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Quick Start Guide for Learning Catalytics™ with Pearson MyLab Math and MyLab Statistics

Last updated 7/10/17

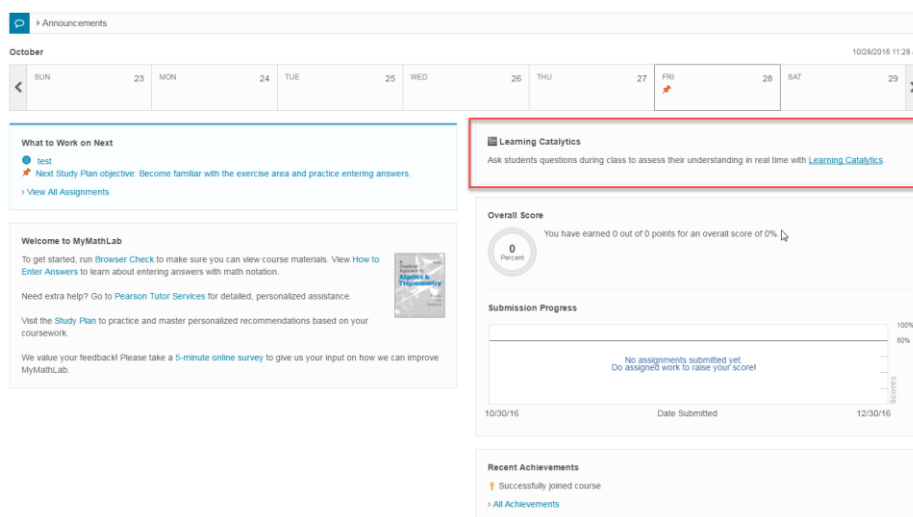
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How is Learning Catalytics integrated with MyMathLab and MyStatLab?

Learning Catalytics (LC), a “bring your own device” student engagement, assessment, and classroom intelligence system, is now fully integrated into your MyLab courses. Below is a list of the key integration features:

- Instructors can easily access Learning Catalytics from the Course Home.



- When you cross over from your MyLab to Learning Catalytics, a course is created in Learning Catalytics with the same name as your MyLab course. Here you can create modules to run in or outside of class.

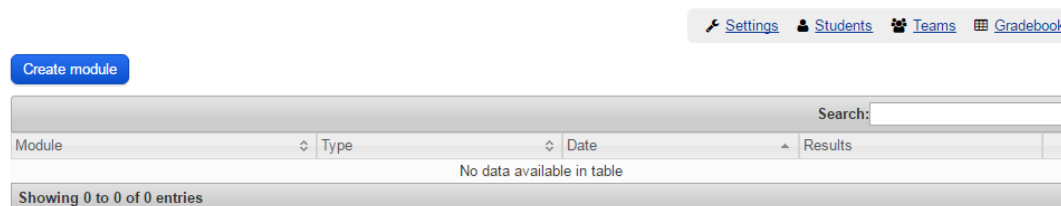
In addition, any scores students earn during sessions (modules you deliver) can be transferred to your MyLab gradebook in the Homework category.

Note that you cannot transfer scores to any other category except the Homework category.

[My Courses](#) > **Course 101**


Welcome, Instructor.

See our [training page](#) for resources to help you get acquainted with Learning Catalytics.



- Students *do not* see a link to Learning Catalytics on their Course Home *until you enable Learning Catalytics for your students*. To enable LC for your students you must select **Use with Students**.


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 know and adjust lectures accordingly.

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 & Setup

Step 2. Use with Students


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.

 **Use with Students**

*Requirements for Use in Your Classroom

- Wi-fi or cell provider connectivity with capacity for all students to be online simultaneously (check with your IT department).
- Web-enabled device for each student (e.g. smartphone, tablet, laptop)
- The ability to use Learning Catalytics with your MyLab Course is a Beta feature. Please review our [Training](#) pages for more information.

- Once you enable LC by selecting **Use with Students**, all students have access to Learning Catalytics at no charge from within their MyLab course.

Important Tip: Students SHOULD NOT purchase access separately to Learning Catalytics at the Learning Catalytics website. If students create a different account (different username) on the Learning Catalytics website, then their scores will not successfully transfer from LC to your MyLab Gradebook. For this reason, we suggest students always access LC from their MyLab course.

- When students join sessions from the MyLab Course Home they do not need to enter a session ID. When a session is in progress, they see Join Now button on the Course Home.
- As soon as a session is stopped, scores for Learning Catalytics sessions can be automatically transferred to your MyLab Gradebook. Any updates to those scores are sent automatically, as well.
- After you've enabled LC for your students, you will see the option to transfer grades within the module settings. You can transfer all or some of your LC modules to your MyLab Gradebook. All transferred

scores automatically flow to your Homework category. Note that there is no option to have LC scores flow to a different category.

Sample workflow for running a Learning Catalytics Instructor-Led Synchronous session* with students in class:

**Students can engage with LC in various ways, including self-guided learning, but this example is for the Instructor-Led Synchronous response type, which is the most common response type.*

- 1) Enable Learning Catalytics
- 2) Students see Learning Catalytics on their Course Home once you've enabled it
- 3) Create a new module
 - a) Select whether to leave Gradebook transfer "on" (default for all new modules) or uncheck to turn off
 - b) Add questions and customize the module as needed
- 4) Start the session (deliver the module) when appropriate
- 5) Students join the session from their Course Home
 - a) Students see a Join Now link
 - b) Students do not need the session ID when they join the session from their MyLab course
- 6) End the session once complete
- 7) Review student answers within Learning Catalytics or review scores within your MyLab course Gradebook (if scores were transferred)
- 8) If you've allow review, students can review their own performance and results from Learning Catalytics or from their MyLab course

Best Practices and Tips for Learning Catalytics

To use Learning Catalytics with your course, you must enable it for your students and notify them. Students don't see Learning Catalytics on their Course Home until you enable it for their course. Before enabling Learning Catalytics, be sure to read through the best practices below. If you are new to Learning Catalytics or redesigning your course, please refer to the [Learning Catalytics Planning Toolkit](#) to help you have a successful implementation.

Best Practices: 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.

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.
-

Learn about enabling your course and student access to Learning Catalytics from MyLab

- Learning Catalytics is included at no charge with all MyLab Math and MyLab Statistics courses. Once you enable Learning Catalytics, students can access it from their Course Home.
 - If students sign in to learningcatalytics.com to access any sessions, it is important they use the SAME username and password they use for their MyLab course to ensure successfully grade sync from Learning Catalytics to the MyLab.
 - Communicate this information to your students early so they understand how they access Learning Catalytics from their MyLab course.
 - 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 Learning Catalytics on their Course Home.
 - 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 provide you with helpful feedback on your Learning Catalytics implementation.

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.

**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 MyLab 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 MyLab, 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 or TAs so they can create a seat map, monitor responses during class, grade open-ended questions, and so on.

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.

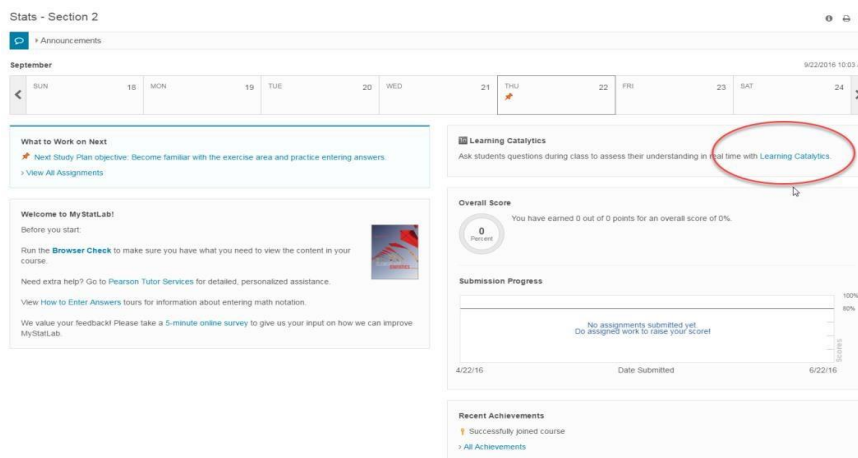
- Try to connect what they work on in Learning Catalytics to their learning outcomes and professional aspirations so they see the relevance and purpose.
- Remind students of your requirement to use Learning Catalytics *before* you use it in class. Encourage your students to confirm their access to Learning Catalytics from within MyLab *before* you deliver your first Learning Catalytics session. Consider assigning a practice module outside of class for example. This will avoid time wasted in class the first time you run an in-class session.
- 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.

Enable Learning Catalytics on the Course Home

You can enable Learning Catalytics (LC) from your Course Home for your students to access LC throughout the term. Once enabled, the instructor view of the area allows you to create modules and start and end sessions. The student view of the section (once enabled) provides students with easy access to active sessions.

Step-by-Step Directions

1) From your Course Home, click **Learning Catalytics**.



2) To enable LC, select **Use with Students**.

learning catalytics
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Use with Students

*Requirements for Use in Your Classroom

- Wi-fi or cell provider connectivity with capacity for all students to be online simultaneously (check with your IT department).
- Web-enabled device for each student (e.g. smartphone, tablet, laptop)
- The ability to use Learning Catalytics with your MyLab Course is a feature. Please review our [Training & Support](#) pages for more information.

*Tips: Be sure to review the requirements for use in your classroom prior to selecting **Use with Students**.*

*If you are unfamiliar with LC, we recommend clicking **Preview & Set Up** first to explore Learning Catalytics before you decide to make it available to students. In Preview & Set Up you can create seat maps, set up modules, add questions, test your delivery, and try it out in Student View. Students don't see Learning Catalytics on their MyLab Course Home until you click **Use with Students**.*

- 3) After you click **Use with Students**, you have enabled Learning Catalytics for your course. When you crossover to Learning Catalytics, notice that a course has been created with the same name as your MyLab course title. You can create a new module now or access and create one later. Learning Catalytics has been added to the student view of Course Home and new links have been added to the instructor view of the section on your Course Home.

Instructor view after you enable Learning Catalytics:

The screenshot displays the 'Stats - Section 2' instructor view. At the top, there's a navigation bar with 'Stats - Section 2' and a date '9/22/2016 10:09 AM'. Below this is a calendar for September, with the 21st (Thursday) highlighted. The main content area is divided into several sections. On the left, there's a 'What to Work on Next' section with a 'Next Study Plan objective' and a 'View All Assignments' link. Below that is a 'Welcome to MyStatLab!' section with instructions on how to get started, including a 'Browser Check' and a link to 'Pearson Tutor Services'. On the right, the 'Learning Catalytics' section is highlighted with a red circle. It contains three links: 'Create new module.', 'Start new session.', and 'Review previous sessions.'. Below this is an 'Overall Score' section showing '0 Percent' and a message 'You have earned 0 out of 0 points for an overall score of 0%'. At the bottom right is a 'Submission Progress' section with a bar chart showing 'No assignments submitted yet. Do assigned work to raise your score!' and a timeline from '4/22/16' to '6/22/16'.

Student view after you enable Learning Catalytics:

When a session is not in progress, student can click Learning Catalytics to review past session (if applicable):

The screenshot shows the MyStatLab student interface. At the top, there's a navigation bar with a calendar for September 2016. Below the calendar, there's a 'What to Work on Next' section with a 'Next Study Plan objective' and a 'View All Assignments' link. To the right, the 'Learning Catalytics' section is circled in red, showing a button to 'Access your past Learning Catalytics sessions as a study aid.' Below this, there's an 'Overall Score' section showing 0 out of 0 points for an overall score of 0%. The 'Submission Progress' section shows a progress bar at 0% with the text 'No assignments submitted yet. Do assigned work to raise your score!' and a date range from 4/16/16 to 6/16/16.

When a session is in progress, students see **Join Session in Progress**:

The screenshot shows the MyStatLab student interface with a session in progress. The 'Learning Catalytics' section is circled in red, showing a blue button labeled 'Join Session in Progress'. The 'Overall Score' section shows 0 out of 0 points for an overall score of 0%. The 'Submission Progress' section shows a progress bar at 0% with the text 'No assignments submitted yet. Do assigned work to raise your score!' and a date range from 4/16/16 to 6/16/16.

Scoring 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 [Implementation Guide](#) topic 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.
- **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 MyLab Gradebook.
- **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.

Transfer Learning Catalytics Grades to MyLab

Student scores for Learning Catalytics sessions are reported to the Learning Catalytics Gradebook, and you have the option to transfer scores to the MyLab Gradebook. This can be done by module in the module settings. Note that you only see this option after you've enabled Learning Catalytics in your course. If you've copied a course that had Learning Catalytics enabled from a prior term, you still have to enable Learning Catalytics in the new course.

Gradebook transfer



Send grade data to MyLab course (Microeconomics)

Best Practices and Tips: Grade Transfer

- All grades transferred from Learning Catalytics to the MyLab Gradebook flow into the Homework category. There is no way to edit the category for Learning Catalytics grades.
- In order to have grades transfer to the MyLab Gradebook, you **MUST** enable Learning Catalytics for your course by selecting **Use with Students**. If you don't select this, you will not be able to use the grade transfer from Learning Catalytics to MyLab. The option to send grade data to the MyLab course doesn't appear until you make the selection.
- It is important for students to use the same username for both MyLab and Learning Catalytics. If students create a separate Learning Catalytics account from their MyLab account, grades will not transfer successfully. To avoid this, make sure to share the [student handout](#) at the beginning of the course.
- If you decide later that you don't want your Learning Catalytics grades transferred to the MyLab 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.
- Typically a module is delivered in a single session, but if you deliver a module in more than one session in the same course, scores for each session are transferred separately and appear in separate columns in your MyLab course Gradebook.

- If you edit a student's score in the Learning Catalytics gradebook, your changes are automatically transferred and updated to the MyLab Gradebook.
- *Once a module has already been delivered to students:* If you change any scoring parameters, student scores will be recalculated based on the new parameters. Any new scores will be transferred to both the Learning Catalytics Gradebook and to the MyLab Gradebook if you use grade transfer.

Any edits to a Learning Catalytics module's scoring parameters always affect scores for *all sessions* of that same 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 assign sessions for homework, like self-paced or self-test modules, the Learning Catalytics assignments do not appear in the assignment manager. Assignments are "sessions" and the entry isn't created in the assignment manager until the session has started.
- Once you end the session (or it automatically ends because of the Learning Catalytics due date settings), the submission is complete and the student will see their result on their results page.

Create Modules and Run Sessions

- [Create Modules](#)
- [Start and End Sessions](#)
- [Review Student Work and Results](#)

Create Learning Catalytics Modules

Once you enable Learning Catalytics in your course, you can create your first module immediately from the LC account page or access this page at a later time by clicking **Create new module** on your Course Home. Either way, the modules you create are now tied to your MyLab course. When you deliver modules, students do not need a session ID to join a session from their MyLab course.



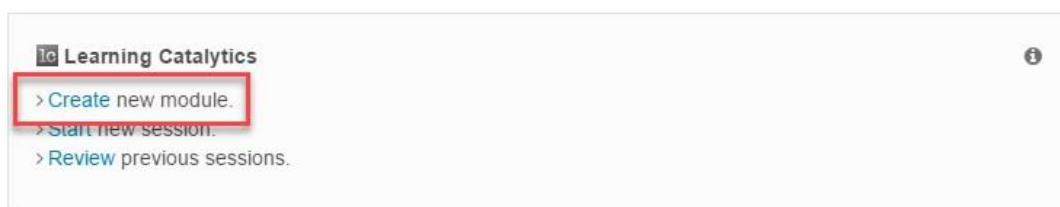
[Select a Response Type](#) (video)

[Create an Instructor-Led Synchronous Module](#) (video)

For more detailed information on creating modules including Instructor-Led Synchronous, Team-Based Assessments, Self-Paced, Self-Test, or Automated Synchronous modules, see the [Learning Catalytics Implementation Guide](#).

Step-by-Step Directions

- 1) From Learning Catalytics, click **Create new module**.



2) Customize your module settings.

learning catalytics™ LG, Prof2 | Pearson | Log out

Courses Questions Classrooms Training Help Feedback Student view

My Courses > Econ > Module 1

Add Questions and Customize Module

The module has been created. Now it's time to customize the module settings and add questions.

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: **Instructor-Led Synchronous** [Change response type](#)
Students respond individually to questions as they are delivered one at a time, typically in class or online with an instructor present.

☐ 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.

Participation weight: **Final score = 100% Correctness + 0% Participation**
Students receive credit only for correct responses. 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.

Gradebook transfer: ☒ Send grade data to MyLab course (Econ)

Note: Notice the gradebook transfer setting is selected by default. If you don't want grades to transfer, uncheck the box. All Learning Catalytics scores automatically transfer to your Homework Category in the Gradebook if you transfer grades from Learning Catalytics to your MyLab course.

3) Add questions to your module.

Only show: Format:

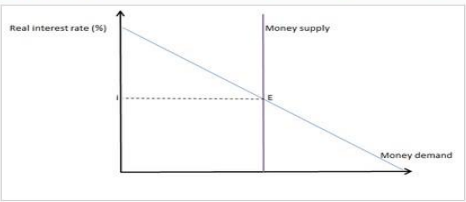
Discipline: Added by:

Chapter/content tag:

Show 5 entries Search:

direction

The following figure shows the money supply and money demand curves in an economy. The money market is in equilibrium at point E. Everything else remaining unchanged, in which direction will the equilibrium real interest rate move if the central bank of the country buys government securities in the open market?



composite sketch

Note: When adding questions from the library, the filter automatically defaults to Pearson content and the discipline of your MyLab course.

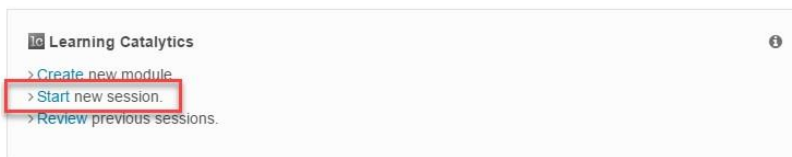
4) Click **Save and Finish**.

Start and End Sessions

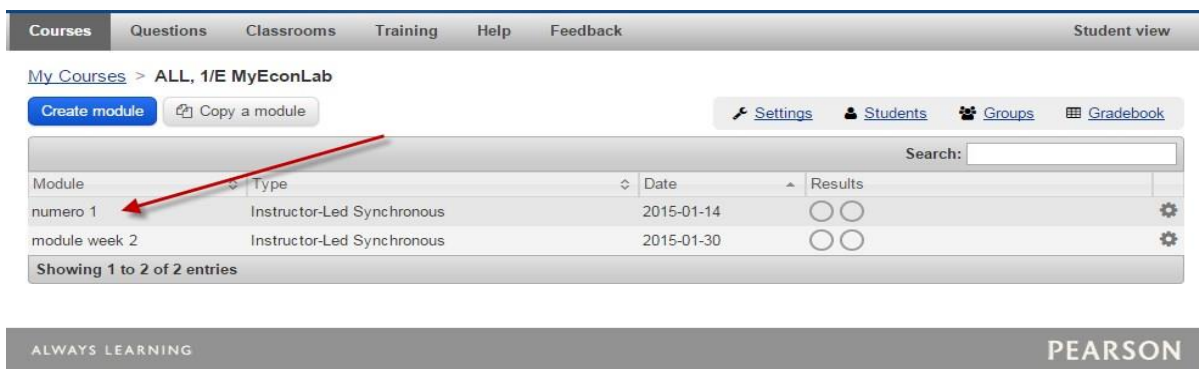
Once you have created and saved modules, you can start the session immediately after saving or by clicking the **Start new session** link from the In Class Learning section. Alternatively, you can also stop sessions from within the active session or at any time from the In Class Learning section.

Start Sessions from the In Class Learning Section

- 1) Click **Start new session**.



- 2) From the list of modules, open the module you will use. Before you start the session you can preview the questions in the module using the navigation tools on the page.



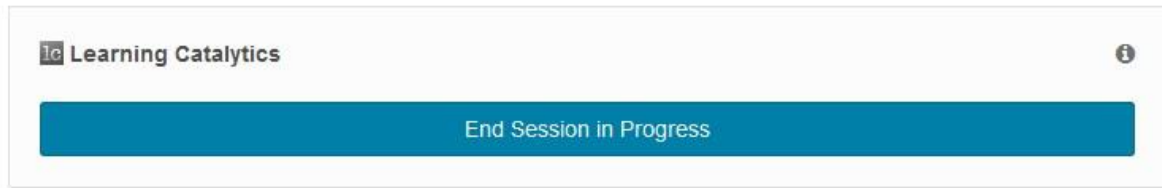
- 3) When you're ready, click **Start Session**.



- 4) If you are delivering the session from a computer attached to a projector, then drag the student window to the projector (visible in the classroom) or to the second monitor (for your convenience during online delivery), if available.

Stop Sessions from the In Class Learning Section

- 1) Click **End Session in Progress**.



- 2) Click **Stop Session**.



Note: If you have more than one session in progress, the most recent session opens when clicking End Now.

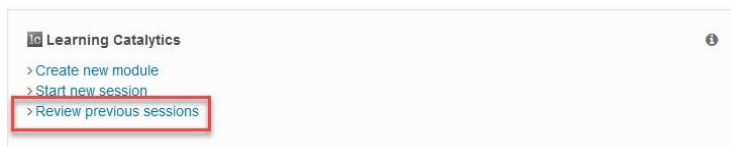
Don't forget to click **Stop session** to allow:

- Student scores to report to the Learning Catalytics Gradebook, and transfer to the MyLab Gradebook and to students' Scores pages.
- **NEW** The maximum possible points for a session is based on only the questions that were delivered in that session.
- Students to review their responses and the correct answers, after the review waiting period has elapsed (you can move undelivered questions so students won't see correct answers to questions you want to use later).

Review Student Answers and Results

Your course now offers grade synchronization from Learning Catalytics sessions to your MyLab gradebook. Therefore, you can now review student answers and results from both Learning Catalytics and your MyLab course.

- 1) Click **Review previous sessions**.



- 2) The Learning Catalytics Gradebook opens displaying grades for each student for each module.

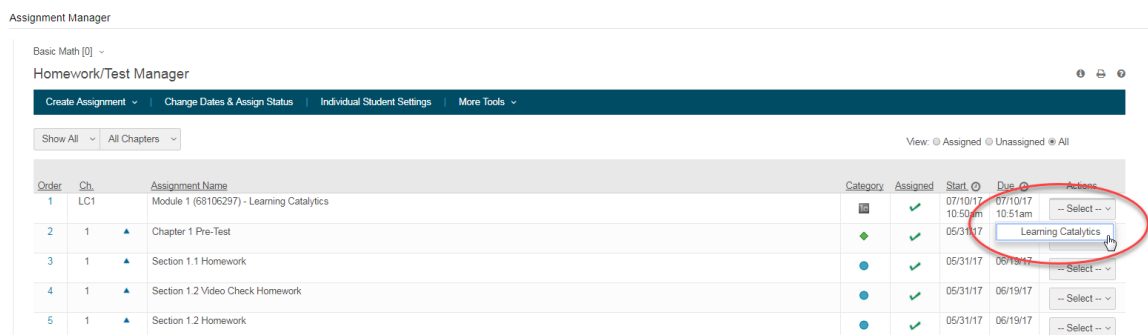


- 3) Click a student name or session name to see more detailed information.



Review from Your MyLab Course

- 1) From the Assignment Manager in your MyLab course, locate the LC assignment and select **Learning Catalytics** from the Actions drop down menu.



- 2) Review student answers for each question from that module.

The screenshot shows the Learning Catalytics interface. At the top, it says "learning catalytics" and "Elizabeth Cameron | Pearson | Log out". Below the navigation bar, there are links for "Courses", "Questions", "Classrooms", "Training", "Help", and "Feedback". The main content area shows a question titled "Round 1" with a multiple-choice format. The question is: "A child is born with an elongated eyeball. Which of the following problems would you predict would occur?" The options are: A. hyperopia, B. myopia, C. cataract, D. astigmatism, and E. presbyopia. The student's answer is B, which is marked as correct with a green bar. Below the question, there is a table showing the student's performance. The table has columns for "Student", "Score", and "Status". The student is "Student2, Cameron" with a score of "8 (1.00 points)" and a status of "Correct".

- 3) From your MyLab Gradebook > Homework, review the grades for each student.

The screenshot shows the MyLab Gradebook interface. At the top, it says "Gradebook". Below the navigation bar, there are links for "Manage Incompletes", "Change Weights", "Offline Items", "Export Data", and "More Tools". The main content area shows a table of student grades. The table has columns for "Class Roster", "Category Score", "# Results", "LTS Training (77737990) ...", and "LTS Training (77256874) ...". The student "Wydro, Sara" is listed with a score of 100% and 1 result. The table also shows the class average and median.

Class Roster ↑	Category Score	# Results	LTS Training (77737990) ...	LTS Training (77256874) ...
Percent of overall score	30%	--	30%	0%
Class Average	100%	--	100%	See all scores
Class Median	100%	--	100%	
# Results	--	1	1	--
Change Scores				
Wydro, Sara	100%	1	100%	omitted

- 4) For more details, click a student's name to open the student's review page and click **Review**.

The screenshot shows the student's review page in Learning Catalytics. At the top, it says "Member: Stats - Section 1 [1] - Ouellette | Back to Gradebook". Below the navigation bar, there are links for "Results", "View student achievements", and "Show Overall Score". The main content area shows a table of student results. The table has columns for "Results from entire course to date", "Correct/Total", "Score", "Time Spent", "Date Worked", and "Actions". The student "Sara Wydro" is listed with a score of 100% and 1 result. The table also shows the class average and median.

Results from entire course to date	Correct/Total	Score	Time Spent	Date Worked	Actions
LTS Training (77256874) - Learning Catalytics	1/1	100% (omitted)	07/10/17 12:04pm	-- Select --	
LTS Training (77737990) - Learning Catalytics	1/1	100%	07/10/17 12:03pm	-- Select --	

Note: From the gradebook results page in Learning Catalytics, you can see how the student performed on each question and can click the performance icons to see the student's exact answer.

Find and Create Questions in Learning Catalytics

Filter and Search the Question Library

The question library page allows you to "star" questions as favorites for easy retrieval, and to easily locate "private" (unshared) questions that you have created, or that have been created by someone whose course you have access to. Less space is consumed by each question listed. The use of screen space lets you show as many as 25 questions that match your search.

The screenshot shows the 'Search question library' interface. At the top is a search bar. Below it is a 'Show 5 entries' dropdown. The list contains five questions, each with a star icon, a question type (all are 'short answer'), a question description, and an 'Add to module' link. The third question includes a mathematical expression:
$$\frac{14m^3n^3 - 21mn + 7n}{7mn}$$
. At the bottom, there is a pagination bar showing 'Showing questions 1-5 of 15' and navigation links 'Previous 1 2 3 Next'. A link '+Add checked questions to module' is also present.

Search question library

Show 5 entries

★ short answer +Add to module
Write the given number in scientific notation.
48,610,000 Note: When en...

★ short answer +Add to module
Divide.
$$\frac{14m^3n^3 - 21mn + 7n}{7mn}$$

Note: When enterin...

★ short answer 0 0 +Add to module
Use the distributive property to write the expression
without parentheses. Th...

★ short answer 0 0 +Add to module
Write the whole number in standard form.
Eighty-one thousand, nine hundred

★ short answer 0 0 +Add to module
19.A.3 Using your answers to questions 1 and 2,
what is the Amount Accrued...

Showing questions 1-5 of 15 Previous 1 2 3 Next
+Add checked questions to module

You can use the filter options in any combination. The more criteria you select, the more targeted your results will be. As you select and clear options, the resulting list of questions changes dynamically, with one exception: When you use the text search box, you need to press **Enter** to let Learning Catalytics know you've finished entering search text.

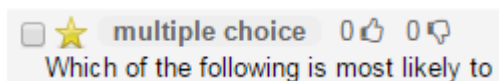
Only show: Select a content source

[Pearson content](#) has been provided by Pearson. Pearson content has been developed specifically for use with Learning Catalytics. Therefore, you will see content that is different from what you find within your MyLab course.

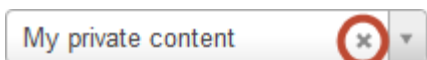
[Community-contributed content](#) gives you access to all questions in the library that you or others have created and shared.

[My private content](#) limits the results to questions you have created but have not shared. Private content includes questions you have copied and edited.

[My starred content](#) shows all questions that you have starred by clicking the star next to the question in the list of entries on this page.



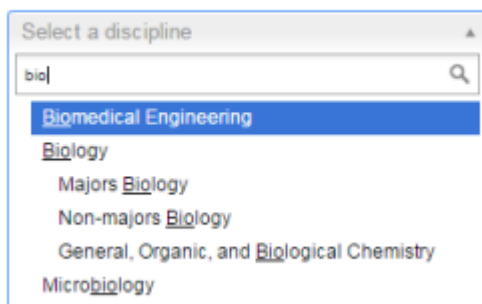
Or click **x** to remove the selection and include questions from all sources in your results list.



Discipline: Select a discipline

Click the box and begin typing the name of a discipline for which you'd like to see questions. The list responds as you type.

Type "bio"



You can also scroll through the hierarchical list, but you might find your way more quickly by typing. For example, Biology is nested under Natural Sciences, so you'll need to scroll further than you might expect.

You can select a discipline at any level in the hierarchy. Selecting a top-level discipline includes questions in all the disciplines nested below it. The more indented a discipline listing is, the more restricted the resulting list of questions is.

Book: Select a book

If you searching only for Pearson content, and have selected a discipline for which Pearson has provided questions for one or more specific textbooks, you can select a book from the list—either the book you are teaching with or any other book in the list.

You can type part of the title or author's name to reduce the length of a long list.

Showing questions 1-11 of 11
([+ More Engineering questions](#))

If you've selected a book and narrowed the results list to a specific question format (type), a link at the bottom of your results list reminds you that additional questions are available for the discipline. Clicking the link removes the book constraint and displays the list of all questions that match the discipline and question type.

Format: Select a question format (type)

Your options are any of the [question types](#) available in Learning Catalytics. You can click **x** to see questions that use any type.

Added by: Enter a contributor's name

For best results, enter the whole name, but you can also enter just a portion of the name. You'll see a list of questions shared by authors whose names include the character string you entered.

You can enter your own name to see a list of questions you have created—both shared and unshared (private) content—that match other criteria you have selected.

Search box: Search the question library based on a word in the question prompt or a content tag.

- [Search by selecting one or more tags](#): Begin typing in the box to display an alphabetical drop-down list of tags that contain the text you enter. Tags are text strings that have been applied to questions by contributors, with the aim of aiding quick retrieval of related groups of questions. The tags are

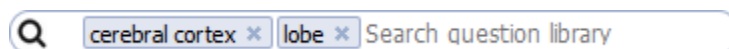
independent of any other filters you have currently selected (so entering "sup" contains tags for marsupials, supersonic, and supply and demand, regardless of the selected discipline), but the questions returned by a search are restricted by all the current filter selections, including discipline.

The list of tags narrows as you continue typing, and at any point you can press **Enter** to select the highlighted tag to add it as a filter criterion. The results list changes to include only those questions to which that tag is applied. If you'd like, you can enter different text and select an additional tag. There's no limit on the number of tags you can select to fine tune the list of questions found.

- [Search for free text](#): You can ignore the tags and keep typing to search for any word or phrase that appears in a question's *prompt* (not in the answer or explanation). When you've finished typing, press **Enter** to indicate that you've completed that entry. Then you can type another word or phrase and press **Enter** again. These entries are treated as temporary tags by the search engine and, like tags, there's no limit to the number you can add to restrict your results.

Tip: If you want to dismiss the list of tags, especially if a tag is highlighted that you don't want to search for, press Esc or click outside of the search box, and then press Enter.

- [Search for both tags and text](#): You can combine both tags and free text without any limit on either. In this example, "cerebral cortex" is a tag, and "lobe" is free text.



- [Remove an item from the search box](#): Click the **x** in the tag. The results list responds accordingly.

Format Text and Add Mathematical Notation in Questions

The screenshot shows a 'Create new question' window. At the top, there are four tabs: 'Priority', 'Ranking', 'Region', and 'Short answer'. Below these, the 'Discipline' is set to 'Developmental Math'. The 'Prompt' section features a rich text editor with a toolbar containing various icons for text formatting (bold, italic, underline, strikethrough, subscript, superscript, text color, background color), list creation (bulleted, numbered, table of contents), indentation, alignment, link/unlink, image insertion, summation, table, bulleted list, and symbols. Below the toolbar is a large text area for the prompt. At the bottom of the text area is a link that says '→ Switch to simple editor'. At the bottom right of the window are three buttons: 'Save & Preview', 'Save', and 'Cancel'.

When you add or edit a question, you can format text or add mathematical notation in a question's **Prompt** and **Answer/Explanation**, as follows:

- Use [Markdown](#), which enables you to add simple formatting easily. For example, you can put text in italics by surrounding the text `_with underscores_`.
- Use HTML, which enables you to add any arbitrary formatting. HTML is more complex, but with HTML you can make your question look like just about anything.
- Use [LaTeX](#), which enables you to add mathematical expressions quickly.

Note: If you have MathType, you can use "Copy with Plain TeX" to generate LaTeX code from your work!

For	Surround with	Example
Expressions that are inline with the text	dollar signs	$e^{i\pi} + 1 = 0$
Equations that are centered on their own line	double dollar signs	$\int_0^1 x^2 = \frac{1}{3}$
Visible dollar signs in the question	precede each dollar sign with a backslash (\\$)	If red tulips cost \\$2 each, while tulips cost \\$1 each, and blue tulips cost \\$3 each, how much does it cost to buy a shipment of 75 red tulips, 150 white tulips, and 75 blue tulips?

Link to learn [more about LaTeX](#).

[You can learn more about questions here.](#)

Image Upload Options for Questions

Several question formats allow you to upload images.

Image format: You can upload any GIF, JPG, or PNG image.

File size: If possible, try to reduce the file size before you upload the image. Doing so reduces bandwidth use in the classroom (since all of your students will be downloading that image onto their devices simultaneously).

Display size: Learning Catalytics automatically resizes images that are too large for mobile devices.

Tips for Question Creation

- 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.
- Tips for writing good ConcepTests can be found in research on peer instruction. ConcepTests are "short conceptual questions, typically posed in a multiple-choice format, on the subject being discussed". (Eric Mazur, 2007):

- Focus on a single important concept, ideally corresponding to a common student difficulty
- Require thought, not just plugging numbers into equations
- Provide plausible incorrect answers
- Be unambiguously worded
- Be neither too easy nor too difficult

Each ConcepTest has the following general format:

1. Question posed (1 minute)
2. Students given time to think (1-2 minutes)
3. Students record/report individual answers via Learning Catalytics
4. Neighboring students discuss their answers (2-4 minutes)
5. Students record/report revised answers
6. Feedback to teacher: Tally of answers
7. Explanation of correct answer (2+ minutes)

In this format, students are not graded for answers to the ConcepTests, but given participation points as credit.

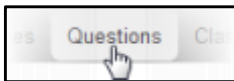
For more information, refer to [Peer Instruction: Engaging Students One-on-One, All at Once](#).

- 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. (Lasry, 2008) With this approach in mind, see Julie Schell's, Professor of Education at the University of Texas at Austin, post, "[3 Tips for Teaching – Great Question Writing](#)" on [Teach.com](#) to get 3 tips for writing effective questions to engage students.
 - *Shore up students' prior knowledge* to make sure your students have enough prior knowledge to self-assess accurately whether they can do a problem or not.

- *Lighten students' cognitive load* because working memory is very susceptible to overload. There is only a finite amount of space available for it. For more details, refer to [Schell's post](#). One suggestion may be to provide students with questions before lecture to scaffold students' learning by providing more support for learning early on. After students work on the questions at home, review the results to gain a better understanding of student misconceptions. Use the information you gather about student misconceptions to create the questions you ask in lecture via Learning Catalytics.
- *Un-situate students' learning*: Transfer and application questions can be the hardest questions for students because they often see their learning as situated or bounded by subject, classroom, or even topic. There are a few approaches, "hugging" and "bridging" that Schell outlines in her [post](#). "Hugging" works toward transfer as they ask questions to apply knowledge in new by very similar contexts. "Bridging" on the other hand or far transfer requires a significant leap between the learning and a new or foreign application context.
- 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.

How do I create a question from start to finish?

1. In the top navigation bar, click **Questions**.



2. Click + **Create a new question**.
3. From the horizontal slider, select the **Question Type** for the new question. There are quite a few different types of questions to choose

from. Some may be more pertinent to your course than others.
Commonly used math types

are : numerical, short answer, multiple choice, image upload, and composite sketch.

As you point to each question type, you see a description of what students see and how they must respond to that type of question.

Note: If you plan to record scores for student responses to questions, some question types can be automatically scored by Learning Catalytics, and other question types require individual marking as correct or incorrect. Be careful with this if you are using LC for grading purposes.

4. From the **Discipline** drop-down list, select a subject area for the question, which will help locate the question in the future. Some instructors just use “mathematics,” but it makes it harder to locate specific content.
5. In the **Prompt** box, enter the text of the question.

To format this text, you can use options available by clicking buttons or by using many familiar keyboard combinations to see your entries.

For Expression and Numerical questions, you can click to enter LaTeX (see more info above) and see it rendered as students will see it in the question. Or you can switch to the simple editor to enter plain text and use [Markdown, HTML, and LaTeX](#) for formatting.

6. If the question will contain one or more images, click **Add Images** and select an images to upload, one at a time. Note that you may want to format your image so it doesn't take too long to load. I find it a good idea to use simpler images.
7. In the **Options** section, instructions vary according to the Question Type (format).

For expression questions, you can select **Enable Math Palette**, which gives both you and students access to the [palette for entering the correct answer](#).

Otherwise, you can't format text you enter here, as you can in steps 5 and 10 for the Prompt and for any Answer/Explanation you supply.

8. In **Sharing and Copyright**, you can select the check box to make the question available to other instructors, and you can edit the attribution message. Please note if you are using a problem directly from a text, you should enter the author's name and publication date instead of your own.
9. In **Tags**, enter content tags that you and others can use later to locate this question.

When you click in the Tags box, you see an alphabetical list of tags that have been applied to questions in the discipline you selected for the question. You can scroll to select tags from this list, start typing to see if the list contains matches for the characters you enter, or continue typing and press Enter to add a new tag. Select or add as many tags as you'd like, and click **x** to remove any tag you don't want to save. Tags are helpful in locating key questions later!

10. In **Answer/Explanation**, enter content that students will see when they review the question after class, or after exhausting allotted answer attempts for a Team-Based assessment. This is helpful for students reviewing their work.

You can enrich this content using all the features of the enhanced editor, which include formatting options and the ability to add hyperlinks and images.

11. In **Notes**, you can include notes for yourself (and other instructors if you share this question) that are never shown to students.
12. Click **Save & Preview** or **Save** before you leave this page.

Student Access and Experience

Learning Catalytic on the Course Home provides your students with easier access to Learning Catalytics from within their MyLab course, including the ability to:

- Confirm access and establish a connection to Learning Catalytics
- Join sessions in progress
- Review past sessions and results

Best Practices

- Advise students that Learning Catalytics will be an active part of the course and include in your course syllabus.
- Make sure they don't go to learningcatalytics.com and create a separate account. In order for grades transfer from Learning Catalytics to MyLab to work, students must not create a separate Learning Catalytics account. To avoid this, students should always join sessions from the MyLab course.
- Use the [Student Get Started Handout](#) to help your students access Learning Catalytics for the first time.

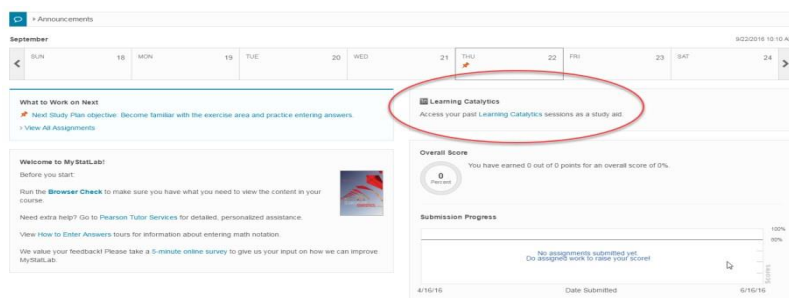
How Do Students Get Access to Learning Catalytics?

Once you enable Learning Catalytics in your course, your students will see it on their Course Home page. ***All students with MyMathLab or MyStatLab access will automatically have access to Learning Catalytics.***



Step-by-Step Directions: [Student Get Started Handout](#)

1. Students click **Learning Catalytics** on the Course Home page.



Student Tip: After confirming access and crossing over from the MyLab course to Learning Catalytics, students can join sessions from the MyLab course or from learningcatalytics.com using their MyMathLab username and password. However, they must sign in at learningcatalytics.com with the **exact** same username and password as their MyLab course.

How Do Students Join Sessions?

Students can join Learning Catalytics sessions you have started in two ways:

- Click **Join Session in Progress** from Course Home

The screenshot shows the 'Stats - Section 1' course home page. A calendar for September is at the top. Below it, a 'What to Work on Next' section lists 'LTS Training (77256874)' and 'Next Study Plan objective: Become familiar with the exercise area and practice entering answers.' To the right, a 'Learning Catalytics' section features a blue button labeled 'Join Session in Progress', which is circled in red. Below this, an 'Overall Score' section shows '0 Percent' and a 'Submission Progress' section shows 'No assignments submitted yet. Do assigned work to raise your score!'.

OR

- Click on the assignment title on the **Homework** menu item.

The screenshot shows the 'Homework and Tests: Homework' page. It includes a dropdown menu for 'Homework' and 'All Chapters'. Below, a table titled 'All Homework Assignments' lists three assignments:

Due	Assignment	Time Limit	Attempts	Gradebook Score
04/23/16 2:31pm	LTS Training (77737990) - Learning Catalytics			see score
09/22/16 10:32am	LTS Training (77256874) - Learning Catalytics			see score
	Module: Chapter 1-2 (59399319) - Learning Catalytics			

How Do Students Review Past Sessions and Results?

Students can review completed Learning Catalytics sessions from two access points in the MyLab course:

- Learning Catalytics on the Course Home
- Results menu item

This link opens the LC results page where students can review how they performed on each session as well as how they answered each question delivered. Students can also see the score earned and click **Review** next to each completed LC session from the MyLab **Results** menu item to review how they answered each question delivered.

Note: Students DO NOT have a Learning Catalytics Gradebook. They see their Learning Catalytics scores in the MyLab Gradebook, if you've selected to transfer scores.

Best Practices

- Students should review past LC sessions as a study aid to prep for tests and exams.
- If you didn't get to all questions during an in-class session, be sure to remove the questions you didn't get to during class for review purposes.

From the Course Home:

1. Click **Learning Catalytics**.

The screenshot shows the MyLab course home page. At the top, there's a navigation bar with 'Announcements'. Below it is a calendar for September, with the 21st (Thursday) highlighted. The main content area is divided into several sections. The 'What to Work on Next' section contains a 'Next Study Plan objective' and a link to 'View All Assignments'. The 'Welcome to MyStatLab!' section provides instructions for new users, including a 'Browser Check' and links to 'Pearson Tutor Services' and 'How to Enter Answers' tours. The 'Learning Catalytics' section, which is circled in red, offers a link to 'Access your past Learning Catalytics sessions as a study aid.' To the right of this section is a 'Submission Progress' chart showing a score of 0 out of 0 points for an overall score of 0%.

2. Click on the session to review question details and answers.

The screenshot shows the Learning Catalytics interface. At the top, the header reads 'learning | catalytics' with a user profile 'Cameron Student2 | Log out'. Below the header, a breadcrumb trail shows 'Home > Review older sessions'. A message states: 'Class sessions will show up here 2 hours after the start of the class.' A search bar is present. Below it, a table lists sessions. The first entry is for 'Econ Module 1' with session ID '17097927', where the user 'participated' on 'Wed, Oct 29, 2014 at 4:27pm'. The table indicates 'Showing 1 to 1 of 1 entries'.

From the MyLab Results or Gradebook Menu Item:

1. Click **Review** next to the desired LC session (categorized as Homework).

The screenshot shows the 'Results' page. At the top, it says 'You have earned 30 out of 30 points for a Overall Score of 100%.' A circular progress indicator shows '100 Percent'. To the right, 'Assignments Submitted' shows 'Homework' with a progress bar at '2/3'. Below this, a table lists results from '06/26/17 - 07/10/17'. The table has columns for 'Correct/Total', 'Score', 'Time Spent', and 'Date Worked'. Two entries are shown, both for 'LTS Training (77256874) - Learning Catalytics' and 'LTS Training (77737990) - Learning Catalytics', both with a score of '100%' and a 'Review' link. A red circle highlights the 'Review' link for the second entry.

2. Review the question and answer details for the session chosen.

The screenshot shows the Learning Catalytics interface for a specific session. The header reads 'learning | catalytics' with a user profile 'Cameron Student2 | Log out'. Below the header, a breadcrumb trail shows 'Home > Review Module 1 in Econ (17097927)'. A message states: 'Of the 1 question with a correct answer, you answered 1 correctly; you responded to 0 of the 0 questions that had no correct answer.' A search bar is present. Below it, a table lists questions. The first entry is for 'A child is born with an elongated eyeball. Which of the following problems would you predict would occur?' with options A. hyperopia, B. myopia, C. cataract, D. astigmatism, and E. presbyopia. The correct answer is 'B', which is highlighted in green. The table indicates 'Showing 1 to 1 of 1 entries'.

What students see when they review?

When students review a session, they see:

- Their response and the correct answer (if the question *has* a correct answer)
- An explanation (if one is stored with the question). To see the explanation, they need to click the question to see **Details**.

Example:

Details



Michael Jackson likely died from an electrolyte imbalance brought on by decreased breathing. What common phrase best describes his ultimate cause of death? Please mark your answers by distributing the confidence of your answer across the choices. If you are 100% sure in your answer, place all four of your confidence votes in that answer. If you are somewhat unsure, distribute your four confidence votes among the answers.

- A. Cardiac arrest
- B. Heart attack
- C. Heart failure
- D. These are all different names for the same condition

Answer

A

Technically speaking, decreased breathing leads to increased CO₂. Increased CO₂ makes the blood more acidic. When the blood is more acidic, the additional H⁺ ions enter cells. When the H⁺ enters cells, K⁺ leaves the cells. Additional K⁺ outside the cells, called hyperkalemia, leads to extended action potentials. These extended action potentials in the heart will disturb the electrical activity in the heart. Disturbances of electrical activity in the heart is termed cardiac arrest. Heart attack results when there is inadequate blood flow to the heart. Heart failure is due to damage to cardiac muscle. While similar, each of the conditions differ in their root cause.

- Even if the question has no correct answer, they'll see whether their response has been manually marked correct and any comments you may have provided.
- For Slide questions, if you presented PowerPoint slides that appeared in Learning Catalytics, they can see all the slides that were presented during the session as well as any answer/explanation you may have provided.

How Do Students Enter Algebraic Expressions?

Students enter a mathematical expression like $x^2(y+1)$ or $\sin(t)\cos(t)$ using a keyboard and, **if it is enabled**, the [math palette](#). A computer algebra system automatically scores expressions as correct when they are algebraically equivalent to the correct answer you provide (e.g., xy and yx are considered to be the same). For purely numerical responses, use the numeric question format.



15x ⁵	25%
16x ⁵	6%
2.5x ³ - 2.5	6%
25x ⁴ /2	6%
3x ² (5x ³)	6%
5(x ³)(3x ²)	6%
5x ³	31%
5x ³ *3x	6%
f(x ²)(2x)	6%

In general, students can enter expressions in a format that is natural, with a slash (/) to indicate division or fractions, an asterisk (*) to indicate multiplication, parentheses for grouping, and a caret (^) to indicate exponentiation.

Examples

- $\sin(2x^{y+z})$ is interpreted as

$$\sin(2x^{y+z})$$

- $\text{sqrt}((2H)/g)$ is interpreted as

$$\sqrt{\frac{2H}{g}}$$

How Do Students Use the Math Palette for Expression Questions?

If you deliver an **expression question** in which the *math palette is enabled*, students are able to use the palette to format their responses. This is checked when creating the problem.

Options

Students enter a mathematical expression like $x^2(y+1)$ or $\sin(t) \cdot \cos(t)$. A computer algebra system automatically scores expressions as correct when they are algebraically equivalent to the correct answer you provide (e.g., xy and yx are considered to be the same). For purely numerical responses, use the numeric question format. [Sample results for a question in this format](#)

Correct response:

$\frac{\sqrt{a}}{b}$

$\Lambda \Sigma \Phi$

* Always add brackets to trigonometric functions, log, ln and exp. e.g., $\sin(x)$, $\ln(y)$, $\exp(2)$. Inverse trigonometric functions are supported only in form of exponent notation, e.g. $\sin^{-1}(x)$. Use $\exp(1)$ for Euler's number. $\log(z)$ presents the logarithm of z to base 10, while $\ln(z)$ to base $\exp(1)$ and $\log(z,2)$ to base 2.

☒ Enable Math Palette ☐ Ignore capitalization

Learning Catalytics uses [R \(The R Project for Statistical Computing\)](#) to parse and evaluate algebraic expressions that students enter in response to an expression question. In general, most syntax that is valid in R is also valid in Learning Catalytics. The main exception is that Learning Catalytics assumes that *all variables are only one letter* (with N and n considered different variables); this way, a student can enter 2xy and it is interpreted as $2 \cdot x \cdot y$. Students can also use common functions: sin, cos, tan, arccos, arcsin, arctan, log, ln, and sqrt.

See [Student help](#) on using the palette. See the palette below.

Computer:

$\frac{\sqrt{a}}{b}$

$\Lambda \Sigma \Phi$

x^a

x_b

$\frac{a}{b}$

\sqrt{x}

$\sqrt[n]{x}$

$|x|$

$x \cdot 10^n$

ABC 123+ $\Lambda \Sigma \Phi$

x^a

x_b

$\frac{a}{b}$

\sqrt{x}

$\sqrt[n]{x}$

$|x|$

$x \cdot 10^n$

If a math palette isn't available, students can use either a physical keyboard or your device's virtual keyboard to enter your response. You can find more information here: [Use a keyboard to enter your response](#).

Additional Training and Support

[Planning Toolkit](#): Start with this resource to access worksheets and checklists that facilitate and support a successful implementation.

[Get Your Students Started Handout](#): Download a handout to share with your students on how to get started with Learning Catalytics within MyLab Math and MyLab Statistics.

[Implementation Guide](#): Provides insightful best practices and strategies for effective implementation based on feedback from experienced faculty.

[Online Help](#): Provides detailed information about features and functions. Also available from within your Mastering course.

[How Do I? Videos](#): Short videos that demonstrate tasks.

[Prerecorded Sessions](#): Access recordings of the Live Online Training sessions to watch at your convenience. All prerecorded sessions are led by experienced Faculty Advisors who offer advice and best practices.

[Pearson Support](#) is also always available. Search for articles by topic or contact us if you need additional help.