Teaching Tips/Notes

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Crumpled Rounds: A Technique for Anonymous Participation in Class Discussions

Introduction

When it comes to participation in class discussions there are usually three types of students; those who never participate unless asked directly, those who participate occasionally when they feel confident they know the answer and those who always want to speak and monopolize a discussion. To encourage more inclusive and interesting, discussions in my class the challenge was to find a method that would engage the non-participants and at the same time gently limit the enthusiastic talkers so that everyone could participate. One way to overcome possible reasons for non-participation, such as fear of being wrong, or fear of talking in public, is to allow students to participate and have their "voice" heard while remaining anonymous.

Procedure

To encourage participation, I start many lectures by asking students to answer a particular question, write a comment about the lecture topic, such as what they hope to learn, or write a list of three to five things they know about the topic on a half sheet of paper. For example, I might tell them, "Write three characteristics of a low-water use landscape". The students write their answer but no names are written on the paper to keep the answers anonymous. The students then crumple the paper into a small ball and on my cue they toss their ball around the room to other students. The balls are tossed several times to ensure they are scattered about the room and no one knows whose "crumpled round" they end up with (also because students seem to enjoy throwing things at each other). Everyone is instructed to open the ball they catch and smooth out the paper so they can read the text. We then go around the room randomly or have volunteers read the answers on the paper. Students find it easy to read comments or answers that another student has written because there is no risk of personally being wrong and they can simply read off the paper without having to think. The original author can identify themselves and claim their answer if they wish or if they want to add a comment or explain their answer. With this method everyone has the opportunity to "speak" and the over-talkers are more limited by the text on the paper.

Assessment

Several interesting things happen with this technique; 1) if the instructor makes a positive comment about the answer or comment, such as "good point!" or "brilliant idea!", several students are eager to claim authorship, 2) students find that they know just as much and sometimes more than their peers and they generally think alike, with many writing similar answers or comments, and 3) additional discussion and/or questions are more likely to follow this method than a more traditional approach of asking a question and hoping for, or directly asking, someone to reply. Another advantage is the instructor has a much better idea about what all the students know or understand rather than just a few of the "talkers." With a little creativity several variations of this method can be used, such as drawing the scraps of paper from a box or flying paper airplanes with answers written inside.

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Grounded Application of Connectivism in the Classroom

Introduction

The way we gather information has changed dramatically over the past 20 years and this has implications for learning and engaging with the millennial generation. Connectivism can be thought of as both a learning theory and an instructional theory. Stephen Downes defines connectivism as *"…the thesis that knowledge is distributed across a network of connections, and therefore, learning consists of the ability to construct and traverse those networks"* (Downes, 2007, para. 1). While this seems pretty straight forward, some scholars feel that the theory isn't justified and already exists in terms of the constructivism, behaviorism, and cognitivsm disciplines. However, it is largely accepted as a useful tool in the classroom to engage with the large bank of information available over the internet. I use the term grounded to suppose that while the technological route is a necessary one to take for students and teachers to keep up with the cultural shift, class room learning should remain grounded in the interaction between students.

Teaching Tips/Notes

Procedure

A connectivist procedure is one that I have participated in as a student and believe works very well to find a balance between engagement with information through technology and also with engagement with peers through human interaction. Iowa State University has several required core classes for students in the Graduate Program in Sustainable Agriculture. One of these is Agroecosystems 509 which has three professors from different disciplines and begins with a week-long field trip around Iowa where we saw a range of agricultural systems. We saw a 5000-head of cattle operation, an ethanol plant, a direct market grass-fed dairy, a school greenhouse garden, a highly diversified 20-acre vegetable farm, a corn and soybean operation that uses cover crops, one that doesn't and the list goes on. This field trip was followed by a weekly 4-hour course, which included a lecture by one of the professors and then a peer engagement activity. Often times we were just asked to share our opinion on a certain topic. Other times we were asked to get in groups and come up with a collective response to a question. The most memorable was when we were asked to draw a landscape of our hypothetical future farm for homework and the following week we shared with the class on an overhead.

Assessment

In consideration of connectivism, it can be applied as a learning theory and an instructional theory for this case of Agroecosystems 509. In terms of connectivism as a learning theory, the millennial generation is very much reliant on computers and smart phones for how they gather information and communicate with friends. However, they are still human and require a high level of social interaction which should not be left behind. In fact, it should be propped up because the quick cultural shift toward technology has caught us off guard and our society wasn't particularly prepared for the shift.

In terms of connectivism as an instructional theory, it is important to note that throughout our lectures we were allowed to have our computers out and had a world of information at our fingertips. While the arrangement was never discussed, the expectation appeared to be that we were taking notes on our computers. Often students are in fact working on other assignments and seldom students will bring into the conversation information from other sources to bolster the discussion. On another note, we had one assignment where we were advised to employ the use of our computers to research a particular topic with a colleague 15 minutes and report back to the class what we found. That was actually very exhilarating because this is a task that we graduate students do all the time and we were being asked to perform this task as part of the class which is unusual.

It appears that graduate professors are just beginning to understand the use of technology in the classroom. The expectation for graduate students is certainly different and more hands-off than the expectation for undergraduate students. However, in both scenarios the computer, iPad, or clicker can be used to engage students. For me personally, being asked to research a topic was a new level of excitement that I hadn't experienced in graduate school since then. Another point is that teachers have to be more prepared for class to facilitate a higher degree of engagement with the students. The fallback is to just quickly get through a lecture and let the students go. In this 509 course there was one professor who took the extra time to engage us and we really responded strongly to it.

Conclusion

A successful graduate/undergraduate course should include a high level of human interaction and technological interaction to fully engage the millennial generation. While it may not be practical to engage both areas in every class, it would be most beneficial to do so. Certainly it is not reasonable to visit a farm each week, but it is possible to incorporate engagement between students and/or computers each week, in addition to the professor's lecture.

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Assessing Learning Objectives with Bloom's Revised Taxonomy

Why is it a Good Practice?

Updating and reimagining Agricultural Education and Training (AET) programs and curriculum should begin with a clear specification of the educational goals and objectives that will drive instructional activities that will be used to support learning. Instruction and learning activities must align with written goals and objectives in order to ensure that learning activities and assessments are focused and germane to future AET employment and entrepreneurial challenges. Bloom's revised taxonomy is an effective tool for writing, organizing and analyzing learning goals and objectives. Bloom's revised taxonomy allows AET faculty and instructors to effectively work with large amounts of complex information in order to bring more precision to applied practice.

How is Bloom's Revised Taxonomy Used?

Practitioners employing Bloom's revised taxonomy can describe and represent learning objectives using the two-dimensional taxonomic structure illustrated in Table 1. Table 1 illustrates that the intersection of the six categories of the cognitive process dimension and four categories of the knowledge dimension form twenty-four discrete cells which afford educators the oppor-

tunity to precisely classify learning objectives based upon the level (cognitive process) and type (knowledge dimension) of cognitive processing they require of learners. Practitioners can then assess whether or not the learning objectives they are using are requiring sufficient levels of cognitive engagement and complexity.

Table 1. A two-dimensional illustration of the relationship between the knowledge and cognitive processing dimensions of Bloom's revised taxonomy						
	Cognitive Process Dimension					
Knowledge Dimension	Remember	Understand	Apply	Analyze	Evaluate	Create
Factual	A1	A2	A3	A4	A5	A6
Conceptual	B1	B2	B3	B4	B5	B6
Procedural	C1	C2	C3	C4	C5	C6
Metacognitive	D1	D2	D3	D4	D5	D6

Note. Adapted from Krathwohl, 2002. p. 216.

Any individual learning objective will fall under one of the six discrete categories of cognitive processing and at the same time will also be linked to one of the four discrete categories of knowledge dimension. The object in a learning objective statement is used to determine whether the learning objective is supporting factual, conceptual, procedural, or meta-cognitive knowledge acquisition and the verb in a learning objective statement is used to determine which cognitive process dimension is being applied in the learning process: remembering, understanding, applying, analyzing, evaluating, or creating. Learning objectives placed in the upper left hand corner of the taxonomic table tend to be more concrete, simple, structured and require less learner independence. And as the taxonomic niches traverse the table diagonally toward the lower right hand corner the learning objectives tend to be more abstract, complex, open, multifaceted and require greater learner independence.

Table 2. Example learning objective statements and their classifications	
Learning Objective Statement	Classification
Identify the 16 essential elements all plants need for life, growth, and reproduction	A1
Analyze the relationship between the design of a landscape and its impact on the surrounding ecosystem	B4
Evaluate the efficacy of animal care plans based on real-time data	C5

Table 3. Example learning objective action verbs					
Remember	Understand	Apply	Analyze	Evaluate	Create
listing	explaining	calculating	attributing	scoring	generating
defining	interpreting	demonstrating	differentiating	critiquing	composing
reciting	Comparing	operating	detecting	justifying	integrating
matching	Classifying	implementing	contrasting	valuing	transforming

Table 2 illustrates three example learning objectives and their classifications. Table 2 illustrates that the object in learning objective one was as follows: the 16 essential elements all plants need for life, growth and reproduction. Learning objective one required learners to demonstrate a type of knowledge that represents a basic building block which would be utilized in the construction of different types of knowledge. More specifically the object of the learning objective sentence required students to demonstrate knowledge of technical vocabulary, a type of factual knowledge. Therefore, learning objective one was classified as being within the factual knowledge category of the knowledge dimension of Bloom's revised taxonomy.

Table 2 demonstrates that the verb in learning objective one required learners to identify information. In this case, to identify the required information depends only on the learners' ability to recognize or recall, therefore, learning objective one was classified as being within the remember category of the cognitive process dimension of Bloom's revised taxonomy. Once both dimensions of a learning objective have been classified it can be placed into one of the 24 cells created by the intersection of the knowledge and cognitive process dimensions of the taxonomic table illustrated in Table 1. Using Table 1 as a guide, objective one would most appropriately be placed in cell A1 at the upper left hand corner of the taxonomic table.

Table 2 illustrates that the object in learning objective three was as follows: the efficacy of animal care plans based on real-time data. The object of the learning objective sentence required students to demonstrate knowledge of subject specific techniques, as well as, knowledge of criteria for determining when to use appropriate medical procedures. Therefore, learning objective three was classified as being within the procedural knowledge category of the knowledge dimension of Bloom's revised taxonomy. Table 2 demonstrates that the verb in learning objective three required learners to evaluate situations based upon data. In order to demonstrate the ability to complete the required evaluations learners must be able to enact appropriate interpretation and appraisal techniques that lead to accurate judgments. Therefore, learning objective three was classified as being within the evaluate category of the cognitive process dimension of Bloom's revised taxonomy. Utilizing Table 1 as a guide, objective three would most appropriately be placed in cell C5 at the lower right hand corner of the taxonomic table.

Table 3 lists verbs that can be utilized to design learning objectives that target the six levels of cognitive processing described in Bloom's revised taxonomy. Including appropriate action verbs into learning objectives will help AET faculty and instructors ensure that they are explicitly defining the level of cognitive processing they are requiring of their students.

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Ten Steps for Creating a Great Environment for Positive Group Work Experiences

Introduction

Group projects are often a source of anxiety and much groaning from students and professors alike! Many students would prefer to complete a project on their own and not have to rely on other students for a portion of their grade, yet some class projects are not conducive to allowing a single individual to complete. The real world and future workplace of many of these students demands that students work as a team. Researchers determined that teamwork and ability to communicate effectively were ranked highest in a list of soft-skills potential employees should have (Crawford et al., 2012). Therefore, group work is an important component of a well-rounded undergraduate curriculum.

The Ten Steps

Create the "right" group. Do not let students pick their own group members. Inevitably, some students will feel like an outcast at this opportunity and others will select their 'friends' and fail to work with others that may possess new ideas they haven't heard before. Instead, develop a tool that will score students in different areas that are important to your assignment. Additionally, addressing the idea that 'everyone hates group work' up front can get that stigma out of the way, and gives the instructor an opportunity to reiterate the complexity of the project and ensure students they are better off working with a group to complete this project.

1. Give students a questionnaire where you ask them a few important questions about themselves. Allow students to opt-out of a group with a certain individual. You never know when a bad relationship of some kind will negatively impact a group, so give the students an option to write the name (one) of another student in class they could absolutely not be in a group with. This will save you a headache later, and students really appreciate this opportunity. Make sure to shred this paperwork so no one knows besides you and the student. Ask questions that will indicate if the responder is quiet, outgoing, etc. when working in a group Example questions can be found in Figure 1.

Figure 1. Example questions for group placement

When you work in a group on a school project, how do you like to get started?
- Ask everyone their ideas
- Take the lead and start assigning responsibilities
- Tell everyone about your ideas first
- Quietly listen to everyone's ideas and go with one of those

What kind of group members do you want and work best with?
- People who have good ideas and help me when I get stuck
- People who follow orders
- People who are willing to work hard
- People who will get the work done without my help

Which of these is the most important quality you will bring to the group?
- Creativity
- Good listener
- Staying positive
- I'm smart
- Organization

Are you okay with a group member turning in an assignment for the group that you have not seen since the final version of?
- Yes
- No

a) A funny saying or picture on the questionnaire will remind students that group work is warranted if not always popular.

2. Group students so every group has a leader, a quiet/shy member, a go with the flow member, etc. If your project is discipline specific and you have non-majors in the class, try to incorporate majors and non-majors in each group.

3. Once students are grouped up, discuss the assignment in detail with them. Have a hand-out where they can follow along. Have a detailed hand-out that students can take with them and refer to.
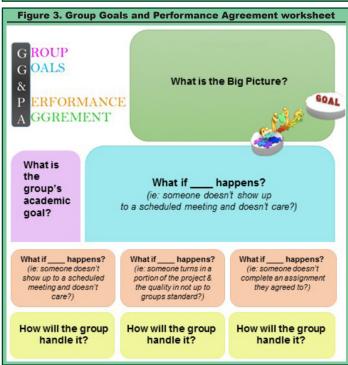
Group work creates an opportunity for real-world practice unlike others available in higher education. It is important to build in accountability for each student and each group, as well as walk students through a goals setting assignment. Further, devote class time to reviewing and updating group/individual goals and helping students discuss various scenarios where group-work isn't going perfectly (team-work conflict resolution). This will create an open dialog between students and assist them to be open with each other. Students working toward one common goal can be facilitated with the group goals and participation agreement.

4. Have students complete a Personal Goals Performance Agreement (PGPA; Figure 2). Include a section where students can describe scenarios where things might go poorly and how they will react to right the ship. Once completed, have students discuss their PGPA with each other and finalize their own.

5. Have students brainstorm a Group Goals Performance Agreement (GGPA; Figure 3). Include a section where the group can describe scenarios where things might go poorly and how they will react to right the ship. Have students work independently, then discuss and complete their GGPA as a group.

6. Have each individual turn in a PGPA and each group turn in a master GGPA. Keep these documents in a binder with details about the project so students can refer to them during the semester. This will help you keep students and you on track!

7. Once a week have the students look over the PGPA and the group look over their GGPA. Allow students to revise as they see fit.

Finally, you must hold students accountable for participating. Since the instructor cannot be at every group meeting, having students peer review each other is essential.

8. Allow students to self-evaluate and peer evaluate half-way through their project so students can get an idea of how they are performing. This allows students to discuss and correct any inconsistencies so everyone has the potential to earn the grade they want. Do this anonymously, but share the results with the students, so they know where they

Figure 2. Personal Goals and Performance Agreement worksheet

Figure 3. Group Goals and Performance Agreement worksheet

stand. Have the group discuss ways to get back on track if a member has strayed.

9. Have students self-evaluate and peer evaluate at the end of the project and make sure this counts toward their grade in some way. Ensure students know they will be graded by their peers and how their project grade and subsequent final course grade will be affected by their peer reviews.

10. Have a culminating event for the major project. Allow students a big event, rather than just turning in an assignment. For example: create a poster session where students can show off their work. Invite industry professionals to interact with students and discuss their project. Or, have students in an upper level course present information to a lower level course in the same discipline.

Conclusion

Group work can be a rewarding experience for students and instructors when the project is well thought out and steps are taken to ensure everyone can be successful. This 10-step method has been perfected and utilized for five semesters in an upper level equine management course with rave reviews from students. Use this guide, adapt it to fit your needs and Group-work On!

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