Using Technology Outside the Classroom to Improve Face-to-Face Classroom Interaction

The approach outlined in this article is taken from a book, cited in References below, by José Antonio Bowen about improving student learning by moving technology outside the classroom.

The Idea:

Use technology outside of class time for first exposure to content and to engage students with the subject. Then, use class time for active learning activities in which students apply concepts and get feedback. The result: deeper understanding and ability to use concepts.

Students arrive to our classes bored, but with an encyclopedia in their pockets: their smartphones. Technology can deliver content in many and more varied ways than we can, live, in lectures. So, use technology to deliver content in advance, motivating learning with multiple channels of communication, and construct assignments that force students to prepare for class. In class, present interactive lectures only when it really serves the outcomes and adds something original that they can't get anywhere else. (Your insights from experience and tips on what to do and how to do it are likely things they can't get anywhere else.)

"Time for reflection and interaction is a casualty of the digital age, and one of the primary goals of higher education should be to reclaim this time" (Bowen, 27).

"If critical thinking matters, then developing it needs to be one of our central learning goals. It is at best a paradox, at worst appalling, that although we say we want to develop critical thinking skills, we structure most of higher education around delivery of content" (Bowen, 20).

"We need to adjust our classrooms to focus less on content and more on application of material to new contexts, development of intellectual curiosity, investment in the material, evaluation, synthesis, challenging personal beliefs, development of higher-level cognitive processing, oral and written communication skills, construction and negotiation of meaning, information literacy, connection of information across disciplines, teamwork, and reflection on the significance of content" 21.

Tools and Techniques for First Exposure and Engagement

"Crafting assignments and learning modules that have the right entry point and then motivating students to do their best work as they navigate a pathway through difficult material is an enormous challenge, but it is the holy grail of teaching and learning" (Bowen, 153).

Use technology to introduce students to the foundational content in your subject area, outside of class. There are likely free videos, podcasts, Web sites, articles and other types of online material that cover a good portion of your course content. Start by searching Khan Academy, Merlot, Open Yale, and iTunes

University. Don't reinvent the wheel, but rather use what's available for "first exposure" to content topics in intentionally structured, pre-class assignments. Online materials can provide more examples to students than you could in class, and they can review them as much as they need and want. This ability to create redundancy and alternative explanations or ways of presenting content is very a powerful teaching tool. Also, advanced students can skip through basic material and easy examples and quickly get to the parts that matter to them.

Email

Most students communicate by texting, social media such as Facebook, chat, or video chat. However, they still have email accounts. Use email as a content delivery system by delivering announcements and reminders by other means and sending longer messages as emails. Use email to connect with students the day before class, with information about the reading or viewing/listening assignment for that class. Tell them why the pre-class activity is important, how it relates to their experience and the topic of the upcoming class. Say why you assigned the reading/video and what you hope it will say to students. It's more effective to get students interested in a question that matters to them and introduce the reading/video in that light. Videos and podcasts let students "time shift"—to do a task in a new way, time or place due to mobile technology.

Have students do something with the online material—look for something, connect it to other ideas or experiences, answer a question. For example:

- Google before class: Have students read two very different summaries or views and describe the differences. Then have them read original source material and evaluate the quality of the summaries.
- Make a chart of the differences among a large body of summary sites to find the best one.
- Give an authorized site and have students compare it with sites they find by searching.
- Evaluate information sources to collectively find the best one.
- Controversy: assign two different readings or sites and have students categorize a list (they create) of things the two sides agree and disagree on. What is the nature of the differences—evidence? Interpretation?
- Error regression: an error on one site is often mirrored on many others. Have students find the source of an error and correct it.
- Theory vs. practice: Have students use source data to compare theory with implementation (one big upside of the Internet is the wide availability of source documents).
- Needle in a haystack: Teach conceptual framework and organizational principles by having students find a detail online that requires them to figure out how things work in order to find it.

- Write better prompts: What does the text say? (paraphrasing practice) Or, ask students to explain/translate concept in a new context.
- How do you or others interpret this text? (Students will need guidance: What did the author mean by this? How might [a competing view author) interpret this text differently? How might this text appear to someone from a different time period, geography, or scientific discipline?
- What is your understanding of this text? Differentiate between judgments and opinions. "What did you like about…" or "Why did you like…" rather than "Did you like…"
- Why is this text important? Audience at the time and today.
- How does this item do a good or poor job of conveying its message? How does form match content (or not)?
- Why is this item important? (How does it relate to the topic, outcome, etc.?)
- Why is this item disturbing? Have students take a side and argue for or against. What did the author not anticipate or take into account?

Send an email summary after each class and a reminder of the next class topic and what students must do to prepare.

Email is for slow thinking: integrating and connecting content; current events; reflection and final thoughts.

Encourage students to share their insights in video. Use these to create an indexed series of tips for the next batch of students.

Twitter or Texting

Twitter's main value is as an integrator and idea connections-maker. Tweet or text questions that require no research, for the sake of recall and to make connections between content items and course ideas. Make it social where possible: "How many types of literature can your roommate name?" Twitter is good for microblogging (140 characters or less) about course readings, topics, and items of interest. Ask students to summarize key class talking points and tweet them to the class to stimulate discussion. Ask them to connect and apply what is happening in class to breaking news. Send a study question on a weekly event, such as a reading, video or podcast. Students can use Twitter to back channel questions during class. Create groups or Twitter lists of experts in course topic areas for students to follow. You can keyword search in Twitter to see what people are saying about your class.

Use technology, not class time, for reminders.

Facebook

Any class use of Facebook will be a mix of social and class activities. Create a Facebook group for your class or special project (Facebook groups are joined only by invitation, so you can restrict access to class

members—don't use your personal Facebook profile for class activities). Use it to connect what is happening in class with what is happening in the world to create relevance and motivation. Use Facebook to organize a field trip. Make connections: e.g., "how does Rousseau's theory of vanity connect with your current Facebook profile?"

Find more information about Facebook etiquette at this link: http://teachingnaked.com/social-networks/

Online Discussion

How will students communicate with each other? Online discussion topics in D2L Brightspace provides you with many useful options—approving posts before they go public; monitor but participate only when you want to; scan simultaneous conversations; have a permanent record that can be mined later for learning activities. Repeat engagement outside class with topics dealt with during class through a "discussion board."

Technology provides a middle space between communication with the class as a whole and with individual students. Facebook Chat, for example, lets you add others to an ongoing conversation that you started with a student, for the benefit of a larger number of students interested in that conversation or issue, perhaps who happen to be online at the time. Or, after the conversation reaches a strategic point, move it to the D2L discussion area for the whole class or a class subgroup to view. Be careful not to play favourites with information or discussion—any additional information provided to an individual student in response to a question should subsequently be shared with the class.

Virtual Office Meetings

Use Skype or a similar program to meet with student or students to answer questions. For Skype, pay so you can have video with more than one person. You can use video to show drawings, etc. and to screen share. Today's students find a professor's office an unfamiliar and uncomfortable place.

Have virtual office hours. Combine Skype with Chat, using Chat to organize and queue your Skype calls. When no one is Skyping during office hours, chat with as many students as want to. Provide contact options: Skype, texting, posting questions to the class Facebook group. Maybe set up for virtual office hours in a student lounge or coffee shop. You can offer to buy coffee for those who drop by. In-person interaction is valuable. Students will increasingly expect face-to face video meetings on demand, so be mindful of boundaries.

Virtual Class and Small Group Meetings

Use Collaborate (live webcasting/meeting software for which UNB is licensed—contact Brock Parks at bparks@unb.ca) or D2L Brightspace chat tools to have small group or whole class virtual seminar. You can share documents and applications during the session (students can share theirs, too), or you can use it in class to link in outside experts as guest speakers or workshop presenters. The Notability app for iPad allows students to integrate audio, image and text in real time. Can annotate a PDF or take a picture of board notes then draw, type, share with others.

More contact does not mean better contact, but the potential for use in reinforcement and application exists in ways previously not possible.

Online Peer Feedback

Consider online peer feedback on writing. Students will spend more time polishing their writing if they know it will be read by peers, not just the professor. You can set this up as a wiki, blog, or discussion board.

"Inkshedding" is an old idea that can be done using technology. Have students write on a topic ripped from the headlines, and circulate it to other students. Students mark passages that stand out (make them rethink their opinions or ideas). This lets more voices emerge, and helps people refine their expression.

Things to do with the Class Time no Longer Needed for Introductory Content Presentation

"Listening to a lecture and taking notes is no longer an important skill, but analyzing information from screens is" (Bowen, 127). Our challenge: "creating progressively challenging low-stakes learning opportunities" (Bowen, 71). Learning is about change.

Use class time for:

- Interaction that finds the entry point, motivational change, intellectual curiosity
- Active learning and problem-solving
- Writing and feedback on that writing that improves communication skills, personal expression, and reflection on the significance of material
- Discussions that challenge beliefs, misunderstandings; that connect information across disciplines, and develop high-level cognitive processing
- Lab and studio experiences, where new knowledge is constructed and new meanings are negotiated with faculty and peers
- Internships, work experience (that connects with course outcomes), study abroad and service learning projects that demonstrate the human dimension, apply course concepts to new contexts, or create real-world contexts
- The appropriate use of technology in mentored or group activities

Instead of developing typical lectures not much different from what already exists, use that time focusing on improving learning, and link to what's freely available online in the ways outlined above. Students will come to class if they get something worthwhile they can't get anywhere else.

Lectures are good at showing students the right entry point into the content and motivating students (even if you think you are a poor lecturer, you will likely be more effective if you reduce content and aim to inspire). In lectures you can role model intellectual curiosity, critical thinking, and effective approach to practice in the discipline. (Do you admit mistakes readily, consider both sides of each issue, treat uninformed students with respect, model caring and the critical eye of scholarship? Who you are is as important as anything you say.)

Ask, Is a lecture best suited at this time to the particular students in this class? Does it give students a sense of control, enhance motivation, require high standards? Does it lead to higher-order thinking? Can it promote the learning outcomes? Do you have anything unique to say? Can you create student interest in your discipline?

Start class with a common misconception and ask if it's true. Follow with an activity that provides students the chance to prove it right or wrong.

Bring Experts to Class Virtually

Extend the learning experience—seek out experts around the world, interview people involved in the things you are studying, collaborate with other universities, with students around the world—the learning experience has yet to be fully redesigned to take advantage of the things educational technology offers.

Using apps as a guide (they limit and focus information and function), give students content in smaller chunks and let them apply it before getting the next chunk. The balance between content and application has shifted, and students who can categorize and analyze (a subset of "application skills" that we have always wanted to teach) will be in demand. Teaching should be judged on its ability to advance the capabilities of students.

Unintentionally, the video game industry has created the best electronic teaching tools available. Games address different learning styles in sophisticated ways. They adapt to the player and learn as we learn. They respond instantly.

Computer "games are really just an endless series of tests, a constant stream of problem solving and assessment" (Bowen, 59). They are characterized by customization for each user, risk-taking (they lower consequences of failure to encourage risk-taking, then move players through successive levels of difficulty). They enable performance before competence: players can create, control and perform before they have complete competence. Games provide pleasant frustration: a surmountable challenge, not too hard or too easy. Interaction is a constant stream of feedback and reaction. Players see value in what they are doing and feel a sense of control, and have a personal stake in the outcome. Games provide challenge and consolidation: a limited set of pleasantly frustrating challenges and endless time for consolidation before changing the problem enough to force players to rethink their recent mastery. And, games give "just-in-time" information when it's needed, not all at once.

Make your courses more like a computer game: provide entry levels to course concepts by using learning activities that suit student capability (if too challenging, it creates frustration and loss of interest). Students should be pleasantly frustrated by constant attempts to integrate increasingly foreign and complex ideas into their mental map of the topic area. Mastery at each level should be required before moving to next. Make failure low-stakes (smaller assignments, but more of them; reduced competition for grades (pass/fail or mastery of criteria or competencies) with many opportunities to start over (chances to resubmit assignments with corrections). At the intermediate level, students should learn how to deal with two opposing ideas at once. Higher levels are achieved when students abandon previously held ideas and conceptions because of new evidence they have integrated into their mental maps.

Tips for Facilitating Effective Class Discussions

Structure discussion to balance guidance on the one hand with students discovering their own connections (between course concepts; connections with personal experience) on the other

Prepare a few good questions in advance, not structured linearly. Different questions lead to different types of discussions and the instructor needs to take into account student needs and interests and connect them to outcomes. Ensure that any preparatory reading or viewing is directly relevant to the discussion. Help students during the discussion to make the connections between the reading/viewing and the discussion content. Refer directly to the reading/video. Take five minutes to have students articulate the basics from it.

Write short items on index cards as a springboard for class discussions. In large classes, have pairs discuss ideas written on index cards.

Help students consider the different types of questions: diagnostic, hypothetical, implication, and action. During the discussion, alternate between listening and responding, content and process. Provide guidance on how to conduct oneself during a discussion.

Ask students to focus on these two types of comments:

1. Those introducing substantive points that are a result of thoughtful reading and thinking about the reading and are intended as the focus for group exploration for several minutes, such as:
    a. Identification of essential issues or questions
    b. The author's main hypothesis or claims, along with supporting arguments and evidence
    c. Pointing out important passages that need to be understood
    d. Explanations of the complexities faced in exploring the reading
    e. Passages that are personally meaningful or connected to a shared experience
2. Comments that deepen the discussion by:

a. Providing additional supportive quotes: explain relevance, ask clarifying questions
b. Sharing the thought process you used in developing an idea
c. Paraphrasing what the author means in a specific passage
d. Summarizing arguments being presented
e. Pointing out similarities and differences in points being made
f. Challenging an ideas or present an alternative interpretations
g. Connecting ideas from several participants or from other readings/videos the class has had
h. Creating insightful questions that spark group response
i. Sharing personal experiences that illustrate the text for others

See these related Teaching Tips articles on:

- Conducting Class Discussions http://www.unb.ca/fredericton/cetl/tls/resources/teaching_tips/tt_instructional_methods/class_discussion.html
- Developing Listening and Dialogue Skills: http://www.unb.ca/fredericton/cetl/tls/resources/teaching_tips/tt_instructional_methods/listening_dialogue_skills.html
- Facilitating Online Discussions: http://www.unb.ca/fredericton/cetl/tls/resources/teaching_tips/tt_instructional_methods/online_discussion.html

Prepare students for discussion by providing in advance the following:

- Guidelines for good behaviour (also, point out examples of good discussion participation behaviours that students exhibit)
- Learning outcomes for the discussion
- An entry point for the pre-reading/viewing/listening (reading guide and questions)
- Tell students that before contributing they should evaluate how their contribution will help the group progress, since discussion is a group exploration 199
- Have a grading system that rewards quality over quantity—students will use the grading criteria to guide their contributions.

After a class involving discussion, send an email pointing out examples of good discussion behaviours.

Rearrange classroom furniture. Focus the discussion. If there is a lull, ask for clarification or deeper insight on the current topic (perhaps from a new voice), or introduce or ask for a transition to a new topic. Provide potential questions in advance.

Overall Things to Consider

Say in your syllabus how you will communicate. Tell your minimum email response time. Here is an example e-communication policy: http://teachingnaked.com/wp-content/uploads/2012/12/TN-Workshop-HANDOUT-B-eComm-for-Student-Engagement.pdf

Give a variety of ways you can be contacted and can meet with students, in addition to office hours. Chat? Skype? Texting? Facebook? Twitter? How you will contact is much more important to students that office hours.

Don't do all of them—limit the forms of communication. Ask students for feedback on the first day or two of class about which communication forms they prefer, and select those. Don't switch mid-course.

Consider not handing out the syllabus during the first class, but rather talk about the subject area, why it is interesting and relevant, what students will be doing during the course, etc. Email the syllabus after the first class (also post it in D2L) and have a short quiz on it at the beginning of the next class: http://josebowen.com/first-impressions-do-not-hand-out-a-syllabus/

In the constant pressure to cover topics while engaging in active learning, limit yourself to what you want students to remember in five years. Integration is more important than covering everything.

Keep your personal and professional online presence (FB, Twitter) separate.

"The best course designs motivate change (like a video game) with a combination of high standards and an environment that supports risk and failure."

Moving from traditional to active learning is a massive undertaking. Start small by creating interactive lectures or breaking up lectures with demonstrations, buzz groups, mini-writing assignments, etc. (low risk, high learning dividends).

Be consistent—post regularly. Specify whether Twitter or Facebook group participation is mandatory. Deliver on time on commitments. Limit communications to one per day. Be brief—include a link with more details. Be transparent—tell everyone before you tell individual students. Use the right channel—some are more passive, less urgent. For example, post a news story as a Facebook status but put a reminder on Twitter or text it. Keep a record of every message and channel used; make it available to students in D2L or a blog.

Provide learning outcomes for both class and class preparation.

Use D2L to keep all files in one place for all notes, handouts, summaries, etc. You can still tweet, FB or email them at strategically timed points to maximize engagement.

Use technology to deliver extra examples, problems, and content that you didn't get to in class, to take the pressure off "covering all the content."

Students interpret online content and activities as evidence of teacher preparation, which is one of the top-rated indicators of quality of teaching for students.

Traditional methods assume that analyzing, reflecting, synthesizing and caring will happen when students are alone and away from the classroom and professor. Technology offers the chance to invert this model: get the concepts while away, then apply them in a safe-to-fail, supervised environment in which students get expert feedback, in the classroom (Bowen, 187).

Research from neurology and developmental psychology reinforce education research: content has to be integrated in order to be used; practice and growth take time; motivation, control and emotion all need to be part of the learning process (Bowen, 85). Practice and emotion cause neural networks to form (this is in the context of brain plasticity), which is why motivation and engagement matter (Bowen, 77).

References:

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Junco, R., Heiberger, G., & Loken, E. (2010). The effect of Twitter on college student engagement and grades. Journal of Computer Assisted Learning, 27, 119–132. doi: 10.1111/j.1365-2729.2010.00387.x