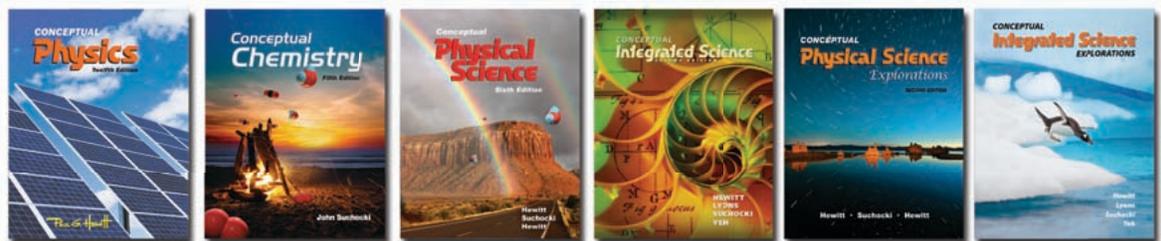


Conceptual Academy

Users Manual



Thank you for using Conceptual Academy. This users manual was created as a reference and guide to help you make the most of this student-centered resource.

<i>Topic</i>	<i>Page</i>
1. Brief Overview	2
2. FYI Pages (From Your Instructor)	4
3. Course Admin	6
4. The Grade Book	7
5. Course Editor and Cloning	9
6. The Conceptual Academy Student Project	10
7. Conceptual Academy and Homework Systems	12
8. End-of-Chapter Questions	13
9. Practice Page Worksheets	14
10. Collaborative Unit Exams	15
11. Putting It All Together	17

1. Brief Overview

Conceptual Academy is both a library of content and a platform for the delivery of that content. This platform can be embedded as an iFrame within Learning Management Systems, such as Canvas or Blackboard. However, we find Conceptual Academy works best when made available to students via a link that opens a second browser window or tab.

Importantly, a student's Conceptual Academy score is uploaded to your LMS only at the end of the semester as a single assignment. Thus, unlike a homework system, the benefits of integrating Conceptual Academy into your LMS are minimal. Much like the printed textbook, Conceptual Academy works well as a stand-alone resource. Indeed, the quickest way to describe Conceptual Academy is as the “talking textbook.”

And much like the printed textbook, Conceptual Academy is a valuable tool for any teaching style. You still prefer to provide straight lectures? Conceptual Academy is there as your backup and also as a “stereoscopic” view of the content for your students anytime anywhere. You wish to explore more class time activities? Conceptual Academy frees you up for that as well as allowing you to spend precious class time only on the more challenging concepts.

With your customized course uploaded to your instructor's account, you are now in the position of trying to figure out what's what? How does this work? How will Conceptual Academy be of help to my teaching? What am I to do next? We try to answer these very questions within this instructor's users manual. Thank you for taking the time to review our explanations.

From the start: When you sign into your instructor's account, you are first brought to your instructor's profile page. From this profile page you will see a series of tabs. You access the instructor tools available to you through each of these tabs.

- Click the “Edit” tab to update your profile information, including your profile image. Please note, your profile image will appear at the top of every FYI page (From Your Instructor). Consider a school logo if you don't want your face to appear. Also note, the “biography” information is not seen by students. Instead, we use this field to provide you with links to various instructor help resources that you first see on your profile page.



Dean Baird

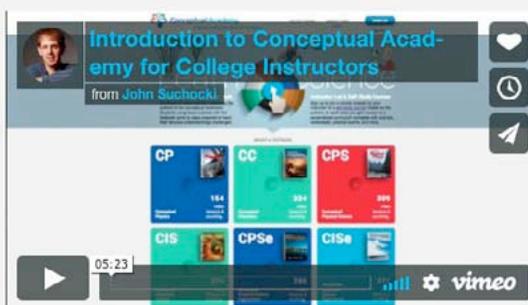
Institution:

Rio Americano

History:Member for:
3 years 7 months**Profile Page (Instructor)**

Click the "My Courses" link to enter a true student view. Click the "Course Admin" tab to manage your courses and to access their grade books. Click the "FYI Page Builder" tab to edit your FYI pages.

Below is the "Introduction for Instructors" video found at our support site: [ConceptualAcademy.Gallery.Video](#). We recommend you also review our [Frequently Asked Questions](#) page. For support, write to Support@ConceptualAcademy.



- Click the “FYI Page Builder” tab to edit any of your pre-populated From Your Instructor (FYI) pages. An FYI page holds information that remains fairly static from one term to the next. This includes generic study advice, external links, PhET simulations, documents for download, and supplemental videos of your own.
- Click on the “Course Admin” tab to access the course grade book and course editor through which you can edit the contents of each lesson and set lesson dates.
- Click the “Quizzes” tab to set the number of points students earn on each question before and after the lesson dates, which serve as due dates. We highly recommend a 2/1 system, which means 2 points per question before the lesson date and 1 point per question (50%) after the lesson date.
- For now you can ignore the “Syllabus Builder” tab, which holds more advanced tools including the tools for creating a Conceptual Academy course from scratch.



2. FYI Pages (From Your Instructor)

Click the “FYI Page Builder” tab. This brings you to a list of your many FYI pages. Click “edit” for a particular lesson (aka class) and you’ll be brought to its editor:

View Edit

Enable this FYI Disable this FYI

From Your Instructor Message

Display Bio photo

Body [\(Edit summary\)](#)

Paragraph Styles Arial Font Size

Welcome to our Chemistry course as hosted by Conceptual Academy.

For directions on how to navigate through this site, scroll down to the video in the Video Share.

All the quizzes here at Conceptual Academy will serve as a single semester-long 600 point project. Each correct question answered by the lesson date (shown to the left) is worth 2 points. Each correct question answered AFTER the lesson date is worth only 1 point (50%). So you can earn points twice as fast if you don't fall behind. **Collect a total of 600 points by the end of the semester and you'll have 600/600, which is 100% on this project.** There's no penalty for wrong answers. Just keep taking quizzes to earn points. If you earn over 600 points, this is evidence of strong class participation. But keep in mind that each quiz can be attempted only once. This material is accessible. But only if you keep with it and avoid trying to cram it all in the night before the exam. Please do your best to stay on task.

As per the syllabus, this Conceptual Academy project accounts for 20% of your overall course grade. But you will find Conceptual Academy to be a key study tool allowing you to perform better on the exams, which account for 80% of your overall course grade.

The textbook is where you can read. Conceptual Academy is the "talking textbook" where you can watch and listen. Both of these should be your focus outside of the classroom. You'll use them to help you prepare for coming to class, where we'll be using another

Path: p.MsoNormal > span

Text format Full HTML

- Web page addresses and e-mail addresses turn into links automatically.
- Lines and paragraphs break automatically.

Document Sharing

Document Sharing [Show row weights](#)

File information	Operations
 CC5e01 Pages.pdf	<input type="button" value="REMOVE"/>
 CC5eSum01.pdf	<input type="button" value="REMOVE"/>

Attach media [Browse](#)

Video Sharing

Video Sharing

Video URL



Importantly, any changes you make are only saved if you click the “SAVE” button at the bottom.

From the top, be sure that your page is “enabled” and indicate whether you want your profile image displayed.

The text box can be expanded by dragging the lower right-hand corner of the text box downward. Text you enter here is full HTML capable, which means you can add links to external sites or images. You’ll also see an html button in the header. This opens up an html code popup box allowing you to add html snippets. For example, this is how the PhET simulations are added to the FYI pages.

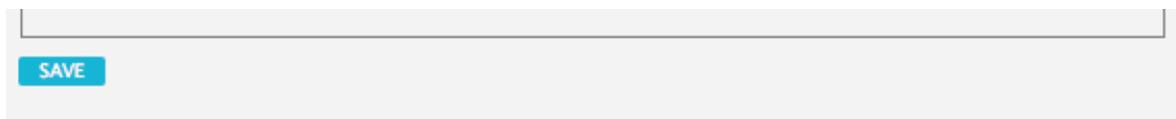
The Document Sharing allows you to upload documents of a variety of extension types. You can also remove documents. For example, you might want to remove the unit practice exams we uploaded to the last FYI page of each unit.

The Video Sharing field allows the sharing of one video per FYI page. This video needs to be hosted on a server, such as YouTube or Vimeo. If you have more videos to share, you can also place them into the body of the FYI page using the html snippet.

Remember to click the SAVE button after making your changes.

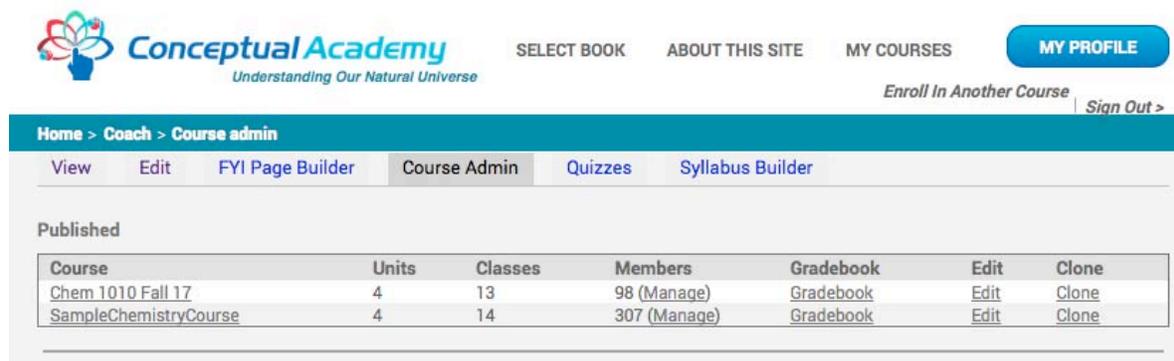
We should note that this editor is not 100% WYSIWYG. It’s a good idea to double check the published FYI page to make sure the formatting is as you wish. In some cases, you might want to revisit the editor to fix any formatting issues, such as line spacing or font size.

SAVE!



3. Course Admin

Click the “Course Admin” tab and you’ll be brought to a list of all your presently published courses. Please note, a course automatically unpublishes itself 5 weeks after the final lesson date. Please contact us if you wish to have a previously published course re-published.



Conceptual Academy
Understanding Our Natural Universe

SELECT BOOK ABOUT THIS SITE MY COURSES MY PROFILE

Enroll In Another Course Sign Out >

Home > Coach > Course admin

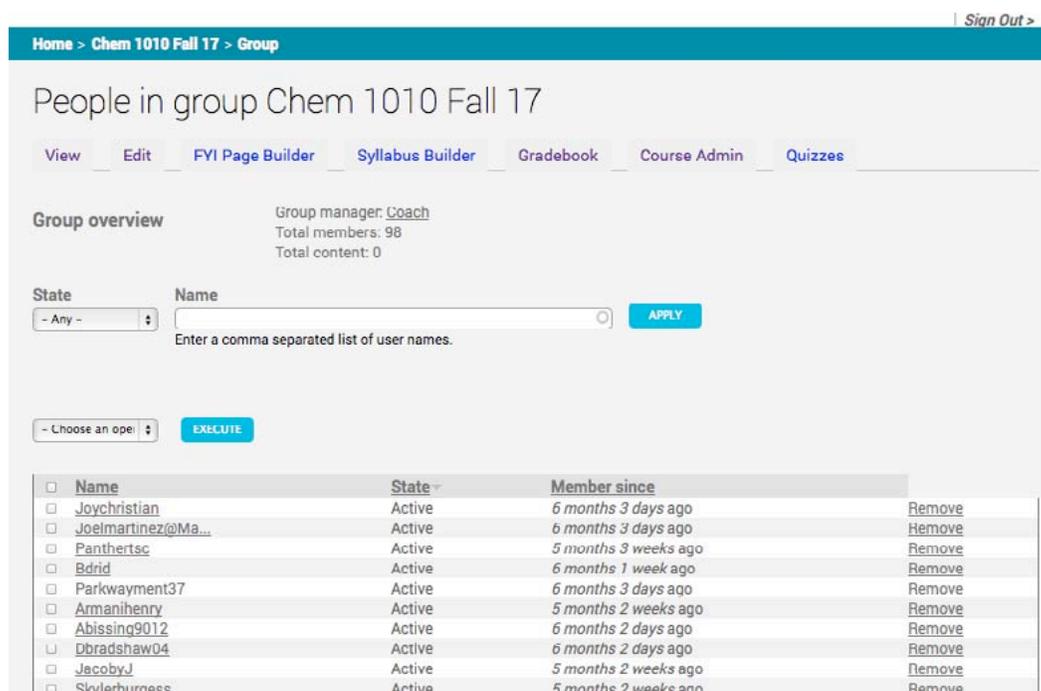
View Edit FYI Page Builder **Course Admin** Quizzes Syllabus Builder

Published

Course	Units	Classes	Members	Gradebook	Edit	Clone
Chem 1010 Fall 17	4	13	98 (Manage)	Gradebook	Edit	Clone
SampleChemistryCourse	4	14	307 (Manage)	Gradebook	Edit	Clone

Click the name of the course and you’ll be brought to the true student view. You can also enter your course by way of the “My Courses” link in the main menu.

Click the “Manage” link under members and you’ll be brought to a list of all currently enrolled students. It’s here that you can remove a student from your course. It’s also here that you can change the status of a student from “pending” to “active”. The pending status occurs when a student enrolls in your course through some back door pathways, which we have as a catchall for students who neglect to enter sufficient data on our main registration page. Use the “Choose an Operation” drop down to change a student’s status. It’s a two step “execution” process to make sure you’re sure. Same with the removal of a student.



Home > Chem 1010 Fall 17 > Group

People in group Chem 1010 Fall 17

View Edit FYI Page Builder Syllabus Builder Gradebook **Course Admin** Quizzes

Group overview
Group manager: Coach
Total members: 98
Total content: 0

State: - Any - Name: APPLY

Enter a comma separated list of user names.

- Choose an opel EXCLUDE

<input type="checkbox"/>	Name	State	Member since	Remove
<input type="checkbox"/>	Joychristian	Active	6 months 3 days ago	Remove
<input type="checkbox"/>	Joelmartinez@Ma...	Active	6 months 3 days ago	Remove
<input type="checkbox"/>	Pantherstsc	Active	5 months 3 weeks ago	Remove
<input type="checkbox"/>	Bdrid	Active	6 months 1 week ago	Remove
<input type="checkbox"/>	Parkwayment37	Active	6 months 3 days ago	Remove
<input type="checkbox"/>	Armanihenry	Active	5 months 2 weeks ago	Remove
<input type="checkbox"/>	Abissing9012	Active	6 months 2 days ago	Remove
<input type="checkbox"/>	Dbradshaw04	Active	6 months 2 days ago	Remove
<input type="checkbox"/>	JacobyJ	Active	5 months 2 weeks ago	Remove
<input type="checkbox"/>	Skvierburness	Active	5 months 2 weeks ago	Remove



4. The Grade Book

With simplicity in mind, we left out an instructor's ability to drill down to see how a student performed on individual quiz questions. Please contact us if a student believes their score on a particular quiz needs to be adjusted. This can happen if the student finds an error in our test pool. We aim for a perfect test pool, but because it's so large, errors do occur, usually due to missed keystrokes.

The main data that will be important to you is the overall "Total Points Earned" for each student from both the reading and video quizzes. You can click on the Reading Check and Video Check tabs to see point totals for each of these quiz types.

Conceptual Academy
Understanding Our Natural Universe

SELECT BOOK ABOUT THIS SITE MY COURSES MY PROFILE

Enroll In Another Course Sign Out >

Home > Chem 1010 Fall 17 > Gradebook > Grade book

Chem 1010 Fall 17 grade book

View Edit **Gradebook** Syllabus builder Clone

Total Points Earned Reading Check Video Check

Student	Points Earned
Adams, Michael	1267
Anderson, William	658
Anderson, David	921
Anderson, David	535
Arora, Arjun	390
Arora, Arjun	632
Arora, Arjun	829
Arora, Arjun	109
Arora, Arjun	792
Arora, Arjun	605
Arora, Arjun	908
Arora, Arjun	18
Arora, Arjun	523
Arora, Arjun	636
Arora, Arjun	670
Arora, Arjun	670
Arora, Arjun	853

CSV

Scroll to the bottom of the grade book view and you will see an export CSV button, which is useful for large enrollment classes. You may need to tab or space delimit the data in your spreadsheet application. Rather than exporting as a .csv, you can also just copy/paste the data from the table into your spreadsheet, which is handy for small enrollment classes.

Downloading this data need only be done at the end of the semester for the student's final score on their Conceptual Academy project. However, you might find yourself downloading the data at times during the semester as a progress report. For example, you might generate a histogram to share with students so they can see how they're doing as a class. It's also useful to scatter plot CA points against an exam score. With a large class you'll find a rough correlation between the two. Mostly, such plots are useful for flagging students who have been putting in a lot of energy into their reading and video assignments, yet are not earning reasonable exams scores.



Click on a student's name and you'll access the details of their performance on both the reading and video quizzes. A student's performance per unit is also available. The unit scores are useful in cases where you want to see how the student collected points over the semester. If you see an even distribution of points earned per unit, then you're looking at a diligent student. If a student has waited till the end of the semester to collect points, then the unit view will show this. This is handy in cases of a borderline grade.

Per unit totals



SELECT BOOK ABOUT THIS SITE MY COURSES **MY PROFILE**

Enroll In Another Course Sign Out >

Home > michelle > Gradebook

Total Points Earned Reading Check Video Check

Course	Points Earned
A: Elements of Chemistry	204
B: Bonding and Reactions	258
C: Chemistry of Life	439
D: Chemistry Topics	366

Detailed data for Reading Check Quizzes



SELECT BOOK ABOUT THIS SITE MY COURSES **MY PROFILE**

Enroll In Another Course Sign Out >

Home > michelle > Gradebook

Total Points Earned Reading Check Video Check

Units	Quizzes (completed)	Points Earned (for quizzes taken)	Points Possible (for quizzes taken)	Percentage (for quizzes taken)	Quizzes (available)	Points Possible (all)
All Units	12	175	416	42.07%	13	122
A: Elements of Chemistry	4	31	76	40.79%	4	38
B: Bonding and Reactions	3	24	58	41.38%	3	29
C: Chemistry of Life	3	66	180	36.67%	3	30
D: Chemistry Topics	2	54	102	52.94%	3	25

Detailed data for Video Check Quizzes



SELECT BOOK ABOUT THIS SITE MY COURSES **MY PROFILE**

Enroll In Another Course Sign Out >

Home > michelle > Gradebook

Total Points Earned Reading Check Video Check

Units	Quizzes (completed)	Points Earned (for quizzes taken)	Points Possible (for quizzes taken)	Percentage (for quizzes taken)	Quizzes (available)	Points Possible (all)
All Units	188	1092	1860	58.71%	201	603
A: Elements of Chemistry	60	173	360	48.06%	62	186
B: Bonding and Reactions	53	234	318	73.58%	53	159
C: Chemistry of Life	44	373	624	59.78%	44	132
D: Chemistry Topics	31	312	558	55.91%	42	126



5. Course Editor and Cloning

The Course Editor (accessed from the Course Admin tab) is used primarily to set the dates of each lesson. Each of these dates is also the due date for the quizzes. There are two steps to this editor. The first step allows you to modify basic course information. The second step allows you to dig into the details of the course content, such as what chapter sections are linked to what unit lessons.

Removing a chapter section from a lesson is fairly easy. Because this editor is still a bit clunky, adding a chapter section, or a new class, or a new unit can be tricky. Please let us know if you need any assistance.

With further support, we look forward to being able to afford a revised and more user friendly course editor.

The screenshot shows the 'Step 1' interface of the Course Editor. It includes a navigation bar with 'View', 'Edit', 'Gradebook', 'Syllabus builder', and 'Clone' buttons. The main content area contains a 'Step 1' indicator, a 'Number of units' field set to 4, a 'Syllabus' field with 'Chem 1010 Fall 17', a 'Country' dropdown menu set to 'United States', a 'State / Province' field with 'Utah', and a 'Course ID' field with 'Chem10105'. A 'NEXT STEP' button is located at the bottom right.

The screenshot shows the 'Step 2' interface of the Course Editor. It includes a navigation bar with 'View', 'Edit', 'Gradebook', 'Syllabus builder', and 'Clone' buttons. The main content area contains a 'Step 2' indicator, a 'Unit name' field with 'A: Elements of Chemistry', a 'Date' field with '09/06/2017', a 'Select Chapter' dropdown menu with 'Chapter 1: About Science', and a 'Select Section' dropdown menu. A table titled 'Syllabus: Chem 1010 Fall 17' is displayed, showing a list of units with columns for Unit, Class, Date, Weight, and Content. A 'CHAPTER SECTION LIST' is also visible on the right side. Buttons for 'ADD TO LIST', 'SAVE CLASS', 'PREVIOUS STEP', and 'UPDATE SYLLABUS' are present.

Unit	Class	Date	Weight	Content
A: Elements of Chemistry	1	09-03-2017	1-2	View/Edit
A: Elements of Chemistry	2	09-06-2017	2-3	View/Edit
A: Elements of Chemistry	3	09-13-2017	3-4	View/Edit
A: Elements of Chemistry	4	09-21-2017	4-5	View/Edit
B: Bonding and Reactions	1	10-01-2017	1-2	View/Edit
B: Bonding and Reactions	2	10-11-2017	2-3	View/Edit
B: Bonding and Reactions	3	10-20-2017	3-4	View/Edit
C: Chemistry of Life	1	10-29-2017	1-2	View/Edit
C: Chemistry of Life	2	11-12-2017	2-3	View/Edit
C: Chemistry of Life	3	11-17-2017	3-4	View/Edit
D: Chemistry Topics	1	11-29-2017	1-2	View/Edit
D: Chemistry Topics	2	12-06-2017	2-3	View/Edit
D: Chemistry Topics	3	12-11-2018	1-2	View/Edit

Cloning, however, is a piece of cake. After clicking the “clone” link for a particular course, enter a new course name and a new Course ID. Click the clone button. You’ll need to wait about two minutes as the database updates quite a bit of data. All the modification you made to the original course will be included.

After a successful clone, your next step is to visit the course editor and modify the dates for the subsequent term. The cloned course is then ready for a fresh batch of students. You’ll need to give these students the new Course ID you created. The shorter the Course ID, the better. But all Course IDs must be unique.

The screenshot shows the 'Cloning' interface of the Course Editor. It includes a navigation bar with 'View', 'Edit', 'Gradebook', 'Syllabus builder', and 'Clone' buttons. The main content area contains a 'Title of Syllabus' field, a 'Course ID' field, and a note: 'Enter an identifying alpha numerical course ID (no spaces or special characters) that your students can use to register for your course. For example: SMCCChem101Fa14'. A 'Clone' button is located at the bottom.



6. The Conceptual Academy Student Project

It works well to refer to Conceptual Academy as a semester-long “student project” rather than as “homework”. The essence of this project is for the student to keep up with their reading and video assignments. They are provided credit for doing so by way of Conceptual Academy’s reading and video quizzes.

Our aim with these quizzes is purely *formative*. The approach is encouragement-based. Never is a student penalized for a wrong answer. Instead, the student is given the task of collecting a certain number of points by the end of the term, or by the end of each unit as determined by the instructor. For a typical course there are from 500 to 800 quiz questions automatically aligned to your syllabus by our tagging system. Each of these questions is low level and low stakes. If the student has read the textbook or watched the video, then the questions will be easy to answer.

Over a single semester students are typically required to earn 400 points. Each correct answer before the due date earns the student 2 points. After the due date, the student can only earn 1 point (50%). We call this a 2/1 system. As the instructor, however, you can set these point values as you see fit through the “Quizzes” tab from your instructor’s profile page. You can even change the values on the fly during the semester. For example, you might offer a “triple week” when you feel the students are deserving or as warranted. For an announced 7 days, you change the settings to 6/1 so that a student earns triple points for each correct answer before the due date. As described in our Handbook of Class Activities, this is just one of the creative ways you can use the Conceptual Academy system of reading and video quizzes to help encourage your students to stay on task. The goal of these quizzes is simply to provide students credit for staying on task. All diligent students should be able to earn full credit on their Conceptual Academy project.

Note: In changing a quiz point setting you are only changing the rate at which students earn points for upcoming quizzes they take. There’s no effect on points earned from quizzes already taken. Also note: Each quiz can only be taken once.

With a 2/1 system, even if it’s past the due date, students can still earn credit for earlier units, though at only 1 pt per question. This provides a built in flexibility that students appreciate. Yet, they are also rewarded for staying on pace, which earns them 2 pts per

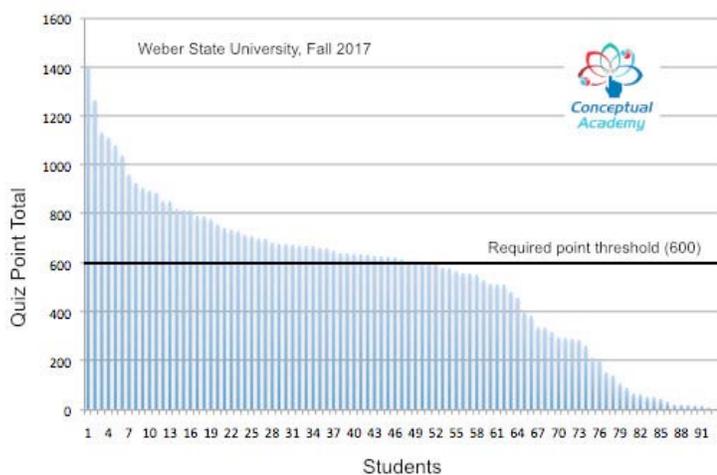


question. Students also appreciate having that “due date” incentive. This Conceptual Academy student “project” is a fully online project and should be worth at least 10% of the overall course grade. Please consider 20%. But please note, even with this point system, students will need periodic encouragement from the instructor to remain on task with their reading and video assignments. Posting a class histogram helps in this regard.

You might also consider setting a “point threshold” for each *unit*. For example, you might require each student to earn 100 points for each unit. All students who earn this 100 points (or more) receive full credit (100%). This method helps to minimize cases where the student doesn’t start into their Conceptual Academy project in earnest until a week before the end of the term, which is too late to be able to catch up at a rate of only 1 point per correct question and given that each quiz can only be attempted once.

We have found these quizzes to be a quantitative measure of student attitude, rather than aptitude. Thus, as you review student scores during the semester, you'll have a gauge on which students need your added attention. For some perspective, below is a histogram of point totals for a chemistry class of non-science college majors in Fall 2017. The shape of this histogram is typical of what we see and shows the broad spectrum of student study

habits. Notably, it also shows how many students choose to exceed the point threshold even though doing so offers no point benefit. They like our videos! Please review the student comments posted at ConceptualScience.com to gain more insight into the responses you might expect from your own students.



You should find it no mystery that students typically prefer our video presentations over our textbook paragraphs. However, both the videos and the paragraphs are important, which is why Conceptual Academy provides students credit for both video AND reading assignments. All this to ensure students come to class prepared to learn.



7. Conceptual Academy and Homework Systems

We're often asked if Conceptual Academy is a replacement for Mastering, which is the homework system of our textbook publisher, Pearson. You'll note Conceptual Academy has an emphasis on what we call Step 1 learning, which is where students are introduced to content. Step 1 is an input process. Step 2 learning is where the student articulates or applies that which they think they learned from Step 1. Step 2 is an output process and arguably more challenging for the student. Conceptual Academy certainly offers Step 2 activities, such as the reading and video quizzes, PhET simulations, worksheets, and practice exams. But its main emphasis, as a "talking textbook", lies with Step 1. As a homework system, the main emphasis of Mastering lies with Step 2. Thus Conceptual Academy and Mastering, or other online homework systems, can potentially complement each other quite well.

But there are a number of caveats. Most of all is the danger of overloading the student with too many tasks, especially for the science-shy liberal arts oriented student. If you are using both Conceptual Academy and an online homework system, you'll need to be very mindful of this danger. You can do this by lowering the CA point threshold to something like 200 points, rather than 400. You can do this by making sure your online homework assignments are short and meaningful. As a side note: Remember the number one of concern of most students is "How do I earn points?" If you make CA purely optional, it won't happen. Just like if you made the homework purely optional, that wouldn't happen either.

Online homework systems are nicely automated and they nicely hold students accountable. However, they can also be sterile and onerous given that a student typically works alone in an environment that penalizes them for not yet fully understanding the concepts. That can be counter productive when our main goal is to inspire our students who are already science-shy. For these reasons, we have a suggestion we hope you seriously consider: Go Analog! Please consider implementing our tried and true and numerous questions appearing at the back of each chapter (described next). Still in need of digital homework? Please consider class management systems, such as Learning Catalytics, that allow for homework action both at home and within the classroom. See our Handbook of Class Activities for more on our thoughts regarding Learning Catalytics.



8. End-of-Chapter Questions

As mentioned earlier, the reading and video quiz questions are low level. They do not push the envelope when it comes to higher learning. For this, we have our many end-of-chapter questions (EOC). Please note that these questions are presented in order of increasing difficulty. We feel that the “Think and Explain” questions hold the most value, especially when it comes to getting students ready for an exam.

The answers to all odd-numbered EOC are at the back of the textbook. For homework, a common practice is to have students write out answers to select even-numbered EOC. Their written answers are then reviewed or just spot checked by the instructor for credit. You’ll note that many of our unit exam questions are merely multiple choice versions of Think and Explain question. Thus you can tell students that these Think and Explain questions are also potential exam questions.

For the odd-numbered questions, you can also think of these as conversation starters. Ideally, the student has someone they can explain their thoughts to verbally. There’s a discussion that leads to an agreement. Only then is the answer looked up in the back of the book. The student might rate themselves as to the quality of their initial answer on a scale of 1 to 5. At that point most students would just move onto the next question. But here’s a better alternative: Now that the student has been exposed to the “real answer”, have them explain it again! (without looking at the answer). Then they rate again on a scale of 1 to 5. You’ll see what’s happening here is the student is articulating, hopefully to another real person. As this is done, there are pathways within the brain that are literally being built. Durable learning is occurring.

How many EOC questions should a student tackle? Enough to help, but not so many that it spoils any budding enthusiasm. We have about 100 questions for each chapter only for variety. If a student is answering only 15 of these 100, then that’s pretty good.



9. Practice Page Worksheets

These are pencil-pushing minds-on activities available in most all Doc Shares. In a way, they are similar to a lab experience, except it's all on paper (Analog!). Our goal in creating these Practice Pages is to provide an enjoyable venue through which the student can *apply* what they think they understand. Please note: It's not like the student already understands something and then should be able to do the worksheet. It's the other way around. The understanding evolves only when the student is working on the worksheet.

This is similar to the end-of-chapter questions. The student may ask: How can I answer these questions if I don't first understand the material? They have it backward. The real question is: How can you understand the material if you don't first work on these questions? The understanding itself arises from working on the questions. After Step 1? After reading the book and watching the videos? Some students feel they "got it" and simply don't need to go any farther. Wrong! A stronger student will sense they still don't really understand. That's correct. That's a wise student. An even wiser student knows that the understanding will grow like a seed from the soil only when watered by a stream of well-placed questions (Step 2). This is all "formative". We feel students should be rewarded for this effort. Never penalized.

We should note that many of our courses also features Paul Hewitt's "Next-Time Questions" that students will also find in the Doc Share of many FYI Pages. You might consider featuring select NTQ for class time discussions.

Next-Time Question

As she falls faster and faster through the air, her acceleration

- a) increases.
- b) decreases.
- c) remains the same.



CONCEPTUAL PHYSICS

NEWTON'S SECOND LAW

Hewitt
12-1-71



10. Collaborative Unit Exams

As described in our Handbook of Class Activities, we are strong advocates for team-based learning. This even extends to how we implement our exams through what we call the pyramid exam format, also described in this handbook as well as here.

In the Doc Share of the last FYI page of each unit, you'll find an exam, typically about 20 questions long—all multiple choice. These unit exams can be an important tool to your teaching endeavors in a number of ways:

1. Simply let your students know the exams are there while calling them “practice exams”. Students are welcome to attempt the practice exam on their own or within a study group to practice for an upcoming exam. Let them know you'll be posting the answer key at an appropriate time.
2. Remove these exams from the Doc Shares of those FYI pages and use them as your actual class exams or in class practice exams. You should know that the questions on these exams tend to be relatively difficult, which is in contrast to the reading and video quizzes. If a student is only working on the reading and video quizzes and NOT working on the end-of-chapter questions nor other resources, then that student can expect to do quite poorly on the unit exam.
3. Tell your students that the actual exam is already posted within the Doc Share of the last FYI page of each unit. They are to complete this exam as homework by the night before the class of a posted exam date. They can do this by writing down answers on an answer sheet (or an online testing system if available). They are welcome to work with others on this assignment, but encouraged to actually WORK with others rather than relying on others to do all the work. Each question is worth 10 points. Students turn in this work at the start of class of the posted exam date. Students are then set into teams of 3 or 4 and told to take the exam again together as a team, each question worth 6 points. Open book, but teams are not allowed to mingle. During this phase of the exam, you roam among the teams helping them as needed. At the end of about 35 minutes, you collect one answer sheet per team. All team mates will share the same score. For the third phase the exam, everyone will take the same exam as a class. Your role is to record



the class answers on a single class answer sheet. Two points for each correct answer. You also moderate any class discussions before a vote is taken. For each question, the majority wins. You can lay out the team phase answer sheets to give you an idea of which questions might require discussions. If all teams selected the correct answer for a particular question, then it's unanimous and you can give them an automatic two points to save time. Where it gets interesting is when teams disagree as to the correct answer. Students are encouraged to discuss their thoughts. Again, majority wins.

This is a variation of what we call a "pyramid exam". It's a pyramid in that students can first earn 10 pts, then 6 pts, then 2 pts. All points are added together for a final score. With 20 questions that equates to 360 points. You can do all of the above as a grand "practice exam" the day before the actual exam. Then for the actual exam, you can run the very same format but with different questions. As students leave the pyramid "practice exam", hand each of them the pyramid "actual exam" for the next class period. We can supply you with our test bank if needed. Also look to our Handbook of Class Activities for other ideas on how to run this type of collaborative exam.

4. As you've no doubt noticed, the above description is rather "low security". If you are fortunate enough to have a 75 minute to 2 hour class period, then it's reasonable to implement the first phase of the pyramid exam during class where students take the exam individually, closed book, in a more secure setting. Though we highly recommend each student is allowed to create and use an 8.5 x 11 cheat sheet. Also, we recommend each student fill out two answer sheets (Scantrons or home made Scantrons). One answer sheet has their name on it and is used for scoring. The second answer sheet is anonymous. During the team phase all these anonymous answer sheets are laid out on a table. A team can send a scout to inspect these anonymous answer sheets to see what other classmates were thinking during the first phase of the exam.

These pyramid formatted exams are wonderful for both formative and summative assessment. Students respond most favorably because these exams are community driven, a real learning experience, and directly related to their course grade. Yes, they are complicated. But students soon catch on and many come to wanting every exam for every course presented in the same manner. To learn more, please see our Handbook of Class Activities.



11. Putting It All Together

How might Conceptual Academy impact your teaching? As a system of content delivery that holds students to task, you'll find it allows you to use class time to focus on the more challenging concepts. It also provides you the wiggle room to explore more class activities where your students are engaged with the content, yourself, and their classmates. However, we also want to make a plug for your changing nothing about the way you teach. If you've been teaching for a number of years, you've already keyed into techniques that work quite well for your personal teaching style. If you make any changes, if you do, then make them minimal. Of course, when we try to change too much at once, we risk everything falling flat on its face. A few small changes from one semester to the next is the best practice.

Evolution, not revolution, we see as the best route to healthy professional development. Slow, methodical, yet successful progress keeps our teaching careers fresh and exciting—the opposite of burn out. This benefits not only ourselves but our students too.

We know you will find your Conceptual Academy course to be unusually rich not only in content but in flavor. For students who use our resources, our goals go beyond imparting knowledge. Like you, we aim to nurture a life-long curiosity about this amazing natural world in which we are blessed to live. We know this to be an important path to becoming good stewards. Further, the rules of nature are what we all have in common. As this world gets smaller, a focus on what we have in common becomes all the more important. Further still, understanding science for what it is, for what it can do, for what it can't do, for how it, for better or worse, has impacted our daily lives, is critically important for any student in this modern age.

We are please and honored to be working with you. For any questions, please write to Support@ConceptualAcademy.com. Thank you for your support. Good science to you!

The Conceptual Academy Team



Prof. Hewitt
Geology



Prof. Suchocki
Chemistry & Astro



Prof. Hewitt
Physics



Prof. Lyons
Earth Science



Prof. Yeh
Biology

