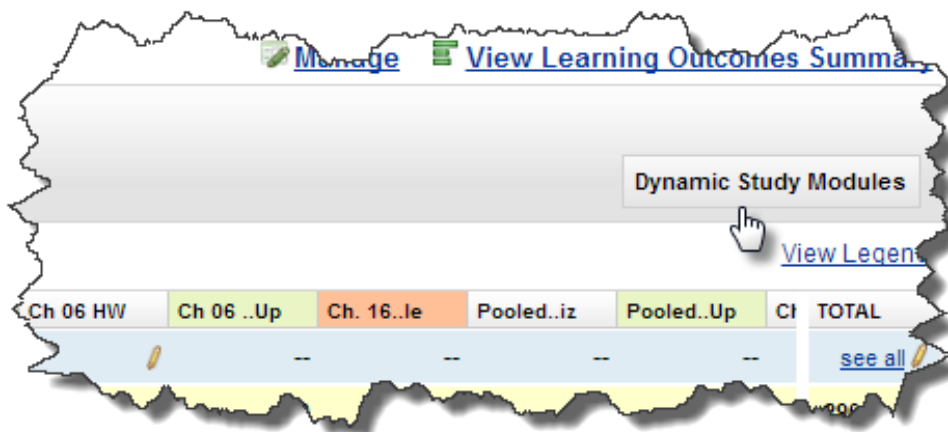
You and any section instructor can generate reports on your students' progress in the modules they have completed, whether you assigned the modules or students completed them as self-study. Before you create a report, refer to the document below for information about the reports you can run with suggestions on when to use each report and how to use it.



### [Dynamic Study Module Reports \(PDF\)](#)

## Generate Dynamic Study Module Reports

From the Mastering Gradebook, click **Dynamic Study Modules** to run and view reports.



### [To Generate Reports \[54 seconds\]](#)

### [Dynamic Study Module Report Types \[59 seconds\]](#)

## MODULE 7: INTERACTIVE AND PEER LEARNING WITH LEARNING CATALYTICS IN MASTERING

### Lesson 1: What is Learning Catalytics?

Learning Catalytics, founded at Harvard University by Gary King, Brian Lukoff and Eric Mazur is a “bring your own device” student engagement, assessment, and classroom intelligence system. Students respond to questions with their own Wi-Fi enabled device (smartphone, tablet, or laptop). The company was acquired by Pearson in March, 2013.



[The Learning Catalytics Story](#) (3 min 22 sec)

[Matt Stoltzfus' TEDx Talk: How Socrates Can Stimulate your Brain Activity](#) (Stoltzfus M. , How Socrates Can Stimulate your Brain Activity, 2014)

[Learning Catalytics in Action](#) (3 min 35 sec)

### Features and Benefits

#### Engage students with open-ended questions to develop critical thinking skills

- Use various types of questions with Learning Catalytics such as region, sketch, ranking, word cloud, priority, many choice, short answer, data collection, direction, confidence, composite sketch, multiple-choice, long answer, and so on, to pose questions to student in the most natural way possible.

#### Get students working together

- Automatically group students for discussion of a question based on their responses and location, regardless of class size.

#### Build teamwork and collaboration skills for all students

- Provide students with the structure to come up with a team consensus answer by engaging in discussion, articulating arguments, and resolving differences.

### **Engage your students in person or online, in a flipped or traditional classroom**

- Augment a traditional lecture, drive active learning in a flipped classroom, or bring the benefits of in-person interactions to completely asynchronous online courses.

### **Identify misconceptions and monitor responses to find out where students are struggling**

- Use any device to keep track of how students are progressing in real time without being tethered to the podium.

### **Fully integrated with Mastering**

- Your students access Learning Catalytics at no cost when they purchase a Pearson Mastering product with an eText subscription.
- After students cross-over once from their Mastering course, they will have single sign-on access to Learning Catalytics.
- Take advantage of Pearson content built specifically for Learning Catalytics.
- Use gradebook integration with a Mastering product.

## Response Types and How Educators Use Them

In Learning Catalytics, questions are grouped into modules; each module may correspond to a single period of instruction on a single day, or a single set of questions that might be grouped into an activity.

There are five module response types available which define the ways in which students respond to questions in a module. You select the response type when you create a new module.



### Video: [Select a Response Type](#)

## Instructor-Led Synchronous

### How is this response type typically used?

- This response type works best when all of the students are in the same classroom together. Benefits include real time feedback on student understanding as well as the option to automatically group students for [peer instruction](#) and discussion based on their responses.
- It also works well for synchronous online courses. Note that all students and the instructor must be online at the same time. Since online course students tend to sign in whenever, a different response type such as Automated Synchronous, Self-Test, or Self-Paced may work better for online courses.

### How does it work?

This is the "classic" response type that has always been available in Learning Catalytics, and emulates the way you would use clickers or other response systems. Students are presented with questions one at a time, and they all respond to that question during the same time period.

Instructors view the student responses in real time which enables them to get into the minds of their students to understand what they do or don't know and allow for just-in-time teaching adjustments.

It encourages [peer instruction](#) and active engagement in class. A seating map identifies students and groups them based on the instructors' criteria for further

problem solving and discussion. This makes for an engaging classroom experience and gives instructors an unprecedented view of class performance.



A seat map is not required to use this response type. Some educators run sessions without worrying about seating. If you use a seat map, you have the option to group students automatically based on their responses. Automatic grouping is based on your selections. Alternatively, you can informally ask them to talk to each other and deliver the question a second time.

All of the answer data is stored in the cloud and aggregated automatically to allow the instructor to easily gain insights both during and after class, whether about the whole class or individual students.

## Automated Synchronous

### How and when might you want to use this response type?

- This response type is designed to deliver the benefits of peer discussion to students in online or hybrid courses.
- Another use may be to use it for face-to-face students for snow days.

## How does it work?

With the Automated Synchronous response type, students respond individually to questions as they are delivered one at a time in an automated format, typically out of class at a set time when an instructor is not present.

By default, the first question will start after 5 minutes to give students time to log on. Instructors can edit the amount of time students have to join the session before the first question is delivered.

There is auto timing and auto pacing throughout the module. Students are presented with a countdown timer to help them know how much time they have left to enter their response.

If between 30-70% of students have responded with the correct answer, then they are grouped for discussion. During discussion students have a text chat to discuss their responses before entering their second response. With this response type, the instructor specifies a window of time for the module to be available.

## Self-Paced

### How and when might you want to use this response type?

- Homework outside of class (where for example you want them to do it in a certain window like a pre-lecture assignment, but not allow them to see answers/feedback so you can cover the most difficult questions the following lecture).
- If you have a snow day, you can copy the Instructor-Led Synchronous module you planned to deliver that day and assign it as a Self-Paced module.
- In class quizzes (when you don't want to group students or allow them to see answers/feedback).

### How does it work?

In this response type, students have access to the full set of questions when they begin, and can answer them at their own pace and in any order. This can be used in class for quizzes or worksheets. The instructor can also specify a window of time for the module to be available, so it also works well outside of the classroom (e.g., for a homework assignment).

For in-class quizzes, instructors can view student responses to automatically scored questions on the seat map if their Learning Catalytics course is associated with a seat map to gauge how well students have understood the material.

Instructors can set a Start at and End at time. For an in-class quiz, this would be the time when the questions are no longer available to students. Thus, the Start at and End at values can serve as a start and stop timer for all students at once. Outside of class, these values should span a longer, more flexible period (1 or more days, perhaps) during which students can work at a time that suits them, but must finish by a deadline. This deadline isn't visible to students, so instructors should tell them about it.

Both in class and outside of class, students can access and change their responses at any time up until the session is stopped—either manually, when the instructor clicks the Stop Session button, or automatically, based on the End at value.

Students do not see answers/feedback during the session. If instructors want students to review responses and correct answers, they can allow students to review the module after the session has ended.

## Self-Test

### How and when might you want to use this modality?

- Online homework or practice tests where you want students to see answers/feedback immediately.
- You can clone another module response type such as an Instructor-Led Synchronous Module or Team-Based Assessment so students can practice outside of class with immediate feedback.
- Use Self-Test in class as a way to differentiate instruction. For example: When teaching a particular topic where students would find themselves at much different skill levels (some students still needing much practice on the basics and others deathly bored by the basics right away and in need of much more of a challenges), then create a Self-Test module with questions of increasing difficulty, and open it up to students. Tell them that the easy questions are at the front, harder questions at the end, and tell them they can start anywhere they choose. Then the instructor view reflects real-time performance so you

can see both what problems students are attempting and what the common errors are on each one. Also students are working independently so you have time to walk around and help students individually as needed.

- Self-Test, unlike Self-Paced, allows students to receive feedback as they submit answers to each question. Further, this option allows the instructor the option of permitting students to answer questions as many times as they wish. Only the last response will be recorded.

### How does it work?

This response type is identical to Self-Paced, except that students will receive right/wrong feedback on their response immediately after submitting it. Students will also have the opportunity to read the answer explanation after responding to a question. Like Self-Paced, instructors can set a Start at and End at time for a session.

## Team-Based Assessment

### How and when might you want to use this modality?

- To achieve team-based assessment where students first work individually and then work in a team (self-selected or permanent) for the second round. If you deliver the Individual Round in class, the environment will be similar to a quizzing or testing setting, as students will be quietly working on their own. For the Team Round, you can designate the number of attempts as well as the value of each attempt on a module-by-module basis.
- Practice exam for students in class. Students work individually first and then in a team.
- Have students do the questions in the individual round from home and have them come in to class to work on the team round. This will allow students to engage in discussion with each other about problems they may have encountered in the individual round. If you use this method, permanent teams are suggested. If you use temporary teams, students are prompted to join their teams before you can begin the Individual Round. Temporary team formation works best if students are already in class together.

### How does it work?

The Team-Based Assessment response type is modeled on the "[In-class Readiness Assurance Testing](#)" from Team-Based Learning™ Collaborative. Selecting Team-Based will allow students to respond individually to all of the questions in a given module in any order. They will then gather into their team and respond as a team to the same questions. Before delivering a module, the instructor will select the settings that will be applied to the grading of the module.

In a team-based assessment, students are assembled into teams in one of two ways:

- The instructor can create permanent teams for the course using the Teams button. (The Team-Based Learning Collaborative has some advice on how to form teams in this [video](#) titled Team-Based Learning: Group Work that Works.)
- Students can form teams in a less formal way, and then can be prompted to enter a "team name" when they join the class session. (For example, if you have students sitting at tables, they could enter their table number as their team name.)

In the team-based response format, students will be able to begin the individual round and answer all questions in the module once the instructor begins the session. When the instructor is ready to transition to the team round, the instructor will select **Begin team round**.

As students work in teams, they agree upon one response to submit for the team. To assist that process, they have access to all the responses their team members submitted during the Individual Round. Any student can click **Show my team's responses**.

 [Show my team's responses](#)

When a team member submits the team's answers, all team members see answer feedback. If you have enabled multiple attempts in the module settings, the team can submit another answer (generally for fewer points). A different person can submit the next response, but teams need to remember to coordinate their input because each response to the same question is considered to be another attempt.

The number of attempts allowed by the team will have been set by the instructor when the team based response was selected for the module. The instructor can

designate the number of attempts as well as the value of each attempt on a module-by-module basis.

The final score for each student completing a Team-Based module depends on the weighting of the scores of the individual vs. team based. The default final score is calculated as 50% individual score/50% team score. An instructor can modify this to meet their needs by sliding the selector to the left (increasing the value of the individual score) or the right (increasing the value of the team score).

*“The part of the program that has really blown me away is the Team-Based Assessment. I made a practice exam for students consisting of 12 questions and the students worked individually for about 15 minutes and then in a team for about 10 minutes. (I pulled many questions from the question bank, from Georgia Tech's Jung Choi.) The classroom was buzzing with noise during the team component, and the students hardly needed any direction from me about what a team-based assessment entailed. Students enjoyed it, and it was thrilling for me to see how students were answering my exam questions in real time! By examining the real-time display, I knew which questions I would want to spend time discussing in the 10 minutes I had at the end of class...In fact, the students made gains on every question as a group compared to individual answers.”*

- Submitted by Kelly Hogan, Senior Lecturer & Advisor, Biology Department, University of North Carolina

## Response Type Comparison Grid

Response Type	Students answer questions	You start & stop the session
<b>Instructor-Led Synchronous</b>	<ul style="list-style-type: none"> <li>Individually, during class</li> <li>In the order you deliver them during class (in a physical or virtual classroom)</li> <li>May be asked to discuss first-round answers with a</li> </ul>	<ul style="list-style-type: none"> <li>Manually in real time</li> <li>May redeliver any question in another round in the same session</li> <li>May display all responses</li> <li>May reveal the correct response, if any, or hide</li> </ul>

Response Type	Students answer questions	You start & stop the session
	group, and then answer again individually in a second round.	correct response from students
<b>Automated Synchronous</b>	<ul style="list-style-type: none"> <li>Individually, during an automated online session that you schedule</li> <li>In the order they are listed in the module</li> <li>May be asked to discuss first-round answers in an automatically generated chat session with a group, and then answer again individually in a second round.</li> </ul>	<ul style="list-style-type: none"> <li>Schedule one or more start times to give students a choice of when to participate</li> <li>Learning Catalytics monitors response time and correctness to determine whether to generate group chat sessions for peer instruction, when to deliver the next question, and when to end the session.</li> </ul>
<b>Self-Paced</b>	<ul style="list-style-type: none"> <li>Individually, typically outside of class</li> <li>In any order</li> </ul>	<ul style="list-style-type: none"> <li>Manually or by scheduling</li> </ul>
<b>Self-Test</b>	<ul style="list-style-type: none"> <li>Individually, typically outside of class</li> <li>In any order</li> <li>Receive feedback for all responses</li> </ul>	<ul style="list-style-type: none"> <li>Manually or by scheduling</li> </ul>
<b>Team-Based Assessment</b>	<ul style="list-style-type: none"> <li>Individually, either before or during class</li> <li>In any order</li> <li>Again as a team during class</li> </ul>	I and Team rounds

Response Type	Students answer questions	You start & stop the session
	<ul style="list-style-type: none"> <li>During the team round, students must come to a consensus response to each question, which counts for the entire team</li> </ul>	

## User Stories and Case Studies

Research shows that instant or immediate feedback is essential to student learning, and LC affords professors the opportunity to adjust their teaching through the immediate in-class feedback LC provides. Among its most powerful capabilities is LC's role as a "feedback engine" that enables "two-way learning" without freezing or disrupting the flow of a class.

Instructors can pose questions throughout the class to assess how well the students understand a concept and whether there are questions or confusion. Equipped with this information, instructors can adjust their teaching in real time and dive more deeply into areas of common misunderstanding. The wide variety of open-ended question types in Learning Catalytics enables instructors to gather rich feedback on what students really know and can do, well beyond what is possible with traditional multiple-choice questions.

LC also helps students learn by enabling and facilitating peer instruction. LC dynamically and intelligently groups students to generate productive groups for problem solving and conceptual discussion. The group discussions that follow require students to reflect on and articulate their reasoning to a peer (or peers), increasing interaction and understanding.

To learn about how instructors have used Learning Catalytics to improve teaching and learning, refer to the [user stories](#) on the Learning Catalytics website.

For more detailed Learning Catalytics educator studies, click one of the links below to learn more about the study including key findings, setting, course details, challenges, implementation, and results and data:

[Amanda Fenner, University of Hawaii at Manoa, Honolulu, HI, Chemistry](#)

Key Findings:

- Data indicate there was a strong positive correlation between the Pearson Mastering Chemistry average scores and exam averages in Preparation for Chemistry.
- Data indicate there was a strong positive correlation between performance in Preparation for Chemistry and General Chemistry I.
- Students who averaged 70 percent or higher on General Chemistry I exams and had taken Prep Chem during the period of this study had earned higher Prep Chem Mastering and exam averages than students scoring below 70 percent on General Chemistry I exams.
- The instructor recommended using Mastering diagnostics to track student performance and identify areas of misconception to review in class or with additional homework.

## Lesson 2: Get Started with Learning Catalytics

To use Learning Catalytics with your course, you must enable it for your students and notify them to confirm or purchase their access. Before enabling Learning Catalytics for your students and notifying them to confirm or purchase their access, read through the best practices below. Students don't see the In-Class Learning option on their Course Home until you enable Learning Catalytics for your students. Please refer to the [Learning Catalytics Planning Toolkit](#) to help you have a successful implementation.

### Best Practices: What to Consider Before You Begin

#### Check classroom connectivity

- If you decide to implement Learning Catalytics for in-class learning, check with your IT department on campus. You need capacity for all students to be online simultaneously via Wi-Fi or cell providers.
- Involve your campus administration (dean, chair, and so on) with your request for classroom connectivity. Campus administrators can be very helpful to get you the resources you need to incorporate active learning into your class.
- It is suggested to request Wi-Fi capacity for 3x the enrollment of your class because some students may bring multiple devices to class.

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#### Consider student access to web-enabled devices

- If you are concerned about all students having a web-enabled device (smartphone, tablet, or laptop) in class, consider purchasing a few low-cost used devices to loan to students. Many institutions have successfully implemented a loaner strategy with six or fewer devices for 500-student enrollment courses.
- For a loaner strategy, look into grant opportunities on your campus. For example, many schools offer mini-

grants through the Center of Teaching Excellence or Teaching Development Departments.

- Consider exploring device loaner programs that may already be available through your institution's library.

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**Learn about student access to Learning Catalytics from Mastering**

- Learning Catalytics is included in Mastering with eText purchases (both online and new book packages) or sold separately. If students did not purchase the eText version of Mastering, then they will need to purchase access to Learning Catalytics through their Mastering Course Home.
- If students do not purchase the eText with Mastering, it is important that students associate their purchase of Learning Catalytics with the SAME username and password they use for their Mastering course.
- Communicate this information to your students early so they understand what they need to purchase for your course and how they access Learning Catalytics from Mastering.
- Once you decide to use Learning Catalytics, make sure to follow the appropriate steps to enable your course with Learning Catalytics by clicking **Use with Students**. After that, students will see the In-Class Learning pod on their Course Home.
- Make sure students know they need to crossover to Learning Catalytics from their Mastering course successfully at least once to successfully connect Learning Catalytics and Mastering. This will allow you to use great integration features such as grade transfer, single sign-on, and session awareness.

- Once you click **Use with Students**, you will see the option to transfer grades from Learning Catalytics to Mastering in the module settings.
- 

**Identify how you will use Learning Catalytics to achieve learning goals**

- Consider your learning goals and what you want students to get out of the material. Think about learning outcomes that students struggle with most and how you might use interactive learning to increase your students' conceptual understanding of those topics.
  - Peer instruction helps students learn by encouraging them to articulate their thinking. The discussion process helps both the stronger and the weaker students. Research has shown that Peer Instruction yields significant gains in conceptual understanding, problem solving skills and long-term retention.
  - Work with the Pearson Results team to help analyze your data to compare learning outcomes before and after implementing Peer Instruction in your course. This is a great way to get buy-in from colleagues for teaching interactively. It can also be helpful for any future changes in your course design.
- 

**Consider how you will measure student learning gains**

- Pair targeted activities with diagnostic assessment strategies. If you want to assess student gains, consider designing a module to assess student understanding of a process. Create a module with a five or six question set of multiple choice and true/false questions that require a short-answer response explaining answer choice so you can determine reasoning type (i.e. informal, mixed, or principled scientific reasoning) as a pre-test. This should take about 15-20 minutes to complete. Questions should directly relate to the targeted active-learning exercises used in the lecture. Don't discuss

the questions in class. Consider asking these questions again at the end of the semester as a post-test. This will allow you to compare the pre- and posttest results to measure student gains. It can help you implement targeted active-learning activities in the future.

Consider giving no points and encourage students to try their best. (April Cordero Maskiewicz, 2012 Spring)

- Consider asking questions in a pre-test in the beginning of the semester to get a baseline such as prior knowledge assessment, conceptual inventory, and attitudinal survey. Consider using standardized conceptual inventories like the Force Concept Inventory, where available and appropriate. At the end of the semester or on an exam, ask them again.
- Consider conducting a student survey to learn more about your students' experience. A survey can you provide you with helpful feedback on your Learning Catalytics implementation.

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**Identify good questions to ask**

- Ask questions that address your students' misconceptions and reveal the kinds of uncertainties they might have about that material. For example, if you are writing a multiple-choice question, you'll want include choices that students might think are correct. Learning Catalytics permits you to create free-response questions where you do not need to know students' misconceptions beforehand.
- Questions should challenge students appropriately by being neither too easy, nor too hard, that is, somewhere between 30 and 70 percent of the students should answer it correctly on their own, before discussion.
- Consider using various types of questions with Learning Catalytics such as region, sketch, ranking, word cloud, priority, many choice, short answer, data

collection, direction, confidence, composite sketch, multiple-choice, and so on, to pose questions to student in the most natural way possible. This will help give you both more confidence in students' developed skills and a more precise understanding of students' misconceptions.

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**Develop a plan for how you will use Learning Catalytics that works for you**

- Decide how you will incorporate Learning Catalytics into your course assessment plan. For example, will you make Learning Catalytics worth 5 percent of the overall grade (such as a participation grade)? Are you planning on using Learning Catalytics for in-class quizzes or assessments? If you will incorporate Learning Catalytics use into students' grades, decide whether you will score responses based on participation, correctness, or both.
- Decide whether you will transfer grades from Learning Catalytics to your Mastering Gradebook.
- If you are just starting out, consider incorporating Learning Catalytics once a week or every other lecture to give yourself time to move to the new format. Alternatively, consider only spending one-third or half your lecture time on Learning Catalytics activities.
- If you assign pre-lecture assignments in Mastering, you don't have to cover everything in class. Demonstrate how you adjust your teaching in reaction to the pre-lecture assignments and students will be motivated to take the assignments seriously and will find class time more useful.

- Students should cover the easier aspects of the material outside of class and work in class along with the instructor on the more difficult content.
- Consider giving Learning Catalytics privileges to section instructors such as TAs so they can create a seat map, monitor responses during class, grade open-ended questions, and so on.

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**Explore the Learning Catalytics system and content**

- Create modules, create questions, browse the question library (Pearson and/or Community content), and preview the student view. All of your work is saved in Learning Catalytics before you decide to use it with your students.
- To save time when preparing for class, it is important to avoid “reinventing the wheel” when possible. In Learning Catalytics, you will find Pearson-provided content as well as a searchable shared question library where instructors can share questions that they have successfully used in their classes. This way, you can prepare for class by combining your own questions with what you find to be the best questions that others have written. We encourage you to share questions that you have found particularly useful in class.
- Use a graphical tool to map out the classroom seating arrangement, and when students arrive in class each day they use any web-enabled device to indicate what seat they are sitting in. During class, you can — with only a few clicks — have Learning Catalytics automatically assign students to groups and send a message to each student’s device telling them who to talk to (e.g., “turn to your left and talk to Jon Snow”).

**Consider how you  
will present  
Learning  
Catalytics to your  
students**

- Interactive techniques might be new to students. It is important to motivate students to participate from the very beginning of the course. Encourage your students to participate in interactive learning by explaining the method at the beginning of the course, by using the feedback from pre-lecture assignments to plan your lectures, and by making sure that your exams reflect the type of questions you ask in class.
- Try to connect what they work on in Learning Catalytics to their learning outcomes and professional aspirations so they see the relevance and purpose.
- Remind students of your requirement to use Learning Catalytics *before* you use it in class. Encourage your students to confirm their access to Learning Catalytics from within Mastering *before* you deliver your first Learning Catalytics session. If they wait until they are prompted to join a session, those who haven't purchased access will be prompted to do so when they try to join.
- For students who don't have a device, supply a printed PDF version of the module questions.
- Explain Learning Catalytics on your syllabus, including why you are using it in your class.
- At the beginning of the semester, show them the [analysis](#) (Scott Freeman, 2014) of how students in active learning courses do better than traditional lecture courses.
- Talk with students throughout the semester about how they are learning. Keep them informed about the learning outcomes for each lecture and how those learning outcomes are also incorporated into their homework and exams.

## Explore Learning Catalytics in Mastering: Instructor Experience

You have easy access to Learning Catalytics right from the Mastering Course Home page.

The screenshot shows the Mastering Course Home page interface. At the top left is the 'Course Calendar' for November 2013. Below it is the 'Announcements' section. On the right side, there are three main sections: 'In-Class Learning', 'Test Your Knowledge', and 'Course Materials'. The 'In-Class Learning' section is highlighted with a red box and contains a link to 'Learning Catalytics'. Below it are sections for 'Test Your Knowledge' (powered by amplify) and 'Course Materials' (with links for 'Manage Documents' and 'Manage/Record Lecture Video'). At the bottom right, there is a 'Learn More' section with links for 'Getting Started', 'How-To Video Tours', 'IMPORTANT NOTE: Discovery Videos No Longer Available', 'FAQs', 'Best Practices', 'Ask an Expert Mastering User', and 'Virtual Robot Lab: Test for Success'.

Once you click **Learning Catalytics** you will be prompted to watch a video, review requirements for use, preview the system, or invite students.

The screenshot shows the Learning Catalytics setup and usage instructions. At the top, there is a blue banner with the Learning Catalytics logo and a 'Watch the Video' button. Below the banner, there are two main steps:

**Step 1. Preview & Set Up** (indicated by a red circle with the number 1 and a gear icon):

- Explore Learning Catalytics and determine how you will use it in your course.
- Browse the question library or write your own questions from scratch.
- Add questions to modules to use in your class.
- Preview the student experience.
- Arrange your classroom seatmap.

A red circle with the number 3 and an arrow points to a yellow button labeled 'Preview & Set Up'.

**Step 2. Use with Students** (indicated by a red circle with the number 2 and a group of people icon):

- Notify students to purchase access and start using Learning Catalytics in your course\*.
  - Pose questions to students during class.
  - Form discussion groups based on student answers.
  - Review results in real time to identify student misconceptions.
  - Notify students via email to purchase access. [view / edit message](#)

A red circle with the number 2 and an arrow points to a yellow button labeled 'Use with Students'.

**\*Requirements for Classroom Use**

- Classroom connectivity:** Capacity for all students to be online simultaneously via Wi-Fi or cell providers (Check with your IT department.)
- Web-enabled devices:** Smartphone, tablet, or laptop for each student
- Learning Catalytics access:** Included in Mastering with eText (both on-line subscriptions and new book packages) or sold separately

After you click **Preview & Set Up**, a new window opens for the Learning Catalytics system where you can create seat maps, set up modules, add questions, preview as a student, and so on. Note: Any work completed in Preview & Setup mode is saved and remains in the course if you move onto Use with Students. Students don't see anything you do in Learning Catalytics until you click Use with Students and deliver a session.



**Note:** Any work completed in **Preview & Setup** mode is saved and remains in the course if you move onto **Use with Students**.

Students don't see anything you do in Learning Catalytics until you click **Use with Students** and deliver a session.

## Section Instructors

Section instructors can help with all the tasks you can complete in Learning Catalytics, including copying courses and modules, creating new questions, editing the student notification message and inviting students, delivering in-class sessions, starting and stopping asynchronous sessions, responding to student questions,

exporting the Learning Catalytics Gradebook, and so on. To do this, go into your Mastering course settings and give your section instructors the Learning Catalytics privilege.

**Set Section Instructor Privileges:**

NAME (LOGIN NAME) AND EMAIL ADDRESS	COURSE SETTINGS	ROSTER	GROUPS	ANNOUNCEMENTS	SECTION INSTRUCTORS	ASSIGNMENTS	GRADEBOOK	ESSAYS	LEARNING CATALYTICS	CO MA
Robin Hartwell (robinhartwell) <a href="mailto:robin.hartwell@pearson.com">robin.hartwell@pearson.com</a>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

## Copying a Mastering Course with Learning Catalytics Modules

When a Mastering course is copied, all associated Learning Catalytics content is also copied. But Mastering still prompts you to preview Learning Catalytics before enabling it for students in case you choose not to use Learning Catalytics in this new course.

## The Learning Catalytics Interface

The screenshot shows the Learning Catalytics interface for user Sara Ouellette. The top navigation bar includes 'Courses', 'Questions', 'Classrooms', 'Tour', and 'Help'. A 'Student view' link is located in the top right corner. The main content area displays 'My Courses > FAP 9E' and a welcome message for Sara. Below the welcome message are two video thumbnails: 'Getting started' and 'Create a module for your course or copy one.' Callouts provide the following information:

- Menus:** Allow you to access your courses, create questions or select questions, access all classrooms created at your institution, view all the videos available, and access help topics.
- Student View:** Click to see the student view at any time. A new window appears when you click Student View.
- Settings:** Manage settings, see students in your roster, create and manage groups, and access the Learning Catalytics Gradebook.

At the bottom of the interface, there are buttons for 'Create module' and 'Copy a module', and a navigation menu with 'Settings', 'Students', 'Groups', and 'Gradebook'. Below this is a search bar and a table with columns for 'Module', 'Type', 'Date', and 'Results'. The table currently shows 'No data available in table' and 'Showing 0 to 0 of 0 entries'. The footer contains the text 'ALWAYS LEARNING' and the 'PEARSON' logo.

## Courses

The Courses area lists of all of your Learning Catalytics courses. Courses are created automatically when you enter Learning Catalytics through Mastering. Within each course, you can create multiple modules. You can copy modules between your courses.

## Questions

You can easily create your own questions on the fly or ahead of time with Learning Catalytics. You can also choose questions from the Pearson library (if available for your discipline) or from the community questions shared by other professors.



[Description of Question Formats](#)

## Classrooms

This lists all of the classrooms in Learning Catalytics *for your institution*. A classroom is associated with a course and shows the physical layout of the seats in the room. You can create a course without associating a classroom with it, but by creating a classroom in the system you will be able to see the spatial distribution of right and wrong answers around the room and you will be able to automatically group adjacent students sitting near each other for discussion based on their responses.

Once you have created a classroom, associate it with the course by editing the course and selecting your newly created classroom from the dropdown there. Then when you are delivering questions you will have several new features available to you:

- A seat map button next to each round's results that you can use to view the real-time results for that round overlaid on top of the seating chart
- An Assign Groups button that you can use to automatically assign students to optimal discussion groups based on their responses.

## Create a Classroom Seat Map



[Create a Classroom Seat Map](#)



[Video: Adding a classroom seat map](#)

## Training

There are How Do I? Videos, Documentation, and an Implementation Guide with best practices available for training and professional development.

Videos cover basic tasks for completing a specific activity.

The Implementation Guide provides guidance for getting started and using Learning Catalytics successfully.

If you need more help and training, you can click Request Training from the Learning Catalytics or Mastering websites. Click **Training & Support** under Educator to see the resources.

## Help

Help provides you with details on how to use the system.

## Settings

In settings, you can select your classroom, create new classroom, edit your review settings, enable the “I don’t understand” button and real-time graph, as well as enable automatic pacing.

### General Information

Classroom  [+ Create new classroom](#)  
 The seating map for the classroom where the course will be taught.

### Settings

Allow review after  hours  
 Allow students to review all of the questions and answers in your delivered modules after this much time has elapsed since the start of the session.

Enable "I don't understand" button and real-time graph  
 If checked, students will have access to a button at all times where they can indicate when they are understanding or not.

Enable automatic pacing  
 If checked, Learning Catalytics will automatically manage the timing of question delivery, and automatically group students based on question results. (We recommend that new users keep this feature turned off initially.)

### Default Grouping Settings

These settings apply to both Automated Synchronous modules and Instructor-Led Synchronous modules when automatic pacing is turned on.

Lower bound for grouping   
 e.g., 30 for 30%

Upper bound for grouping   
 e.g., 70 for 70%

Default group size   
 Students should be placed into groups of size...

Default group indicator   
 Group students based on their...

Default group comparison   
 Group students when the indicators (above) are...

Default group tolerance   
 Only group students that are sitting...

Save

## Students

Click **Students** to see the students in your Learning Catalytics roster. All students enrolled in your Mastering course are automatically added to your roster when you click **Use with Students** from the Mastering Course Home.

[My Courses](#) > [Anatomy and Physiology I](#) > **Students**



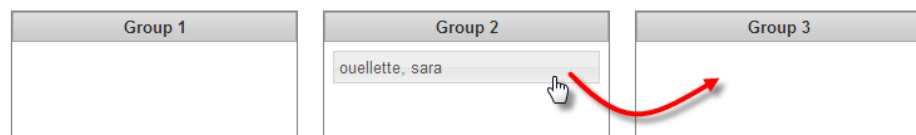
If you click the gear, you can remove students from the Learning Catalytics roster. Removing students in the Learning Catalytics roster will not remove students from your Mastering roster.

## Groups

Use the Groups tools to create permanent groups for team-based learning activities. Drag students from the left side to a box on the right to add each student to a group.

### Create Student Groups

Use this tool to create permanent groups for team-based learning activities. Drag students from the left to a box on the right to form a group.



## Gradebook

The Learning Catalytics gradebook is where you can see a list of students with the points they have earned for each module. You can edit scores as well as download them. You can also drill into the student performance.

You can also transfer the Learning Catalytics points to the Mastering gradebook for easier grade management.

## Tips for Learning Catalytics Course Settings

- **Title your Mastering course by section and semester.** When you are in Learning Catalytics, you see the Mastering course title. Titling your Mastering course very specifically with the section and semester information will make it easier for you to quickly find it in Learning Catalytics.
- **It can be a nice time saving feature to use other instructors' seat maps from your institution.** Instructors at the same institution see all the classrooms at that institution. Note: If you are concerned about other instructors editing your classroom seat map, you can name your classroom your name or something creative instead of the actual classroom name (i.e. West Hall).
- **In Course Settings, it is suggested to not select automatic pacing until you are comfortable using Learning Catalytics.** If you select this option, delivery is based on pace of student responses. It begins with a “count up” timer displayed on the student window and transitions to “count down” timer based on response frequency. When time expires in Round 1, students will be automatically grouped for peer instruction if 30-70% of students answered the question correctly. When time expires in Round 2 (or if too few or too many students answered the question correctly in Round 1) Learning Catalytics will automatically show students the results of the question.
- **If you are using the Team-Based modality, consider creating permanent groups for these activities.** The Team-Based Learning Collaborative has some advice on [how to form teams](#).
- **Enable “I don’t understand” button and real-time graph.** If checked, students will have access to a button at all times where they can indicate when they understand or not. This can provide you with a nice visual of student confusion.
- **Unless your class size is small, create a seat map if you want to do automatic grouping in the Synchronous modality.** Consider having your TA create your classroom seat map for you to save time. The seat map will give you a visual view of student responses. Watch the short [video](#) to see how Professor Christine Lindstrom uses Learning Catalytics for peer

instruction in her classroom. Read the Learning Catalytics user story from [Matt Stoltzfus, Chemistry Department, Ohio State University](#). If your class size is small, you can still group students automatically for discussion but they may be grouped with any other student in the room.

- **Check your review settings and let your students know about the review option.** Student surveys have indicated that students find the session review helpful to prepare for exams and reconnect with the content after class.

## Lesson 3: Scoring and Grade Transfer in Learning Catalytics

Scoring options are the same for both Synchronous modalities and the Self-Paced modality, and similar for Self-Test modality.

**Important:** *The Team-Based modality uses an entirely different scheme, for which you set different options. The tips below apply to all modalities except the Team-Based modality. For information about the Team-Based modality, refer to the lesson in this guide on Team-Based Assessments.*

### Best Practices: Scoring

- **Scoring preferences are decided by module.** For each module, you can award points for participation only, correctness only, or proportionally for both. By default, it is set to score based on correctness only. The slider allows you to adjust the setting.  
**Tip:** If you want to promote open discussion during peer instruction for a Synchronous session, it is suggested to give credit primarily or completely based on participation so that students are not too worried about answering questions incorrectly.
- **You can set a different point value for each question in a Synchronous, Self-Paced, or Self-Test module.** By default, questions have either a 1 or 0 point value. Automatically scored questions have 1 point value by default and questions that are not automatically scored have a 0 point value by default. See this [table](#) for helpful details about automatic and manual scoring.
- **If you give points for a question that is not automatically scored and you provide credit for correctness, you need to manually mark answers correct or incorrect.** A student receives the number of points you set for that question when you mark a response as correct. If time isn't available to mark these questions individually, you can change the point value back to 0 at any time before or after delivery of the module.

- **If you add points to questions in a module that are not automatically scored (such as sketch or word cloud questions), consider providing credit for participation only.** This way, you don't have to mark the answer correct or incorrect.
- **Point values you assign are saved with the *module*, not with the question itself.** If you select the same question from the Question Library for a different module, its value defaults to 1 or 0.
- **If you copy a module, the saved point values are preserved in the new module.** You can always change point values in the original module or a copied module.
- **If you change points to a question to a past session, it will recalculate the students' points earned.** Any scoring change you make is saved in the Learning Catalytics Gradebook, and if you have selected Gradebook Transfer for the module, the change is transferred to the Mastering Gradebook and to students' Scores pages.
- **Any edits to a Learning Catalytics module's scoring parameters always affect scores for *all sessions* of that module, even those that *have already been delivered* in the same Learning Catalytics course.** If you don't want to affect scores for sessions already delivered, consider cloning the module within the course. Doing so lets you deliver the same content using separate modules.
- **If you edit a score in the Learning Catalytics gradebook, the score is a fixed value that overrides the module's scoring settings.**

For example:

You edit points in the Learning Catalytics gradebook for a student and you change the points earned for the module from 5 to 10 points. At this time, the total possible points are 10 for this particular module. This student now has 10 of 10 possible points for this module.

You decide to give more points for a question within a module for the entire class. You edit points in a module for a question. You change the points for a particular question in the module from 2 to 4. Now, the total possible points for the module is 12.

The grade for the student in the gradebook remains 10. Therefore, you changed the total possible points, but the student's score is a fixed value, which is now 10 out of 12 points. To correct this, you would have to adjust the student's score again to 12 so that the student now has 12 out of 12 points. As a result, if you want to change student scores because of a policy or other global change on a question or module level, it is preferable to edit the question or module settings as those changes will automatically update all student scores. Reserve the step of editing a student's score in the gradebook directly for situations where a student completed an assignment in an alternate way or did makeup work.

## Step-by-Step Directions: Scoring in Learning Catalytics



[Set up scores for Learning Catalytics questions](#)



[Video: Working with Learning Catalytics scores](#)

## Transfer Learning Catalytics Grades to Mastering

Student scores for Learning Catalytics sessions are reported to the Learning Catalytics Gradebook, and you have the option to transfer scores (credit or extra credit) to the Mastering Gradebook, as well. This can be done by module and you have the option to click a checkbox so all modules in the future transfer to the Mastering Gradebook.

Gradebook Transfer  Send grade data to MasteringBiology course (Biology Ess 4E)

Points transfer as

Make the above grade transfer settings the default for all new modules

## Best Practices: Grade Transfer

- In order to have grades transfer to the Mastering Gradebook, you **MUST** select **Use with Students**. If you don't select this, you will not be able to use the grade transfer from Learning Catalytics to Mastering. After you click **Use with Students**, students must also crossover from Mastering to Learning Catalytics before you can transfer grades successfully.
- If you decide later that you don't want your Learning Catalytics grades transferred to the Mastering gradebook, you can always uncheck the Send grade data checkbox to stop the grades transfer.
- Remember to click **Stop Session** to send scores to the Learning Catalytics gradebook.
- Once you transfer grades from Learning Catalytics to Mastering, you can link back to the Learning Catalytics sessions for review from the Mastering Gradebook.
- Existing modules aren't affected by new default settings, but you can always edit an existing module to change its settings. Be sure to save your changes to the module for the new settings to take effect.
- If you edit a student's score in the Learning Catalytics gradebook, your changes are automatically transferred and updated to the Mastering Gradebook.

## Step-by-Step Directions: Transfer Grades from Learning Catalytics to the Mastering Gradebook



[Transfer Learning Catalytics scores to Mastering](#)




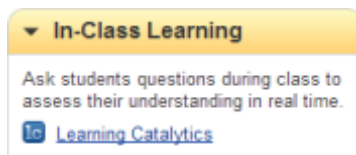
[Video: Transferring Learning Catalytics scores to Mastering](#)

## Lesson 4: Enable Learning Catalytics for Your Students

If you decide to use Learning Catalytics with your course, you enable students to access your associated Learning Catalytics course, and notify students to confirm or purchase access. You must follow the steps below and click **Use with Students** in order for the In-Class Learning feature to appear on the student Course Home.

### Step-by-Step Directions


1. You have easy access to Learning Catalytics right from the Mastering Course Home page. On your Course Home page in Mastering, click  **Learning Catalytics**.





2. Once you click **Learning Catalytics** you will be prompted to watch a video, review requirements for use, preview the system, or invite students.

*Note: If you have not already done so, click **Preview & Setup** to explore Learning Catalytics features before you decide to use it and ask students to purchase it. Any work completed in Preview & Setup mode is saved and remains in the course if you move onto **Use with Students**.*

learning catalytics

 Watch the Video

Learning Catalytics is a "bring your own device" web-based student engagement, assessment, and classroom intelligence system. Use open-ended questions to get into the minds of your students to understand what they do and don't know and adjust lectures accordingly.

<div style="text-align: center; border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <b>Step 1. Preview &amp; Setup</b>  </div> <p style="font-size: 0.8em;">Explore Learning Catalytics to determine how you will use it in your course.</p> <ul style="list-style-type: none"> <li>Browse the question library or write your own questions from scratch.</li> <li>Add questions to modules to use in your class.</li> <li>Preview the student experience.</li> <li>Arrange your classroom seatmap.</li> </ul> <div style="text-align: center; margin-top: 10px;"> <span style="background-color: #ffc107; padding: 5px 15px; border-radius: 3px; font-weight: bold; font-size: 0.8em;">Preview &amp; Setup</span> </div>	<div style="text-align: center; border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <b>Step 2. Use with Students</b>  </div> <p style="font-size: 0.8em;">Notify students to purchase access and start using Learning Catalytics in your course.*</p> <ul style="list-style-type: none"> <li>Pose questions to students during class.</li> <li>Form discussion groups based on student answers.</li> <li>Review results in real time to identify student misconceptions.</li> <li><input type="checkbox"/> Notify students via email to purchase access. <a href="#">view/edit message</a></li> </ul> <div style="text-align: center; margin-top: 10px;"> <span style="background-color: #ffc107; padding: 5px 15px; border-radius: 3px; font-weight: bold; font-size: 0.8em;">Use with Students</span> </div>
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**\*Requirements for Classroom Use**

- Classroom connectivity: Capacity for all students to be online simultaneously via Wi-Fi or cell providers (Check with your IT department)
- Web-enabled devices: Smartphone, tablet, or laptop for each student
- Learning Catalytics access: Included in Mastering with eText (both online subscriptions and new book packages) or sold separately

3. [Optional] Under Step 2, click **view/edit message** to read and make changes to the message that you can send to students to notify them to confirm or purchase access to Learning Catalytics.

[Notify students via email to purchase access.](#)  
[view/edit message](#)

4. [Optional] Select the **Notify students** check box if you want to send the email message as soon as you click **Use with Students**. (If you want to use the message later, you can copy and save it from this box now. You won't see this option again.) It is recommended to select the "Notify students" check box to quickly and easily inform students. The automated email explains to students in detail what they need to do to access Learning Catalytics. This message is editable and also appears as an announcement in Modified Mastering.
5. Click **Use with Students**.

### Important Notes:

- You must click **Use with Students** if you are planning to transfer Learning Catalytics scores to the Modified Mastering Gradebook.
- Once you click **Use with Students**, it is irreversible in that particular Modified Mastering course. When you copy a course, you will need to click Use with Students in the copied course even if you've used Learning Catalytics with students in the original course.

Clicking **Use with Students** automatically:

- Sends the notification email to all students registered in your Mastering course, and places an announcement on the student Mastering Course Home page. Make sure the check box is selected so students get this message. The announcement remains visible to students, including those who enroll in your course later.
- Places the In-Class Learning feature on the student Modified Mastering Course Home page. Students must cross over successfully from Modified Mastering to Learning Catalytics at least once. Students should NOT sign in

directly at [www.learningcatalytics.com](http://www.learningcatalytics.com) until they have crossed over at least once.

- Creates the Learning Catalytics roster with names of all students in your Modified Mastering course, and keeps the Learning Catalytics roster up-to-date automatically with changes that are made to your Modified Mastering roster.
- Provides you with the ability to select whether you'd like to transfer grades from Learning Catalytics to Modified Mastering in the module settings.

## Next steps

From the Learning Catalytics Welcome page you can proceed to do any of the following:



[\*\*Add a classroom seat map\*\*](#)

[\*\*Set up permanent groups for Learning Catalytics\*\*](#)

[\*\*Examine available questions for any discipline\*\*](#)

[\*\*Create a new question\*\*](#)

[\*\*Add a module \(a set of questions to be delivered to students\)\*\*](#)

[\*\*Test delivery modes and equipment\*\*](#)

## Lesson 5: Get Students Started with Learning Catalytics

### Learning Catalytics in Action

We recorded a class at Temple College using Learning Catalytics where we captured the essence of Learning Catalytics: peer-led instruction and active learning. Here's what Professor Terry Austin, Mastering and Learning Catalytics Faculty Advisor, and his students had to say about it.

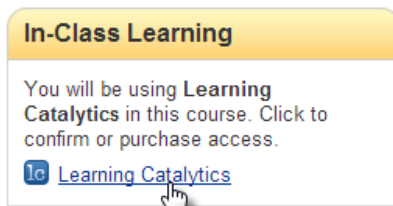


[Learning Catalytics in Action](#) (3 min 35 sec)

### Student Access to Learning Catalytics

After you've clicked **Use with Students** on your Course Home, students will see **Learning Catalytics** on their Mastering Course Home page to confirm or purchase access to Learning Catalytics.

Original Course Home:



Beta Course Home:

Course Home



**Important:** [Student Get Started with Learning Catalytics handout](#)

Some students will be able to get immediate access to Learning Catalytics (included at no charge with eText purchases and new textbook purchases). Other students will be prompted to purchase access (with or without eText). It is very important students associate their purchase with the SAME username and password they use for their Mastering course.

*Note: Encourage students to confirm their access before you deliver your first Learning Catalytics session. If they wait until they are prompted to join a session, those who haven't purchased access will be prompted to do so when they try to join.*

*To get students started smoothly, many instructors create a practice module due before the first day or class or they run a practice module in class to get students set up quickly.*

## Student Experience

Students can use any modern web-enabled device, including laptops, smartphones (iPhone, Android, Blackberry, and so on), and tablets (iPad, Kindle Fire, and so on). Learning Catalytics is completely web-based so there is no software to install for the student or the instructor. If students forget their device, you can print out a PDF of the modules and have this available during class. Also, it might be helpful to warn students to charge up their device for class, depending upon access to outlets for charging purposes.

## Joining a Session in Progress

Students sign in to their Mastering course and click **Join Now** (on a computer) or tap **Join Session in Progress** (on a mobile device) from the In-Class Learning area of the Mastering course home page.

With the Mastering integration with Learning Catalytics, students are automatically directed to the available session(s) in progress. If multiple sessions are available and they are not brought to the correct session, they can choose **Join another session**. If asked, students identify their seat in the classroom (either by entering an alphanumeric seat label that you create when the seat map is created or by

choosing a seat from the provided map) and choose **OK**. For a live classroom session, students wait until you make the first question available to the class and then submit a response.

## Three Possible States for the “In-Class Learning” Message Box (Old Course Home)

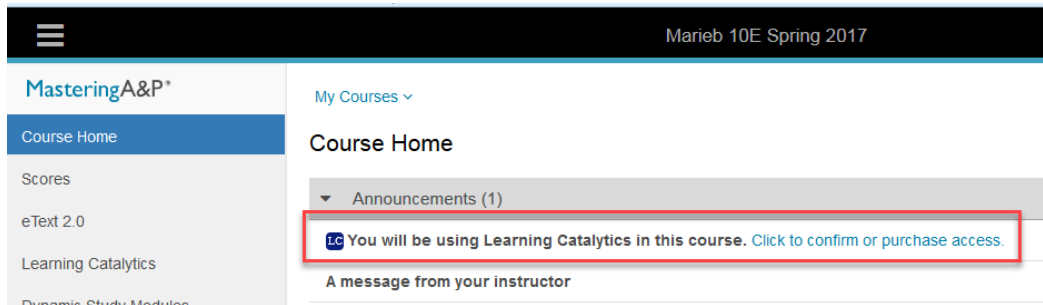
- If you have not yet started a Learning Catalytics session, the student is prompted to confirm or purchase access.
- When sessions have been started, the message informs the student that there are active Learning Catalytics sessions to join.
- If there are no active Learning Catalytics sessions to join, but students have completed earlier sessions, the message reminds them that they can access Learning Catalytics to review work in past sessions.

The screenshot displays a course home page with the following components:

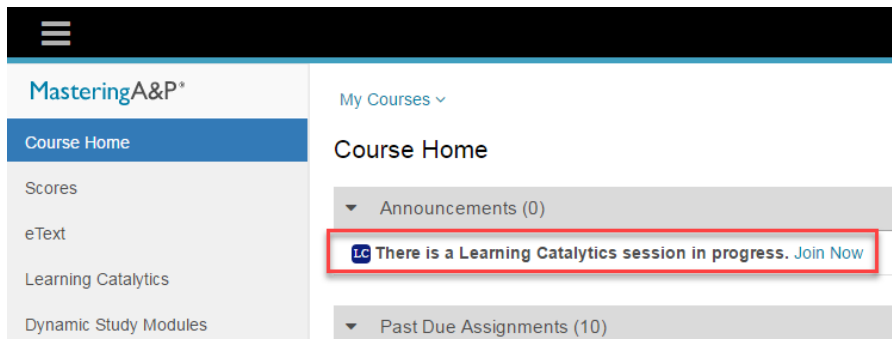
- Announcements:** A table with columns for SUBJECT and DATE POSTED. A message from the instructor is listed as 'NEW' and posted on 11/12/13 at 04:12pm.
- Course Calendar:** A calendar for November 2013. The date 12th is highlighted in yellow.
- In-Class Learning (Red Box):** A message stating, "You will be using Learning Catalytics in this course. Click to confirm or purchase access." with a "Learning Catalytics" button.
- In-Class Learning (Yellow Box 1):** A message stating, "You will be using Learning Catalytics in this course. Click to confirm or purchase access." with a "Learning Catalytics" button.
- In-Class Learning (Blue Box 2):** A message stating, "There is a Learning Catalytics session in progress. Join now to participate." with a "Join Now" button.
- In-Class Learning (Yellow Box 3):** A message stating, "Access your past Learning Catalytics responses as a study aid." with a "Learning Catalytics" button.
- Test Your Knowledge:** A section for choosing a chapter and working through questions, powered by amplify™, with a "Get the Mobile App" button.
- Course Materials:** A section for getting documents and other files posted by the instructor, with "View Documents" and "View Lectures" buttons.
- Learn More:** A section with a "Getting Started" link.

## Two Possible Messages under Announcements (Beta Course Home)

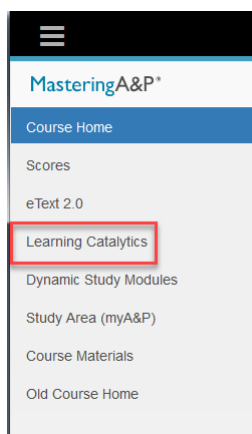
- If you have not yet started a Learning Catalytics session, the student is prompted to “confirm or purchase access”.



- When sessions have been started, the “Join Now” message informs the student that there are active Learning Catalytics sessions to join.



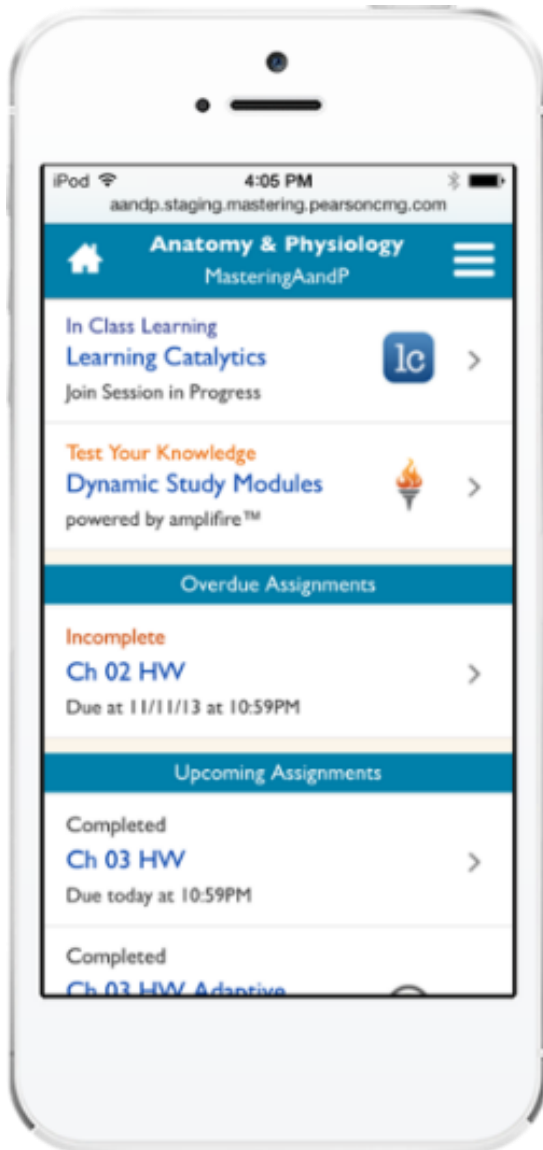
## Review Sessions (Beta Course Home)



Students click **Learning Catalytics** from the left navigation menu to review past sessions.

## View from a Mobile Device (Mobile Mastering)

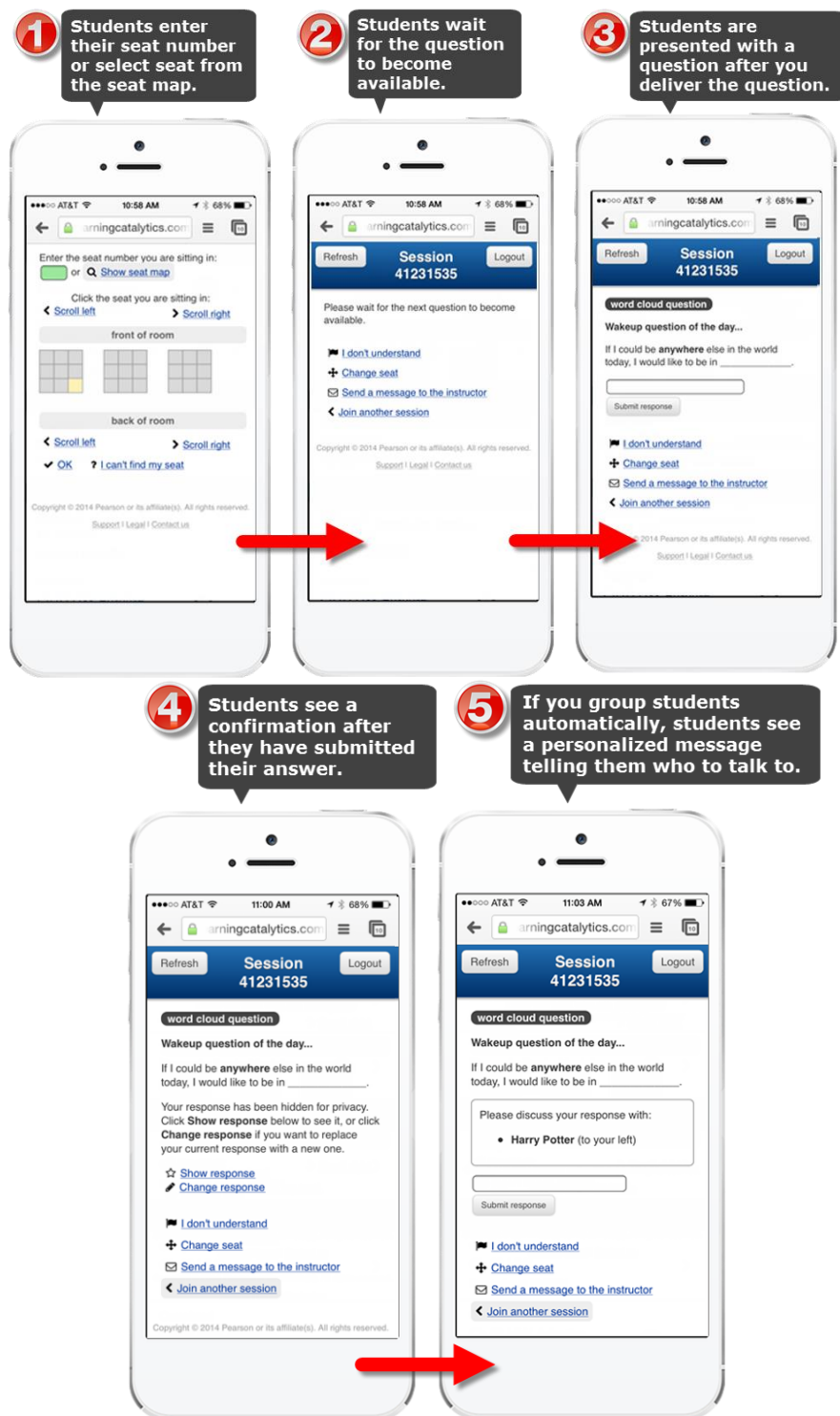
**Mobile device users:** From Mastering, the navigation to Learning Catalytics from a Mastering course is optimized for mobile device users.



Students see a Learning Catalytics notification to join session when a session has started at the top of their screen.

## Student Experience during a Synchronous Session

To give you an idea of the student experience during a synchronous session where you've decided to group students, view the screenshot path below.



## Lesson 6: Create and Deliver an Instructor-Led Synchronous Module during Lecture or Lab

If you are delivering questions in a module synchronously, there are best practices to follow when grouping students for productive classroom discussions. Peer Instruction helps students learn by encouraging them to articulate their thinking. The discussion process helps both the stronger and weaker students. Research has shown that Peer Instruction yields significant gains in conceptual understanding, problem solving skills and long-term retention.

See a flowchart (Figure 1) below demonstrating the recommended peer instruction implementation process. How the instructor decides to advance is dependent on course content and the student population; the flowchart provides an overall guide to productive peer discussions in class. See [Eric Mazur present on the use of this technique](#).

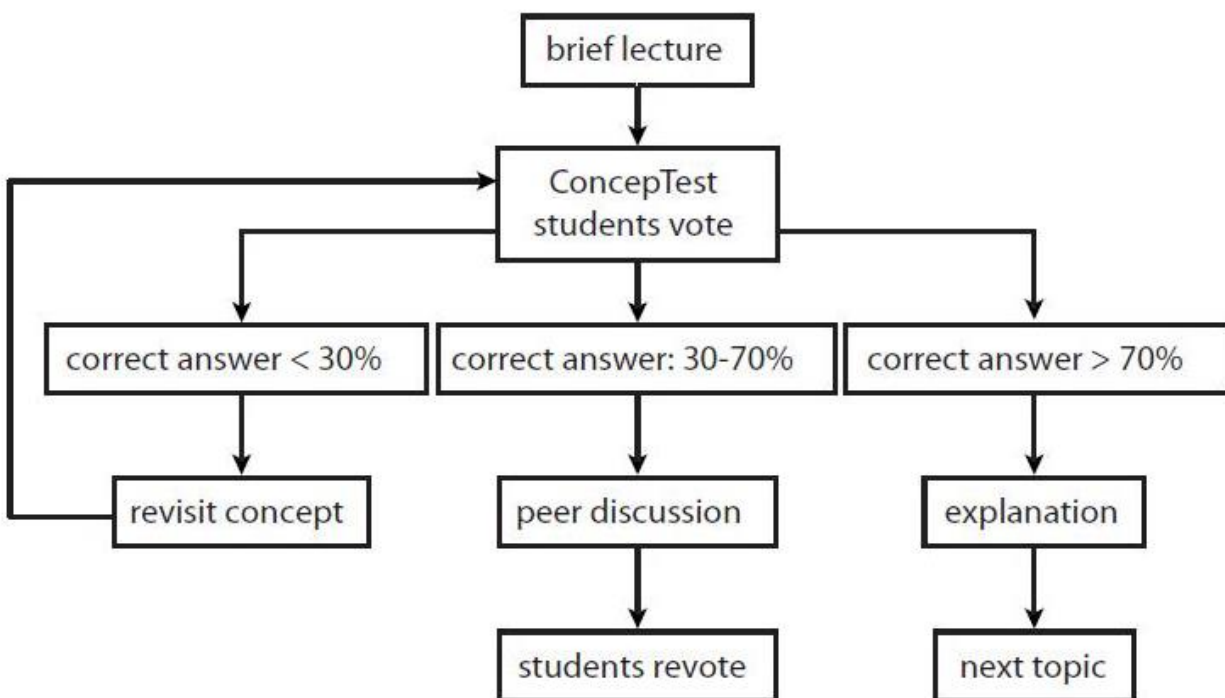


Figure 1 (Lasry, 2008)

## Steps for Productive Peer Instruction

- ❑ After a brief presentation of the concept, students are given a few minutes to submit an individual answer.
- ❑ If the appropriate percentage of students answers the question correctly (usually between 30 and 70%), students are grouped in pairs or small groups. Typically, you will want to try to group students with different answers, or students with correct and incorrect answers. This way, students can compare and discuss their answers. If less than 30% have the correct answer, you may want to lecture more on the topic prior to any discussion. If more than 70% have the correct answer, you can typically skip the peer discussion and instead provide a brief follow-up explanation and move to the next topic.
- ❑ After you initiate peer discussion, move around the room to promote discussion and guide student thinking. In a student-centered class, students help each other and learn from each other. They may reach out to you for help or guidance after they've tried to work through the question among themselves. (Note: The Learning Catalytics interface allows you to view the student responses and their spatial distribution around the room in real-time, so you can see the students that might need help.) Your role during group discussions is a facilitator so that students are active participants in the learning process.
- ❑ After several minutes, the students answer the question again. Depending on student answers, you can explain the concept, provide feedback, or offer advice. Then, move on to the next topic.

**Tip:** Consider what you want to achieve through the group activities. Try making the tasks challenging and stimulating to promote critical thinking, discussion, and deeper understanding of the material.

## Best Practices: Create and Deliver a Module

### Planning the Module Design and Delivery

- Ask questions that address your students' misconceptions and reveal the kinds of uncertainties they might have about that material.
- Make sure to incorporate concepts and learning outcomes from your Learning Catalytics modules into your exams and any other assignments to tie it all together for your students and to make the in-class experience a productive one for them.
- Use the information you receive in Mastering diagnostics from pre-lecture assignments to help you decide on what to focus on in class. Mastering diagnostics allow you to quickly see your students' common misconceptions. The diagnostics also allow you to see what they already understand to allow you to move up Bloom's Taxonomy for in-class activities.
- When you design your module, keep in mind how much time in lecture you want to dedicate to active learning (such as 5%, 40% or 80% of lecture time).
- When thinking about your module design, consider various active-learning activities. These may include knowledge questions, discussion questions, conceptual questions, case studies, and data-driven problems. Learning Catalytics allows you to pose questions to students in the most natural and "authentic" way possible so there is no need to force questions into a multiple-choice format.
- Modules can be used synchronously in class or in lab. Example implementations in lab may be to have students upload images, answer region questions, or take a lab practical on Learning Catalytics.
- Practice delivery and view the student view before you use Learning Catalytics in class. This will increase your confidence and ensure things go smoothly during lecture.
- Consider using the mobile user interface for delivery of Learning Catalytics in lecture. This will allow you to deliver questions in a module from your device

and view responses to make it very easy for you to move around the room during peer discussions.

- Plan what you will project in class. If you plan on using only your computer in class and not pulling up Learning Catalytics on your device, figure out what you want students to see from your computer and how you want to set up the projector. Click here to see [how to set up Learning Catalytics in the classroom](#).

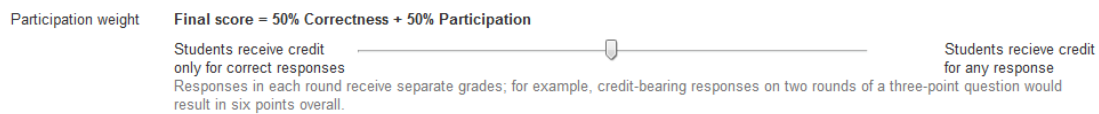
## Student Gains Assessment with Learning Catalytics

- Pair targeted activities with diagnostic assessment strategies. If you want to assess student gains, consider designing a module to assess student understanding of a process. Create a module with a five or six question set of multiple choice and true/false questions that require a short-answer response explaining answer choice so you can determine reasoning type (i.e. informal, mixed, or principled scientific reasoning) as a pre-test. This should take about 15-20 minutes to complete. Questions should directly relate to the targeted active-learning exercises used in the lecture. Don't discuss the questions in class. Consider asking these questions again at the end of the semester as a post-test. This will allow you to compare the pre- and posttest results to measure student gains. It can help you implement targeted active-learning activities in the future. Consider giving no points and encourage students to try their best. (April Cordero Maskiewicz, 2012 Spring)
- Consider asking questions in a pre-test in the beginning of the semester to get a baseline such as prior knowledge assessment, conceptual inventory, and attitudinal survey. Consider using standardized conceptual inventories like the Force Concept Inventory, where available and appropriate. At the end of the semester or on an exam, ask them again.

## Module Settings

- To encourage open discussion, you may want to give little or no credit for correctness. With Learning Catalytics, you can set grading so students are

only graded on participation or correctness. You also have a slider that allows you to adjust the weight of participation vs. correctness.



- If you want students grades transfer to the Mastering gradebook, be sure to click the checkbox. You can always turn this off after the session if you decide later not to have the grades transferred into the Mastering gradebook.
- If you want to see a student reaction graph during sessions, you will need to turn this on in your course settings before you deliver the module. This presents students with an “I don’t understand” button they can click or tap at any time during the session; a real-time graph accessible on your display via the Reactions button helps you gauge student confusion in real-time.
- You can adjust points for questions added to the module. Consider this as you add questions to your module. Some questions are not graded automatically and have a default of 0 points. You can also assign points to questions that cannot be automatically scored (e.g., sketch questions). If you set scoring based on correctness for questions that are not graded automatically and give them a point value, you will have to manually grade the answers.
- You can now prevent students from reviewing any type of module by checking a box during module creation. However, keep in mind that students do appreciate the ability to review past sessions. Students can review past sessions from any web-enabled device or computer.

## Content and Questions for Your Module

- Questions should challenge students appropriately by being neither too easy, nor too hard; aim for somewhere between 30 and 70 percent of the students to answer it correctly on their own, before discussion.
- Look through the publisher-provided content and the community content to find questions to use in-class. You can add these to your module or add them along with your own questions as well.

- When writing a question, use the Learning Catalytics question type that most naturally maps to the kind of question you want to ask such as region, sketch, ranking, word cloud, priority, many choice, short answer, data collection, direction, confidence, composite sketch, multiple-choice, and so on.
- Focus on questions that promote higher-level learning. The important thing is that class time should be used to deepen understanding, apply concepts, and improve skills.
- You cannot edit Pearson questions, even if you copy a question. You can edit your own questions or community questions.
- When searching for questions in the library, use the filter options in any combination to target your search results.
- Consider adding a ‘wake up’ question as your first question delivered in class, to ensure that students are logged in and ready to go when you are ready to ask your first “real” question. If you consistently have a question available before class starts and stop delivery at the beginning of class, you can avoid wasting class time as students log in on their devices. A great example is the word cloud question type. This can be a great way to engage students at the beginning of class. Instructors find it useful to deliver a general survey question (with no correct answer) as students enter class.
- Consider adding questions related to your last lecture or copying questions you didn’t get to from a past session. This can also help students connect topics from one lecture to another.
- Consider covering the same case study in class over several lectures. You can relate the case to different concepts during each lecture; for example, one day you apply the case study to immune system topics and the next lecture you apply the case to nervous system topics, and so on.

## During Delivery of a Module

- For classroom-based sessions, see [How do I set up Learning Catalytics in the classroom?](#), which discusses options for classroom setup based on the

equipment that is available to you (mobile device or laptop, projector, and tablet or second laptop).

Unless you accidentally display it on your projector, **students never see your instructor dashboard.**

You can also [deliver a Learning Catalytics Session on a Mobile Device.](#)

- Use the formative feedback from Learning Catalytics. You can see anonymous responses, specific student responses, reactions (if you've added this to your course settings), and the elapsed time. If you group students, you can see pre-discussion and post-discussion responses side by side.
- Consider asking questions on the fly if it will help further understanding of a concept. An on-the-fly question becomes part of the module.
- Use automatic grouping for students to engage in peer-to-peer instruction. So long as the question counter is still running for a question you have delivered (**do not stop delivery**), you can form impromptu groups to discuss their responses to the question.
- A suggestion from Eric Mazur is to develop new questions by giving students open-ended prompts in class and then using students' responses as the answer choices. These could be created as a question on the fly. (Schell, 2014)
- Move around the room to encourage discussion and student thinking. Use the seat map with real-time responses as a guide.
- When grouping students, consider the number of students in your class when making the grouping selections. For more grouping techniques and strategies, see Lesson 5 Grouping Strategies.
- Students can send you private messages during a session. You will see them appear on your screen (bottom left corner of instructor dashboard). You can read it during a session or wait until after the session. You have the ability to mark it as read as well.
- Consider when and if you want to push the class results to students' devices and to the student window (if using a projector). Once you display results, students can no longer change their responses. You can click **Hide results** to

return the question to delivery mode and allow students to respond again.

**Important:** When you click **Show all Results**, be careful and select either:

- Revealing the correct answer
- Without revealing the correct answer

## After the Module Delivery

- You can edit any of the questions you create later for future use. For example, you may want to add feedback (which students see when they review the session), tags, or notes. You can also decide to share questions later in the community library that have been successful in your course.
- After a Synchronous session, you might want to remove any questions you don't get to after the session. If you leave questions in the module that you haven't gotten to, students will be able to review those questions after class.
- You can clone your modules to use in other courses and you can also clone your questions to use in other modules. If you have a question that you want to create that is similar to another question, cloning can save you time creating the second question. After you clone them, you can edit them or keep them the same.

## Step-by-Step Directions: Create and Deliver an Instructor-Led Synchronous Module



[Add a Module](#)

[Find Learning Catalytics Questions](#)

[Add Your Own Questions](#)

[Create a Classroom Seat Map](#)

[Use a Synchronous Module in Class](#)

[Deliver a Learning Catalytics Session on a Mobile Device](#)



**[Video: Create an Instructor-Led Synchronous Module](#)**

## Lesson 7: Grouping Techniques for In-class Synchronous Delivery of Modules

Creating opportunities for peer instruction is easy when delivering questions in synchronous modules. This can be done either formally or informally. The best opportunities for peer instruction occur when a question is delivered and the correct answer is given by 30%-70% of your students.

One option for peer instruction is created by formally assigning students to groups. Selecting “assign groups” allows this (see screenshot below) after you deliver a session.

The screenshot shows the Learning Catalytics interface. At the top, there are navigation links: Courses, Questions, Classrooms, Tour, Help, and Student view. The current session is titled "Learning Catalytics-San Francisco" and "Science of Learning", with a current session ID of 151233 and 0 students. Below the navigation, there are buttons for "Stop session", "Reactions", "Edit", and "Ask a new question on the fly". A "Jump to" menu shows questions 1 through 9, with question 5 selected. The question is a "many choice" type, titled "Macromolecule Linkages (1 of 3)", and asks "In which of the following figures contain peptide bonds? Select all that apply." The question number "1" is displayed. The chemical structure shows a tripeptide backbone with three side chains highlighted in colored boxes: a yellow box containing a methylsulfanyl group (-CH<sub>2</sub>-S-CH<sub>3</sub>), a green box containing a hydroxyethyl group (-CH<sub>2</sub>-CH<sub>2</sub>-OH), and a light green box containing a mercaptoethyl group (-CH<sub>2</sub>-SH). To the right of the question, there are buttons for "Stop delivery", "Deliver again", "Assign groups", and "Show all results". A tooltip for "Assign groups" reads: "Automatically assign students to groups, and then start another round of responding to this question". Below the question, there are four answer options, each with a 0% response rate: A. 0%, B. 0%, C. 0%, and D. 0%.

The instructor will then be given the option of how Learning Catalytics will create the groups (see screenshot below). When students are grouped, the question is redelivered to the students. The first delivery is labeled “Round 1” and the second delivery is “Round 2.” Round 2 becomes a second chance for students to select the correct answer.

### Options for assigning groups for peer instruction include:

- Size of each group

- What indicator will be used to create the groups
- How students should compare within each group
- Whether student location could be considered within the classroom.

**Assign groups for peer instruction** ✕

Group size:

Indicator:

Comparison:

Group students:

If students can't be grouped:

---

As students get into their groups, they present and defend their selected answer to each other. Students often get into spirited discussions with each other, challenging other members of the group to defend their answer. Students tend to become very invested in identifying the correct answer, and will often delve into the text (willingly and without prompting) in order to back up their answer with evidence from the text. When the results are shown, students may question why their answer is not marked as correct, identifying specific misconceptions and generating valuable opportunities for specific instruction.

**Tip:** Use the seat map to identify students that may not be participating in Round 2. These students can be identified as the grey boxes (vs. green, red or yellow identifying students who have submitted answers). Groups that are not on task can be identified in this manner, and students not participating can be encouraged (by name) to consult with a student in the group that has correctly identified the correct answer.

A second way to create opportunities for peer or whole-class discussion is to select **'Show results without revealing the correct answer'**. This prompts Learning Catalytics to show all answers in blue, without indicating which answers are right or wrong.

At this point, you can informally group students by asking them to turn to their neighbor(s) to discuss and justify their answer. The instructor can then select **'Deliver again'** and students will be given another opportunity (round 2) to select the correct answer. The instructor can then select **'Show results, revealing the correct answer'**. At this point, students will see the results for both rounds, with correct responses shown in green and incorrect responses in red.

Alternatively, an instructor can stop delivery, elect to take time to teach specific areas where content gaps may exist, and then deliver the question again for a third round. Learning Catalytics can be used to deliver many rounds of a single question.

## Best Practices: Group Students

Try the default settings first for automatic grouping as these settings work for most classrooms.

When using the Assign Groups feature in a synchronous session, instructors should take several things into account.

1. Ease of mobility in the classroom
2. Productive student discussions
3. Randomness in successive discussions within a class period, or throughout the semester. You don't always want students in the same group each time.
4. Time invested in discussion, as time relates to distance traveled to/from seats when students must move.

While assigning groups in large class, especially in an auditorium style classroom, instructors may have to invest less lecture time when using smaller groups (2-3) seated relatively near one another (1-2 seats away). Small classrooms which are often conducive to student mobility, groups can be larger (4-5), and may be able to move about small rooms easier (2-3 seats). In small classrooms where having students get up and walk around is not an issue, instructors can also choose to

have Learning Catalytics disregard the location information entirely and group students independently of their location in the room.

Use the **Comparison** setting to structure your group dynamics. There are three options, each with benefits and drawbacks.

1. **All Different** - This choice can lead to provocative discussions as each student comes with a different opinion. However, this may make grouping difficult in small classrooms where it may be difficult to generate several groups where all have different opinions.
2. **All the Same** - This choice may lead to less discussion, as everyone comes to the group with the same opinion, and it may be the wrong opinion. This can make for rapid discussion, since it does not provoke conflict as often as the other choices.
3. **Not all the same** - This choice is a good all-around compromise and it generates groups with a mix of opinions. This is often the easiest type of group for the system to generate. There are differing opinions in most groups. This tends to provoke good discussions in most classrooms. This choice fits well in classrooms of all sizes.

Use the **Indicator** setting to toggle between **Response** and **Score**. The effect this has will differ depending on the question type. The effect of **Indicator** is influenced by the **Comparison** choice as well.

1. **Response** - This will vary groups based on all possible answer choices. For instance, if you are grouping based on **Response** and **Comparison** is **Not all the same** there will be a mixture of different answers.
2. **Score** - This will vary groups based on whether a student was right or not. In many questions a 'wrong' answer could come in several forms. Using a **Score** indicator with an **All Same** comparison setting would create some groups where all students were right and other groups where every student got the answer wrong. This could lead to entire groups arguing between several wrong answer choices, with none arguing for a correct choice.

## Lesson 8: Team-Based Assessment

Learning Catalytics can be utilized for Team-Based Assessment by selecting **Team-Based Assessment** as the response type for any given module.

[My Courses](#) > [A&P 1](#) > **Create Module**

### Create Module

Give the new module a name, a delivery date, and select a response type.

Name\*   
The name of the module, as shown to students.

Date   
The date is used for sorting modules within the table on the course page (enter as YYYY-MM-DD or click to select date).

Response Type

<b>Synchronous</b> Students respond individually to questions as they are delivered one at a time in class.	<b>Self-Paced</b> Students respond individually to questions in any order, typically outside of class.	<b>Self-Test</b> Students respond individually to questions in any order and receive feedback on each of their responses, typically outside of class.	<b>Team-Based Assessment</b> Students respond individually to all questions in the module, and then gather in their groups and respond as a team to the same questions.
--	---	--	--

Selecting Team-Based will allow students to respond individually to all of the questions in a given module in any order. They will then gather into their groups and respond as a team to the same questions. Before delivering a module, the instructor will select the settings that will be applied to the grading of the module.

**Settings**

Name\*   
The name of the module, as shown to students.

Date   
The date is used for sorting modules within the table on the course page (enter as YYYY-MM-DD or click to select date).

Response Type **Team-Based Assessment** [Change response type](#)  
Students respond individually to all questions in the module, and then gather in their groups and respond as a team to the same questions.

Group assignment  Use the permanent groups from the course  
 Let students assign themselves to new groups

Points  
In the team round:  
Answering correctly on attempt 1 is worth  points  
Answering correctly on attempt 2 is worth  points  
Answering correctly on attempt 3 is worth  points  
(Correct responses in the individual round are worth the maximum number of points.)  
[Allow more attempts](#) - [Allow fewer attempts](#)

Team weight **Final score = 50% individual score + 50% team score**  
Score based solely on individual work  Score based solely on team work  
Responses in each round receive separate grades; for example, credit-bearing responses on two rounds of a three-point question would result in six points overall.

Hide sessions for this module from students  
If checked, do not show active sessions for this module in the list of active sessions students see when they log on.

Do not allow students to review their performance on this module  
If checked, do not show sessions for this module in the list of older sessions that students can review within Learning Catalytics.

Gradebook Transfer  Send grade data to MasteringAandP course (A&P 1)  
Points transfer as

Make the above grade transfer settings the default for all new modules

**Questions**

The instructor must decide how grouping will be defined: permanent groups or allow students to assign themselves to groups.

Response Type **Team-Based Assessment** [Change response type](#)

Students respond individually to all questions in the module, and then gather in their groups and respond as a team to the same questions.

**Group assignment**

- Use the permanent groups from the course
- Let students assign themselves to new groups

Points

In the team round:

Answering correctly on attempt 1 is worth  points

Answering correctly on attempt 2 is worth  points

Answering correctly on attempt 3 is worth  points

(Correct responses in the individual round are worth the maximum number of points.)

[+ Allow more attempts](#)   [- Allow fewer attempts](#)

Team weight

**Final score = 50% individual score + 50% team score**

Score based solely on individual work  Score based solely on team work

Responses in each round receive separate grades; for example, credit-bearing responses on two rounds of a three-point question would result in six points overall.

Hide sessions for this module from students  
If checked, do not show active sessions for this module in the list of active sessions students see when they log on.

Do not allow students to review their performance on this module  
If checked, do not show sessions for this module in the list of older sessions that students can review within Learning Catalytics.

Gradebook Transfer  Send grade data to MasteringAandP course (A&P 1)

Points transfer as

Students can be assigned into permanent groups within a Learning Catalytics course or they can assign themselves into groups. Creating student groups is easy once students have enrolled in your Learning Catalytics course. First, select **Groups** from the selection of settings in your course.

learning | catalytics
Rebecca Orr | Collin College | [Log out](#)

Courses Questions Classrooms Tour Help
Student view

[My Courses](#) > **Sample course**

Create module
Copy a module

Settings
Students
Groups
Gradebook
Sharing
Delete course

Search:

Module	Type	Date	Results
Sample lecture	Synchronous	2014-01-09	○○○○○

Showing 1 to 1 of 1 entries

ALWAYS LEARNING
PEARSON

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Support | Legal | Contact us

Then drag and drop a student name from the list of enrolled students into the Group 1 box.


**Create Student Groups**

Use this tool to create permanent groups for team-based assessment modules. Drag students from the left to a box on the right to form a group.

Once a student is in the **Group 1** box, a second box will be generated titled **Group 2**. Continue to drag and drop student names into groups. Each time a name is added to an empty group box, and additional group will be generated by the system. When you have finished creating groups, select **Save Groups**.

In the team-based response format, students will be able to begin the individual round and answer all questions in the module once the instructor begins the session. When the instructor is ready to transition to the team round, the instructor will select **Begin team round**.

As students work in groups, they agree upon one response to submit for the team. To assist that process, they have access to all the responses their team members submitted during the Individual Round. Any student can click **Show my team's responses**.

 [Show my team's responses](#)

When a team member submits the team's answers, all team members see answer feedback. If you have enabled multiple attempts in the module settings, the team can submit another answer (generally for fewer points). A different person can submit the next response, but teams need to remember to coordinate their input because each response to the same question is considered to be another attempt.

The number of attempts allowed by the team will have been set by the instructor when the team based response was selected for the module. See an example below.

Points

In the team round:

Answering correctly on attempt 1 is worth  points

Answering correctly on attempt 2 is worth  points

Answering correctly on attempt 3 is worth  points

(Correct responses in the individual round are worth the maximum number of points.)

[+ Allow more attempts](#)   [- Allow fewer attempts](#)

The instructor can designate the number of attempts as well as the value of each attempt on a module-by-module basis.

The final score for each student completing a Team-Based module depends on the weighting of the scores of the individual vs. team based.

Weighting

Final score = 50% individual score + 50% team score

Score based solely on individual work  Score based solely on team work

Hide sessions for this module from students  
If checked, do not show active sessions for this module in the list of active sessions students see when they log on.

Do not allow students to review their performance on this module  
If checked, do not show sessions for this module in the list of older sessions that students can review.

The default final score is calculated as 50% individual score/50% team score. An instructor can modify this to meet their needs by sliding the selector to the left (increasing the value of the individual score) or the right (increasing the value of the team score).

## Team-Based Assessment Tips

- Deliver the individual round as homework, and use class time to deliver the team round. This will allow students to engage in discussion with each other about problems that may have been encountered in the individual round. This will also allow the instructor to listen to students justify their answer,

and address misconceptions as needed. Realize that if you deliver the individual round in class, the environment will be similar to a testing setting, as students will be quietly working on their own. Very little interaction or opportunity for teaching will occur- although Team-Based assessments can also be used for testing purposes where it might be essential to have students present in the room for both rounds.

- The Team-Based modality is modeled on the "[Readiness Assurance Process](#)" from Team-Based Learning. The Team-Based Learning Collaborative has some advice on [how to form teams](#) including:
  - Never use student-selected teams.
  - Create diverse teams.
  - Make the selection process transparent.
  - It takes time for groups to evolve into effective teams. If you don't use permanent teams, the team development process must begin all over again each time you deliver a Team-Based module. To get the most benefit from this modality, consider using your lab groups as a permanent group for example or consider the other suggestions from the Team-Based Learning Collaborative on how to form groups.
  - If you use temporary teams, students are prompted to join their teams before you can begin the Individual Round. Students enter a common team name to indicate to Learning Catalytics that they are on a team together. Temporary team formation works best if students are already in class together.

## Step-by-Step Directions: Use a Team-Based Assessment



[Use a Team-Based Assessment](#)



[Video: Using a Team-Based Assessment module in class](#)

## Lesson 9: Delivery of Self-Paced or Self-Test Modules

Two kinds of modules are well suited for individual work outside of class. However, they can both be used during class as well. See a few examples below of use cases.

- **Self-Paced:** Students respond individually to questions in any order. Self-Paced modules are typically used for:
  - Homework outside of class (where for example you want them to do it in a certain window like a pre-lecture assignment, but not allow them to see answers/feedback so you can cover the most difficult questions during the following lecture).
  - In class quizzes (when you don't want to group students or allow them to see answers/feedback).
- **Self-Test:** Students respond individually to questions in any order and receive feedback on each of their responses. Self-Test modules are typically used for:
  - Online homework or practice tests where you want students to see answers/feedback immediately.
  - You can clone another module response type such as a Synchronous Module or Team-Based Assessment so students can practice outside of class with immediate feedback.
  - Use Self-Test in class as a way to differentiate instruction. For example: When you are teaching a particular topic where students would find themselves at much different skill levels (some students still needing much practice on the basics and others deathly bored by the basics right away and in need of much more of a challenges), then create a Self-Test module with questions of increasing difficulty, and open it up to students. Tell them that the easy questions are at the front, harder questions at the end, and tell them they can start anywhere they choose. Then the instructor view reflects real-time performance so you can see both what problems students are attempting and what the common errors are on each one. Also students are working

independently so you have time to walk around and help students individually as needed.

Note: You could also use a Synchronous module for synchronous online sessions outside of class.

For both of Self-Paced and Self-Test module types you can optionally set a **Start at** time and a **Duration** for starting and ending the session automatically. Unless you have established a **Start at** time, you must manually start a session for the module. If you want students to be able to review responses in these modules, and if you have not established an automatic stop time, then be sure to click **Stop Session** to allow students to review their responses and the correct answers for questions.

## Step-by-Step Directions: Use a Self-Paced or Self-Test Module



[Assign Learning Catalytics Modules outside of class](#)

## Lesson 10: Learning Catalytics Online (Automated Synchronous)

**NEW** This new kind of delivery gives students in completely asynchronous online courses options for participating in a Learning Catalytics session simultaneously with other students who are taking the same course. You specify multiple time slots for participation, and students sign in for a session that is convenient for them.

You don't need to be present for these sessions—Learning Catalytics takes it from there.

During each session, Learning Catalytics uses automatic pacing to deliver each question in an automated fashion (based on your predetermined sequence and timing settings), and it determines whether the participants would benefit from peer discussion of each question, based on their responses. (You set the grouping thresholds in advance in course settings.)

If a discussion is warranted, Learning Catalytics automatically places students into chat sessions for groups of concurrent participants. Students benefit from articulating why they answered as they did, and then the question is delivered again for them to answer in a second round.

### Pacing based on student response times

Some questions require more response time than others, and Learning Catalytics dynamically adjusts the time available based on the pace of student responses.


**1:43** When a question first becomes available, Learning Catalytics displays an elapsed-time ("count up") timer for students. Learning Catalytics watches how quickly responses come in, and predicts how much additional time is needed for the vast majority of students to respond.


**0:44 left** At that point, the "count up" timer switches to a "count down" timer that displays the remaining time.

*Note: Students see these timers on their devices in Automated Synchronous sessions*

## Intelligent grouping and redelivery

When time for a question expires, Learning Catalytics uses the percentage of students who responded correctly in Round 1 to determine whether the class would benefit from peer instruction by discussing the question in small groups.

If less than 30% or more than 70% of students responded correctly, students see the results graph as if you had selected  **Show all results**.

If between 30% and 70% of students responded correctly, students are automatically placed into groups, as if you had selected  **Assign Groups**. Students discuss their responses via an online chat and then respond to Round 2 of the same question, with smart "count up" and "count down" timers appearing again. After Round 2, students see the results graph, regardless of response percentages.

*Note: The 30% and 70% default thresholds are recommended, but you can adjust these values and other grouping settings in course Settings.*

## Step-by-Step Directions: Create Module

1. Click **Create Module**.

[My Courses](#) > [Anatomy and Physiology I](#)



2. Name your module, select a date, and select **Automated Synchronous**. Click **Save and Continue**.

**Create Module**  
Give the new module a name, a delivery date, and select a response type.

Name\*   
The name of the module, as shown to students.

Date   
The date is used for sorting modules within the table on the course page (enter as YYYY-MM-DD or click to select date).

Response type

<p><b>Instructor-Led Synchronous</b></p> <p>Students respond individually to questions as they are delivered one at a time, typically in class or online with an instructor present.</p>	<p><b>Automated Synchronous</b></p> <p>Students respond individually to questions as they are delivered one at a time in an automated format, typically out of class at a set time when an instructor is not present.</p>	<p><b>Self-Paced</b></p> <p>Students respond individually to questions in any order, typically outside of class.</p>	<p><b>Self-Test</b></p> <p>Students respond individually to questions in any order and receive feedback on each of their responses, typically outside of class.</p>	<p><b>Team-Based Assessment</b></p> <p>Students respond individually to all questions in the module, and then gather in their groups and respond as a team to the same questions.</p>
--	---	--	---	---

3. You see a settings page where you can set start times, maximum time to answer questions, and participation weight. Make your selections and add questions to the module.

*Note: You can only add scorable questions to an Automated Synchronous module. If you try to add questions that are not scorable, then you be asked by the system to remove them before beginning the session.*

Once you finished, click **Save and Finish**.

**Settings**

Name\*   
The name of the module, as shown to students.

Date   
The date is used for sorting modules within the table on the course page (enter as YYYY-MM-DD or click to select date).

Response type **Automated Synchronous** [Change response type](#)  
Students respond individually to questions as they are delivered one at a time in an automated format, typically out of class at a set time when an instructor is not present.

Start times [+ Add start time](#)  
Sessions will automatically begin at these times. Do not schedule the sessions to be too close together to ensure that they will not be overlapping. An active session will end automatically if it is time for another session to begin.  
 Hide sessions for this module from students  
If checked, do not show active sessions for this module in the list of active sessions students see when they log on.

Start first question after\*  seconds  
The amount of time students have to join the session before the first question is delivered.

Maximum time to answer a question\*  seconds  
The maximum amount of time students will be given to answer each question. Learning Catalytics' automatic pacing will automatically shorten this time limit if students are responding more quickly.

Present correct answer for\*  seconds before next question  
The amount of time students are given to review correct answers between questions.

Participation weight **Final score = 100% Correctness + 0% Participation**  
Students receive credit only for correct responses  Students receive credit for any response  
Responses in each round receive separate grades; for example, credit-bearing responses on two rounds of a three-point question would result in six points overall.  
 Do not allow students to review their performance on this module  
If checked, do not show sessions for this module in the list of older sessions that students can review within Learning Catalytics.

## Step-by-Step Directions: Edit Automatic Pacing Settings.

- To edit the automatic pacing settings for your course, click **Settings**.

[My Courses](#) > [Etkina Physics](#)

[Create module](#)
[Copy a module](#)
[Settings](#)
[Students](#)
[Groups](#)
[Gradebook](#)

Search:

Module	Type	Date	Results
Copy of Automated Synchronous 1	Automated Synchronous		<span style="color: red;">●</span> <span style="color: green;">●</span>

Showing 1 to 1 of 1 entries

- Make your selections for the Automatic Synchronous grouping settings under **Default Grouping Settings** and click **Save**. It is recommended to try the default settings as these are based on research on peer instruction. For more information, see [Eric Mazur's publications at the Mazur Group](#).

### General Information

Classroom  [+ Create new classroom](#)

The seating map for the classroom where the course will be taught.

### Settings

Allow review after  hours

Allow students to review all of the questions and answers in your delivered modules after this much time has elapsed since the start of the session.

Enable "I don't understand" button and real-time graph

If checked, students will have access to a button at all times where they can indicate when they are understanding or not.

Enable automatic pacing

If checked, Learning Catalytics will automatically manage the timing of question delivery, and automatically group students based on question results. (We recommend that new users keep this feature turned off initially.)

### Default Grouping Settings

These settings apply to both Automated Synchronous modules and Instructor-Led Synchronous modules when automatic pacing is turned on.

Lower bound for grouping

e.g., 30 for 30%

Upper bound for grouping

e.g., 70 for 70%

Default group size

Students should be placed into groups of size...

Default group indicator

Group students based on their...

Default group comparison

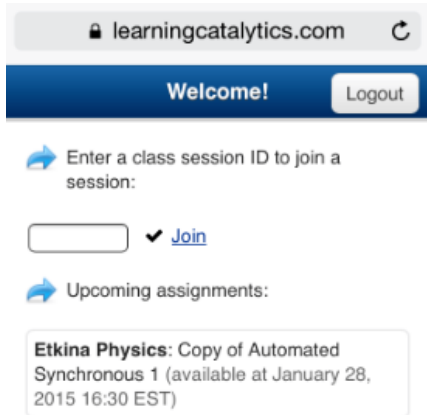
Group students when the indicators (above) are...

Default group tolerance

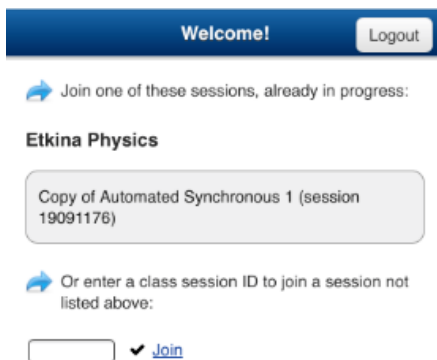
Only group students that are sitting...

## Step-by-Step Directions: Student Experience

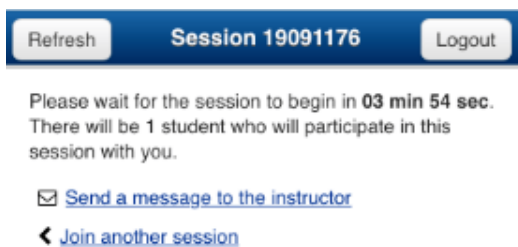
- Students sign in and see the Automated Synchronous assignment as an upcoming assignment until it is available based on your start time in the settings.



- Once the session is available, student click the session title.



- They see a countdown timer until the session begins. The system also lets them know how many other students are in the session as well. Students can also send a message to the instructor at any time during the session.



- Students are presented with a question. They click **Submit Response** to submit an answer. They can see how much time they have left in the countdown timer.



Refresh Session 19091176 Logout

region question 0:33 left

Select the cell that assists the immune defense against parasites and plays a role in asthma and allergies.

Your response:

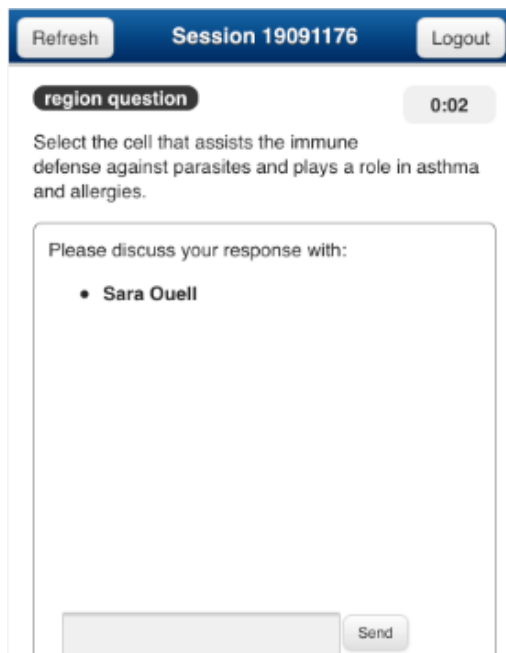


[Hide response](#) [Change response](#)

[Send a message to the instructor](#)

[Join another session](#)

4. Once their time runs up, they may be grouped (automatically), depending upon their answers and your settings for [automatic pacing](#). If they are grouped, then they are told who to discuss the response with.



Refresh Session 19091176 Logout

region question 0:02

Select the cell that assists the immune defense against parasites and plays a role in asthma and allergies.

Please discuss your response with:

- Sara Ouell

Send

5. They can chat for a specific amount of time before they select their response to the second round (same question prior to their discussion). The goal of the Automatic Synchronous modality is to promote peer instructor outside of the classroom.

region question 1:16

Select the cell that assists the immune defense against parasites and plays a role in asthma and allergies.

Please discuss your response with:

- Sara Ouell

Sara Oue  
I selected the top one because...

Sara Ouell  
I selected the bottom one because

Sara Ouell  
Oh wait I get it!!

Send

< > [Share] [Bookmark] [Print]

6. At the end of the session, they can see a brief summary of their results.

Session 19091176 (Copy of Logout)

Of the 2 questions with a correct answer, you answered 1 correctly.

< [Join another session](#)

## MODULE 8: MANAGE THE GRADEBOOK AND DIAGNOSTICS FOR OPTIMAL STUDENT SUCCESS

### Lesson 1: Use the Gradebook

As students complete work in your course, Mastering automatically scores their work and collects other data that is available to you from the Mastering Gradebook.

The Gradebook provides a **quick visual view** of student scores, time spent, and difficulty of each assignment for each student. Color-coding highlights students who may be having difficulties. The shades of red indicate relative values of students' scores. Flexible **filters** let you refine your analysis by looking at data for only a specific group of students or only a selected category of assignments, like quizzes or homework.

The Gradebook also gives you easy access to valuable detailed data about:

- **A specific assignment** (diagnostic graphs that let you view assignment data from several perspectives and sort the data in useful ways)
- **An individual student's performance** (exactly how the student interacted with the assignment, and how each of the student's scores contributes to the student's current total)
- **Quantifiable and reportable learning outcomes** to help you assess student understanding or skills, based on all student results (specific assignment items that support each outcome, percentage of students who completed the items, and scores for the outcome)

NAME	Ch 9	Ch 23	Ch 24	Evolution	Ch 29	Ch 30	Ch 35	Ch 36	Ch 11	Field Lab	Exam	TOTAL
Essays	--	--	--	0	--	--	--	--	--	--	--	see all
Assigned Points	10	10	1	15	7	10	5	10	10	5		605
Class Average	7.9	7.9	0.9	7.3	5.6	5.1	8.4	8.9	8.9	3.6		151
Last01, First0...	8.7	9.8	1.0	10.3	6.6	9.9	10.0	9.7	9.9	1.0		163
Last02, First0...	7.9	9.0	0.6	9.5	6.6	3.4	9.2	9.7	9.8	1.0		145
Last03, First0...	6.7	9.4	1.0	0.0	6.9	0.0	9.2	9.3	0.7	1.0		133
Last04, First0...	7.1	0.0	1.0	1.2	0.0	6.2	9.0	8.4	9.0	1.0		118
Last05, First0...	8.8	9.3	0.8	10.3	0.0	0.0	9.4	8.3	9.1	1.0		141
Last07, First0...	7.1	8.3	1.0	6.9	6.3	4.7	9.0	9.3	9.4	5.0		155
Last08, First0...	9.0	9.8	1.0	10.4	7.0	6.5	9.8	9.9	9.7	5.0		173
Last09, First0...	8.2	7.8	0.6	9.7	6.9	4.2	0.0	10.0	8.7	5.0		150

You select your view by clicking the **Score**, **Time** or **Difficulty** tab.

Within the **Score** tab you view all scores, the class average, and the current total. Deeper shades of red indicate lower scores.

Within the **Time** tab you view the time a student has taken to complete an assignment. Deeper shades of red indicate less time taken.

Within the **Difficulty** tab you view the difficulty rating per assignment for each student. The difficulty rating is calculated based on the student's score, their time spent on the assignment, and the number of attempts a student made before reaching a correct answer. Deeper shades of red indicate a higher difficulty rating.

Assignments are listed in due date order. Even before the term begins, you can use the Gradebook to see all the Mastering assignments that you have set dates for, and each non-Mastering activity (offline activities covered below) that you will be tracking. To see the assigned points for each assignment or activity, and the total points for the term, as shown below, use course settings to display the Gradebook by points.

If your course includes Adaptive Follow-Up assignments, Dynamic Study Module assignments, or Learning Catalytics activities, you see them in the Gradebook with a shaded column head.

Gradebook [Manage](#) [View Learning Outcomes Summary](#)

Filter ▾ Showing Score in All Categories for All Students

Score Time Difficulty

There are no grades to display yet

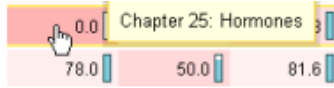
Adaptive Follow-Up assignment for Ch 03 HW

NAME	Ch 01 HW	Ch 01 ..Up	Ch 02 HW	Ch 02 ..Up	Ch 03 HW	Ch 03 ..Up	Ch 04 HW	Ch 04 ..Up	CI	TOTAL
Assigned Points	14	6	10	6	6	6	6	6		200
Class Average	--	--	--	--	--	--	--	--		

Ch 03 HW  
Category: Homework  
Due September 16, 2013  
15 points

## Click or point to expose more information

Click a student's assignment score to go directly to the Assignment Grade page, where you can make adjustments, or link to the student's step-by-step work for each item in the assignment.



The screenshot shows a table with a header row and a data row. The header row has a score of 0.0 and the text 'Chapter 25: Hormones'. The data row has three scores: 78.0, 50.0, and 81.6. A mouse cursor is pointing at the 0.0 score in the header row.

0.0	Chapter 25: Hormones
78.0	50.0 81.6

From the student's Assignment Grade page, you can adjust a student's grade, extend due date and availability, reset an assignment, or exempt a student from the assignment.

### Assignment Grade for [First04 Last04](#)

#### Ch 9

Due 02/18/09 at 09:00am

Students will receive no credit for items they complete after the assignment is due. [Grading Policy](#)

TITLE	POINTS	SCORE %	FINISHED
<a href="#">Activity: Electron Transport</a>	0.82 / 1.00	82.14%	02/15/09 at 09:36pm
<a href="#">Cellular Respiration (4 of 5): Oxidative Phosphorylation (BioFlix tutorial)</a>	2.29 / 3.00	76.17%	02/15/09 at 10:01pm
<a href="#">Activity: Fermentation</a>	0.88 / 1.00	87.50%	02/15/09 at 09:39pm
<a href="#">Pathways for Pyruvate</a>	0.98 / 1.00	97.50%	02/15/09 at 09:44pm
<a href="#">Cellular Respiration (5 of 5): Summary (BioFlix tutorial)</a>	2.19 / 4.00	54.75%	02/18/09 at 12:35am
<b>TOTAL ASSIGNMENT GRADE</b>	<b>7.15 / 10.00</b>	<b>71.46%</b>	

#### Adjust Settings for this Student

Exempt Student from this Assignment

#### Adjust Total Points by (+/-):

Points added to or subtracted from the calculated POINTS for the items above.

#### Extended Due Date/Time:

Original Due Date: 02/18/09 at 09:00am

#### Availability to Student:

From:

Original Date: 02/01/09 at 09:00am

Until:

Original Date: 06/30/13 at 11:59pm

#### Reset Assignment:

Delete all work for this assignment and allow student to restart

If you click on the title of the item to go to the student's Item Work page, you can see the student's step-by-step work for each assignment item (including time spent, wrong answers, hints requested, and hints worked).

### Item Work for First03 Last03 (last03\_first03)

[Contact the Publisher](#)

Item: Cellular Respiration (4 of 5): Oxidative Phosphorylation (BioFlix tutorial)  
Assignment: Ch 9

COMPLETED: Score=52% (raw=52) Correct=3, Wrong=10, Hint Reqs=2, Solution Reqs=1, Rating=5  
Started: 17 Feb 2009 11:44PM  
Finished: 18 Feb 2009 12:06AM  
Duration: 0h 17m 52s

Time spent  
on item

Access to your student's time spent, wrong answers, and hints worked can be very helpful if the student comes to you with questions or if you want to speak directly with an at-risk student. It can also be a great indicator of guessing if only a few seconds pass between answers.

Which statement best explains why more ATP is made per molecule of NADH than per molecule of FADH<sub>2</sub>?

ANSWER:

- The H<sup>+</sup> gradient made from electron transport using NADH is located in a different part of the mitochondrion than the H<sup>+</sup> gradient made using FADH<sub>2</sub>.
- FADH<sub>2</sub> enters the citric acid cycle while NADH is made in glycolysis, acetyl CoA formation, and the citric acid cycle.
- It takes more energy to make ATP from ADP and P<sub>i</sub> using FADH<sub>2</sub> than using NADH.
- Fewer protons are pumped across the inner mitochondrial membrane when FADH<sub>2</sub> is the electron donor than when NADH is the electron donor.
- There are more protons pumped across the inner mitochondrial membrane for FADH<sub>2</sub> than for NADH.

**Time stamps** (points to the time column in the table below)

**Student proposed answers** (points to the proposed column in the table below)

**System responses** (points to the response column in the table below)

Time	Proposed	Response
18 Feb 2009 12:00:34AM	There is more NADH than FADH <sub>2</sub> made for every glucose that enters cellular respiration.	Although this statement is true, the amount of NADH and FADH <sub>2</sub> produced is not relevant. The question asks about ATP production per molecule of NADH and FADH <sub>2</sub> .
18 Feb 2009 12:01:42AM	It takes more energy to make ATP from ADP and P <sub>i</sub> using FADH <sub>2</sub> than using NADH.	In oxidative phosphorylation, all of the ATP are produced by the same mechanism. Thus, the energy required to make an ATP does not depend on whether the electron donor is NADH or FADH <sub>2</sub> .
18 Feb 2009 12:01:55AM	Fewer protons are pumped across the inner mitochondrial membrane when FADH <sub>2</sub> is the electron donor than when NADH is the electron donor.	[ CORRECT ]

Electrons derived from the oxidation of FADH<sub>2</sub> enter the electron transport chain at Complex II, farther down the chain than electrons from NADH (which enter at Complex I). This results in fewer H<sup>+</sup> ions being pumped across the membrane for FADH<sub>2</sub> compared to NADH, as this diagram shows. Thus, more ATP can be produced per NADH than FADH<sub>2</sub>.

You can also see all of a student's grades on their Scores page if you **click a student's name** from the Gradebook.

[Manage](#) [View Learning Outcomes Summary](#)

Filter: Showing Score in **All Categories** for All Students

Score | Time | Difficulty

Students per page: 100

NAME	Ch 8	Ch 9	Ch 23	Ch 24	Evolution	Ch 29	Ch 30	Ch 35	Ch 36	Ch 11	Field Lab	Exam 1	Test	TOTAL
<b>Essays</b>														
<b>Class Average</b>	88.4	78.5	78.9	89.0	48.6	78.4	77.9	178	89.0	88.8	28.4	5.8		29.8
Last01, First0...	0.0	87.4	97.5	95.0	68.9	96.3	98.9	200	96.6	99.3	80.0	110		51.0
Last02, First0...	86.9	66.3	90.0	64.0	63.6	96.3	79.4	183	97.3	97.8	20.0	0.0		35.0
<b>Last03, First0...</b>	99.7	67.3	94.2	95.0	0.0	98.8	0.0	183	93.4	7.0	100	0.0		33.9
Last04, First0...	99.2	71.5	0.0	98.0	7.8	7.5	93.7	180	84.5	90.3	60.0	0.0		37.3
Last05, First0...	98.3	87.7	92.5	82.0	68.9	30.0	52.2	188	83.2	91.0	0.0	0.0		45.1
Last07, First0...	84.8	70.6	83.3	97.0	45.8	92.5	96.6	180	92.5	94.0	0.0	0.0		29.6
Last08, First0...	102	89.8	97.5	99.0	69.6	100	97.1	197	98.6	97.0	0.0	0.0		49.8
Last09, First0...	94.3	82.2	78.3	64.0	64.9	98.8	78.0	0.0	100	86.5	40.0	0.0		44.7
Last10, First1...	86.9	87.8	95.8	94.0	66.2	92.5	96.4	196	94.6	95.5	40.0	0.0		23.6
Last11, First1...	101	98.5	93.3	95.0	44.9	100	98.6	196	99.3	98.5	40.0	0.0		24.2
Last12, First1...	89.0	75.3	100	100	44.7	100	100	197	97.5	99.3	40.0	0.0		23.7

Assignment titles are condensed into column headings along the top. Point to each column heading to see the full title of the assignment and other details, or click the column heading to see diagnostic charts for the assignment. See Lesson 2 “Use Gradebook diagnostics” for details.

## Filter to focus on data by student, group, or assignment

Filtering the Gradebook data to see a subset of data can be particularly helpful for any Groups you’ve created in Mastering. You create your own groups in the course, and you can assign each student to multiple groups for the purpose of analyzing Gradebook data.

Reasons why you might want to create Groups to filter in the Gradebook:

- Create a group for each section of the course, and view scores for each section separately.
- Identify a number of students who have attended extra-help sessions or at-risk students, and view all of their scores at once to see whether their performance is improving. C
- Create a group for a set of students whose scores exhibit a uniform pattern of spikes and troughs, which might indicate answer sharing.
- Create groups based on lab groups, especially if they have their TAs add lab grades as offline items in the Gradebook.

You can filter your Gradebook to show only a specific student, a specific group of students (if you have created Groups), or category:

- To show only a specific student, enter the student's name or Student ID into the **Find by Name/Student ID** field and click **Save**.
- To show a group of students, select one or more groups from the **Limit to groups** menu and click **Save**.
- To show only a specific type of assignment, select that type of assignment from the **Limit to category** menu and click **Save**.

Gradebook

Clear All Filters

Find by Name/Student ID:  
 [Clear](#)

Limit to groups: [Select All](#) [Clear](#)

A plus students  
 Group A  
 Group B  
 Section 1  
 Section 2  
 Section 3

Limit to category:  
 All Categories

[Save](#) [Cancel](#)

## Manage Gradebook

To manage your gradebook, click on **Manage**.

Filter Showing Score in All Categories for All Students

Score Time Difficulty

Students per page: 25

Dynamic Study Modules

NAME	Introd..&P	Week 1	Week 1..Up	Chapte..nt	Chapte..Up	TOTAL
Assigned Points	3	20	10	13	10	56
Class Average	0.0	--	--	--	--	0.0
student, scien...	0.0	1.3	0.0	0.0	0.0	0.0

[Manage](#) [View Learning Outcomes Summary](#)

You can select preferences; create and edit categories and weighting; manage offline activities; or export gradebook data.

### Manage Gradebook

Gradebook Preferences [Categories and Weighting](#) [Offline Activities](#) [Export Gradebook Data](#)

## Gradebook Preferences

This area allows you to choose how you want to view your Gradebook. For example, you can select to show for-practice item completion thermometers, turn off color-coded Gradebook, or show the Student ID column.

asteringPhysics<sup>®</sup> with KNEWTON Adaptive Learning Signed in as Jenni

### Manage Gradebook

Show Student ID column:

Yes

No

Show Login Name column:

Yes

No

Show for-credit item completion thermometers:

Yes

No

Show for-practice item completion thermometers:

Yes

No

Color-code gradebook:

Yes

No

Show assignments/activities that are not yet due:

Yes

No

Show assignments/activities that have no recorded scores:

Yes

No

## Categories and Weighting

Use **Categories and Weighting** to add a weighting scheme. When you first create a new course, no weighting scheme is applied; assignments are worth their raw point value. This way, you can let students know that whatever points they earn in Mastering make up x percent of their grade for the course depending on your assessment plan.

You can also **standardize** each assignment, quiz, test, or other activities so that the total points match your course grade goals.

10 homework assignments at 10 points each = 100

4 quizzes at 25 points each = 100

2 exams at 50 points each = 100

Alternatively, you can also set up weighting to match your syllabus. You can apply weighting both by category and by assignments in any of three different ways:

- Weight can be applied **equally** for all categories, or for all assignments within a category.
- Weight can be applied **by points** for categories and assignments, so larger assignments carry more weight.
- You can set **custom weighting factors** to match a specific grading scheme you prefer.

**Manage Gradebook** Help | [Exit](#)

[Gradebook Preferences](#) | [Categories and Weighting](#) | [Offline Activities](#) | [Export Gradebook Data](#)

Categories and Weighting

**Tip:** Categories determine default presentation and grading settings for new assignments. They can also be used to organize and weight scores in the gradebook. [Learn more about categories.](#)

**Add a Category**  
Add a category called  with the same settings as **Homework**

Category Weighting: **By Points**

**Homework** [Edit Default Settings](#) Category Weight: 95.1%

Assignment Weighting: **By Points**

Assignment or Offline Activity	Assignment Weight
Ch 02 HW	4.04%
Ch 03 HW	5.51%
Ch 04 HW	5.88%
Ch 05 HW	5.15%
Ch 06 HW	5.15%
Ch 07 HW	5.51%
Ch 08 HW	4.78%
Ch 09 HW	5.88%
Ch 10 HW	4.78%

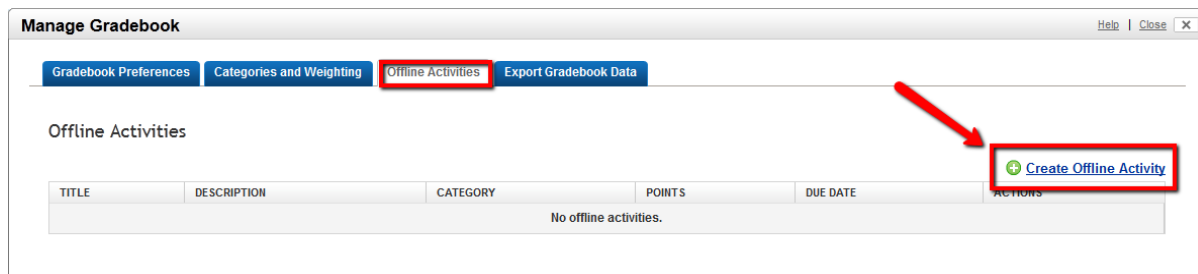
**Important:** *If you export scores to use in an external gradebook, only raw scores are exported. Neither weighted scores nor the categories to which assignments belong are exported.*

Course activities, such as labs or exams, that are outside of Mastering assignment content in the Item Library are called offline activities. As an instructor, or a section instructor with the Gradebook privilege, you can create and add the grades of these activities as described below.

To add grades from labs and other outside activities to the Gradebook, first create the new category that you plan to use for these activities.

## Offline Activities

Use **Offline Activities** to create a record for a non-Mastering activity, such as a lab or class participation. For these activities, you select a category, assign points, set a due date, and specify when or whether the score is visible to students.



*Students do not see offline activities in their Assignments list or on the calendar, so you might consider using Mastering announcements to describe any non-Mastering activities you assign, and to post reminders of due dates. If you want offline activity due dates to appear on the Calendar in Mastering, you can do this by creating an assignment without any content to it.*

## Enter Grades for Offline Activity

When you are ready to add grades, go to the dropdown menu under **Actions** at the right of the row containing your activity, select **Import Scores** to upload all of them at once, or select **Edit Scores** to manually enter a score for each student. Students see these imported scores in their Scores page.

TITLE	DESCRIPTION	CATEGORY	POINTS	DUE DATE	ACTIONS
<a href="#">Lab 1</a>		Homework	10	07/11/13 04:16 pm	+ Create Offline Activity Choose... Choose... Edit Settings Edit Scores Import Scores Delete

## Grade Essays

Mastering does not automatically grade student essays. Each essay must be graded by an instructor, or section leader who has been granted that privilege by

the original creator of the course. Essay answers can be up to 3800 characters or about 500 words. They appear as a single text-only paragraph, without formatting. There are multiple ways to access essays. You can look at all of the essays from the entire course, or simply select the essays from a specific assignment to grade. You can also grade essays anonymously or see student names. Grade essays by entering a **percentage score**. The percentage score is converted into points in the Gradebook. For example, if the item was a single essay question worth 2 points, awarding 100% for a student's answer will result in the student earning 2 points.

## Step-by-Step Directions: Use the Gradebook



[Use the Gradebook](#)

[Grade Essays](#)



[Use the Gradebook](#) [1 min 26 seconds]

[Weight Assignments](#) [2 min 18 seconds]

*See also* [How to Read My Scores](#) [2 min 43 seconds]

[Grade Essays](#) [2 min 42 seconds]

[Reset a Student's Assignment](#) [44 seconds]

## Lesson 2: Understand Grading

The Mastering default grading settings are based on extensive experience from professors using the Mastering system. Schools report the largest learning gains using Mastering when professors do the following five grading recommendations.

4. **Give a liberal course percentage to Mastering homework assignments (minimum 10% of grade).**
5. **Include as many course-appropriate Mastering tutorial items in your assignments as you can.**
6. **Charge for wrong answers.**

A small penalty for wrong answers discourages students from simply guessing. Because Mastering often gives helpful feedback when a student makes a mistake, it's important to ensure that every answer a student submits is one that they have some intellectual commitment to.

- **If you charge for wrong answers, your students are also charged for wrong answers to hints.**

That is, if you charge 3% of the possible credit for a wrong answer to a main part, students are charged 3% of the possible hint credit for a wrong answer to a hint. Like the penalty for incorrect tries on multiple choice answers, this keeps students from guessing their way through the item and improves student grades.

- **Give a small bonus for not using hints.**

This gives students just enough incentive to try to answer the question without the hint first. They will open a hint when they really get stuck. A lost bonus is more palatable to many students than a penalty, even though they effectively amount to the same thing.

[Mastering grading](#) is set up so that, statistically, students will get a better grade if they open hints only when they need them. The hint extra credit default setting is based on efficacy data from the [Mastering White Paper v3](#). See the [Massachusetts Institute of Technology](#) case study for more info.

## How Mastering calculates item scores

- **Students need to complete all parts of a Mastering item to get credit for any part of it.** Students get no credit for the item until all its parts are finished. Late penalties are taken off the whole item. To complete an item, students must do one of the following for all of the part questions (Part A, B, etc.): Submit a correct answer, run out of answer attempts, or choose Give Up or Show Answer. Answering any available hint questions is not required.
- **If students don't know the correct answer to a Mastering tutorial problem part, they can view Hints.** Getting wrong answers on hints usually gives students a better grade than getting wrong answers on the main part. Hints coach students to a correct answer. Some hints are Socratic and some are declarative.
  - Hints break parts into smaller, simpler questions or give clues about solving a part.

**Hint 1.** Review the Glycolysis animation [\(click to open\)](#)

**Hint 2.** Is there a *net* input or *net* output of ATP in glycolysis? [\(click to open\)](#)

**Hint 3.** What are the electron carriers in glycolysis? [\(click to open\)](#)

**Hint 4.** Reactions that produce ATP usually require ADP and Pi as inputs [\(click to open\)](#)

- Students get extra credit for not opening a hint in the default homework category settings. Students may give up their extra credit for not opening a hint.

**Students Can View Hints:**

Always

Give credit for correctly answering a question in a Hint.

Give bonus credit for not opening a Hint. Bonus per Hint not opened:  %

Deduct credit for opening a Hint.

Deduct credit for exhausting all attempts or giving up on a question in a Hint.

- **By default, hints and parts are graded the same way.** For each wrong answer in a hint or part, the same small fraction is taken off the potential score for the hint or part. Mastering answer-specific responses to wrong answers can give students additional clues.

## Grading Policy

Number of answer attempts per question is: 6

### You gain credit for:

- Correctly answering a question in a Part
- Correctly answering a question in a Hint
- Not opening a Hint (2% bonus)

### You lose credit for:

- Exhausting all attempts or giving up on a question in a Part or Hint
- Incorrectly answering a question in a Part or Hint

*Students don't have to **complete any hints**. If students haven't exhausted all attempts or given up on a hint, then the hint is **counted as correct** if the main part answer is correct. When a student answered the part **correctly**, the hint grades and the grade on the main part question are averaged to get the score for the part.*

- Multiple choice and true/false items are graded differently than other items. By default, each unique wrong answer to a multiple choice or true/false item loses a fraction of possible credit. The fraction is equal to one over the number of unique wrong answers. The large penalty for multiple choice items discourages students from guessing their way through multiple choice items.

You will receive no credit for items you complete after the assignment is due. [Grading Policy](#)

#### Grading Policy

Number of answer attempts per question is: 6

You gain credit for:

- Correctly answering a question in a Part
- Correctly answering a question in a Hint
- Not opening a Hint (2% bonus)

You lose credit for:

- Exhausting all attempts or giving up on a question in a Part or Hint
- Incorrectly answering a question in a Part or Hint

Late submissions: receive no credit.

Hints are helpful clues or simpler questions that guide you to the answer. Hints are not available for all questions. There is **no penalty** for leaving questions in Hints unanswered.

**Grading of *Incorrect Answers* before the last attempt:**

- You lose  $\frac{100\%}{\text{\# of options} - 1}$  credit per incorrect answer on multiple-choice and true/false questions.
- You lose 3% credit per incorrect answer on questions that are not multiple-choice or true/false.

## Step-by-Step Directions: Understand Grading



[Understand Grading](#)



[Understand Grading \[2 min 57 seconds\]](#)

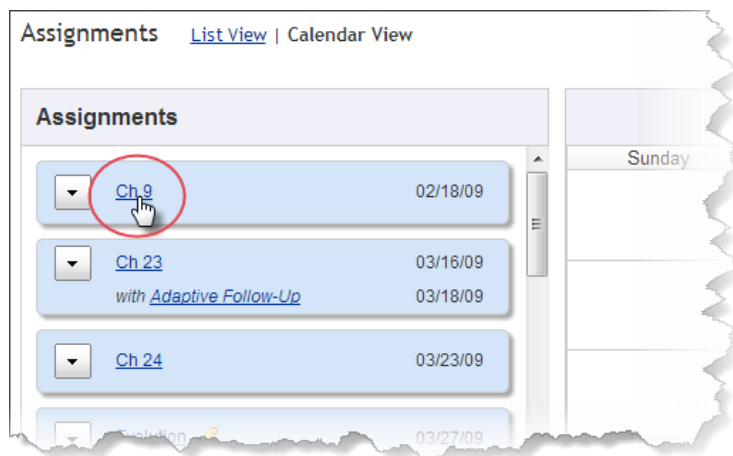
## Lesson 3: Use the Mastering Diagnostics to Address Students' Misconceptions

**In the Diagnostics View, you'll be able to answer questions like:**

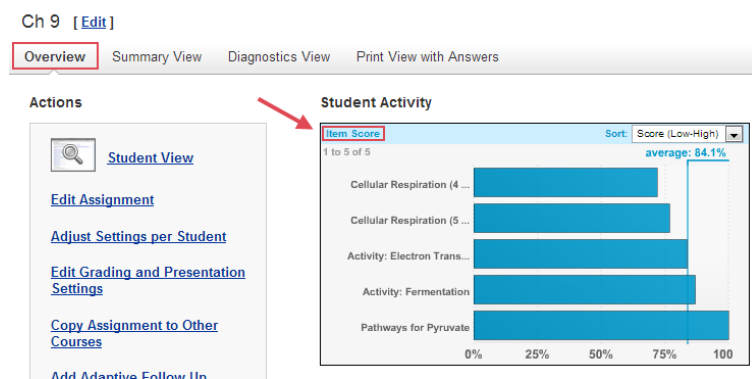
- What are my students' misconceptions prior to lecture, lab, or exams?
- What assignments and questions are working best in this course?
- Which questions are the hardest for my students?
- Which students are doing exceptionally well? Exceptionally badly?
- Which students are completing the assignment exceptionally quickly? Exceptionally slowly?
- What are the common wrong answers to the most difficult or time-consuming questions?
- Which students may be cheating?

**How do I view common student misconceptions and difficulties before lecture or exams?**

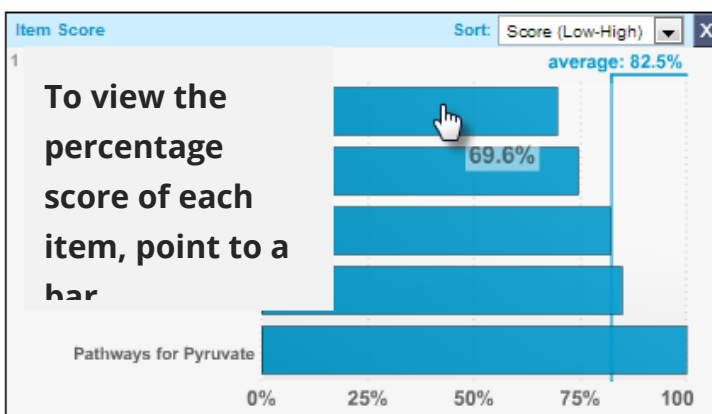
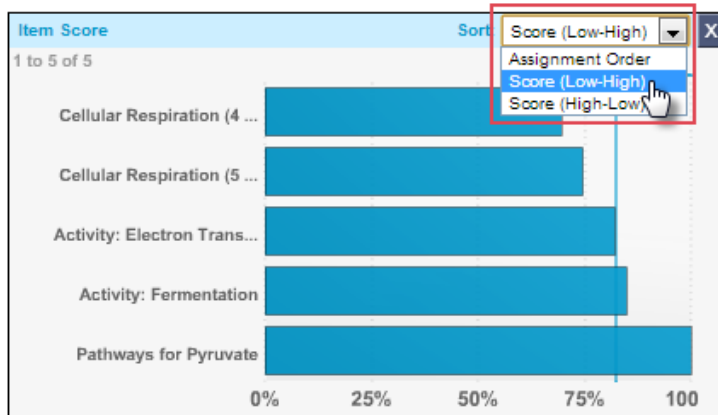
Click an assignment title from the **Assignments** list.



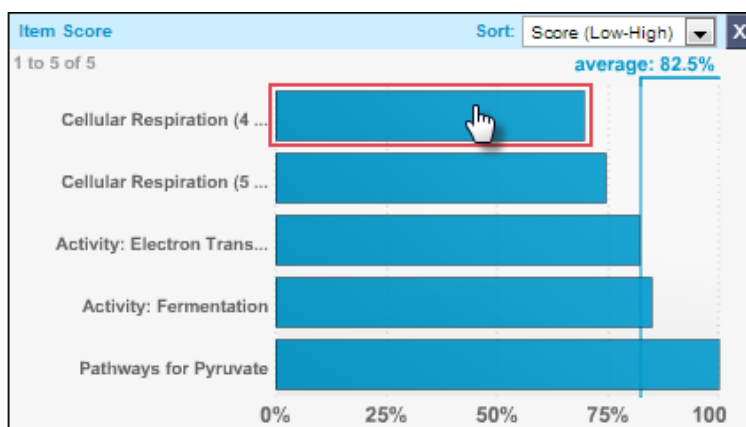
You will see the **Item Score** diagnostic in the assignment **Overview** screen, with a summary of scores for each item in the assignment, and the overall average for the assignment.



You can sort this diagnostic view quickly by **order** of the items in the assignment, or by **score** (low to high or high to low).



To see more details about why the score is the lowest for an item, you can see the common wrong answers for the item and detailed statistics. Click on the item bar.



You'll see the common wrong answers supplied by your students, as well as a comparison with other students who attempted the same part.

Part B

Which of these organelles carries out cellular respiration?

ANSWER:

chromatin  
 smooth endoplasmic reticulum  
 nucleolus  
 ribosomes  
 mitochondrion

Color bars indicate your class did better than the overall Mastering population on this part

Answer Stats:	Students	% Correct	% Unfinished	% Req'd Solution	Wrong/student	Hints/student
System Average	97999	98.6%	1.3%	0.1%	0.2	0
This Course (MBDEMOGRADES)	26	100%	0%	0%	0.1	0

Wrong Answers for This Course (MBDEMOGRADES)		
% Wrong	Answer	Response
50%	ribosomes	Ribosomes do not carry out cellular respiration.
50%	chromatin	Chromatin is found within the nucleus.

The table shows the two *wrong* answers that your students supplied, along with the responses that Mastering provided for each wrong answer.

Mitochondria convert the chemical energy of organic molecules to chemical energy in the form of ATP.

Follow up text when student submits the answer correct

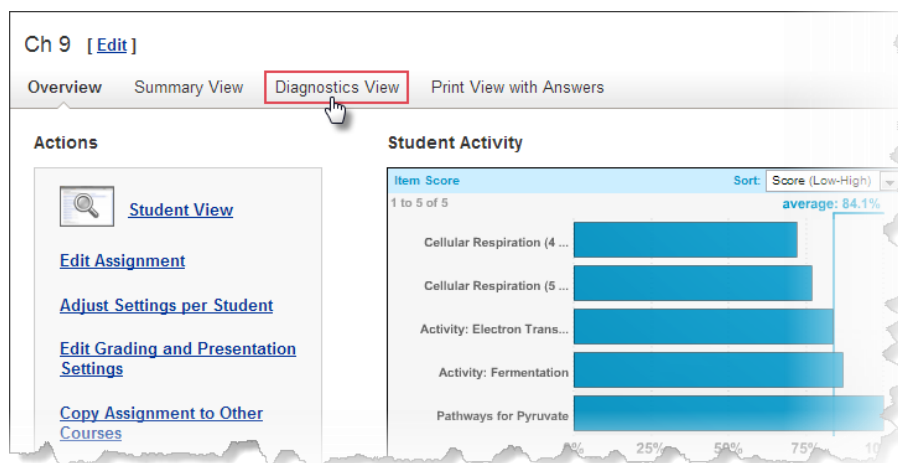
## Best Practices – Student Misconceptions

- Of the wrong answers submitted for a part, you can see which answers were the most common wrong answers. Wrong answers help you pinpoint student misconceptions. The information about common wrong answers for the most difficult concepts can be used before lectures, exams, or study group sessions.
- You can also use this information if you teach with active learning in class using Learning Catalytics. You can create your Learning Catalytics questions based on the misconceptions of your class.
- You can give your TA (s) access to this data as well for review sessions. Contact your sales representative for student access code (s) for your TA (s).

*“Students must succeed in this course in order to move forward with their educational goals, but there is too much content to cover in one semester. Now I can assign some content using MasteringMicrobiology and confirm via the program’s diagnostic features that the students have successfully mastered the content. I use the time saved in lecture to focus on higher-level concepts.”*

-Submitted by Zhongguo Xiong, [University of Arizona case study](#)

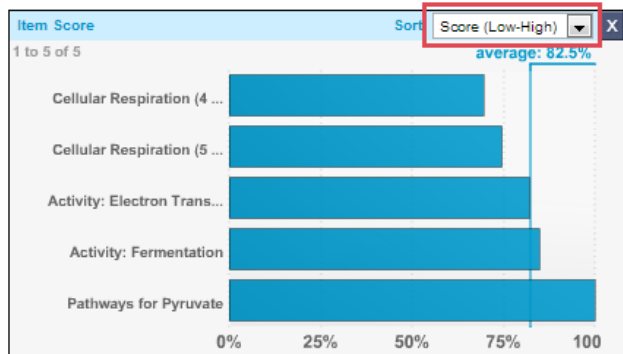
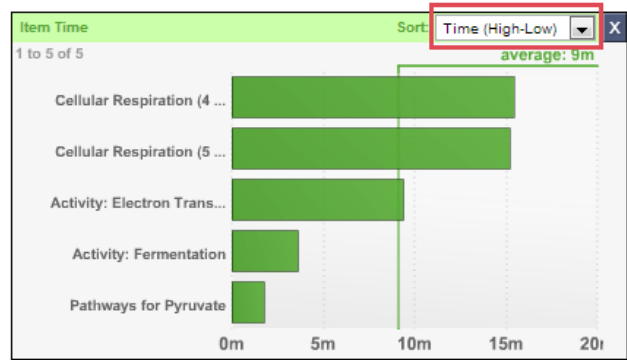
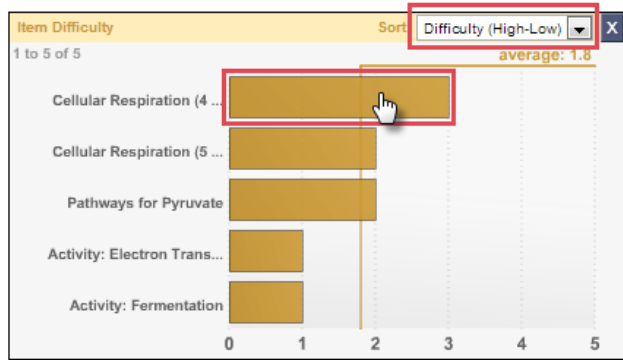
## The Diagnostics View



The default view when you go to the Diagnostic View for the first time displays the **Item Score, Item Time, and Item Difficulty** charts. They will be sorted as follows in order to quickly see the *items* your students struggled with most in the assignment.

**Item Time – High to Low**  
**Item Difficulty – High to Low**  
**Item Score – Low to High**

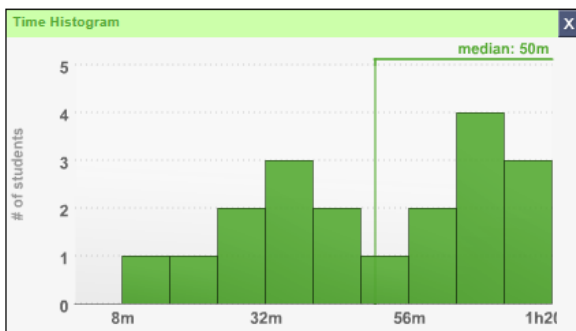
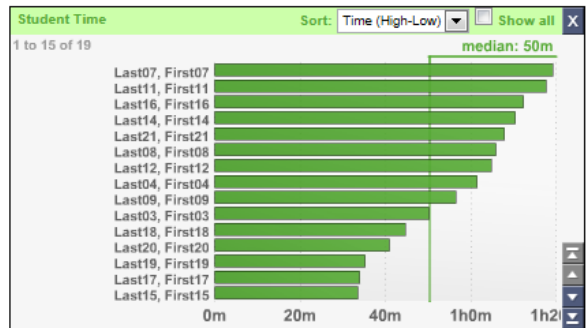
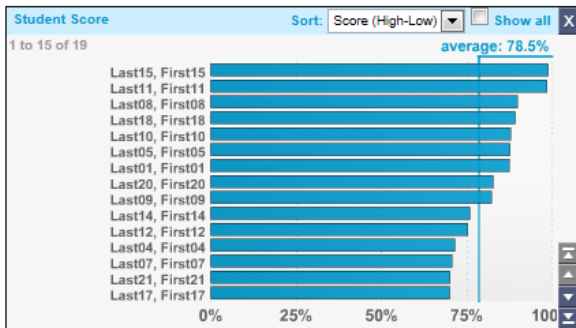
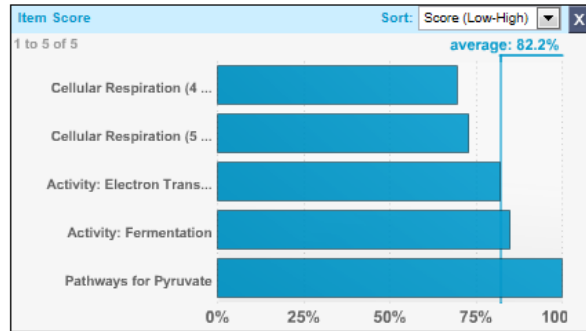
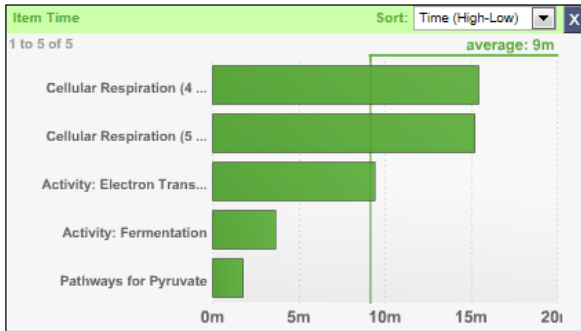
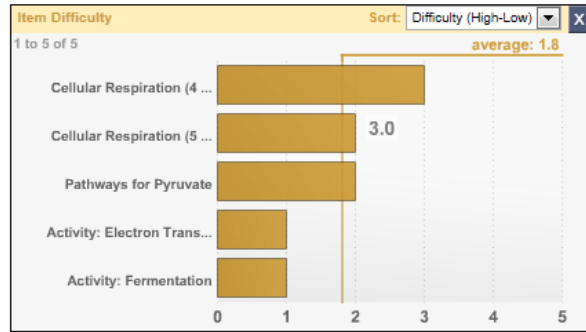
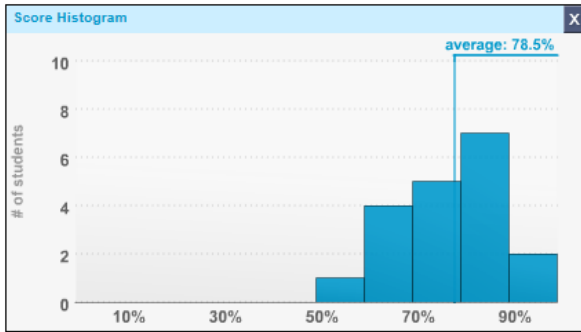
**Important:** Point to bars on the graph to see numbers. Click the bar to get more details about that item in the assignment.



The Cell Respiration item shows it has the **highest difficulty, lowest score, and the most time spent** by your students. To see why, click the bar to learn more.

Up to seven different diagnostic charts can be selected and displayed, including Score Histogram, Time Histogram, Item Scores, Item Difficulty, Item Time, Student Score and Student Time.

The diagnostic charts are displayed in the order that you add them, with the most recently added chart appearing at the top left. They will stay in that arrangement until you close one or more, or add others.



To add a chart, select it from the **Chart list** and click **Add**.

To close a chart, click **X** in the upper right corner, and then **OK**.

## How do I find the most challenging assignments and topics for my class?

To find the most difficult assignments and topics, first go to your Gradebook. From your Gradebook, look for assignments with the most red and pink shades as well as the lowest class average. Click on the assignment title to get to the diagnostics of that assignment.

Gradebook

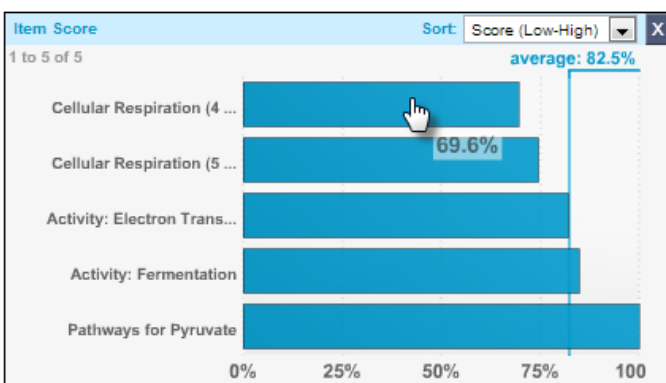
Filter Showing Score in All Categories for All Students

Score Time Difficulty

Students per page: 100

NAME	Ch 9	Ch 23	Ch 23 ..Up	Ch 24	Evolution	Ch 29	Ch 30	Ch 35
Essays	--	--	--	--	--	--	--	--
Assigned Points	10	10	10	1	15	7	10	5
Class Average	7.9	7.9	0.0	0.9	7.3	5.6	5.1	8.4
Last01, First0...	8.7	9.8	0.0	1.0	10.3	6.6	9.9	10.0
Last02, First0...	7.9	9.0	0.0	0.6	9.5	6.6	3.4	9.2
Last03, First0...	6.7	9.4	0.0	1.0	0.0	6.9	0.0	9.7
Last04, First0...	7.1	0.0	0.0	1.0	1.2	0.0	6.2	9.0
Last05, First0...	8.8	9.3	0.0	0.8	10.3	0.0	0.0	9.4
Last07, First0...	7.1	8.3	0.0	1.0	6.9	6.3	4.7	9.0
Last08, First0...	9.0	9.8	0.0	1.0	10.4	7.0	6.5	9.8
Last09, First0...	8.2	7.8	0.0	0.6	9.7	6.9	4.2	0.0

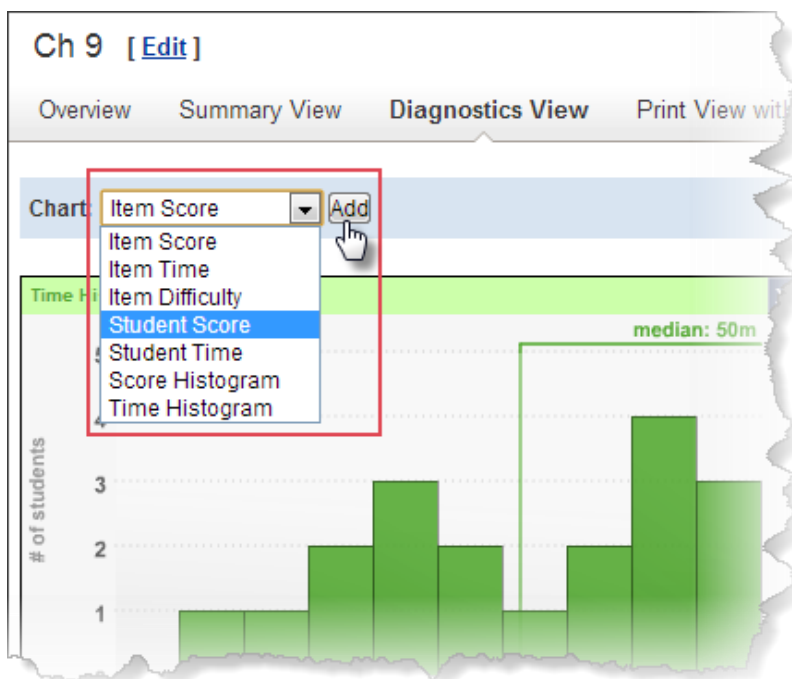
You will see information about the individual *items* in the assignment with the default view of **Item Score, Item Time, and Item Difficulty**. If you've customized your diagnostics view, you will see the charts you added to the view. The default view shows items most difficult items, most time consuming items, and lowest score items.



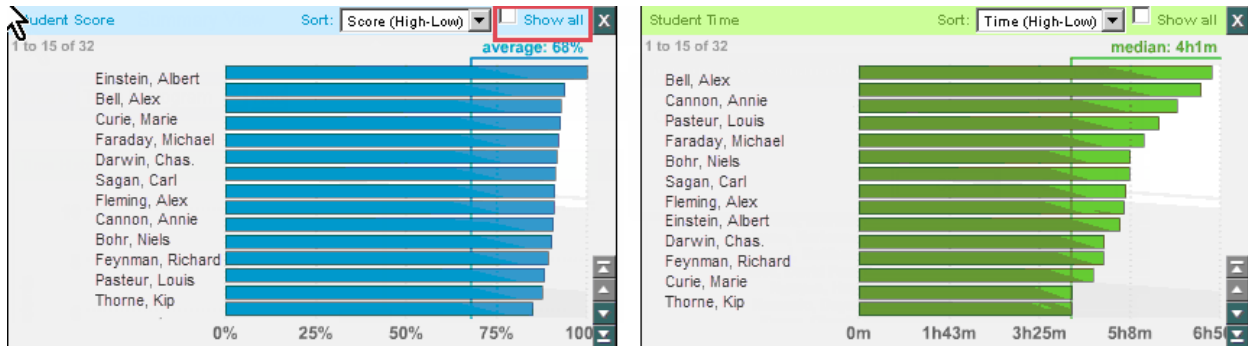
To view the percentage score of each item, average time in minutes to complete each item, or difficulty rating, point to a bar. Click the bar to get more details.

## How do I find students with the best or worst scores or students that spent the most or least time on the assignments?

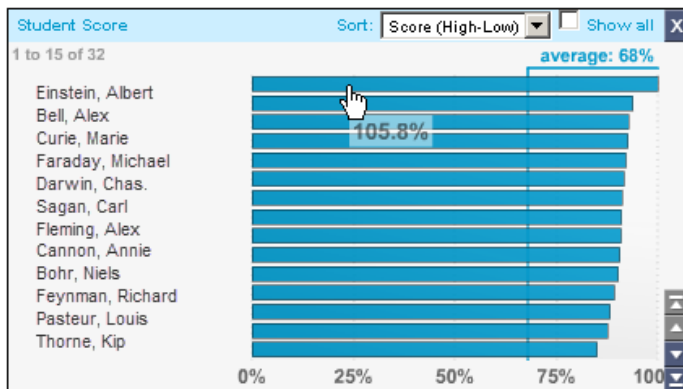
To see *students' performance*, select the Student Score and Student Time charts.



Unless there are very few students in the class (or very few items in an assignment), if **Show All** is checked, uncheck it. Then sort by Score (High-Low or Low-High) or Time (High-Low or Low-High).



You can quickly point to the students' scores to see each student's grade on the assignment.



Click any score bar next to a student's name to get detailed results, by item, including when the student finished each item.

#### Assignment Grade for Einstein, Albert

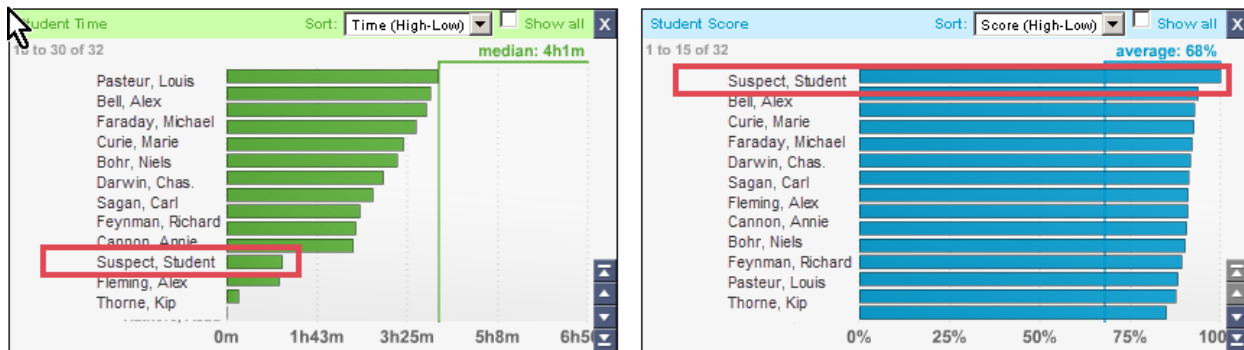
HW 1: Chapter 21

Due 01/30/13 at 01:30pm

To understand how points are awarded, read the [Grading Policy](#) for this assignment.

TITLE	POINTS	SCORE %	FINISHED
<a href="#">Placing Charges Conceptual Question</a>	0.98 / 1.00	97.75%	01/23/13 at 03:47pm
<a href="#">Charged Aluminum Spheres</a>	1.90 / 2.00	95.00%	01/23/13 at 04:38pm

Watch for students who suddenly get quite high grades on assignments and take a very short time to do them. Use Mastering's Diagnostics View to display **Student Times** vs. **Student Scores** to assist with the comparison.



### **Tip: Use Diagnostics to Create Groups**

*Some professors like to create groups of students based on data from the Gradebook diagnostics. You can create an at-risk student group.*

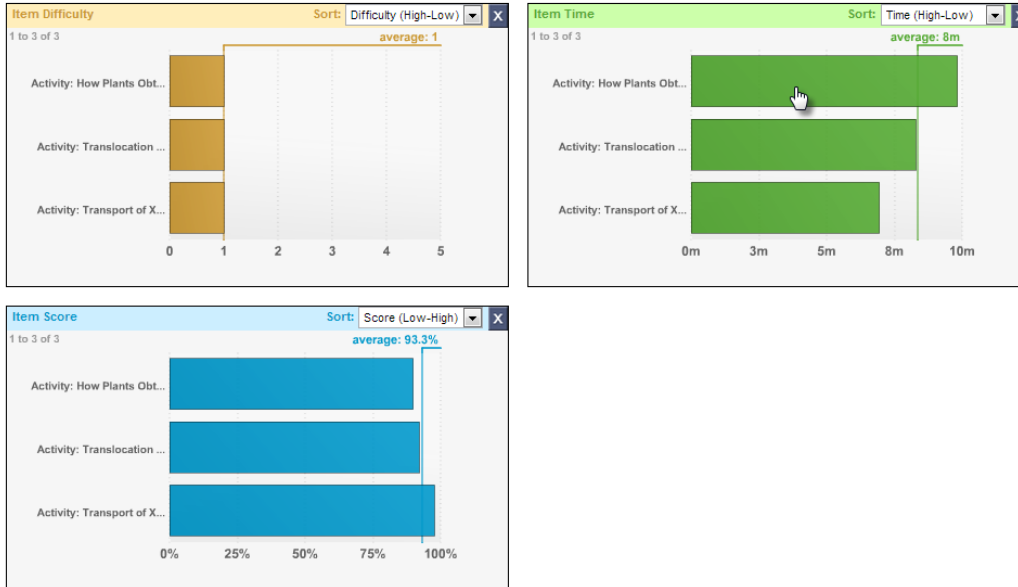
*Another possibility is to create a group of students that have high scores, but very little time spent. High scores and low time spent might be a red flag students are cheating on homework or quizzes.*

## **Which assignments are working best in the course?**

View your Gradebook and look for columns with the highest averages and with very little pink and red shades. Click on the name of the assignment to get to the assignment diagnostics.

Filter Showing Score in All Categories for All Students										
Score Time Difficulty										
Students per page: 100										
NAME	Ch 9	Ch 23	Ch 23 ..Up	Ch 24	Evolution	Ch 29	Ch 30	Ch 35	Ch 36	Ch 11
Essays	--	--	--	--		--	--	--	--	--
Assigned Points	10	10	10	1	15	7	10	5	10	10
Class Average	7.9	7.9	0.0	0.9	7.3	5.6	5.1	8.4	8.9	8.9
Last01, First0...	8.7	9.8	0.0	1.0	10.3	6.6	9.9	10.0	9.7	9.9
Last02, First0...	7.9	9.0	0.0	0.6	9.5	6.6	3.4	9.2	9.7	9.8
Last03, First0...	6.7	9.4	0.0	1.0	0.0	6.9	0.0	9.2	9.3	0.7
Last04, First0...	7.1	0.0	0.0	1.0	1.2	0.0	6.2	9.0	8.4	9.0
Last05, First0...	8.8	9.3	0.0	0.8	10.3	0.0	0.0	9.4	8.3	9.1
Last07, First0...	7.1	8.3	0.0	1.0	6.9	6.3	4.7	9.0	9.3	9.4
Last08, First0...	9.0	9.8	0.0	1.0	10.4	7.0	6.5	9.8	9.9	9.7
Last09, First0...	8.2	7.8	0.0	0.6	9.7	6.9	4.2	0.0	10.0	8.7
Last10, First1...	8.8	9.6	0.0	0.9	9.9	6.3	0.0	9.8	9.5	9.6

Click into any of the item bars to see more detail. Below see the three *item* diagnostic graphs.



By clicking the item bar for the item where students spent the most time, you can view the common wrong answer for any students that got it incorrect. You can also compare your students with the system averages and see the percentage of your students that were coached to the correct answer. Point your mouse to any information on the metrics bar to see more information. This can give you information about which items have the best answer-specific feedback and hints.

Part G  
How do cations enter root hairs?

ANSWER:

- osmosis
- active transport
- phagocytosis
- diffusion
- endocytosis

Answer Stats:	Students	% Correct	% Unfinished	% Req'd Solution	Wrong/student	Hints/student
System Average	16320	97.9%	1.8%	0.3%	0.5	0
This Course (MBDEMOGRADES)	20	100%	0%	0%	0.8	0

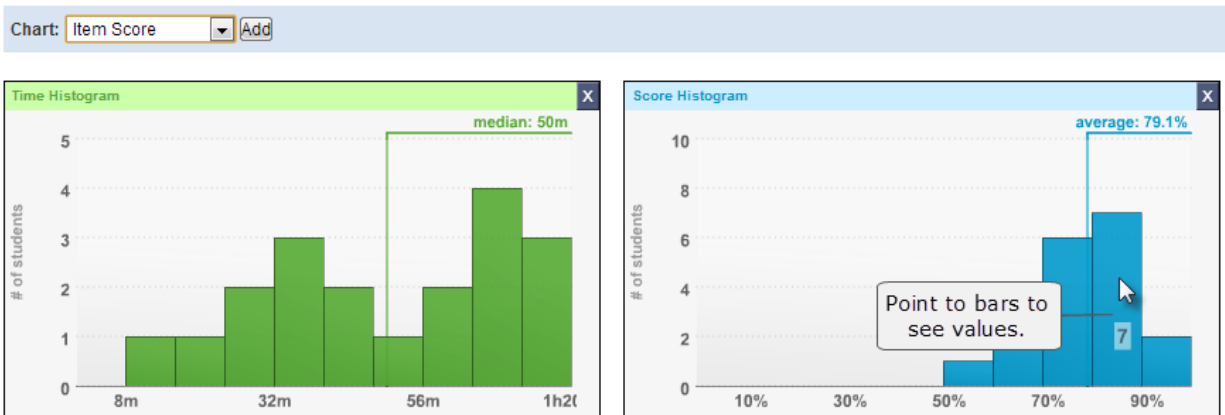
Wrong Answers for This Course (MBDEMOGRADES) Avg. of 0.8 wrong answers per student

% Wrong	Answer	Response
62.5%	active transport	Active transport requires the cell to expend energy. The transport of cations into root hairs does not, directly, require the expenditure of energy.
18.8%	endocytosis	Endocytosis requires the cell to expend energy. The transport of cations into root hairs does not, directly, require the expenditure of energy.
18.8%	osmosis	Osmosis is the diffusion of water; the cations that enter root hairs are minerals.

Cations diffuse into root hairs.

## View Overall Histograms of Assignment (time and score)

To see overall histograms of assignment time and scores, select the Time Histogram and Score Histogram charts from the list. Point to bars in the graph to see values.



## Step-by-Step Directions: Diagnosis and Assessment



[About Diagnosis and assessment](#)

[See Student Diagnostic Graphs \(Score, Time, Difficulty Data\) \[2 min\]](#)



[View Assignment as Instructor or Student, Print Assignment with and without Answers \[1 min 24 seconds\]](#)



## Lesson 4: Use the Mastering Diagnostics to Compare Your Students with Others

In the Summary View, you'll be able to answer questions like:

- How did my students perform on specific topics compared to the system average?
- How many of my students completed the item?
- Did my students request more hints and feedback than the system average?
- What was the difficulty and median time for *all* students (system wide) who completed the item and for *my* students in this course?
- What are the detailed wrong answer statistics for all students and for my students?

To compare your students' work against the System averages, select **Summary View**. Click on the column heading of the Summary View to reorder the listing. Sorting the detailed statistics by difficulty is a useful way to see how your students did on the hardest items in the assignment.

Ch 5 [Edit]

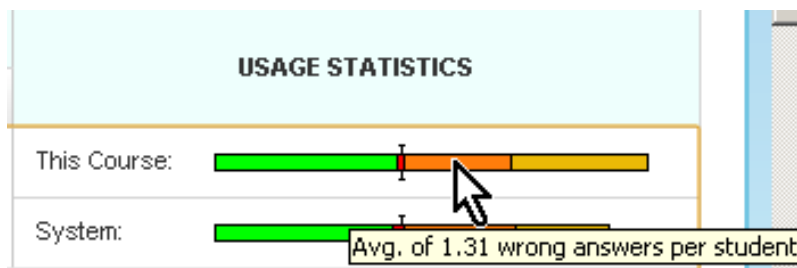
Overview **Summary View** Diagnostics View Print View with Answers

#	ITEM TYPE	TITLE <a href="#">Show Descriptions</a>	STUDENTS COMPLETE	DIFFICULTY		MEDIAN TIME		USAGE STATISTICS
				This Course	System	This Course	System	
1	Activities	<a href="#">Activity: Electron Transport</a>	25	1	2	9m	7m	This Course: System:
2	Tutorial	<a href="#">Cellular Respiration (4 of 5): Oxidative Phosphorylation (BioFix tutorial)</a>	25	3	3	15m	10m	This Course: System:
3	Activities	<a href="#">Activity: Fermentation</a>	25	1	1	4m	3m	This Course: System:
4	Tutorial	<a href="#">Pathways for Pyruvate</a>	25	2	1	2m	2m	This Course: System:
5	Tutorial	<a href="#">Cellular Respiration (5 of 5): Summary (BioFix tutorial)</a>	25	2	2	15m	10m	This Course: System:
5 items (10 points)				Average: 1.8    1.8		Total: 45m    31m		

This view shows the following information:

- Item type, such as Tutorial, Reading Question, End-of-Chapter.
- Item title, which you can click to [view the most common wrong answers for each item part](#)
- How many students have completed the item
- Difficulty, median time, and usage statistics for your course and the system average for all students worldwide, which let you [view comparative statistics for each item](#)

To see more details, like the percentage of wrong answer attempts, point to the color bars.



To see the numbers and their meaning, point to a segment in the color bar



- **Green**—Percentage of students who submitted the correct answer to this item
- **Red**—Percentage of students who requested the answer, clicked "give up," or used all allowed attempts for this item
- **Orange**—Average # of wrong answers submitted per student for this item
- **Gold**—Average # of hints requested per student for this item

The values shown are not downloaded when you export grades. If they are important to you, make a note of them as they appear when you use the **Summary View**.

Mastering provides even more detailed statistics for every item, including how students do on each part, and for every hint. To access statistics, click on the item title in the Summary View.

Ch 9 [ [Edit](#) ]Overview **Summary View** Diagnostics View Print View with Answers

#	ITEM TYPE	TITLE <a href="#">Show Descriptions</a>	STUDENTS COMPLETE	DIFFICULTY		MEDIAN TIME		USAGE STATISTICS
				This Course	System	This Course	System	
1	Activities	<a href="#">Activity: Electron Transport</a>	25	1	2	9m	7m	This Course: System:
2	Tutorial	<a href="#">Cellular Respiration (4 of 5): Oxidative Phosphorylation (BioFix tutorial)</a>	25	3	3	15m	10m	This Course: System:
3	Activities	<a href="#">Activity: Fermentation</a>	25	1	1	4m	3m	This Course: System:
4	Tutorial	<a href="#">Pathways for Pyruvate</a>	25	2	1	2m	2m	This Course: System:
5	Tutorial	<a href="#">Cellular Respiration (5 of 5): Summary (BioFix tutorial)</a>	25	2	2	15m	10m	This Course: System:
5 Items (10 points)				Average:		Total:		
				1.8	1.8	45m	31m	

In the item detail view, you'll see the complete item text, including opened hints (if the item has them) with the correct answer, answer statistics (comparison of your students and system wide students), and the most common wrong answers displayed.

Part B

Which of these organelles carries out cellular respiration?

ANSWER:

- chromatin
- smooth endoplasmic reticulum
- nucleolus
- ribosomes
- mitochondrion

Color bars indicate your class did better than the overall Mastering population on this part

Answer Stats:	Students	% Correct	% Unfinished	% Req'd Solution	Wrong/student	Hints/student
System Average	97999	98.6%	1.3%	0.1%	0.2	0
This Course (MBDEMOGRADES)	26	100%	0%	0%	0.1	0

Wrong Answers for This Course (MBDEMOGRADES)		
% Wrong	Answer	Response
50%	ribosomes	Ribosomes do not carry out cellular respiration.
50%	chromatin	Chromatin is found within the nucleus.

The table shows the two *wrong* answers that your students supplied, along with the responses that Mastering provided for each wrong answer.

Mitochondria convert the chemical energy of organic molecules to chemical energy in the form of ATP.

Follow up text when student submits the answer correct

*"I was talking with a few students about the problems in MasteringBiology. They were telling me that the problems were impossible to finish and how frustrating it was. But, I went to the assignment summary page to see how my students did, and they had consistently scored higher than the nationwide average. I showed the students that were complaining how well they had done compared to others, and it immediately changed their attitude about the whole thing."*

-Submitted by Shannon Datwyler, Ph.D., [CSU Sacramento Case Study](#)

## Step-by-Step Directions: Diagnosis and Assessment



### [About Diagnosis and assessment](#)



[See Student Diagnostic Graphs \(Score, Time, Difficulty Data\)](#) [2 min]

[View Assignment as Instructor or Student, Print Assignment with and without Answers](#) [1 min 24 seconds]

## Lesson 5: View or Export Student Learning Outcomes

*"Another feature I use is the new learning outcomes feature. This is a powerful (and nearly effortless) way to document student mastery of skills that transcend chapters."*

*-Submitted by Robert Pribush, [Butler University case study](#)*

To view, click on Gradebook, then **View Learning Outcomes Summary**.

Gradebook


[Manage](#) [View Learning Outcomes Summary](#)

Filter ▾ Showing Score in All Categories for All Students

Score Time Difficulty

Students per page: 100 ▾











NAME	STUDENT ID	Ch 8	Ch 9	Ch 23	Ch 24	Evolution	Ch 29	Ch 30	Ch 35	TOTAL
Essays										
		--	--	--	--	📄	--	--		<a href="#">see all</a>
<b>Class Average</b>		88.4	78.5	78.9	--	48.6	79.5	53.2	11	28.6
Last01, First0...	student1	0.0	87.4	97.5	--	68.9	94.6	98.9		31.1

Overall student results for each learning outcome will be displayed. Click  to view the details for each specific learning outcome, including which assignments and items related to that outcome. For each item, Mastering displays the percent complete and the percent average score.

### Learning Outcomes Summary

The list below contains learning outcomes specified for items assigned in this course. The initial order reflects the sequence of outcomes as they appear in assignments, but you can sort them by any column. [Learn more about using learning outcomes.](#)

Hide Provided Learning Outcomes [Print](#) [Export](#)

#	LEARNING OUTCOMES	# OF ITEMS	% COMPLETE	% AVERAGE SCORE
1	 Identify how common techniques of microscopy and biochemistry are used in cell biology.	2	0.0	--
2	 Use examples to illustrate each theme of this book.	4	0.0	--
5	 Explain how hydrogen bonding results from polar covalent bonds.	1	0.0	--
32	 Trace the pathway of glucose oxidation during glycolysis.	2	0.0	--
33	 Describe the oxidation of pyruvate and the process by which further oxidation occurs in the citric acid cycle.	2	0.0	--
7	 Identify the steps of oxidative phosphorylation and account for the total ATP produced per glucose molecule during cellular respiration.	11	27.3	<div style="width: 27.3%;"></div> 74.9
46	 Discuss the scientific process.	1	84.2	<div style="width: 84.2%;"></div> 74.4
47	 Global: Demonstrate the quantitative skills needed to succeed in Introductory Biology.	1	84.2	<div style="width: 84.2%;"></div> 74.4
ASSIGNMENTS		ITEMS		% COMPLETE
<a href="#">Lab 2</a>		<a href="#">Graph!!!: An Introduction to Graphing</a>		84.2
9	 Global: Demonstrate the ability to think critically and employ critical thinking skills.	4	47.4	<div style="width: 47.4%;"></div> 75.5
14	 Global: Read and interpret graphs and data.	2	86.8	<div style="width: 86.8%;"></div> 77.9

By default, learning outcomes are listed sequentially according to the due date to help you track student progress throughout the semester. You can click any column heading to sort data by that column. No learning outcomes are displayed until students enroll in the course. For pooled assignments, outcomes and results are displayed based on the items that are actually assigned from the pool.

In the detailed view for each learning outcome, click an assignment title to view the assignment. Click an item title to see student responses for the particular item.

#### Learning Outcomes Summary

The list below contains learning outcomes specified for items assigned in this course. The initial order reflects the sequence of outcomes as they appear in assignments, but you can sort them by any column. [Learn more about using learning outcomes.](#)

Hide Provided Learning Outcomes [Print](#) [Export](#)

#	LEARNING OUTCOMES	# OF ITEMS	% COMPLETE	% AVERAGE SCORE										
1	<a href="#">+</a> Identify how common techniques of microscopy and biochemistry are used in cell biology.	2	0.0	--										
2	<a href="#">+</a> Use examples to illustrate each theme of this book.	4	0.0	--										
5	<a href="#">+</a> Explain how hydrogen bonding results from polar covalent bonds.	1	0.0	--										
32	<a href="#">+</a> Trace the pathway of glucose oxidation during glycolysis.	2	0.0	--										
33	<a href="#">+</a> Describe the oxidation of pyruvate and the process by which further oxidation occurs in the citric acid cycle.	2	0.0	--										
7	<a href="#">+</a> Identify the steps of oxidative phosphorylation and account for the total ATP produced per glucose molecule during cellular respiration.	11	27.3	<div style="width: 27.3%;"></div> 74.9										
46	<a href="#">+</a> Discuss the scientific process.	1	84.2	<div style="width: 84.2%;"></div> 74.4										
47	<a href="#">-</a> Global: Demonstrate the quantitative skills needed to succeed in Introductory Biology.	1	84.2	<div style="width: 84.2%;"></div> 74.4										
	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; text-align: center;">ASSIGNMENTS</td> <td style="width: 50%; text-align: center;">ITEMS</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> <tr> <td style="text-align: center;"><a href="#">Lab 2</a></td> <td style="text-align: center;"><a href="#">Graph!!: An Introduction to Graphing</a></td> <td style="text-align: center;">84.2</td> <td style="text-align: center;">74.4</td> <td></td> </tr> </table>	ASSIGNMENTS	ITEMS				<a href="#">Lab 2</a>	<a href="#">Graph!!: An Introduction to Graphing</a>	84.2	74.4				
ASSIGNMENTS	ITEMS													
<a href="#">Lab 2</a>	<a href="#">Graph!!: An Introduction to Graphing</a>	84.2	74.4											
9	<a href="#">+</a> Global: Demonstrate the ability to think critically and employ critical thinking skills.	4	47.4	<div style="width: 47.4%;"></div> 75.5										
14	<a href="#">+</a> Global: Read and interpret graphs and data.	2	86.8	<div style="width: 86.8%;"></div> 77.9										
36	<a href="#">+</a> Identify the parts of the endomembrane system and describe their roles in the cell.	1	100	<div style="width: 100%;"></div> 80.3										
40	<a href="#">+</a> Describe the process of active transport.	1	94.7	<div style="width: 94.7%;"></div> 80.6										
15	<a href="#">+</a> Use examples to show how evolution is supported by scientific evidence.	1	89.5	<div style="width: 89.5%;"></div> 81.4										
19	<a href="#">+</a> Characterize organisms and their life cycles.	2	89.5	<div style="width: 89.5%;"></div> 84.4										

<http://session.masteringbiology.com/myct/itemView?showStatsForCourse=1005550&noNav=1&...>

You can print and export the data in this report. Decide whether you want to hide the publisher-provided learning outcomes for your printout or export.

Hide Provided Learning Outcomes

Student learning outcome exports available include:

- **Summary** exports high-level data for each learning outcome.
- **Item Details** exports data for each assignment item that is associated with every outcome.

- **Student Item Details** exports every student's score for each item associated with every learning outcome.

The following table provides a comparison of data exported with each of the learning outcomes .csv (spreadsheet) formats: Summary, Item Details, and Student Item Details.

Data column	Summary	Item Details	Student Item Details
First Name			✓
Last Name			✓
Student ID			✓
Username			✓
Email			✓
Group(s)			✓
#	✓		
Type	✓	✓	✓
Learning Outcome	✓	✓	✓
# of Items	✓		
Assignment		✓	✓
Item		✓	✓
% Complete	✓	✓	
% Avg Score	✓	✓	
% Score			✓

## Step-by-Step Directions: Create and Assess Learning Outcomes



[Create and Assess Learning Outcomes](#)



[Create/Assign Learning Outcomes](#) [3 minutes 10 seconds]

## Lesson 6: Export the Gradebook

At the end of the semester, it is important to export your scores and save the course data to your hard drive. As an instructor, or a section instructor with the Gradebook privilege, you can export Gradebook data. The data you export goes into a .csv (comma separated values) file, which looks like a spreadsheet.

### Reasons to export scores:

- **Track grades for all assignments in one place:** Exporting grades offers a standardized way of using Mastering grades in other gradebook formats.
- **Archive student grades:** Exporting grades at the end of the term is a recommended practice for archiving student grades. You might also want to export a student's grades to give to another instructor if a student transfers to a different section of the same course during the term.
- **Analyze scores for a subset of students:** If you want to export scores for only selected groups of students, you can filter the Gradebook data before you export.
- **Copy student email addresses:** One way to contact students by email is to export any Gradebook data (times, difficulty, or scores using the Standard Gradebook Format) and copy their email addresses from the resulting .csv file.
- **Analyze time and difficulty patterns:** Exporting and examining time spent or difficulty ratings for Mastering assignments can provide insight into areas where students need more study or instruction, or it can reveal possible student cheating. After you have opened the exported data in a spreadsheet application, such as Microsoft Excel, you can sort the rows by any column.

***Export does not preserve some Mastering Gradebook features, such as assignment categories or weighting. If you prefer not to lose those Mastering capabilities, you can track offline (non-Mastering) activities in the Mastering Gradebook.***

## Notes on Preparing your Export

- If you plan to use exported scores in a spreadsheet, ensure that the Gradebook displays scores as you want them exported, or [change the points or percentages format in Course Settings](#).
- Check the consistency of student IDs. [Display student IDs in the Mastering Gradebook](#) and compare them with student identifiers in the course management system. If you notice inconsistencies, you may want to [edit the student IDs in Mastering](#).
- For larger courses, you may want to manage student IDs through a template rather than manually editing student IDs.
- Filter data as you want to export it; for example, scores for a group of students. You can create groups for sections, lab teams, at-risk students, and so on and export to see only scores for that group.

*Note: You cannot filter and export by category currently.*

## More on Exported Scores

- Only raw scores are exported. If you are using category or assignment weighting in Mastering, that weighting is not applied to the exported scores. The category to which an assignment belongs is also not exported.
- Assignments for practice have no grades to export. Grades in these assignments are indicated by dashes.
- When you select the Standard Gradebook Format, only grades for assignments that are already due are exported. Grades are not exported for assignments that are not yet due.
- In specialized exports (for instance, for export to Blackboard), all assignment grades are exported, even for assignments that are not yet due. However, these are not necessarily final grades; they represent only what the student has submitted so far.

- The Gradebook exports grades to 2 decimal places of precision. This is precise enough for most purposes, but slightly less exact than the Gradebook internal calculations, which are calculated to approximately 9 decimal places.

## Step-by-Step Directions: Export the Gradebook



[Export scores, times, or difficulty ratings from the Gradebook](#)



[Export Scores](#) [56 seconds]

## MODULE 9: WHAT'S NEXT? END THE SEMESTER AND START THE NEXT

### Lesson 1: End of Semester and Start the Next Preparation

#### At the End of Each Course

- Export a copy of student scores from your Gradebook for your records. You can access your courses after the Course End Date, even though your students no longer have access. Your access continues for five three years, but you are not notified when it ends, so you might want to create your own reminder if you want to copy this course later. Reference the Gradebook lesson: Export the Gradebook.
- Get Assistance with Your Own Efficacy Study - Contact your sales representative or [betsy.nixon@pearson.com](mailto:betsy.nixon@pearson.com), Mastering Efficacy Results Manager, if you'd like to get help with a student survey or case study.
  - Consider giving a survey to your students to provide feedback that will help you plan your course the following semester.
  - Consider using your exported data to conduct a case study. Pearson would like to help you analyze your results from your use of Mastering. Pearson can provide templates, guidelines, checklists, and samples on course redesign, efficacy studies, data collection, and more.

#### Your Course Continues into the Next Term

Sometimes students enroll in courses that last for more than one term. If your course is CONTINUING from one term to the next with no change in course ID, and a few students are dropping or adding the course, you only need to:

- Export a copy of the grades from your Gradebook for your records.

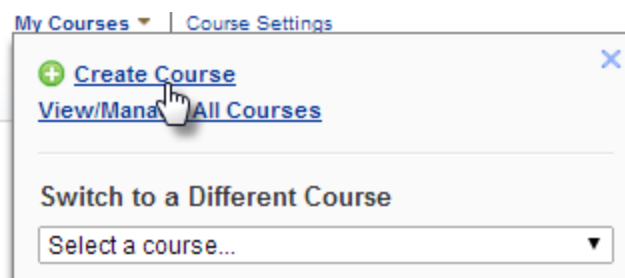
- Disenroll any students who have dropped the course. (If you are not sure they have dropped, but they do not appear to be submitting assignments, you should suspend them temporarily.)
- Remove any section instructors who are not continuing. Remember to assign privileges to any new section instructors you add.
- If you are not going to have the same students for both semesters, it is recommended to COPY your course instead of keeping the same Course ID.

## Copy Your Course for the Next Semester

To use a similar course as the one you have created for a later term, copy the course. This creates a new course that contains all assignments and most customizations of the original course, yet is free of any student data or section instructors. Students will need a NEW Course ID to enter this course.

(Note: If a student is repeating the course, they will be able to reenter the new course with the new Course ID without having to make an additional purchase)

- You will find the option to Copy your course (or create a new course) by clicking on the **My Courses** link on the top left hand of your Mastering home page. Click **Create Course** to copy your course.



[Characteristics of a copied course](#) – your course settings, standard assignments, Adaptive Follow-Up assignments, Dynamic Study Module assignments, Learning Catalytics modules, offline activities, MyItems, uploaded course documents or videos, and Gradebook customizations (except display preferences) copy to the new course.

- You have the option to copy assignment dates. If you copy dates, you can adjust the dates as needed to be accurate for the next term. If you don't copy dates, you can supply new dates for all assignments.
- After you have copied the course, remember to let students enroll.
- If you are continuing with the same section instructors but have a new course ID, remember that you must add your section instructors to the new course and edit their privileges.
- You will want to be sure to confirm due dates of assignments in the new course and make adjustments.

**Note:** *If you are moving to Modified Mastering from Mastering (or vice versa), you can copy your assignments and learning outcomes. For more information, refer to the [Modified Mastering support pages](#). Refer to the [Modified Mastering Implementation Guide](#) for details.*

## Step-by-Step Directions: Get Ready for a New Semester



[Checklist for beginning and ending courses](#)



[Export Scores](#) [56 seconds]

[Copy a Course](#) [1 minute 5 seconds]

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