

Guiding Principles for Teaching with Technology

Classroom response systems, electronic textbooks, Prezi®, course management systems (e.g. Blackboard®), social media, online lectures, video chats – welcome to the classroom of the 21st century! For those accustomed to the traditional classroom, the technology may at times seem overwhelming. The following ten guiding principles for teaching with technology serve as a resource for educators integrating technology into any type of course – distance learning, hybrid, or traditional face-to-face classroom.

Focus on pedagogy, not technology. Start with your imagination. Initially, set aside thoughts of particular technologies. Think first like a science fiction storyteller. Identify how you would like to teach if anything were possible technologically. Your vision will help others help you identify the most promising and appropriate technologies to make your vision a reality.

Set expectations clearly. When teaching practices change, students need to understand clearly how you expect them to adapt. This is especially true when introducing new technologies to the classroom. When students' personal computers malfunction, what are your expectations for completing assignments? What if the campus network is inoperable for 24 hours? For one minute? What are your expectations? What digital file format (e.g., PDF, Word, etc.) do you expect? What about use of computers and cell phones in class? Does your syllabus state that you reserve the right to make changes as needed?

Choose high-quality over high-tech. Just because it is the newest option with the most bells and whistles does not mean it is the best choice for your course. In some cases and for some professors, a piece of chalk or dry erase marker is the best educational tool. High-tech does not work well for all courses and can be distracting and discouraging for some students. The trick is to find what technology works best for what you are trying to accomplish, your students, and your level of comfort. Just because a colleague is teaching a course using a particular technology, does not mean it fits the needs of your course – be selective and deliberate when using technology.

More technology requires more organization. The more technology you integrate into your course, the more organized you should plan to be as you prepare your course. Recognize that not all students have been

exposed to the technology you are using in the class. For much of the technology you may use, it is important to have resources explaining the technology and how-to guides and exercises for practicing with the technology. One idea is to have modules with quizzes at the start of the class session for each piece of technology that will be utilized (e.g. how to navigate the online classroom management system). Embedded videos explaining the technology can be highly effective.

Accommodate before you innovate. Sometimes your preferred technologies may be inaccessible to some students. Not all students may be able to afford laptop computers and cell phones for use in class. Not all students may have Internet access at home. Your pre-recorded lecture videos may be inaccessible to students with visual or hearing impairments. Many of these challenges have existing technological solutions. Be aware of accessibility and accommodation concerns and consult with your campus disability resource center, if needed.

Appeal to multiple styles of learning. Some students love electronic textbooks. Other students love social media. And yet other students love online lectures. The bottom line is that while most college students today are adept at using technology, not all students find the same electronic resources engaging and beneficial to their learning. Therefore, it is important to include variety in the technology you use in teaching.

Don't let technology make you mechanical. Academic technologies can automate teaching in many ways. Quizzes can be graded automatically. Email reminders and pre-recorded content can be sent automatically. Course progression for individual students can be managed automatically. These can be valuable time-saving innovations. Still, students need and will expect specialized, real-time attention from their instructors as well. Consider offering telephone and/or web-based office hours if teaching online.

Use technology to teach, not entertain. Show a funny YouTube® clip in your class and you'll probably capture the attention of your students. As a class opener or to engage your students this can be highly effective. However, when overdone, the technology is now entertaining, rather than teaching your students. Technology in the classroom can be entertaining, but should ultimately support the student learning outcomes

of the course. For example, PowerPoint® lectures that integrate animation, automatic slide transition and excessive embedded video links can be distracting and take away from the lecture itself. Instead, develop slides that are organized, have a limited amount of text, and include relevant and interesting graphics.

To legitimize, you need to personalize. Cheating and plagiarism are very legitimate concerns. Expanded use of technology in classrooms can raise these concerns. For example, student can copy in-class exams using a plain-looking pair of eyeglasses with a high-resolution camera (\$80). Personalization in different forms can help. Require students to show photo IDs when submitting exams. Create assignments that require students to record themselves demonstrating competency. And, of course, get to know students' personal concerns, achievements, and names.

Prepare for technology to fail. The reality is that technology does not always work. The projector bulb may blow in the middle of an important PowerPoint® lecture, the speakers may not work for the video clip you are trying to show, a storm may result in power outage at the time students are supposed to be taking an online exam. We *know* it will happen at some point, so it is important to be prepared with a back-up plan and to be accommodating. Before the start of the course, think about how you may handle failure of technology and be fair and consistent with all students.

Successful teaching strategies integrating technology require both expertise in the course content as well as knowledge and experience with the selected technology. The bottom line is to use the technology you feel most comfortable with and that best supports the learning environment and outcomes for your course.

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Multi-Language Challenges in International Agroecology Courses

Introduction

We have all experienced communication challenges during lectures, discussions and team field activities in our international MSc degree programs. When English is the native language for only a small number of student participants, and also for few of the teachers, it becomes difficult for those with less experience and language facility to keep up with discussion. If we observe a student carefully searching through the dictionary to

locate one word, it is certain that they are not following the ongoing discussion.

Numerous literature reports emphasize the importance of instructors using alternative methods of presentation, of engaging students and of encouraging students to express themselves (eg. Izzo, nd). This Ohio State University "fast facts for faculty" worksheet also suggested guided notes, comprehensive syllabus and detailed study guide (course preparations), illustrations, handouts and visual materials (methods of presentation), and personal real-life examples as methods to engage a multi-language class of students. Stephenson (2012) states that the burden for communication rests on the instructor and many cross-language barriers may be overcome by greeting the class in a friendly manner, being courteous to every student and confronting the language challenges up front. Students introducing themselves, mentoring their peers in how to pronounce their names, openly recognizing language differences as an issue to be considered are all steps toward opening the learning community to new experiences and growth. Often the process will take longer and visual examples and personal experiences will help to build understanding and confidence. We recognize these challenges and openly discussed them in our own multi-language ENOAT (European Network of Organic Agriculture and Agroecology Teachers) workshop.

A workshop on language and communication issues was conducted during the ENOAT workshop in Plovdiv, Bulgaria in 2013 to uncover specific experiences of participants, to learn how different people deal with this language situation and to summarize the general and specific approaches used by instructors to design learning opportunities that overcome or at least minimize language problems.

Method

The facilitator posed two key questions to a group of 16 educators: 1) In which situations do you perceive problems due to teaching in English? Participants had to write down their individual perceptions of challenges and then discuss these with a group of three other persons before reporting out to the entire plenary group. And then he posed another: 2) What are potential solutions to these language challenges? In the results section of this report we present the comments written by people, and expand them with some discussion about each issue. The solutions were provided by the participants and expanded by the facilitator and recorder of the session after reflection on the overall language challenge issues.

Results

We summarized comments from the 16 educators into *eleven observations* about their own classes and personal experiences where English was the language of primary communication and the 'official language' of the course:

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1. Knowledge of English for older generation teachers in some countries is a challenge, especially for those who are not fluent and often those who have not studied abroad in an English-speaking country; it appears that this is improving with younger instructors having more experience and practice.

2. English knowledge in our students is a current challenge and this will continue as more courses are offered in this 'common academic language' used in international education programs in Europe and elsewhere. Even when test scores of applicants appear to be acceptable, at times there is a disconnect between what people are able to do on a written/oral exam and what is possible in the rapid give and take discussion in the classroom.

3. Correct or precise translations or terms may be a problem, since this may be different in different cultures even when the terms seem to have clear meaning in U.K., U.S., Canadian or Indian versions of English; just as when we use terms in publications, it is important to provide a definition if there is any doubt.

4. Often it is difficult to understand properly the questions that are posed in class due to English being spoken with many different accents. This is sometimes a challenge both from teachers to students and vice-versa, and from students to students.

5. Field trips and excursions with presentations by farmers may present special cultural and language challenges due to differences in backgrounds, lack of farm experience for some of the students and limited experience of some farmers with an international visitor group, all in addition to a language barrier.

6. A particular challenge may be presentations by farmers or other stakeholders in their native language which have to be translated by the teachers; there is the inefficiency of delay, but also a chance of misinterpretation of details.

7. Agricultural terminology may not be known by teachers who come from the pedagogy or language department, and at times they are the ones who prepare and present language classes to students who are new to English. It is particularly difficult for non-native speakers of the language to use agricultural terminology, even though they may be relatively fluent in their own specific teaching or research domains.

8. Psychological resistance and discomfort may be part of any multi-language situation in courses and in the field work with students. Obviously some people learn a different language more quickly than others.

9. Teachers may not be fully prepared to teach in English, even though they have years of experience with conversation, and may be hesitant to launch a new course that must be taught in another language.

10. It takes more time to prepare classes in English than in one's native language and there may or may not be extra compensation for this additional time and energy investment by the teacher who is already dividing time between teaching and research.

11. We recognize that some students have as a major objective the improvement of their language skills, in addition to the content of the course in organic agriculture or agroecology. We respect that goal and certainly encourage language improvement; however, we must also state that acceptable language level is indispensable, in particular for courses with participatory learning approaches.

These are *some potential solutions to the challenges* related to English, as discussed in the plenary session and expanded by the facilitator and recorder:

1. It is important to develop a more rigid screening process to be sure that students are well prepared when they arrive to begin the courses; students may do well on written essays, but their oral English skills may not be good enough to allow them to participate immediately in the full discussions in class. Compulsory tests could help; personal and individual interviews can be done by telephone or by Skype today, or by in-person interview if this is possible. When a certain level of competency is not achieved before starting a class, this creates frustration on the part of students and instructors alike, as well as mis-communications about assignments and expectations. It is unfair for those who are well prepared to conduct a course at "the lowest common language denominator" so that those who are just learning English can keep up with the class.

2. We can offer English language competency courses for students to get up to speed in the new language; these should ideally be with native speakers of English. Additional tutorials for students should be available, and we could provide more literature in English and make it available to students.

3. There is value in specific help sessions for those students who need them; language tables or meals where students gather for conversation in an informal setting can be useful, and writing centers are available at some universities.

4. One approach to improve instruction is to provide English courses for teachers, and perhaps provide paid incentives for them to attend, or at least not charge for these classes. We may need additional budget for this activity. Individual tutoring for teachers could be made available, one on one. Assessment of teachers could be a pre-requisite for allowing a course in English.

5. Instructors could start with limited lectures in English; the university could provide more preparation time for the first time a course is taught in English. In some universities, academic credit accounting for teachers may be 1.5 times for courses in English.

6. Power points in English can be used to reinforce lectures in class, so that students both see and hear the material presented.

7. When organizing the class for field work or classroom projects, we should mix teams in project work and if possible have at least one native English speaker on each team.

8. Translations on farm from a farmer presentation

may be problematic and it is difficult at times to interrupt and translate. It is useful to prepare written information ahead, including descriptions of farms, photos of activities, maps, and lists of enterprises. Native speaking students may be asked to support translation from the farmer. More observations and active learning on farms instead of verbal communication may be more effective for learning.

9. Native speakers often speak too long and too fast; it is important to orient accomplished speakers of English to consider their audience and speak slowly.

10. We need to define technical terms and use photos or figures in addition to words to explain concepts when possible; having small cards with English technical terms or glossaries with translation could help students practice and build understanding.

11. Peer review of student work before handing in assignments can help improve language of the reports and serves as an additional learning experience for the mentor.

12. Technical reports and translations into English of articles familiar to students in their own languages could be more available; preparing a glossary of terms for students to learn should be useful for most courses.

13. We should create teams with a mix of nationalities, gender, learning styles, and language skills for project work.

14. One option in extreme cases is to have discussion in small groups in native languages, and then have a report out session in English to all other students.

15. We can overcome difficulties with understanding questions by having them written, or have students repeat the question, or have a neighbor interpret the question; we can always ask the class what they think and how they would respond.

Conclusions

No simple answer exists to solve communication challenges related to English as context will vary and there are many individual differences. Instructors learn through experience how to handle unique situations, but it is important to anticipate this language challenge and to prepare as much as possible by using the 15 guidelines listed and described above.

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Teaching Sustainable Crop Production through Collaborative Learning

Teaching sustainable practices to a diverse group of students with varied background and divergent perception of sustainable agriculture is a challenge. For instance, students differ in their perception about use of genetically modified organisms; organic agriculture; conservation tillage etc. One of the methods to teach about such topics could be through collaborative learning. Collaborative learning is an active learning technique where students work and learn together in groups to accomplish shared goals. According to Gerlach (1994), "Collaborative learning is based on the principle that learning is a naturally social act where the participants talk among themselves and that it is through the talk that learning occurs". In the collaborative learning, the learners have the opportunity to converse with peers; present and defend their ideas; exchange diverse beliefs; question other conceptual frameworks and are actively engaged (Smith and MacGregor, 1992). The goal of collaborative learning is to shift the learning from a teacher-centered model to student-centered model (Smith and MacGregor, 1992). Two conditions are a must for collaborative learning to be effective and successful: i) there must be a group goal or shared responsibility for the whole group; and ii) there must be individual accountability.

A group discussion project was introduced in a senior level class in sustainable crop production where students were divided into four groups. A reading was assigned a week before the class discussion on topics in sustainable crop production. Each of the four groups was assigned a specific role to play during the group discussion. First group, called 'Presenters' presented the findings from the assigned reading highlighting the salient points. The second group, called 'Enquirers' submitted their questions based on the reading at least two days in advance to the class via the course website. The third group, 'Problem Solvers,' presented solutions to the questions/issues raised by the 'Enquirer' group. Finally, the fourth group, 'Supervisors,' took

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notes and summarized the whole activity including the salient findings presented, the questions raised and the solutions offered during the group discussion. The group roles were rotated among the groups so that each group was assigned each of the four tasks at least once during the semester (Figure 1). During each discussion activity, each group was evaluated on a range of questions specific to their group role by the peer students, the instructor and the TA. The students were also asked to provide their anonymous feedback about what they thought was the most important lesson that they learned from the group discussion. These results were then analyzed to assess how the group activity impacted the student learning. The percent of student participants who correctly answered the question ranged from 70-100% during the semester.

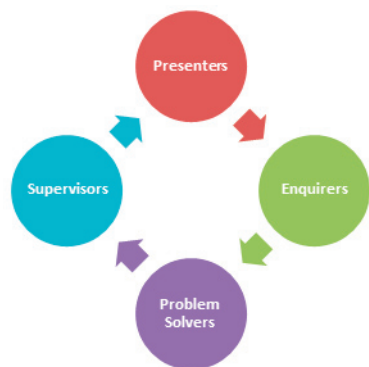


Figure 1. Switching of the four tasks among groups.

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Addressing Students' Financial Constraints in my Teaching and Advising

Introduction

This teaching tip was prompted by a question from the Ohio State University Center for Teaching Excellence: "We are curious about how your teaching is affected by your understanding of the financial realities of your students." After some reflection, I offer these thoughts based on 35 years in the classroom.

Teaching

I was a regular in my campus bookstore each quarter, often to see if textbooks I required were in stock. But I was insulated from the recent prices of new and used textbooks by complimentary desk copies for adopting a text or examination copies for considering a publisher's textbooks. Then I had my eyes opened when I did a professional teaching enrichment leave at the State University about 40 miles from my home. I had to pay for the required books and other materials. So it was a powerful reminder that in the face of expensive textbooks, there are multiple strategies to lower textbook costs. Recently academic books may be purchased as E-books or textbook rentals. The advantage of rental compared to buy (preferably used) and sell back at the end of the semester is the sell back value can be zero if the teacher orders a different text or if the publisher brings out a new edition. In my own teaching to replace commercial lab manuals, I prepared four manuals or study guides that were produced in the campus copy center and sold in the bookstore. I also did not change texts frequently, and I would provide an old syllabus with lecture topics identified with pages from the previous edition of the text. This made the most recent past edition of required texts of value if students had a classmate or friend willing to lend or sell it. Finally, if I had two copies of a required textbook, I placed one on closed reserve in the campus library for student use. This provides access to textbook assignments for students without funds to buy/rent one.

In the courses I taught I usually required a suitable text and put assigned pages for each lecture on the syllabus. I suggested on the first day that they make a friend or two that first class and buy the book in partnership with them. If one of the partners has already purchased the book, no problem, sell shares to the new partners. Even if three people share a textbook, there will be many hours each week that it sits cover closed on a partner's bookshelf. The predictable difficulty will be who gets the book the day or night before a test. This dilemma illustrates a weakness of partnership form of business organization when equal ownership results in deadlock if the partners cannot agree on a sharing scheme. This is a good life lesson in any course. The last bit of advice was to sell your book back to the campus bookstore, but only if you won't need it for later coursework or on your professional bookshelf. My campus store offered one half of the book's new price at buyback if required next term. Faculty should report the renewed adoption of textbooks early to maximize buyback value for their students.

Advising

In my advising duties I tried to ascertain if the student was working part or full time. If so, they needed to see that they could not take the same load of course credits as a schoolmate receiving family aid or scholarships and devoting all their time and energy to school work.

Occasionally mature and well-organized students can work and maintain a full academic schedule, but they are exceptional managers of their time. I told new students and their parents that the bookstore typically ordered a modest number of used textbooks and early purchase of a good used copy would save 25% in the campus bookstore and more if working through web-based book sites such as Amazon.com.

The last pro-student action in every class was to suggest that they put their name, address, phone, and e-mail address in their books as soon as it was firmly established they were staying in my course. So often,

I would observe expensive textbooks left without their owners' identifying information upon entering or leaving a classroom. Like unbranded livestock, no owner ID makes an easier decision for the unscrupulous finder to keep the book or to sell it.

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