Blended Flow Toolkit

A RESOURCE FOR FACULTY
DESIGNING HYBRID AND BLENDED COURSES

The Center for Digital Learning & Innovation

SEATTLEU

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How to use this book

Purpose

The Blended Flow Toolkit provides a framework for designing a purposeful sequence of student learning activities and assessments as students incrementally progress toward mastery of course learning outcomes. The toolkit uses the Practical Inquiry Model (PIM) as its foundation. PIM forms the cognitive presence section in the Community of Inquiry Framework. We have renamed the four main stages of the PIM using plain language (*i.e.: Set the Stage, Explore, Dig Deeper, Wrap Up*). Each of these four stages include multiple steps that further specify the type of learning that occurs (*i.e.: the Explore phase contains the sub-stage "Defining the Problem & Identifying Key Questions"*). These steps contain lists of student learning activities. Each learning activity contains an explanation of how the activity fits into its particular stage of the PIM, as well as notes on facilitating these activities both online and in the classroom.

We are happy to sit down with you and walk through the material below or feel free to peruse these resources on your own and let us know if you have any questions. Just contact us at cdli@seattleu.edu to set up a consultation or find answers to your questions.

Usage

The toolkit is designed to be flexible. You are welcome to use just one learning activity in your course. You may also decide to design entire modules following this framework. No single element is "required" for you to use this framework successfully.

Browsing the Document

The Table of Contents provides hyperlinks so you can jump directly to each section and learning activity in the toolkit. In addition, the top of each section contains hyperlinked breadcrumbs to help contextualize learning activities within the framework, and for quick browsing between sections.

I. Set the Stage

1. Triggering Event

Instructor provides something that shakes assumptions, is a "Beautiful Problem" or triggers understanding at a personal level.

Readings

Students are directed to read specific parts of their textbook, scholarly articles, webpages, blogposts, or other.

How to do this online

Students can access assigned readings through links in Canvas into the library. Short readings such as quotes, or two or three paragraphs, can even be pasted onto a Canvas page with citations. If it is copyright compliant, you can attach the document or have it open directly in Canvas. Red Shelf digital course packs are available through Reprographics. If it is a reading on a website, simply link to the website from Canvas. It's usually a good idea to assign a reading with questions to think about.

PROS: Students can access the reading from anywhere and can print it out if needed. They have time to absorb the material and think about their response. If they don't understand something, they can look it up or privately ask for assistance.

CONS: Students may skim or not prepare enough in advance. If there is material they cannot understand, they may miss important points.

Tools you could use:

- Canvas - https://www.seattleu.edu/cdlihelp/faculty/canvas
- RedShelf https://seattleu.redshelf.com/

How to do this in the classroom

Readings can be handed out, read aloud, or projected on a screen. Text can be read in small groups.

PROS: You have confidence that the readings are being done. Questions and misconceptions can be answered in real time.

CONS: There may not be enough time to fully absorb the work. Students may be embarrassed to admit they don't understand something in front of the class.

Tools you could use:

- Printouts
- Books
- PowerPoint slides

Videos

Students are directed to watch specific videos by the instructor. Frequently combined with questions to keep in mind while watching.

How to do this online

Videos can be embedded in a Canvas page, or in cases where host sites do not allow embedding, can be linked. Note: videos can be embedded anywhere in Canvas that the rich text editor appears: Discussions, Assignments, Quizzes and Surveys and Announcements. It's usually a good idea to assign related questions to think about.

PROS: Videos can be accessed whenever the students have time and can be re-watch as needed. They can watch with captions and/or read transcripts. It doesn't take up valuable class time.

CONS: There can be difficulty accessing videos from certain countries, such as China or Iran, or if there is not sufficient bandwidth. Videos may be taken down or links broken.

Tools you could use:

- YouTube https://www.youtube.com/
- Vimeo https://vimeo.com/
- TED https://www.ted.com/ and TED-Ed https://ed.ted.com/
- Arc (embedded within Canvas) - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#media

How to do this in the classroom

Videos can be shown on a screen.

PROS: You can be certain that the students in attendance have watched the video. You can gauge reactions immediately and adjust the follow up discussion accordingly. Questions and misconceptions can be handled in real time.

CONS: Technology issues can arise last minute; poor room lighting or glare can affect visibility; may be difficult for non-native speakers or hearing impaired students to follow. Students can't re-watch the parts they didn't understand.

Tools you could use:

- YouTube https://www.youtube.com/
- Vimeo https://vimeo.com/
- TED https://www.ted.com/ and TED-Ed https://ed.ted.com/
- Arc (embedded within Canvas) - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#media

(Interactive) Data

Students view and/or interact with visual representations of data that can challenge their assumptions on a given topic or issue.

How to do this online

You can embed or link to sites that display data or post your own graphs and charts on a Canvas page. If the data visualization is interactive, encourage students to explore how data changes along a given axis. Instruct students to make notes about what aspect of the data was unexpected and to begin hypothesizing about the underlying reasons. Initial hypotheses can be shared and debated in an online discussion. The idea is to surface questions and stimulate an interest in finding out more.

PROS: It is easier for students to take their time with the data, to explore it thoroughly. It is also easier to assign a variety of data sets/visualizations around a topic.

CONS: Students may be intimidated or not fully understand how to interact with the data. They may get bogged down in technical details. They may be shy to offer hypotheses online.

Tools you could use:

- Gapminder https://www.gapminder.org/
- Knoema https://knoema.com/
- Google Earth https://www.google.com/earth/
- ArcGIS https://www.arcgis.com/features/index.html
- Excel
- Any interactive visual charts from new agencies, etc.

How to do this in the classroom

You can display data on a screen or in a handout. If the data visualization is interactive, it will work best on a screen. For interactive data, begin by interacting with it yourself and then ask students for suggestions about what to explore. Students can either comment directly when they see something surprising or they can make brief notes as the class explores the data together. Afterwards, encourage students—either in groups or as a whole class—to begin hypothesizing about the underlying reasons for unexpected results. The idea is to surface questions and stimulate an interest in finding out more.

PROS: You can quickly see how the students react to the data and guide them in asking questions and making hypotheses.

CONS: When the teacher is the one interacting with the data, **t**here is some loss of the student learning how to work with the data themselves.

Tools you could use:

- Gapminder https://www.gapminder.org/
- Knoema https://knoema.com/
- Google Earth https://www.google.com/earth/
- ArcGIS https://www.arcgis.com/features/index.html
- Excel
- Any interactive visual charts from new agencies, etc.

2. Preparatory Exploration

Students are asked to search for and contribute more information around the issue.

News Articles

Students are directed by the instructor to read specific news articles or encouraged to seek out (and evaluate) news articles relevant to the topic on their own.

How to do this online

Ask students to go online and find relevant news articles about a topic and share summarized versions with links to the original articles. If you want to encourage a variety of perspectives, you can create a list of what those angles would be. You may even want to assign groups to a specific angle or ask students to find both pro and con articles. As an alternative to students contributing articles, you could select the articles yourself. Either way, ask students to reflect on what they are learning from the news coverage and what themes they see emerging, etc. as the basis for a discussion.

PROS: When students are in charge of finding articles, it promotes information literacy skills, evaluating sources, etc. Because links are provided, students can easily see and read what others have found after reading their summaries.

CONS: With a large class it may be overwhelming to review all the articles their classmates have found. It could be difficult to discern from the summaries if sources aren't credible.

Tools you could use:

- Canvas discussions and/or wiki pages - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigndiscuss
- Padlet - https://padlet.com/

How to do this in the classroom

Ask students to find relevant news articles about a topic and bring their articles, reading notes and summaries to class. If you want to encourage a variety of perspectives, you can create a list of what those angles would be. You may even want to assign groups to a specific angle or ask students to find both pro and con articles. As an alternative to students contributing articles, you could select the articles yourself. Either way, ask students to discuss what they are learning from news coverage, what themes they see emerging, etc. Main points and themes can be captured and summarized on the board during the discussion.

PROS: Easy to organically start the discussion with themes the students see emerging and note those on the board, providing for rich discussion.

CONS: Not as easy for students to see (in depth) what others have contributed since there are no links to follow.

Tools you could use:

White board

Academic Articles

Students are directed to specific academic articles by the instructor or encouraged to search for (and evaluate) academic articles relevant to the topic on their own.

How to do this online

Ask students to search for relevant academic articles. Summarized versions or annotated bibliographies can be turned in to you or shared with the class. (See tools for sharing). Alternatively, you may want to select the articles yourself providing direct links (permalinks) from Canvas to the articles in the library. For articles that you select, develop a discussion prompt that requires students to have read the articles and cite relevant passages when replying during the discussion.

PROS: If shared, students can quickly see the variety and depth of articles on the topic. Passages can be cited in online discussions or even annotated as a group depending on the tools you use. (See tools.)

CONS: If the class is large, it may be hard for you to keep track of all the students' work unless the summaries / annotated bibliographies are also turned in.

Tools you could use:

- Canvas discussion - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigndiscuss

Bibliography tools

- Mendeley https://www.mendeley.com/

- Zotero https://www.zotero.org/
- End Note http://endnote.com/product-details

Annotation Tools

- Perusall https://perusall.com/

How to do this in the classroom

Ask students to search for relevant academic articles. They should bring in notes, summarized versions or annotated bibliographies for aid in discussion. These notes can be turned in to you at the end of class. Small groups can discuss what emerged from the readings, what clarified, what findings were contradictory, etc. Students can then create a list of questions for further investigation. Alternatively, you may want to select the articles yourself. Either way, use the discussion to explore what emerged from the readings.

PROS: Students must show up with something to indicate they've done the readings and can engage in the discussion. Discussion is organic and students can respond in real time with the findings they have.

CONS: This is difficult to do in a large class without breaking into groups. The only person with a record of all the articles found will be the instructor unless students post them online afterwards.

Tools you could use:
Paper
White board

Relevant Websites

Students are directed to specific websites by the instructor or encouraged to seek out websites relevant to the topic at hand on their own.

How to do this online

Direct students to a relevant website and provide instructions for the kinds of things you want them to explore on the site. You may want them to provide evidence that they have interacted with the site by asking them to respond to questions in an assignment, quiz or discussion. Alternatively, ask students to find relevant websites and post links to these in a central location (see tools) along with a brief explanation of why it is relevant to the topic and what they discovered on the site.

PROS: If you ask students to provide you with evidence that they have been to the site, you can have confidence that they did it. Doing this exercise online makes it easier to share relevant websites that the students have found.

CONS: In the case of websites that require some expertise—like grant agency, medical, or financial sites—students may not be able to successfully navigate to the information they need without direction from you.

Tools you could use:

- Padlet - https://padlet.com/
- Canvas wiki page
- Canvas discussion - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigndiscuss
- Airtable - https://airtable.com/

How to do this in the classroom

Bring up a website in class and walk through it together, answering questions and encouraging students to think about the kinds of information they could find on the site. Assign them to explore the site on their own after class and to answer some questions you have provided. Alternatively ask them to explore the site before class and to bring in their questions and observations to class.

PROS: You can be confident that students are acquainted with the site and can answer any questions as soon as they come up.

CONS: Since students are not in the driver's seat they may not remember how to navigate around a site later. You might consider creating a handout for tips on navigating the site if it is a site that requires expertise.

Tools you could use:

- Internet

Videos

Students are directed to watch specific videos by the instructor or encouraged to seek out videos relevant to the topic at hand. Frequently combined with questions to keep in mind while watching or searching.

How to do this online

Videos can be embedded in a Canvas page, or in cases where host sites do not allow embedding, can be linked. Note: videos can be embedded anywhere in Canvas that the rich text editor appears: Discussions, Assignments, Quizzes and Surveys and Announcements. It is usually a good idea to assign related questions to think about. A variation on this is to let students post videos along with a summary of the video and why they think it is particularly relevant to the topic.

PROS: Videos can be accessed whenever the students have time and can be re-watch as needed. They can watch with captions and/or read transcripts. It doesn't take up valuable class time.

CONS: There can be difficulty accessing videos from certain countries, such as China or Iran, or if there is not sufficient bandwidth. Videos may be taken down or links broken. It can be overwhelming if videos are posted by all students in a large class.

Tools you could use:

- YouTube https://www.youtube.com/
- Vimeo https://vimeo.com/
- TED https://www.ted.com/ and TED-Ed https://ed.ted.com/

- Arc (embedded within Canvas) - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#media

How to do this in the classroom

Videos can be shown on a screen.

PROS: You can be certain that the students in attendance have watched the video. You can gauge reactions immediately and adjust the follow up discussion accordingly. Questions and misconceptions can be handled in real time.

CONS: Technology issues can arise last minute; poor room lighting or glare can affect visibility; may be difficult for non-native speakers or hearing impaired to follow. Students can't re-watch the parts they didn't understand.

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- Arc (embedded within Canvas) - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#media

Personal Experiences

Students share stories from their own lives that tie into course concepts. Students may also be asked to seek out new examples from their daily lives.

How to do this online

Ask students to relate the material under discussion to something in their own life. Do they or people they know have personal experience with the topic or issue? Or, does it seem like something that has nothing to do with them? Students can turn in informal papers, post to a discussion board, or create a small multimedia narrative that can be posted online.

PROS: If shared with the rest of the class rather than being turned in to the instructor, these stories of personal experiences can help enrich understanding as students see differences and commonalities among the stories of their fellow students.

CONS: Caution must be taken to ensure that students understand that they are interacting in a public format—even though it is within a password-protected learning system.

Tools you could use:

- Canvas discussion or assignment tools - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials
- Adobe Spark https://spark.adobe.com/
- Sutori https://www.sutori.com
- Sway https://sway.com/
- Others listed in the CDLI Gadget Finder

How to do this in the classroom

Ask students to relate the material under discussion to something in their own life. Do they, or people they know, have any personal experience with the topic or issue? Or, does it seem like something that has nothing to do with them? This is probably best done in small groups and then groups can report out about common themes and new insights gained.

PROS: Students can share and relate directly and organically.

CONS: Not all students will want to talk directly and there is no digital record of what is shared. There may be extroverts that dominate the conversation. Does not leave time for slow and thoughtful responses to the prompt.

Tools you could use:

- *The Discussion Book: 50 ways to get people talking* by Stephen D. Brookfield and Stephen Preskill.

Interviews

Students are asked to solicit responses from others on key questions for the lesson or course.

How to do this online

Either provide a question or two for students to ask each other or ask students to create a couple of questions about the topic. These can be along the lines of "Do you agree…? Why or why not?" or "What do you think is the most important factor in…" Ask students to interview two or three people they know. These could be friends, relatives, etc. but point out that variety is something to aim for. Have them post their interviewees (anonymous) responses in a Canvas discussion (or other, see tools) along with their own thoughts about what they learned from the interviews—what was surprising, what emerged that was different than expected. Have students read each others' posts to look for commonalities and to open up the discussion further. You may want to create a new discussion that riffs off the first and where you frame some questions that emerged.

PROS: Brings in ideas from people beyond the class. Students can read all the responses and get a feel for the topic beyond what their own interviewees said.

CONS: Confidentiality needs to be stressed.

Tools you could use:

- Canvas discussion https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigndiscuss
- Padlet http://www.padlet.com/

- OneNote https://www.onenote.com/ (use SU school login)
- Blogger https://www.blogger.com/

How to do this in the classroom

Either provide a question or two for students to ask each other, or ask students to create a couple of questions about the topic. These can be along the lines of "Do you agree…? Why or shy not?" or "What do you think is the most important factor in…" Give students a sheet to record responses that has three sections: question I asked, person I interviewed, and notes/thoughts/new questions I now have. Divide the class and place rows of chairs facing each other. One row will ask questions, listen carefully and take notes. The other row will answer. After a designated amount of time, have one row of students shift down so everyone has a new partner and switch which row asks the questions. After a few rounds, use the interviews as a basis for discussion. What is emerging? Would students change their initial responses in light of what they heard? What other questions arise?

PROS: It is a fast and easy way to get new insights about a topic and get everyone talking.

CONS: Interviewees are limited to class members in this case and they could be a fairly homogeneous group.

Tools you could use:

- Paper and pencil

Scavenger Hunt

Students are given a list of findings to discover about a topic.

How to do this online

Prepare a list of things students can find online and link back to or embed. For instance, ask them to find a video that supports each side of an issue, along with a map that geographically charts where people fall on the spectrum, websites slanted one way or the other or evidence of Wikipedia edit (revision) wars around the issue. Students can turn in the links they have found via Canvas assignment or share their links/embeds in a Canvas discussion. Scavenger hunts also make good group projects. Groups can share their findings with the rest of the class via a summary or presentation posted in a discussion or on a Canvas Wiki page.

PROS: Can improve students' online source evaluation skills. Provides a rich trove of material that can be accessed by all the students.

CONS: With large classes and long scavenger hunt list, student contributions can be unwieldy when posted.

Tools you could use:

- Canvas Discussion https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigndiscuss
- Canvas Assignment https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assignnew
- Canvas Wiki Page https://community.canvaslms.com/docs/DOC-1842
- Padlet http://www.padlet.com/

How to do this in the classroom

Prepare a list of things students can find that can easily be brought to class and shared. For instance, names of 3 people involved in an issue at the local level, short quotes around an issue, slogans, memes, simple statistical figures and their sources, etc. Walk through the list asking students to volunteer what they found, noting what was surprising, where there are overlaps and discrepancies and using what was collected as a basis for discussion. A composite list of student findings can be created, if desired. The student lists can be turned in at the end of class.

PROS: Simple to set up and gets students talking about what they've found and where.

CONS: Not easy to share what each student has found without collating all the lists.

Tools you could use:

- Paper and pencil
- If compiling answers, use a Canvas wiki page or Padlet
- http://www.padlet.com/

3. Preliminary Meaning Making

Students begin to reflect on how this new information ties into what they already know or have already experienced.

Discussions

Students share their thoughts on how new information ties into their existing knowledge. The class reflects together on new understandings.

How to do this online

In a Canvas discussion board post questions that prompt students to talk about what is surfacing for them about the issue/topic. What sense can they make of it at this initial stage? What have they learned? What questions do they still have? What are the theories they've learned thus far that might apply to the issue? Ask students to make suggestions about how they might explore the topic further.

PROS: Every student needs to participate and every student can be heard. Students have time to think about their responses. They can learn from their classmates' ideas and questions and engage in further discussion with them. There is a record of all the ideas that they can return to.

CONS: Not always as spontaneous as the classroom discussion.

Tools you could use:

- Canvas discussion tool - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigndiscuss

How to do this in the classroom

Open the topic for general discussion, prompting students to talk about what is surfacing for them about the issue/topic. What sense can they make of it at this initial stage? What have they learned? What questions do they still have? What are the theories they've learned thus far that might apply to the issue? As a final part of the discussion, ask students to brainstorm ideas for how they might explore the topic further. These can be captured on the board.

PROS: Spontaneous. Easier for the instructor to "control." Class can quickly come to consensus about the way forward.

CONS: Not all students will be heard. Student may not have had sufficient time to think about their responses. Shy students may not contribute something that could be valuable.

Tools you could use:

- Board

Journals

Students keep a journal about the course material and how it relates to their own life, learning and future plans. Journals communicate questions, fears or anxieties that may not have been expressed out loud.

How to do this online

Ask students to create a journal entry that begins by describing the issue in their own words, recording their personal reactions to the issue and relating it to what they already know. What surfaced for them? What sense did they make of it? How might they begin to integrate theory into the experience/situation? What are the questions they still have going forward? Are there places they could begin to look that would help answer those questions?

PROS: It is easy to see that students are doing their journal entries rather than waiting and writing them all at once just before the journal is due.

CONS: You will need to keep up with the journal entries as they are turned in—even if it is very simple feedback.

Tools you could use:

- Canvas Groups (create a group for each student, assign journal entries as a discussion and choose groups. This will provide a private way to capture a stream of posts.) https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigngroup

- Blogger https://www.blogger.com (Blogger allows the student to have a private blog they can share with you.)

How to do this in the classroom

Ask students to create a journal entry that begins by describing the issue in their own words, recording their personal reactions to the issue and relating it to what they already know. What surfaced for them? What sense did they make of it? How might they begin to integrate theory into the experience/situation? What are the questions they still have going forward? Are there places they could begin to look that would help answer those questions?

PROS: Simple materials—just a notebook—that students write in on a regular basis.

CONS: Usually unfeasible/undesirable to turn in every journal entry one at a time so you will likely see the students' journals only once or twice during the class. This makes it tempting for the student to procrastinate and do multiple—or all— journal entries just before the journals are due.

Tools you could use:

- Notebooks

Small Group Work

Students are placed in (or form by themselves) teams to complete a task. Groups may be encouraged to share drafts of their work for constructive feedback from classmates before proceeding to deeper learning activities.

How to do this online

Create groups using the Group Set function in Canvas and divide the students into groups either randomly or manually. Create a group assignment that requires students to describe the issue in their own words. What is surfacing for them? What sense can they make of it? What are the theories they've learned thus far that might apply to the issue? What questions do they still have? Ask them to come up with some suggestions for how to explore the topic further. These assignments can be turned into you but if you want the groups to see each other's work you will need to set up a space to share the results.

PROS: Canvas provides an easy way to share in groups. Everyone can be "heard" and contribute. You can check on the groups progress and see how they are doing, who is really contributing, who is not.

CONS: May not be as spontaneous and dynamic as a classroom group. Needs an extra step to share the groups' work.

Tools you could use:

- Canvas Group function https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigngroup
- Intergroup sharing via Padlet or Canvas Wiki Pages https://community.canvaslms.com/docs/DOC-1842

How to do this in the classroom

Divide students into groups. Ask the groups to discuss and record: What is surfacing for them about the issue/topic? What sense can they make of it at this initial stage? What are the theories they've learned thus far that might apply to the issue? What questions do they have? The groups' final task should be to come up with some suggestions for exploring the topic further. Have groups share the highlights of their discussion along with their plans for further exploration. As an entire class, discuss what emerged from the groups and which plans seem most feasible for further exploration.

PROS: Spontaneous. Groups are responding just with the information they have at hand. It is easy to share between groups and come up with a class plan.

CONS: Students don't have as much time to think deeply about the questions. The individual groups' work is not saved, which can make it harder to retrieve later if needed.

Tools you could use:

- Paper and board

4. Preliminary Check for Understanding

Students are asked to define the problem or issue. What do they already know?

One-Sentence Summaries

Students summarize the topic into one sentence that incorporates all of who/what/when/where/why/how creatively.

How to do this online

After a reading, video, lecture or even at the end of a discussion, pose a question to students along the lines of "In a sentence, describe the main issues..." or "describe the purpose of..." A variation is to challenge students to answer, "Who does what to whom, when, where, how, and why?" about a given topic and then to synthesize those answers into a simple clear sentence. Have students post their responses in a Canvas discussion or see tools below.

PROS: The online format allows students to take the time to do this well. Afterwards they can easily see what others have done.

CONS: Not as spontaneous.

Tools you could use:

- Canvas discussion (with the must "post first feature" turned on) - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigndiscuss
- Padlet https://padlet.com
- Canvas Wiki page - https://community.canvaslms.com/docs/DOC-1842

How to do this in the classroom

Pose a question to students along the lines of "In a sentence, describe the main issues..." or "describe the purpose of..." A variation is to challenge students to answer, "Who does what to whom, when, where, how, and why?" about a given topic and then to synthesize those answers into a simple clear sentence. They can turn these into you and/or they can be shared with the class.

PROS: Collects students' immediate responses. Trains them to break down and summarize issues quickly.

CONS: Not as easy to share all responses unless the class is small or unless a backchanneling method is used.

Tools you could use:

- Paper and pencil

One-Minute Paper

Students write for one minute on a specific question (which might be generalized to "what was the most important thing you learned today").

How to do this online

Use a discussion, assignment or other tool for students to write a brief response to the following questions: "What was the most important thing you learned in this class (module)?" and "What important question remains unanswered?" You can then use these responses to frame the exploration going forward.

PROS: They have a little more time to frame their response and think about what the questions they still have than if you ask them at the end of a face-to-face class. If using something like a discussion or message board, they can see what others said.

CONS: They may be swayed by what others have posted if using a discussion or message board.

Tools you could use:

- Padlet https://padlet.com
- Canvas Discussion https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigndiscuss
- Canvas Assignment https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assignnew
- Canvas Quiz/Survey tool https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assignquiz

How to do this in the classroom

At the end of the class, ask students to write a brief response to the following questions: "What was the most important thing you learned during this class?" and "What important question remains unanswered?" You can then use these responses to frame the exploration going forward.

PROS: Doesn't require any technology beyond pencil and paper. Also, what they've learned, or not understood, is still fresh in the students' minds. Students are likely to answer honestly since no one besides the instructor will read it.

CONS: They may not realize what they have not understood until later.

Tools you could use:

- 3 x 5 cards or the students' own paper

Muddiest Point

Similar to the 1-Minute Paper activity, but asks for the "most confusing" point instead. This activity is best used at the end of the class session.

How to do this online

Use a discussion, assignment or other tool to ask students for a quick response to one question. "What was the muddiest point in [the lecture, discussion, homework assignment, film, etc.]?" The term "muddiest" means "most unclear" or "most confusing." You can then use these responses to frame the exploration going forward.

PROS: They have a little more time to frame their response and think about what is truly the "muddiest point" than if you ask them at the end of a face-to-face class. If using something like a discussion or message board, they can see what others said.

CONS: They may be swayed by what others have posted if using a discussion or message board.

Tools you could use:

- Padlet https://padlet.com
- Canvas Discussion https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigndiscuss
- Canvas Assignment https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assignnew
- Canvas Quiz/Survey tool https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assignquiz

How to do this in the classroom

In class, ask students for a quick response to one question. "What was the muddiest point in [the lecture, discussion, homework assignment, film, etc.]?" The term "muddiest" means "most unclear" or "most confusing." Students turn in their answers and you can then use these responses to frame the exploration going forward.

PROS: Doesn't require any technology beyond pencil and paper. Also, what they've learned, or not understood, is still fresh in the students' minds. Students are likely to answer honestly since no one besides the instructor will read it.

CONS: They may not realize what they have not understood until later.

Tools you could use:

- Pen and paper

In 3 Words

Students share three words that summarize an idea and the instructor debriefs to explore common themes.

How to do this online

Provide students with a space (see tools) to post 3 words that summarize or represent the issue you have been talking about. Another variation is to ask them to combine their 3 words with a visual. Students can also "vote" on the 3 words that resonate with them.

PROS: Students can take their time, add visuals, share and easily vote on the responses that best capture the issue. There will be a record that can be referenced as ideas change.

CONS: Not quite as spontaneous as in the classroom.

Tools you could use:

- Canvas discussion (possibly with the "must post first" feature and/or the "liking" feature turned on) https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigndiscuss
- Canvas wiki page https://community.canvaslms.com/docs/DOC-1842
- Padlet https://padlet.com
- Tricider http://www.tricider.com/

How to do this in the classroom

Ask students to write 3 words that summarize or represent the issue you have been talking about. They can share these, write the common themes on the board and then attempt to come up with 3 words that everyone can agree on. Alternatively, they can do the same thing in small groups, reporting out to the entire class later. Common themes can be discussed.

PROS: Spontaneous. Quickly gets students talking and wrestling with the ideas, possibly providing for more nuanced summaries.

CONS: There is no record of the work to return to unless it is captured by you.

Tools you could use:

- Paper and chalkboard

What's the Principle?

*After recognizing a problem, students assess what principle(s) to apply in order to solve it. Helps focus on **types** of problems rather than specific problems. Principles should be listed out.*

How to do this online

Provide a link to a "What's the Principle?" list that includes the principles you have covered in the course to-date or post that information on a Canvas page. Ask students to determine which principles are involved in the case or example you are looking at and provide rationales for their choices. There are multiple ways to collect responses. They can be collected in a Canvas discussion using the feature that hides other responses until the student has posted. You can collect responses in a survey and then report the results to the students in an informal video correcting any misconceptions. You can also embed a poll into a Canvas course.

PROS: Students have to think on their own and come up with the rationale for choosing a given principle. If they haven't already learned the principles, they will be forced to spend more time researching them.

CONS: If you decide to use small groups to match the principles there is some set-up and tracking time involved.

Tools you could use:

- Canvas discussion - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigndiscuss
- Poll Everywhere https://www.polleverywhere.com/
- Padlet https://padlet.com

How to do this in the classroom

Create a "What's the Principle?" list on the board or overhead that includes the principles you have covered in the course to-date. Ask students to determine which principles are involved in the case or example you are looking at and provide rationales for their choices. This is a perfect activity for informal small group work. Have students report out which principles are involved and provide some time for discussion and to correct any misconceptions. This can all be done with paper and pencil or you can introduce an informal poll that appears on the screen (see tools.) An alternative to a digital poll is to create a set of color-coded cards for each principle and have students—or groups of students—hold up the card for the matching principle(s).

PROS: You can easily track the students' approach and note where there seems to be some confusion, exploring and correcting misconceptions on the spot.

CONS: Unless you use something like a polling tool or have the students write their responses on paper you might not get the full range of misconceptions since student can follow along with what their classmates say.

Tools you could use:

- 3 x 5 cards or the students' own paper
- Poll Everywhere https://www.polleverywhere.com/
- Padlet https://padlet.com

Quiz

Usually a brief informal test given to students to check their knowledge.

How to do this online

Use the Canvas Quiz tool to check students' understanding using a small number of questions and low-stakes grading.

PROS: Can quickly give you an idea of what students understand. Self-grading. Doesn't use valuable class time.

CONS: Takes more time and thought than the classroom version to write questions that students can't just look up. (We recommend not using timed quizzes.)

Tools you could use:

- Canvas Quiz tool - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assignquiz

How to do this in the classroom

Create a paper quick quiz that students turn in immediately.

PROS: There is no way for students to look up questions.
CONS: You will need to grade by hand. Takes up class time. Usually only assesses lower-order skills.

Tools you could use:

- Paper and pencil

Survey

Anonymous collection of student responses. Results are used in the design of subsequent activities to clear up shared misconceptions.

How to do this online

Use the Canvas Quiz tool and choose "Graded Survey." That sends a message that students aren't expected to have the right answers but that they will lose points if they don't complete the survey. There are other survey tools (see below) but using Canvas is easiest if you don't need complicated question types.

PROS: You can quickly see the results of the survey.

CONS: Students can enter answers without giving any thought to the answers. There is no guarantee that students won't look up the answers.

Tools you could use:

- Canvas Quiz tool – graded survey - https://community.canvaslms.com/docs/DOC-2938
- Qualtrics https://seattleu.qualtrics.com/
- JotForm https://www.jotform.com/

How to do this in the classroom

Create a paper survey students can fill out in class.

PROS: You can have confidence that the students are filling out the survey without access to outside material.

CONS: Takes longer to tabulate. Some kinds of questions (drag and drop, matrix, slider) are more difficult to set up on paper than digitally. Takes up class time.

Tools you could use:

- Paper and pencil

II. Explore

5. Defining the Problem & Identifying Key Questions

Students are asked for their definitions of the problem and then are tasked with coming to a shared understanding.

Brainstorming

An activity designed to generate a large number of ideas for the solution of a problem.

How to do this online

Idea generation could take place either synchronously or asynchronously and either individually, in small groups, or with the entire class.

PROS: Done asynchronously, students have time to generate more thoughtful ideas. Students can participate without fear that their ideas are being judged.

CONS: Spontaneity is diminished if done asynchronously.

Tools you could use:

- Wikispaces https://www.wikispaces.com/ (synchronous or asynchronous)
- Realtime Board https://realtimeboard.com/ (synchronous)
- Padlet https://padlet.com (synchronous or asynchronous)
- Google Doc https://docs.google.com (synchronous or asynchronous)

- Slack https://slack.com/(synchronous)
- Yammer https://www.yammer.com/(synchronous)
- Twitter https://twitter.com/ (synchronous or asynchronous)
- Canvas Content Page (allow anyone to edit; asynchronous) - https://community.canvaslms.com/docs/DOC-1842
- Canvas Discussion (asynchronous) - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigndiscuss
- Canvas Chat (synchronous) - https://community.canvaslms.com/docs/DOC-2609

How to do this in the classroom

Students can brainstorm individually, in small groups, or large groups.

PROS: Students can brainstorm individually, in small groups, or large groups.

CONS: Shy students may feel intimated. It may be difficult to get all students to participate. Even small gestures or facial expressions can convey judgment about an idea.

Tools you could use:

- Whiteboards
- Flip charts
- Notebook paper

Small-Group Discussion

Students are put into groups of 4-6 to deepen understanding, retain material and/or problem solve together.

How to do this online

Classes can be broken into groups to communicate either synchronously or, more often, asynchronously. The quality of a discussion depends largely on the quality of the discussion question; instructors should create questions that promote critical thinking. Discussions should be at least lightly moderated to ensure they do not lose focus and to correct inaccurate statements. You can assign roles such as facilitator, contributor, and summarizer to students and rotate these roles.

PROS: Students have more time to create thoughtful, well-articulated and responses and answers may be more honest. Quiet students may participate more and those who have experienced bias in the past may feel more secure. Students can respond via multiple modalities - text, audio, or video. Instructors don't have to respond on the spot; they have more time to compose constructive feedback.

CONS: The absence of visual and audio cues can lead to misunderstanding. Students may need explicit instructions regarding what constitutes an acceptable response and an appropriate online writing style. Online discussions can feel disjointed, especially if there is a significant time lag between responses. It can be very time consuming for instructors to read and grade all responses.

Tools you could use:

- Canvas Group Discussions (asynchronous) - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigngroup
- Zoom https://www.seattleu.edu/cdlihelp/students/more-apps/zoom (synchronous)
- Slack https://slack.com/ (asynchronous)

How to do this in the classroom

Students can turn desks around or congregate in different parts of the room. The quality of a discussion depends largely on the quality of the discussion question; instructors should create questions that promote critical thinking.

PROS: Instructor can easily identify groups that are struggling and provide immediate feedback. They can be more spontaneous than an online discussion and have the advantage of being in a sensory-rich environment.

CONS: Many classrooms are not configured for easy breakout groups. Outgoing students may dominate the conversation.

Tools you could use:

- Paper and pencil

Polls

Students are asked to respond to a question and their answers are tallied in a visual format that is usually shared.

How to do this online

Embed a survey or poll into a Canvas page, discussion thread, or announcement. Links to a survey or poll can also be sent to students via email. Polls can be used as an attention grabber, icebreaker, or knowledge assessment tool. Polls can kick start other active learning techniques, such as discussions or debates. Anonymous polls facilitate frank answers. Shy students may be more likely to respond to a poll than a discussion question. Polls can encourage metacognitive skills by encouraging self-assessment.

PROS: Students have more time to consider options.

CONS: Difficult for the instructor to give immediate feedback.

Tools you could use:

- Poll Everywhere https://www.polleverywhere.com/
- Canvas survey function - https://community.canvaslms.com/docs/DOC-2938
- Zoom - https://www.seattleu.edu/cdlihelp/faculty/more-apps/zoom (during scheduled, synchronous meetings)

How to do this in the classroom

Ask a question and have students reply via an Internet technology, a student response system ("clickers"), by raising their hands, or holding up color-coded notecards which correspond to their answer. Polls can be used as an attention grabber, icebreaker, or knowledge assessment tool. Polls can kick start other active learning techniques, such as discussions or debates. Anonymous polls facilitate frank answers. Shy students may be more likely to respond to a poll than a discussion question. Polls can encourage metacognitive skills by encouraging self-assessment.

PROS: Instructors can get instantaneous feedback and immediately adjust the instruction based on students' answers. Polls can also be a thinking break for students.

CONS: If the Internet is needed, poor cell phone reception or Wi-Fi connections can be frustrating. If you use the non-tech version of hand raising or color-coded notecards it isn't anonymous; students can go along with the crowd.

Tools you could use:

- Poll Everywhere https://www.polleverywhere.com/
- Canvas Survey function - https://community.canvaslms.com/docs/DOC-2938
- Clickers
- Colored notecards

Think-Pair-Share

Think-Pair-Share activities pose a question to students that they must consider alone and then discuss with a neighbor before settling on a final answer. Even though the activity is called think-"PAIR"-share, this is the term many instructors use for pairs and small groups (three or four students) alike. Often this group discussion "sharing" is followed up with a larger classroom discussion. The instructor can use the student responses as a basis for discussion, to motivate a lecture segment, and to obtain feedback about what students know or are thinking.

How to do this online

This is a three-step process where first each student thinks silently about a question that is usually posed by the teacher. Next, students are paired and discuss their initial responses. In the third and final step, students share either their own response or their partner's response with the larger group. This activity provides a way for students to get to know a peer. It also gives students the opportunity to refine their thoughts and practice articulating them with just one person before presenting to a larger group.

Students are paired up and use an online platform *(see tools)* for back and forth communication either synchronously or asynchronously.

PROS: If done asynchronously, students have thinking time. Students can communicate in a modality that suits them - text, audio, video.

CONS: If think-pair share is done synchronously, it can be difficult to find a mutually agreeable time to meet online. Conversely, if it is done

asynchronously, one student may finish the first step and want to pair up before their partner is ready.

Tools you could use:

- Canvas Discussions - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigndiscuss
- Canvas Page - https://community.canvaslms.com/docs/DOC-1842
- Zoom https://www.seattleu.edu/cdlihelp/students/more-apps/zoom
- Slack https://slack.com/

How to do this in the classroom

This is a three-step process where first each student thinks silently about a question that is usually posed by the teacher. Next, students are paired and discuss their initial responses. In the third and final step, students share either their own response or their partner's response with the larger group. This activity provides a way for students to get to know a peer. It also gives students the opportunity to refine their thoughts and practice articulating them with just one person before presenting to a larger group.

PROS: The instructor can easily identify pairs that are having difficulty. This can be a thinking break after a short lecture.

CONS: f this is a large class, time constraints may deter sharing. The record of responses is not saved unless intentionally archived.

Tools you could use:

- Paper and pencil

Defining Features Matrix

*Hand out a simple table where students decide if a defining feature is **present** or **absent**. For instance, they might have to read through several descriptions of theories and decide if each refers to behaviorist or constructivist models of learning.*

How to do this online

First, identify two concepts that have several similarities. Students can readily confuse the characteristics of key features or concepts that exhibit some similarities (e.g., hurricanes vs. tornadoes, Lincoln vs. Douglas, Picasso vs. Matisse).

Next, list the important characteristics (features) of the two concepts. These may include characteristics that are similar in both cases or different (or even absent in both cases).

Finally, ask students to create a matrix. The simplest matrix has a left-hand column with characteristics and two columns on the right for the concepts. Students indicate whether the feature is present or absent using plus and minus symbols in the cells.

This can be done in a simple table and turned in as an assignment or posted in a discussion. Alternatively you could use the Canvas Quiz tool. This is also a good group activity.

PROS: If you use a Canvas Quiz with a multiple drop-down question type (rather than a matrix), the exercise could be self-graded and students could

re-do the exercise as many times as they like. Students have time to consider their answers.

CONS: Could be difficult to provide immediate assistance if students get stuck.

Tools you could use:

- Canvas Quiz - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assignquiz
- Canvas Assignment - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assignnew
- Canvas Discussion - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigndiscuss

How to do this in the classroom

First, identify two concepts that have several similarities. Students can readily confuse the characteristics of key features or concepts that exhibit some similarities (e.g., hurricanes vs. tornadoes, Lincoln vs. Douglas, Picasso vs. Matisse).

Next, list the important characteristics (features) of the two concepts. These may include characteristics that are similar in both cases or different (or even absent in both cases).

Create a matrix handout. The simplest matrix has a left-hand column with characteristics and two columns on the right for the concepts. Students indicate whether the feature is present or absent using plus and minus symbols in the cells.

This activity can be done individually or in groups and can be a jumping off point for other activities such as a debate. A caution is that it can be challenging to come up with features that are wholly in one category or another.

PROS: Can give immediate feedback

CONS: Students may not have time to thoroughly think about their answers

Tools you could use:

- Handout
- PowerPoint slide or a Word document that is displayed on a screen

6. Exploring Key Questions

Students work together to explore the questions they have articulated.

Experiments

A simple or complex systematic test carried out to find an answer to a hypothesis or problem.

How to do this online

For science courses requiring hands-on experiments, companies such as Hands-On Learning can mail lab kits to students for courses in chemistry, environmental science, anatomy & physiology, and physics. Virtual experiments are also available and can be found by consulting sites such as PhET from the University of Colorado, onlinelabs.in, MERLOT and OER Commons. Often a pre-reading is required which can be distributed electronically *(see Readings under Triggering Event)* along with a concluding write-up which can be submitted via Canvas.

PROS: Limited classroom time can be reserved for making meaning of the results. Instructors can require videos of students performing the experiment allowing for individualized feedback.

CONS: It may take considerable time and effort on the part of the instructor to arrange for lab kits or virtual experiments. For complex experiments, students may need instructions in both video and text formats. Students may feel isolated and instructor assistance is not immediately accessible.

Tools you could use:

- Kits that are mailed to students
- Virtual experiments
- Canvas Assignments - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assignnew
- Phone or camera to create video

How to do this in the classroom

Students are provided with all necessary equipment and materials needed for the experiment.

PROS: Experiments can be done either individually or in a group. Students can easily bounce ideas off one another.

CONS: Lesser motivated students can rely on others.

Tools you could use:

- Standard lab equipment

Case Studies

Provide real or simulated stories to students with problems for groups to analyze. Each group must arrive at a solution by applying course concepts and evidence found in literature.

How to do this online

A case study and associated resources can be uploaded to Canvas (if copyright permission has been granted) or instructors can provide a link if the case study is elsewhere on the web. If the case study is copyrighted, permissions can be granted through the Seattle University Copyright Coordinator.

PROS: Using case studies online affords flexibility; case discussions can be conducted either synchronously or asynchronously and either individually or in groups. Students have time to contemplate the varied dimensions inherent in well-written cases. Students learn to communicate their ideas using a variety of textual and multimedia tools.

CONS: If group work is required, it can be difficult for students to establish a meeting time that is acceptable for all. The ambiguous nature of case studies could lead to frustration if students feel isolated.

Tools you could use:

- Canvas Page - https://community.canvaslms.com/docs/DOC-1842
- Canvas Discussion - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigndiscuss
- Canvas Assignment - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assignnew
- Google Docs http://docs.google.com

- Zoom https://www.seattleu.edu/cdlihelp/students/more-apps/zoom

How to do this in the classroom

Case studies can be handed out or projected on a screen.

PROS: If working in a group, students not only hone their problem solving and analytical skills, but also develop interpersonal skills and the ability to work with others. Discussions around case studies can be very lively and facilitated by instructors asking probing questions.

CONS: Good case studies are multi-faceted and therefore students may need time to absorb the facts before they can act on the material.

Tools you could use:

- Computer and projector
- Paper and pencil

Pass-the-Pointer

Provide a complex, intricate, or detailed image of a concept and ask students to identify key features or ask questions about items they don't understand.

How to do this online

The image could be posted on a page and then students comment via a threaded discussion or online whiteboard. Alternatively there are tools that will allow you to draw directly on and image and comment *(see tools)*.

PROS: Everyone can participate and all comments are recorded.

CONS: Feedback is slower and less spontaneous.

Tools you could use:

- Canvas discussion - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigndiscuss
- Padlet https://padlet.com (image can be used as background)
- Voicethread https://voicethread.com (allows for drawing directly on image while commenting - *asynchronous*)
- Zoom https://www.seattleu.edu/cdlihelp/faculty/more-apps/zoom (allows for drawing directly on image while commenting - *synchronous*)

How to do this in the classroom

The instructor displays an image and students take turns coming up, pointing to part of the image with a laser pointer and then identifying key features or asking a question. For large classes students can work in small groups with the image on a handout.

PROS: The teacher gets formative assessment information quickly and easily and can immediately provide clarification.

CONS: Students may be shy about admitting what they don't understand.

Tools you could use:

- Laser pointer
- Projector and screen
- Whiteboard
- Handouts and pens

Small Group Discussions

Students are put into groups of 4-6 to deepen understanding, retain material and/or problem solve together.

How to do this online

Classes can be broken into groups to communicate either synchronously or, more often, asynchronously. The quality of a discussion depends largely on the quality of the discussion question; instructors should create questions that promote critical thinking. Discussions should be at least lightly moderated to ensure they do not lose focus and to correct inaccurate statements. You can assign roles such as facilitator, contributor, and summarizer to students and rotate these roles.

PROS: Students have more time to create thoughtful, well-articulated and responses and answers may be more honest. Quiet students may participate more and those who have experienced bias in the past may feel more secure. Students can respond via multiple modalities - text, audio, or video. Instructors don't have to respond on the spot; they have more time to compose constructive feedback.

CONS: the absence of visual and audio cues can lead to misunderstanding. Students may need explicit instructions regarding what constitutes an acceptable response and an appropriate online writing style. Online discussions can feel disjointed, especially if there is a significant time lag between responses. It can be very time consuming for instructors to read and grade all responses.

Tools you could use:

- Canvas Group Discussions - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigngroup
- Zoom https://zoom.us (synchronous)
- Slack https://slack.com (asynchronous)

How to do this in the classroom

Students can turn desks around or congregate in different parts of the room. The quality of a discussion depends largely on the quality of the discussion question; instructors should create questions that promote critical thinking.

PROS: Instructor can easily identify groups that are struggling and provide immediate feedback. They can be more spontaneous than an online discussion and have the advantage of being in a sensory-rich environment.

CONS: Many classrooms are not configured for easy breakout groups. Outgoing students may dominate the conversation.

Tools you could use:

- Paper and pencil

Impact Matrices

Students create simple cross-matrices with two variables to determine the impact of a given plan. For example, a matrix may map the varying value of an activity from low-to-high impact in relation to low-to-high effort..

How to do this online

If students are not familiar with impact matrices they should be introduced to them using examples (images with text or a short screencast tutorial embedded in a Canvas Discussion so they can ask questions). Once they understand the basics this is a good exercise for small group work (Canvas Groups) where they can discuss the variables and brainstorm ideas, which are analyzed for probability and plausibility. Their results (images or other - see tools) can then be shared with the rest of the class (via discussion).

PROS: Students have time to explore impact matrices on their own.

CONS: Instructor may need to check on groups to see if they [?]

Tools you could use:

- Zoom screencast (for tutorial) https://www.seattleu.edu/cdlihelp/faculty/more-apps/zoom
- Image and text on Canvas page (for tutorial) https://community.canvaslms.com/docs/DOC-1842
- Canvas Groups - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigngroup
- TUZZit: https://www.tuzzit.com/ (has an impact matrix "canvas" among its may decision tools) https://www.tuzzit.com/en/canvas

- Canvas Discussion - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigndiscuss

How to do this in the classroom

If students are not familiar with impact matrices they should be introduced to them using examples on the board or by projector. Once they understand the basics this is a good exercise for small group work where they can discuss the variables and brainstorm ideas, which are analyzed for probability and plausibility. These can then be shared with the rest of the class.

PROS: Instructor can give immediate feedback and can transition immediately into a corresponding follow-up activity.

CONS: Students may not have time to thoroughly think about their answers.

Tools you could use:

- PowerPoint slide or a Word document that is displayed on a screen
- Handout with matrices.

Brainstorming

An activity designed to generate a large number of ideas for the solution of a problem.

How to do this online

How to do it online - Idea generation could take place either synchronously or asynchronously and either individually, in small groups, or with the entire class.

PROS: If done asynchronously, students have time to generate more thoughtful ideas. Students can participate without fear that their ideas are being judged.

CONS: Spontaneity is diminished if done asynchronously.

Tools you could use:

- Realtime Board https://realtimeboard.com/ (synchronous)
- Padlet https://padlet.com (synchronous or asynchronous)
- Google Doc https://docs.google.com (synchronous or asynchronous)
- Slack https://slack.com/(synchronous)
- Yammer https://www.yammer.com/(synchronous)
- Twitter https://twitter.com/ (synchronous or asynchronous)
- Canvas Content Page (allow anyone to edit; asynchronous) - https://community.canvaslms.com/docs/DOC-1842
- Canvas Discussion (asynchronous) - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigndiscuss
- Canvas Chat (synchronous) - https://community.canvaslms.com/docs/DOC-2609

How to do this in the classroom

Students can brainstorm individually, in small groups, or large groups.

PROS: Great way to build comradeship, especially if done in small groups.

CONS: Shy students may feel intimated. It may be difficult to get all students to participate. Even small gestures or facial expressions can convey judgement about an idea.

Tools you could use:

- Whiteboards
- Flip charts
- Notebook paper

III. Dig Deeper

7. Further Exploration

Students continue to explore the issue and related problems.

Methodical Observations

Students look at something, notice facts and/or take measurements and record their observations in an organized and systematic manner.

How to do this online

Ask students to use their mobile device to capture images / audio / video that adequately documents their experience or environment. Next, ask student to jot down observations with pen and paper. If students haven't received sufficient scaffolding to learn what constitutes methodical observation for the topic, consider providing students a handout explaining what they should look for, the steps they should take (*if applicable*), and any measurements they should take during observation. Students can turn in their media recordings and written observations into a Canvas assignment or discussion (*for sharing observations with the class*).

PROS: tudents can be located anywhere (*in heavily online hybrid courses that don't require many in-class sessions*), which means they may have a wider range of environments / experiences to observe compared to what's available in and around the university.

CONS: You will want to ensure students understand expectations for the depth of their observations. Handouts with steps to take or things to look for

will help, and you may consider creating a rubric in Canvas to communicate assessment criteria with students.

Tools you could use:

- Mobile phone (*pictures, audio/video capture*)
- Arc (*uploading and share of captured media*) - https://www.seattleu.edu/cdlihelp/students/canvas/#usingcanvasmedia
- Canvas - https://www.seattleu.edu/cdlihelp/students/canvas

How to do this in the classroom

Ask students to go outside the classroom and jot down observations of phenomena with pen and paper. If students haven't received sufficient scaffolding to learn what constitutes methodical observation for the topic, consider going on a short class observation activity to demonstrate what they should look for, the steps they should take (*if applicable*), and any measurements they should take during observation. When students return to class they can present their findings to the entire class or in small groups.

PROS: Compared to an online class, it will be easier for you to ensure that students understand what constitutes methodical observations before performing the graded activity (*if applicable*). You could spend 15 minutes of a class session going to a space and observing together with students. After the practice observation ask students to report back what they found, and point out observations that many students missed.

CONS: Students won't have the same diversity of possible experiences compared to heavily online hybrid/blended classes that allow students to be geographically dispersed between in-class sessions.

Tools you could use:

- Pen and paper

Interview an Expert

Students identify an individual who has attributes of interest (e.g., diagnostician, communication, teacher, professionalism) to interview. The student completes a semi-structured interview (with questions typically provided by the instructor to match objectives) and reports back to the group or documents in a way that enhances application and reflection.

How to do this online

This can be an individual or group assignment. Consider providing students a script/template to use as they reach out to an expert in your field by phone or email. This will provide students an idea of your expectations for appropriate and professional communications. For example, should students include a date they should expect a response by, or would that seem too forward? Have students report their progress finding an expert willing to do an interview, and think about your colleagues as backup in case students are unsuccessful finding a willing interviewee. Next, consider providing or brainstorming with students on a pool of questions that students can use during the interview. Students can use a free video conferencing tool such as Zoom to conduct the interview. Zoom allows students to record sessions so they can return to the interview as raw material for later reflection.

PROS: Students can use online video conferencing, which enables them to interview experts around the world.

CONS: Students may not have experience with online video conferencing. Provide opportunities for these students to use the tool to run a mock interview with their fellow student group members; or for individual

assignments students can practice using the tool with you in either a mock interview situation or simply in online office hours.

Tools you could use:

- Zoom - https://www.seattleu.edu/cdlihelp/students/more-apps/zoom

How to do this in the classroom

As a class, you decide on an expert to interview and invite them to come to class (*either in-person or through video conferencing*). Consider providing, or brainstorming with students, on a pool of questions that students can ask during the interview.

PROS: Students benefit from the group experience. They all hear the questions asked, and answers provided. This shared experience provides an opportunity for later class discussion on key themes and important takeaways. Did students differ in their reflections of (and takeaways from) the interview?

CONS: Asking students to go "out in the world" individually or in small groups to interview experts online provides a greater diversity of conversations that students can report back to their classmates.

Tools you could use:

- Zoom (*for remote experts*) - https://www.seattleu.edu/cdlihelp/faculty/more-apps/zoom
- Classroom computer, microphone, speakers & projector (*for remote experts*)

Perspective Taking

Ask students to adopt the perspective of someone else involved in a given situation.

How to do this online

Ask students to visit a place where someone is affected by a topic in your class. For example, students in a public policy course could volunteer at a homeless shelter to better understand the conditions for patrons in relation to policies enacted to assist homeless individuals. Ask students to use their mobile device to take pictures of the environment, jot down how well the facilities enable patrons to receive service, and potentially record an audio interview with a patron or staff to understand their perspective on the effectiveness of social services funded by a certain policy.

PROS: Students have the opportunity to go "out in the world" and more fully experience the lives of individuals affected by topics covered in class.

CONS: Not well-suited for learning objectives aimed at helping students understand how a group of people can perceive a shared event differently.

Tools you could use:

- Mobile phone (*pictures, audio/video capture*)
- Arc (*uploading and sharing captured media*) - https://www.seattleu.edu/cdlihelp/students/canvas/#usingcanvasmedia
- Canvas - https://www.seattleu.edu/cdlihelp/students/canvas

How to do this in the classroom

Ask students to describe a share experience, such as the deceptively simple View from the Window activity, in order to illustrate the various perspectives of the same experience. You could also ask students to do a role playing exercise where students take the part or perspective of historical figures, authors, or other characters and must interact from their perspective. Students could also be asked (*individually or in teams*) to debate a topic from a side of the argument that they disagree with or are uniformed about. Students then debrief by reflecting and discussing as a group what everyone learned in the process of performing the activity

PROS: Great for times when you want to demonstrate the multitude of possible perspectives of a shared experience. Also good for exploring the world of historical figures to better understand what influenced their thinking, and for improving communication between students on contentious topics.

CONS: Doesn't allow for students to fully explore perspectives of individuals "out in the world" that experience course topics in their daily lives.

Tools you could use:

- n/a

Report from the Field

Students use smart phones to record their direct observations of an event/location related to the course of study.

How to do this online

Ask students to use their mobile device to capture images / audio / video of events or places related to course topics. Students then analyze how these examples confirm or challenge concepts introduced in the course. Students can turn in their mobile device recordings and field report into a Canvas assignment or discussion (*for sharing reports with the class*).

PROS: Students can be geographically dispersed (*in heavily online hybrid courses that don't require many in-class sessions*), which means they may have a wider range of environments / experiences to observe compared to what's available in and around the university.

CONS: You will want to ensure students understand expectations for the depth of their reports. Handouts with steps to take or things to look for will help, and you may consider creating a rubric in Canvas to communicate assessment criteria with students.

Tools you could use:

- Mobile phone (*pictures, audio/video capture*)
- Arc (*uploading and share of captured media*) - https://www.seattleu.edu/cdlihelp/students/canvas/#usingcanvasmedia
- Canvas - https://www.seattleu.edu/cdlihelp/students/canvas

How to do this in the classroom

Ask students to use their mobile device to capture images / audio / video of events or places in and around the university that are related to course topics. Students then analyze how these examples confirm or challenge course readings. In a single session, students return to class to share their findings.

PROS: Students can share their findings by quickly uploading media to a Canvas discussion using their mobile device. You can bring up the Canvas discussion on the classroom projector to share the reports and discuss in the classroom.

CONS: Students are limited to reporting from in and around the university due to time constraints of a classroom session.

Tools you could use:

- Mobile phone (*pictures, audio/video capture*)
- Arc (*uploading and share of captured media*) - https://www.seattleu.edu/cdlihelp/students/canvas/#usingcanvasmedia
- Canvas - https://www.seattleu.edu/cdlihelp/students/canvas

Informal Surveys

Students are asked to collect responses based on questions they create. Surveys can be administered in a variety of formats including impromptu in-person surveys on the street, for example.

How to do this online

Students are asked to gather responses to a set of questions they have written, which will inform their analysis of a topic in an online discussion, and also in papers written for the course. These surveys are considered informal because they aren't aimed at gathering statistically significant sample sizes. Rather, they are aimed at gathering responses to inform later analysis that compares course readings with survey responses.

PROS: There are a variety of easy-to-use online survey builders that provide insightful analytics dashboards and data exports. Students can distribute surveys to a wider range of interviewees online, compared to face-to-face interviews.

CONS: Students will need to have some comfort creating an online survey. It's harder for students to conduct a real-time oral (as opposed to written) online survey online -- compared to face-to-face.

Tools you could use:

- Jotform - https://www.jotform.com

How to do this in the classroom

Students are asked to gather responses to a set of questions they have written, which will inform their analysis of a topic in classroom discussion. Students roam around the room ask ask each other questions. Students may also be encouraged to leave the classroom and survey individuals walking in and around the university. Students share findings in the subsequent classroom discussion. These surveys are considered informal because they aren't aimed at gathering statistically significant sample sizes. Rather, they are aimed at gathering responses to inform later analysis that compares course readings with survey responses.

PROS: Students are guaranteed to gather at least a couple responses to survey questions, as compared to surveys administered online where they might not be able to gather responses.

CONS: Respondents will likely be more homogeneous in and around the university.

Tools you could use:

- Pen and paper

Question Log Book

Students are directed to keep a list of their questions, recording them when they occur.

How to do this online

A question log book helps students keep track of questions that arise about course content, and possibly the student's learning process, as students read through course materials, participate in online discussions, and contribute to online group work. The question logs can then inform later activities such as journals or peer reviews for group work. Question logs from early on in the course can also be revisited to see if the student's understanding has progressed since the question arose.

PROS: Students are already participating in the course using their computer's web browser, and there are many browser-based tools students can use for their question log book. This makes it easy for students to record questions as they arise, as compared to potentially after-the-fact if students were in the classroom. Because the question log books are digital, they can easily be shared with the instructor - or with the entire class.

CONS: Make sure students have time to reflect on whether or not their questions have been addressed as the course progresses, and are provided opportunities to remedy their understanding of concepts that remain unclear.

Tools you could use:

- Microsoft OneNote (*private*) - http://onenoteforteachers.com/en-US
- Weebly (*public*) - https://www.weebly.com

How to do this in the classroom

A question log book helps students keep track of questions that arise about course content, and possibly the student's learning process, as students read through course materials, participate in class discussions, and contribute to group work. The question logs can then inform later activities such as journals or peer reviews for group work. Question logs from early on in the course can also be revisited to see if the student's understanding has progressed since the question arose.

PROS: It's common that not all student questions can be addressed during a class session. A question log book provides students a mechanism to record unanswered questions that could be introduced at the start of the next class session, or in a subsequent online class.

CONS: Make sure students have time to reflect on whether or not their questions have been addressed as the course progresses, and are provided opportunities to remedy their understanding of concepts that remain unclear.

Tools you could use:

- Pen and paper

8. Meaning Making & Integration

Students—individually or in groups—demonstrate their understanding of the issue or problem by producing visible work that can be shared with the group.

Research Papers

Students identify a topic to explore, complete preliminary reading, formulate a research question or hypothesis, and use evidence resources to support findings or arguments.

How to do this online

Students, individually or in groups, formulate a research question or hypothesis, and use evidence resources to support findings or arguments. The SU Libraries provide many online resources to help student students conduct research, including email consultations with Research Services Librarians. Students can then use various online mind mapping tools to brainstorm paper ideas and find common themes or surprising connections to formulate research questions. During the writing phase students can collaboratively write in real time on a single online document.

PROS: Students have many online tools available for collaborating with group members and for receiving research help from librarians.

CONS: Students who are unfamiliar with online learning may find the task overwhelming without you, as the instructor, providing a list of online tools and resources available. Consider encouraging students to make use of your online office hours if they run into questions that aren't addressed in your assignment instructions.

Tools you could use:

- SU Libraries Research Path - http://libguides.seattleu.edu/theresearchpath
- Canvas (*group workspaces & collaborative document authoring*) - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigngroup
- Coggle (*mind mapping tool*) - https://coggle.it
- Microsoft Word

How to do this in the classroom

Students, individually or in groups, formulate a research question or hypothesis, and use evidence resources to support findings or arguments. During class, consider guiding students through the SU Libraries Research Path website projected in class to discuss with students expectations about the depth of their research. Let students know that Research Services Librarians are on staff to help them locate scholarly resources on their subject. Students can then use pen and paper in the classroom to brainstorm paper ideas and find common themes or surprising connections to formulate research questions.

PROS: You can respond to student questions during the beginning stages of their research during classroom activities, such as a brainstorming session. Your responses to student questions are easily shared with the class, which can lead to further class-wide Q&A.

CONS: Class-time will likely need to be dedicated to helping students during some part of the research process, which cuts down on class time dedicated to discussing the content of the course.

Tools you could use:

- Classroom computer + projector
- SU Libraries Research Path - http://libguides.seattleu.edu/theresearchpath
- Pen and paper (*mind mapping*)
- Microsoft Word

Storyboards

Students visualize and arrange a sequence of events to tell a story, analyze a problem, or explain a multi-step concept.

How to do this online

Ask students to visualize and arrange a sequence of events to tell a story, analyze a problem, or explain a multi-step concept. For example, you can ask students to create a storyboard to demonstrate understanding of the constituent elements of a tough reading assignment. The work needed to translate ideas from a reading into a visual representation ensures students understand concepts well enough to convey their meaning in a different medium (visuals). Additionally, a common use of storyboards is to prepare students for creation of a video to turn in for an assignment.
PROS: Students can use images they have captured, or images from the web, to create visuals on their storyboard. This works well if students aren't confident with their drawing abilities.

CONS: Students will need to be able to manipulate digital images (*resize, arrange on screen, flip horizontally, etc.*) to create storyboard compositions. Students who are confident in their drawing will likely prefer a pencil and paper alternative.

Tools you could use:

- ACMI Storyboard Generator - https://www.acmi.net.au/education/online-learning/film-it/storyboards/
- Microsoft Powerpoint
- Pencil and paper (*students can take photos of completed paper storyboard to turn in online in Canvas*)

How to do this in the classroom

Ask students to visualize and arrange a sequence of events to tell a story, analyze a problem, or explain a multi-step concept. For example, you can ask students to create a storyboard to demonstrate understanding of the constituent elements of a tough reading assignment. The work needed to translate ideas from a reading into a visual representation ensures students understand concepts well enough to convey their meaning in a different medium (visuals). Additionally, a common use of storyboards is to prepare students for creation of a video to turn in for an assignment.

PROS: In the classroom you can circulate while students are working on a storyboard (*individually or in groups*) and help guide students that seem to be getting stuck or are running into problems. Students who are confident in their drawing skills have only their imagination to hold them back when making visuals for their storyboard.

CONS: Students who are not confident in their drawing skills may prefer a digital tool for storyboarding, such as adding free stock images and clip art into Powerpoint slides. In the classroom, you can't guarantee students who aren't confident creating pencil and paper storyboards will have access to a computer to complete their assignment -- compared to a purely online activity.

Tools you could use:

- Search the web for a storyboard template to share with students
- Pencil and paper
- Powerpoint (*alternative to pencil and paper, using Creative Commons licensed images and clip art*)

Models

Students build real or virtual 3-D models of a concept, theory, or concrete artifact.

How to do this online

Students can either use 3D modeling software or create a physical model at home and take webcam photos and video of the model to submit into an online assignment. Choosing a physical or virtual model may depend on the type of model you would like students to create. For instance, when asking students to create models of the atoms for certain elements, you can provide students a short list of household items they will need to create their models. If you're asking students to construct a simplified design for a the science building at SU, you'll probably want to ask students to download a free trial of AutoCAD software, for example.

PROS: Students are outside the classroom, which allows for greater flexibility when sourcing materials for physical models. Asking students to create a do-it-yourself model using household items can increase student engagement since this activity uses everyday items in a new and novel way.

CONS: If you ask students to use 3D virtual modeling software, make sure to provide them ample help resources for learning how the system works.

Tools you could use:

- Household items (*physical modeling - provide students a list of household items*)
- AutoCAD (*advanced virtual models*) - http://www.autodesk.com/products/autocad/overview
- TinkerCAD (*simple virtual models*) - https://www.tinkercad.com

How to do this in the classroom

Encouraging students to build or find a model can help students visualize and engage with complex systems. This could be explored in groups, or assigned to share in class.

PROS: A creative way to engage students that provides students a memorable and deep learning experience.

CONS: Time consuming, difficult to find parts for students to build with.

Tools you could use:

- Paper and pen
- Macaroni
- Popsicle sticks
- Pipe cleaners
- Drawing program
- Legos

Diagrams / Schematics

Students are asked to produce a concise drawing showing the appearance, structure, or inner workings of something.

How to do this online

This activity works well when you need students to be able to "unpack" an idea or process into its constituent pieces, showing relationships between the parts. For example, you could ask students to produce a diagram of the plot of a movie for a film class by indicating the major parts of the film (*exposition, climax, resolution, etc.*). In a computer science course, you could ask students to create environment diagrams to keep track of the various stages of a computer program. In a similar way, you could ask students to draw a schematic showing the inner workings of a simple engine or organs of a biological specimen - noting how the constituent parts work together to create a whole functioning system.

PROS: For more in-depth assignments, the online format works well because students can turn in a draft of their diagram, receive feedback, and then modify their diagram to incorporate that feedback. If students were creating their diagrams in the classroom using pen and paper, the revision process would take longer because students would have to either use post-it notes which could fall off the diagram, or re-do their diagram to incorporate feedback.

CONS: Some students may find digital diagramming tools difficult to use. Powerpoint actually provides easy manipulation of symbols, lines and text. Depending on your course, you may need to link to or create help tutorials to ensure all students can complete the assignment without technological

barriers getting in the way of students doing their work. You can always allow students to use pen and paper. They would then need to take a picture of their diagram to submit.

Tools you could use:

- Powerpoint
- Coggle - https://coggle.it
- Pen, paper, and potentially post-it notes
- Canvas mobile app (*students use the Canvas mobile app to capture diagram / schematic and submit*) - https://www.seattleu.edu/cdlihelp/students/canvas/#usingcanvasios

How to do this in the classroom

This activity works well when you need students to be able to "unpack" an idea or process into its constituent pieces, showing relationships between the parts. For example, you could ask students to produce a diagram of the plot of a movie for a film class by indicating the major parts of the film (*exposition, climax, resolution, etc.*). In a computer science course, you could ask students to create environment diagrams to keep track of the various stages of a computer program. In a similar way, you could ask students to draw a schematic showing the inner workings of a simple engine or organs of a biological specimen - noting how the constituent parts work together to create a whole functioning system.

PROS: Students can work individually or in groups using pen and paper to diagram. You don't need to think about the potential for some students to shy away from this assignment due to lack of confidence with digital diagramming tools.

CONS: If the diagram is "born digital", students can turn in a draft of their diagram, receive feedback, and then modify their diagram to incorporate that feedback. If students were creating their diagram in the classroom using pen and paper, the revision process could take longer because students would have to re-do their diagram to incorporate feedback. Though, you might consider whether post-it notes will work for diagramming, which would make the revision process less cumbersome.

Tools you could use:

- Pens
- Paper
- Post-it notes
- Canvas mobile app (*students can use the Canvas mobile app to capture diagram and submit*) - https://www.seattleu.edu/cdlihelp/students/canvas/#usingcanvasios

Presentations

Students are asked to analyze and synthesize course concepts and effectively communicate their findings to the class.

How to do this online

At this stage, you're asking students to convey their original analysis and synthesis of course concepts to the class. This presentation is intended to help students clarify their thinking on a large project or paper in the course through feedback from the group. In later stages, you'll see options for student presentations that are aimed at an audience outside the class conveying the student's finalized research findings and thesis.

PROS: Online presentations allow students to share ideas and receive feedback without taking up valuable class time. In a blended / hybrid course, consider asking students to create post their online presentation in a Canvas Discussion so they can solicit and receive feedback from classmates.

CONS: Students may not be familiar with the suggested online presentation tools. Make sure to provide instructions on usage for the tools, and familiarize yourself with any of the tools you suggest that students use so that you can help troubleshoot if problems arise.

Tools you could use:

- Adobe Spark Video - https://spark.adobe.com
- Explain Everything (*iPad only - minimal cost*) - https://explaineverything.com
- Prezi - https://prezi.com/signup/edu/standard/

- Zoom (*for recording a presentation with narration that can be uploaded into Canvas*) - https://www.seattleu.edu/cdlihelp/students/more-apps/zoom
- Arc (*video management system integrated with Canvas*) - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#media
- Canvas Discussions (*for sharing video presentations and soliciting feedback*) - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigndiscuss

How to do this in the classroom

At this stage, you're asking students to convey their original analysis and synthesis of course concepts to the class. This presentation is intended to help students clarify their thinking on a large project or paper in the course through feedback from the group. In later stages, you'll see options for student presentations that are aimed at an audience outside the class conveying the student's finalized research findings and thesis.

PROS: Students don't need to understand how to produce and online presentation. Students are able to practice "thinking on their feet" during Q&A following their presentation.

CONS: Student presentations take up a lot of class time, especially in courses with larger enrollments.

Tools you could use:

- Explain Everything (*iPad only - minimal cost*) - https://explaineverything.com
- Prezi - https://prezi.com/signup/edu/standard/
- Powerpoint

Observational Writings

Accounting for all the senses (sight, sound, touch, taste, smell) this type of writing asks students to give an in-depth first-hand account of a person, place, or thing by describing in detail the subject and it's environment, the student's impressions of the subject, and their judgment of the subject.

How to do this online

Ask students to use their mobile device to capture images / audio / video that adequately documents their experience or environment. Next, ask student to write out as much information about the place or event as they can with pen and paper. If students haven't received sufficient scaffolding to learn what constitutes observational writing for the topic, consider providing students a handout explaining what observations they should look out for. Students can turn in their media recordings and written observations into a Canvas assignment or discussion (*for sharing observations with the class*).

PROS: Students can be located anywhere (*in heavily online hybrid courses that don't require many in-class sessions*), which means they may have a wider range of environments / experiences to observe compared to what's available in and around the university.

CONS: You will want to ensure students understand expectations for the breadth of their observations. Handouts with steps to take or things to look for will help, and you may consider creating a rubric in Canvas to communicate assessment criteria with students.

Tools you could use:

- Mobile phone (*pictures, audio/video capture*)

- Arc (*uploading and share of captured media*) - https://www.seattleu.edu/cdlihelp/students/canvas/#usingcanvasmedia
- Canvas - https://www.seattleu.edu/cdlihelp/students/canvas

How to do this in the classroom

Ask students to go outside the classroom and jot down observations of phenomena with pen and paper. If students haven't received sufficient scaffolding to learn what constitutes observational writing for the topic, consider going on a short class observation activity to demonstrate what they should look out for. When students return to class they can present their findings to the entire class or in small groups.

PROS: Compared to an online class, it will be easier for you to ensure that students understand what constitutes observational writing before performing the graded activity (*if applicable*). You could spend 15 minutes of a class session going to a space and observing together with students. After the practice observation ask students to report back what they found, and point out observations that many students missed.

CONS: Students won't have the same diversity of possible experiences compared to heavily online hybrid/blended classes that allow students to be geographically dispersed between in-class sessions.

Tools you could use:

- Pen and paper

Field Reports

Students are asked to collect a variety of media (notes, photographs, audio/video recordings, illustrations) to identify and categorize common themes in relation to their research problem. Students then interpret results to find meaning in the information they collected.

How to do this online

Ask students to use their mobile device to capture images / audio / video, and optionally draw illustrations, of events or places related to course topics. Students then present an argument in a report that includes their data from their field report as supporting evidence that confirms or challenges course concepts. Students can turn in their mobile device recordings and field report into a Canvas assignment or discussion (*if sharing reports with the class*).

PROS: Students can be geographically dispersed (*in heavily online hybrid courses that don't require many in-class sessions*), which means they may have a wider range of environments / experiences to observe compared to what's available in and around the university.

CONS: You will want to ensure students understand expectations for the depth of their reports. Handouts with steps to take or things to look for will help, and you may consider creating a rubric in Canvas to communicate assessment criteria with students.

Tools you could use:

- Mobile phone (*pictures, audio/video capture*)
- Arc (*uploading and share of captured media*) https://www.seattleu.edu/cdlihelp/students/canvas/#usingcanvasmedia
- Canvas - https://www.seattleu.edu/cdlihelp/students/canvas

How to do this in the classroom

Ask students to use their mobile device to capture images / audio / video, and optionally draw illustrations, of events or places in and around the university that are related to course topics. Students then present an argument in a report that includes their data from their field report as supporting evidence that confirms or challenges course concepts. In a single session, students return to class to share their report.

PROS: Students can share their reports by quickly uploading media to a Canvas discussion using their mobile device. You can bring up the Canvas discussion on the classroom projector to share the reports and discuss in the classroom.

CONS: Students are limited to reporting from in and around the university due to time constraints of a classroom session.

Tools you could use:

- Mobile phone (*pictures, audio/video capture*)
- Arc (*uploading and share of captured media*) - https://www.seattleu.edu/cdlihelp/students/canvas/#usingcanvasmedia
- Canvas - https://www.seattleu.edu/cdlihelp/students/canvas

Concept Maps

Students write keywords about a concept onto sticky notes and then organize them into a flowchart. This could be less structured. Students simply draw the connections they make between concepts.

How to do this online

Concept maps are generally used to get students to connect what they know with their own ideas and the class - ideally surfacing a synthesis of ideas in a new and novel way. The tools we suggest below work well in collaborative groups of three or four. We recommend asking students to post a link to their map in a Canvas discussion and then write about the connections they found.

PROS: Students can work individually or in groups (*on the same concept map*) while separated by time and place. This activity can greatly increase productivity for in-class student group work formulating an original thesis or drafting and outline for a student paper, for example.

CONS: Students may not have used online concept mapping tools, and those shy about using technology may get too focused on making sure the technology works. Consider including a link to help resources for any of the concept map tools you suggest to students. Also, make sure you have tried to produce a concept map using any suggested tools so you can help troubleshoot any problems that arise.

Tools you could use:

- Coggle - https://coggle.it
- MindMeister - https://www.mindmeister.com
- Bubbl.us - https://bubbl.us

How to do this in the classroom

Tools used to create online concept maps can also be used in the classroom. As a group activity, students can gather around a large piece of paper or designate one person to input the information into a digital concept map. The result is a visual way to link where the class has been, where they are, and where they would like to go - drawing connections between concepts to synthesize the relationship of elements in a new and novel way.

PROS: Students don't need to learn how to use online concept mapping tools.

CONS: The end product is either 1) not easily shared with student group members outside class or 2) a static version of the concept map (*if students post a picture online*). Further refinements to the concept map after the class session are not made and shared as easily compared to online concept maps.

Tools you could use:

- Flip-board sheets
- Post-it notes
- Pens
- Coggle - https://coggle.it
- MindMeister - https://www.mindmeister.com
- Bubbl.us - https://bubbl.us

Timelines

Students create a timeline of events and/or timespans. Timelines can be annotated verbally or with multimedia.

How to do this online

Timelines are a great way to help students surface causal or a shared topical relationship between events. Sutori is best for helping students brainstorm and present a chronology of events that may not have a strong geographical relationship. myHistro presents events on a map, so it works better for when you'd like students to show how events are affected by their specific geography. You can then optionally ask students to record their screen using Zoom to narrate a video presentation of their timeline for submission in Canvas.

PROS: Students are able to pull together media from various online sources (e.g.: Youtube, Flickr, etc.) when creating their timeline. This provides students greater ability to gather supporting evidence to justify elements on their timeline - compared to a classroom activity.

CONS: Students will need to learn how to create an online timeline. Consider posting help links for the timeline tools you suggest to students.

Tools you could use:

- Sutori - https://www.sutori.com
- Timeline.js - https://timeline.knightlab.com
- myHistro - http://www.myhistro.com
- Zoom (*for optional screen recording of timeline presentation*) - https://www.seattleu.edu/cdlihelp/students/more-apps/zoom
- Canvas - https://www.seattleu.edu/cdlihelp/students/canvas

How to do this in the classroom

Timelines are a great way to help students surface causal or a shared topical relationship between events. They can also help students "unpack" their own lives through reflection of their own activities, and how they relate to course concepts. On paper, ask students (*individually or in groups*) to write out a chronological series of events and explain (*on paper or through a class presentation*) how the elements are causally or topically related.

PROS: Students can quickly write out their thoughts, which means in-class timelines are best suited for a "work in progress" as students are clarifying their thoughts for later integration and application of their research in a final product.

CONS: Students can't easily include digital media and resources in their timelines. Paper-based timelines are not well-suited as the end-product of a student project.

Tools you could use:

- Pen and paper
- Document camera and classroom projector

Infographics

Students are asked to create a graphic to visually explain a complex topic or set of data.

How to do this online

Infographic activities ask students to visually present data, information or knowledge - especially when complex relationships between elements need to be efficiently communicated. Oftentimes infographics help "tell the story" of raw data to explain a phenomenon or further an argument. Infographics can also depict a "decision tree" for an audience to "choose their own adventure" and test outcomes based on various decision combinations. easel.ly is an infographic tool that provides many free-to-use templates to help students get started with a visually appealing layout. Piktochart is another infographic tool that provides templates and also provides embedded charts that can be quickly updated from a "behind the scenes" spreadsheet of data.

PROS: Students are engaged by the visual appeal of infographic tools. These tools help students see data not only as static and beyond interpretation, but as raw material that can be used to tell a story and potentially further an argument in a manner more accessible than a formal research paper, for example.

CONS: Some students that are not confident in their online skillset will benefit from your posting of help information for the tools you suggest.

Tools you could use:

- easel.ly - https://www.easel.ly
- Piktochart - https://piktochart.com

How to do this in the classroom

Infographic activities ask students to visually present data, information or knowledge - especially when complex relationships between elements need to be efficiently communicated. Oftentimes infographics help "tell the story" of raw data to explain a phenomenon or further an argument. Infographics can also depict a "decision tree" for an audience to "choose their own adventure" and test outcomes based on various decision combinations. Infographics have been around for a long time in magazines and newspapers. Recently, online tools have made it easy for many people to make their own infographics. With some office supplies and ingenuity, you could create a classroom-based infographic activity. Students could draft their infographic together in groups during class with physical materials, and then use that draft to inform their final product created with an online tool.

PROS: Infographic activities help students see data not only as static and beyond interpretation, but as raw material that can be used to tell a story and potentially further an argument in a manner more accessible than a formal research paper, for example. Drafting an infographic on paper during a class helps students think about the argument or story they are looking to tell with their infographic, as opposed to going directly to an online infographic tool that provides many pre-built templates. These templates could influence the types of stories students tell in their infographic, compared to starting with a "blank slate" when drafting on paper.

CONS: Some students that are not confident in their online skillset will benefit from your posting of help information for the tools you suggest.

Tools you could use:

- Flip-chart paper
- Post-it notes
- Markers
- Pencils

Wiki Pages

Great for group projects, wikis allow students to collaboratively author pages using text, images, audio and video. Students can also link multiple wiki pages together to create an entire website.

How to do this online

Contributing to Wikipedia articles, individually or in small groups, is an authentic task for helping students understand how knowledge is created and negotiated. The WikiEdu site offers educator-focused guidance and advice for implementing a course page and creating assignments around Wikipedia articles through online training, handouts and videos. Students are also supported through an online orientation for student editors, handouts and videos.

Creating a class-specific wiki - with Onenote, students can update pages with text, images and files, and even external resources (e.g.: YouTube videos) all in a password-protected environment. A version history is saved whenever anyone makes edits to pages. Onenote is integrated into SU's Office 365 license, so you don't need to create student user accounts.

PROS: Wikis provide a great way for students to collaboratively build a class website. Additionally, Wikipedia provides educators many resources for designing assignments that ask students to edit publicly accessible information. These types of assignments are engaging because student work is more visible than traditional assignments where only the instructor, or possibly a couple student group members, see a student's work.

CONS: For class wikis, students may accidentally overwrite each other's work if simultaneously editing a page. There are many variables to consider when designing assignments that ask students to edit Wikipedia articles, such as preparing students to edit articles acceptably including a) neutral point of view b) no original research c) copyright and plagiarism d) reliable resources e) conflict of interest.

Tools you could use:

- WikiEdu / Wikipedia - http://wikiedu.org/for-instructors
- Microsoft Onenote - https://www.onenote.com/ (use SU school login)

How to do this in the classroom

You can use class session(s) to help students brainstorm and plan wiki contributions. Students can gather in small groups or discuss in class-wide discussions to, for example, a) solidify plans on the structure of a class wiki or b) create a list of Wikipedia articles that are good candidates for student edits / contributions.

PROS: Devoting class time to a wiki assignment can help scaffold learning for students so they don't get caught up in the logistics of designing the structure of a class wiki, or provide a quick back-and-forth dialogue between group members when brainstorming and selecting Wikipedia articles to edit. This way, the logistics of the wiki assignment won't overshadow actually thinking about course content when students go online to do that actual work of editing wiki pages.

CONS: Spending class time on logistics for a wiki assignment reduces the amount of class time you are able to spend on other course activities.

Tools you could use:

- Pen and paper

Maps

Students use maps to locate and elaborate upon significant locations. Maps can be annotated verbally or with multimedia.

How to do this online

Mapping assignments provide students a chance to investigate how timing and geography affect historical or current events. A mapping exercise helps students think about certain aspects of events that can't be revealed by a list of fact and dates. For example, a mapping exercise about the Crusades could help students investigate how geographic features such as proximity of cities in a region affected the expansion of Christianity at the time.

PROS: The online format is especially productive because online tools make it easy for students to gather online resources and media to annotate their maps.

CONS: Students will need to become familiar with online mapping tools. Consider providing students a link to help resources for any tool that you suggest to students. Also, create your own map to ensure that you understand the basics of the tool well enough to help troubleshoot if students run into issues.

Tools you could use:

- myHistro (*especially good for presenting geographically on a sequence of events*) - http://www.myhistro.com
- ZeeMaps (*good for mapping out demographics of different regions, for example*) - http://www.zeemaps.com

- Zoom (*students record video of their screen with narration for their mapping presentation*) - https://www.seattleu.edu/cdlihelp/students/more-apps/zoom
- Canvas Assignment or Discussion using Arc (*students upload Zoom video recording to share with class or privately with instructor)* - https://www.seattleu.edu/cdlihelp/students/canvas/#usingcanvasmedia

How to do this in the classroom

Mapping assignments provide students a chance to investigate how timing and geography affect historical or current events. A mapping exercise helps students think about certain aspects of events that can't be revealed by a list of fact and dates. For example, a mapping exercise about the Crusades could help students investigate how geographic features such as proximity of cities in a region affected the expansion of Christianity at the time. Either provide students a printed map for students to annotate with their analysis, or ask students to draw the map themselves. Students can work individually or in groups and present their work to the class.

PROS: Students can more easily work together to decide on map annotations, compared to online group map making. Groups can collaborate on map making online as well, but the deliberation on what to include and what to exclude on the map is more efficient in person.

CONS: Students may not be able to fit all the information they would like to include on a paper map. The online format allows information hidden behind a "view more" link that can be show and hidden as needed.

Tools you could use:

- Pen and paper
- Canvas mobile app (*optionally ask students to take a picture of their map using their smartphone and upload to a Canvas assignment or discussion*) - https://www.seattleu.edu/cdlihelp/students/canvas/#usingcanvasios

Proposals

Students present a desired outcome, outline reasons why the outcome is necessary, and strive to convince a target audience to agree with the implementation of the recommended steps to reach the outcome.

How to do this online

Think of this activity as a grant proposal. Students need to define a problem, present a solution or mission of their project, and provide justification for their proposed solution and it sustainability - compared to other possible solutions. Your goal at this stage is to help students clearly identify the constituent elements of their argument in a real world context where students must provide adequate justification for their proposed solution. Students can produce a formal text-based proposal and / or create concise presentations of their proposals that are shared with the class in order to solicit constructive feedback.

PROS: Students can gain real-world experience working with a group at a distance on their proposal. This mimics the process for grant writers that are often collaborating at a distance. For individual proposals, the online format provides many opportunities to submit current drafts of their proposals for your feedback.

CONS: Students may not be experienced working at a distance. Consider asking students to decide upon group roles and expectations to ensure group members are able to, and expected to, contribute equally.

Tools you could use:

- Canvas Group workspaces (*for group projects - provides a space for discussion topics, shared files, and creation of group authored proposal documents*) - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigngroup
- Canvas Assignment / SpeedGrader (*for individual projects - students turn in a draft and you provide annotations on their draft using SpeedGrader*) - https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#gradespeed
- PowerPoint (*or alternative presentation tools such as Prezi*)
- Zoom (*students record their presentation with audio narration, and upload the video recording into Canvas*) - https://www.seattleu.edu/cdlihelp/students/more-apps/zoom

How to do this in the classroom

Think of this activity as a grant proposal. Students need to define a problem, present a solution or mission of their project, and provide justification for their proposed solution and it sustainability - compared to other possible solutions. Your goal at this stage is to help students clearly identify the constituent elements of their argument in a real world context where students must provide adequate justification for their proposed solution.

PROS: For group work, the classroom provides students a chance to decide on roles and set expectations and deadlines for each member's contributions.

CONS: Asking students to present their proposals to the class can take up valuable class time that may be needed for other activities.

Tools you could use:

- Pen and paper (*initial brainstorming to inform later online work*)
- Classroom computer + projector (*for class presentations*)

IV. Wrap Up

9. Integration / Application

Class discusses what has surfaced, where to go next, and what they might do with their new understanding.

Slide Presentations

Students arrange slides that contain text and images in a logical sequence that is intended for a target audience. Frequently narrated, either in person or via audio recording.

How to do this online

When a lesson or module comes to an end, asking students to post a few narrated slides that sum up the main ideas for the unit can encourage synthesis and connection-making. There are a vast number of tools to make presentations *(see tools)* and students can post (embed) their slide presentations in a Canvas discussion for others to review and comment on.

PROS: Can be shared outside of class, can make use of multimedia, can be interactive, saves class time.

CONS: Since slide presentations can get too long, and include too much text, it is a good idea to set limits.

Tools you could use:

- Powerpoint recorded with Zoom screen recording: https://www.seattleu.edu/cdlihelp/faculty/more-apps/zoom
- Adobe Spark: http://spark.adobe.com/
- Google Slides: https://www.google.com/slides/about/
- VoiceThread: http://voicethread.com/
- Prezi: https://prezi.com/pricing/edu

How to do this in the classroom

When a lesson or module comes to an end, asking students to create a slide presentation that sum up the main ideas for the unit can encourage synthesis and connection-making. Students can share their presentations in class if desired or turn them in via a Canvas assignment to the instructor.

PROS: When a lesson or module comes to an end, asking students to create a slide presentation that sum up the main ideas for the unit can encourage synthesis and connection-making. Students can share their presentations in class if desired or turn them in via a Canvas assignment to the instructor.

CONS: Uses a lot of classroom time.

Tools you could use:

- PowerPoint
- Google Slides: https://www.google.com/slides/about/
- Adobe Spark: http://spark.adobe.com/

Implementation Plans

Students create a plan to bring a proposal to fruition. Plans can include tasks, timelines, and resource allocation.

How to do this online

Implementation plans work well as an end-of-course cumulative assignment where students solidify plans to bring approved proposals to fruition. They break down the necessary tasks, create a timeline and allocate resources. The plan can be created in a number of digital formats, ranging from simple Word documents to beautiful multimedia presentations. Students can submit their plans via a Canvas assignments or discussion, on a digital bulletin board such as Padlet, or even on their own website.

PROS: Can be scaffolded throughout the course, easy to provide feedback, easy to use peer review, multimedia can be added, can be used in an ePortfolio

CONS: Can be scaffolded throughout the course, easy to provide feedback, easy to use peer review, multimedia can be added, can be used in an ePortfolio

Tools you could use:

- Google Docs
- Word
- Excel
- PowerPoint
- Piktochart: https://piktochart.com/
- Easel.ly: https://www.easel.ly/
- GanttPro: https://ganttpro.com/
- Adobe Spark: https://spark.adobe.com/

How to do this in the classroom

Implementation plans work well as an end-of-course cumulative assignment where students solidify plans to bring approved proposals to fruition. They break down the necessary tasks, create a timeline and allocate resources. The plan can be the form of a Word document or PowerPoint presentation. Students could present their plans in small groups or to the whole class.

PROS: Collaboration is easier in-person, final project can be presented in-person. Instructor can circulate among students.

CONS: Uses class time, may not have access to the needed applications to create the plan unless class meets in a computer lab.

Tools you could use:

- Google Docs
- Word
- Excel
- PowerPoint
- Piktochart: https://piktochart.com/
- Easel.ly: https://www.easel.ly/
- GanttPro: https://ganttpro.com/
- Adobe Spark: https://spark.adobe.com/

Video Presentations

Students create a filmed or taped presentation that tells a story or imparts information to a target audience.

How to do this online

Producing a video to present online requires students to think critically about the material and how to express complex information to an audience. If you are clear in your assignment expectations, you can let your students choose the video tool of their choice *(see tools)*. If production quality is important, consider using a basic presentation rubric, in addition to your content rubric. Students can peer review the clarity of presentations, leaving you to focus on the content. Videos can be shared via Canvas discussions, Canvas wiki pages or a peer reviewed Canvas assignment.

PROS: Builds community through sharing; does not take up class time; could be used for a portfolio; there is time for peer feedback to be more thoughtful and constructive; students can return to each other's presentations.

CONS: Instructors are often concerned about how to grade online presentations. Students don't get the immediate feedback that they would in a classroom presentation. Requires some thought about how the videos will be shared.

Tools you could use:

- WeVideo: https://www.wevideo.com/
- Adobe Spark: https://spark.adobe.com/
- Software at the Seattle University Media Production Center (Adobe Premiere, iMovie)
- Canvas discussion, pages or peer-review assignment (for sharing)

How to do this in the classroom

Producing a video requires students to think critically about the material and how to express complex information to an audience. If you are clear in your assignment expectations, you can let your students choose the video creation tool of their choice *(see tools)*. If production quality is important, consider using a basic presentation rubric, in addition to your content rubric. Students can peer review the clarity of presentations, leaving you to focus on the content. Videos can be shown in class.

PROS: Students can get immediate feedback from a live audience and answer questions afterwards.

CONS: Can take up a lot of class time and get bogged down with technical issues. Doesn't provide an archive of all the videos.

Tools you could use:

- WeVideo: https://www.wevideo.com/
- Adobe Spark: https://spark.adobe.com/
- Software at the Seattle University Media Production Center (Adobe Premiere, iMovie)

Summaries of Field Reports

Students are asked to collect a variety of media (notes, photographs, audio/video recordings, illustrations) to identify and categorize common themes in relation to their research problem. Students then interpret results to find meaning in the information they collected.

How to do this online

Assigning a field report, or summary of field reports, can help students connect research to analysis (and hopefully practice later on). There are a number of ways students can record their field work using their smartphone. Then, by asking your students to turn their field reports online via a Canvas assignment or discussion, you can also suggest they include web links, videos, and photos from site research.

PROS: Mobile apps make recording in the field easy, can add to content at any time, multimedia can be added, can be used in an ePortfolio.

CONS: Difficult to include hand-written documentation.

Tools you could use:

- Google Docs
- MS Word
- Adobe Spark: https://spark.adobe.com/
- Day One (mobile): http://dayoneapp.com/
- Memento (mobile): https://momentoapp.com/

How to do this in the classroom

Assigning a field report or summary of field reports can help your students connect research to analysis (and hopefully practice later on). Students can gather field data using their smartphones or simple pencil and paper. Classroom time can focus on students sharing and trading in groups, discussing their individual findings, and comparing collection methodologies. These tasks, while possible to complete online, are easier to do in the classroom and encourage students to share their thinking process of collecting, summarizing, and analyzing field notes.
PROS: Group discussion, surface collection process, hands-on, tactile, can include device use.

CONS: Static if no other devices are used, uses class time.

Tools you could use:

- Any writing/recording device

Timelines

Students create a timeline of events and/or time-spans. Timelines created with digital tools can be annotated with text and voice.

How to do this online

Timelines help students connect the events of a learning module or course in a linear way. All students could be assigned the same time period or different time periods. A number of online tools exist for your students to create visually striking, multimedia timelines *(see tools)*. They could post URLs to their timelines on Padlet, a Canvas page, or a Canvas assignment. Alternatively, most timeline tools provide embed code so timelines could be displayed on a web page or within a Canvas discussion thread or page.

PROS: Multimedia-rich, shared reference, easily modified.

CONS: Pre-made templates can be time consuming to populate with information.

Tools you could use:

- TikiToki: https://www.tiki-toki.com/
- Timeline.js: https://timeline.knightlab.com/
- MyHistro (combines timeline with maps): http://www.myhistro.com/
- Sutori (very collaborative): https://www.sutori.com/
- ThingLink: https://www.thinglink.com/
- MS Word
- PowerPoint

How to do this in the classroom

Timelines help students connect the events of a learning module or course in a linear way. Students can create timelines individually or in groups with all students being assigned the same time period, or different time periods.

PROS: Classroom activity, engages entire class at once.

CONS: Timeline is probably not useful for the rest of the class, finished products perhaps won't be as detailed since there is less time to fully flesh out the ideas.

Tools you could use:

- Butcher paper
- Whiteboard
- MS Word
- Google Docs
- PowerPoint
- Projector

Concept Maps

Students think of keywords about a concept and then organize them into a flowchart. Students are asked to show hierarchy and specific relationships between elements on the map.

How to do this online

Concept maps can be used to visually illustrate ideas, helping students to organize and integrate new concepts with their existing knowledge. Students can create digital concept maps using any one of a myriad of tools *(see tools)* and then post a link to their map in a Canvas discussion, or embed their map on a Canvas wiki page and then write about the connections they made.

PROS: Online concept mapping tools make visualization easy, students can make several iterations, easily shared.

CONS: Some mapping tools can be difficult to use.

Tools you could use:

- Mindmeister: https://www.mindmeister.com
- Coggle: https://coggle.it/
- Realtime Board: https://realtimeboard.com/
- Bubbl.us: https://bubbl.us/

How to do this in the classroom

As a group activity, students can gather around a large piece of paper or the whiteboard. Alternatively, tools used to create online concept maps can also be used in the classroom by designating one person to input the information into the application.

PROS: Classroom activity gets students talking, tactile.

CONS: Ephemeral, difficult to share, difficult to produce a useful map in a short amount of time.

Tools you could use:

- Butcher paper, markers
- Whiteboard

Poster Presentations

Students present information about research or projects using text and graphics to convey information in a way that is accessible to a large group of viewers. Frequently includes a feedback component.

How to do this online

Poster presentations are a good way to prepare students for professional presentations at conferences. The most straightforward tool for creating posters digitally is a large dimension Powerpoint saved as an image. When these files are shared, the viewer can easily read the text in the large format image. *(See tools for other ideas.)* Online, digital drafts of posters can be shared for peer feedback using Canvas discussions, Canvas groups or a peer-reviewed assignment. A clear rubric about good poster design is helpful for students struggling to give constructive feedback.

PROS: Posters can easily be shared for formative and summative feedback. There is an automatic archive of all posters. Can be used in an ePortfolio.

CONS: Students don't get the practice of answering questions about their posters on the fly.

Tools you could use:

- PowerPoint
- Ease.ly: https://www.easel.ly/

How to do this in the classroom

Poster presentations are a good way to prepare students for professional presentations at conferences. Students can create posters from simple materials such as posterboard and printouts of text and images. Some students may opt to printout a poster.

PROS: Posters can easily be shared during a class poster session and students can discuss their findings.

CONS: No archive of posters. Posters are usually trashed after the poster session and there is no way for students to include their poster in an ePortfolio unless they have created a digital file.

Tools you could use:

- Posterboard
- Paper printouts
- PowerPoint
- Ease.ly: https://www.easel.ly/

Infographics

Students are asked to create a graphic to visually explain a complex topic or set of data.

How to do this online

Oftentimes infographics help "tell the story" of raw data to explain a phenomenon or further an argument. Infographics have been around for a long time in magazines and newspapers. Recently, online tools have made it easy for many people to make their own infographics *(see tools)*. Students can post links to their infographics in a Canvas discussion or assignment for peer review, or on a digital bulletin board such as Padlet.

PROS: Online infographic tools are easy to use.

CONS: Student may get so caught up in the fancy visuals they may be distracted from the main focus of their work.

Tools you could use:

- Easel.ly: https://easel.ly
- Piktochart: https://piktochart.com

How to do this in the classroom

Oftentimes infographics help "tell the story" of raw data to explain a phenomenon or further an argument. Infographics have been around for a long time in magazines and newspapers. With some office supplies and ingenuity, you could create a classroom-based infographic activity. Students could draft their infographic together in groups during class with physical materials, and then use that draft to inform their final product created with an online tool.

PROS: Drafting an infographic on paper during class helps students think about the argument or story they are looking to tell with their infographic, as opposed to going directly to an online infographic tool that provides pre-built templates. These templates could influence the types of stories students tell in their infographic, compared to starting with a "blank slate" when drafting on paper.

CONS: Students that are not confident in their online skillset will benefit from your posting of help information for the tools you suggest.

Tools you could use:

- Flip-chart paper
- Post-it notes
- Markers
- Pencils

Diagrams

Students plan, sketch, draw, or outline something to demonstrate or explain how that thing works or clarify the relationship between the parts of a whole.

How to do this online

Concluding a module or lesson with a diagram can help students translate abstract ideas into concrete ones. Diagrams work well when you need students to be able to "unpack" an idea or process into its constituent pieces, showing relationships between the parts. Students can draw and scan their diagrams or use a digital tool to produce them *(see tools)*. Diagrams can be shared via Canvas discussions, Canvas wiki pages or and external tool like Padlet. They can also be turned in as a Canvas assignment.

PROS: The digital format works well because students can turn in a draft of their diagram, receive feedback, and then modify their diagram to incorporate that feedback. If students were creating their diagrams in the classroom using pen and paper, the revision process would take longer because students would have to either use post-it notes, which could fall off the diagram, or re-do their diagram to incorporate feedback.

CONS: Some students may find digital diagramming tools difficult to use. Powerpoint actually provides easy manipulation of symbols, lines and text. Depending on your course, you may need to link to or create help tutorials to ensure all students can complete the assignment without technological barriers getting in the way of students doing their work. You can always allow students to use pen and paper. They would then need to take a picture of their diagram to submit.

Tools you could use:

- Powerpoint
- Creately: https://creately.com/visio-alternative-online
- Coggle - https://coggle.it
- Pen, paper, and potentially post-it notes
- Canvas mobile app (students use the Canvas mobile app to capture diagram / schematic and submit) - https://www.seattleu.edu/cdlihelp/students/canvas/#usingcanvasios
- Padlet (for sharing): https://padlet.com

How to do this in the classroom

Concluding a module or lesson with a diagram can help students translate abstract ideas into concrete ones. Diagrams work well when you need students to be able to "unpack" an idea or process into its constituent pieces, showing relationships between the parts. Provide larger sheets of paper and ask students to work in groups or individually, sharing their diagrams with the class afterwards.

PROS: You don't need to think about the potential for some students to shy away from this assignment due to lack of confidence with digital diagramming tools.

CONS: If there is a feedback and revision process it can take longer to revise than a digital diagram unless you provide Post-it notes.

Tools you could use:

- Pencils, colored pens
- Paper
- Post-it notes
- Canvas mobile app (students can use the Canvas mobile app to capture diagram and submit) - https://www.seattleu.edu/cdlihelp/students/canvas/#usingcanvasios

Maps

Students use maps to locate and elaborate upon significant locations. Maps can be annotated verbally or with multimedia.

How to do this online

Mapping assignments provide students a chance to investigate how geography can affect the economy, climate, politics, linguistics, historical or current events. A mapping exercise helps students think about certain aspects of events that can't be revealed by a list of fact and dates. For example, a mapping exercise about the Crusades could help students investigate how geographic features such as proximity of cities in a region affected the expansion of Christianity at the time. You can assign students a region and ask them to examine relationships that are pertinent to your material. Students submit their work via narratives or links to maps they create using online tools (see below).

PROS: The online format is especially productive because online map tools make layering and annotating easy and powerful.

CONS: Students will need to become familiar with online mapping tools. Consider providing students a link to help resources for any tool that you suggest. Also, create your own map to ensure that you understand the basics of the tool well enough to help troubleshoot if students run into issues.

Tools you could use:

- myHistro (especially good for presenting geographically on a sequence of events): http://www.myhistro.com
- ZeeMaps (good for mapping out demographics of different regions, for example): http://www.zeemaps.com

- Google Maps: https://www.google.com/maps
- ArcGIS: https://www.arcgis.com/home/index.html
- ThingLink: https://www.thinglink.com/

How to do this in the classroom

Mapping assignments provide students a chance to investigate how geography can affect the economy, climate, politics, linguistics, historical or current events. A mapping exercise helps students think about certain aspects of events that can't be revealed by a list of fact and dates. For example, a mapping exercise about the Crusades could help students investigate how geographic features such as proximity of cities in a region affected the expansion of Christianity at the time. You can assign students a region and ask them to examine relationships that are pertinent to your material. The maps that students create can be an impetus for a classroom discussion or debate.

PROS: If this is a group assignment, collaboration may be easier. The instructor is readily accessible.

CONS: Paper maps are static, much less dynamic and interesting than maps created with digital tools

Tools you could use:

- Pen and paper
- Document camera and classroom projector

Models

Students create graphical, mathematical (symbolic), physical, or verbal representations of a simplified version of a concept, phenomenon, relationship, structure, system, or an aspect of the real world. The objectives of a model include (1) to facilitate understanding by eliminating unnecessary components, (2) to aid in decision making by simulating 'what if' scenarios, (3) to explain, control, and predict events on the basis of past observations.

How to do this online

Students can either use 3D modeling software or create a physical model at home and take digital photos and video of the model to submit into an online assignment. Choosing a physical or virtual model may depend on the type of model you would like students to create. For instance, when asking students to create models of the atoms for certain elements, you can provide students a short list of household items they will need to create their models. If you're asking students to construct a simplified design for the science building at SU, you'll probably want to ask students to download a free trial of AutoCAD software, for example.

PROS: Students are outside the classroom, which allows for greater flexibility when sourcing materials for physical models. Asking students to create a do-it-yourself model using household items can increase student engagement since this activity uses everyday items in a new and novel way.

CONS: If you ask students to use 3D virtual modeling software, make sure to provide them ample help resources for learning how the system works.

Tools you could use:

- Household items (physical modeling - provide students a list of household items)
- TinkerCAD (simple virtual models): https://www.tinkercad.com
- AutoCAD (advanced virtual models): http://www.autodesk.com/products/autocad/overview

How to do this in the classroom

Encouraging students to build or find a model can help students visualize and engage with complex systems. This could be explored in groups, or assigned to share in class.

PROS: Initially, the instructor can guide the creation but as students become more proficient, they can allow for more student-centered exploration. In person, it is easier to determine when to let students explore on their own.

CONS: Time consuming, difficult to find parts for students to build with.

Tools you could use:

- Paper and pen
- Macaroni
- Popsicle sticks
- Pipe cleaners
- Legos
- Drawing program

10. Resolution & Wrapup

Students share the work they have produced and get feedback.

Discussions

Students share their reflections on what they have learned. The class then reflects together on new understandings.

How to do this online

Online discussions can bring a sense of finality to the module. It reinforces a sense of community and can reveal organic answers to questions inherent in cumulative assignments. Use online discussions as an opportunity to identify patterns, find hidden relationships, delight in new insights, and ponder challenges and questions. Often the students are left with questions such as:

- What have I learned?
- Have I changed how I think about these ideas?
- What is next and how does it connect to what I've learned?
- Where has this conversation taken me -- what insights have I reached?
- What is left unanswered?
- Who have I read that reflects further on this question?

PROS: Video lectures can be interspersed to include current events keeping the course relevant . You can hear from everyone in the class. Opportunities for multimedia sharing

CONS: Miss out on "in-the-moment" classroom discussion and clarification. Students have a chance to articulate thoughts out loud. Sometimes physical presence and body language is important when talking about sensitive topics.

Tools you could use:

- Canvas Discussion: https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigndiscuss
- Padlet: http://www.padlet.com/
- VoiceThread: http://voicethread.com/

How to do this in the classroom

Because the classroom allows you to gauge where your students' thinking is in the moment, think about using the time in your hybrid class to clear up misconceptions and synthesize learning. What kinds of questions are inherent in your curriculum that can inspire whole-class conversation? Use classroom wrap-up discussions to have students consider:

- What have I learned?
- Have I changed how I think about these ideas?
- What is next and how does it connect to what I've learned?
- Where has this conversation taken me -- what insights have I reached?
- What is left unanswered?
- Who have I read that reflects further on this question?

PROS: Grows organic conversation, allows for conversation steering, surfaces misconceptions before moving on to new material

CONS: Difficult to hear from everyone, no record (unless recorded)

Tools you could use:

- Padlet: http://www.padlet.com/ (projected)

Reflective Paper

Students submit a detailed account of their learning process and submit directly to the instructor.

How to do this online

As a wrap-up, a reflective paper is a great way to collect thoughts and synthesize findings. Reflection papers encourage students to communicate the ways a module, lesson, lecture, or other learning experience shaped their understanding of class-related material. You can approach this as a private reflection by using the Canvas Assignment tool. Alternatively, you can give your students the opportunity to share their thoughts in public by asking them to post reflections in a discussion *(see tools)*.

PROS: Writing can easily be shared, can contain multimedia elements, can be completely private and turned into you, multimedia.

CONS: Students may not take time out to reflect.

Tools you could use:

- Canvas Assignment: https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assignnew
- Canvas Discussion: https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigndiscuss

How to do this in the classroom

As a means to wrap-up a module or lesson, a reflective paper is a great way to collect thoughts and synthesize findings. Reflection papers encourage students to communicate the ways a module, lesson, lecture, or other learning experience shaped their understanding of class-related material. In class you can assign the reflective paper as homework or set aside some time in the classroom for students to write their thoughts.

PROS: Private.

CONS: Not as easy to share. If you choose to have them write their reflections in class, there may not be sufficient time to reflect deeply.

Tools you could use:

- Paper

Journal

Students keep a journal about the course material and how it relates to their own life, learning and future plans. Journals communicate questions, fears or anxieties that may not have been expressed out loud.

How to do this online

Ask students to create a journal entry that begins by reflecting on what they have learned; how they may have changed their thinking; where the conversation has taken them; what insights they have reached and what questions are still left unanswered. Prompt them to consider what comes next and what more they want to learn.

PROS: Online, it is easy to see that students are doing their journal entries rather than waiting and writing them all at once just before the journal is due. Students can include multimedia if desired.

CONS: You will need to keep up with the journal entries as they are turned in—even if it is very simple feedback.

Tools you could use:

- Canvas Groups (create a group for each student, assign journal entries as a discussion and choose groups. This will provide a private way to capture a stream of posts.) https://www.seattleu.edu/cdlihelp/faculty/canvas/tutorials/#assigngroup
- Blogger https://www.blogger.com (Blogger allows the student to have a private blog they can share with you.)

How to do this in the classroom

Ask students to create a journal entry that begins by reflecting on what they have learned; how they may have changed their thinking; where the conversation has taken them; what insights they have reached and what questions are still left unanswered. Prompt them to consider what comes next and what more they want to learn.

PROS: If done during class time, ongoing journals represent a classroom community activity, provide classroom continuity, and give the instructor access to student writing at a simultaneous moment in time.

CONS: More paper to keep track of, lack of multimedia, extra grading work.

Tools you could use:

- Notebook / paper journal