

## **Teaching Methodologies and Strategies**

Sparking student interest in the subject matter being taught is essential for successful teaching and learning. One of the most effective ways to achieve this goal is to actively engage students in the process of their education. Active and learner-centered approaches elicit the higher-level cognitive skills identified in Bloom's Taxonomy and have tremendous positive impact on student learning. The following list presents some methods for keeping students engaged and interested in virtually any field of study and/or class- room size.

### **Discussion**

Orchestrating an in-class discussion is one the easiest and most effective ways to actively engage students. Depending on the size and organization of the class, everyone, including the instructor, could be involved in one classroom-wide discussion, or the students could be divided into groups to discuss the topic independently. The instructor moderates and directs dialog by calling on specific students (e.g., "And what do you, Johnny, think about that?") in a large group discussion. When the students are organized in groups, facilitators (the instructor and/or teaching assistants), move between groups to ensure that all students are participating and to observe any common misconceptions being shared in the groups, in which case he or she may choose to suspend the discussion to address those misconceptions.

### **Think-Pair-Share**

A small-scale alternative to class discussions could be the Think- Pair-Share technique that also capitalizes on the benefits of brain-storming and exchange of ideas but is more feasible in large-scale classrooms. In this exercise, the instructor asks students to ponder an issue individually for a minute and then to form pairs (e.g., with their neighbors) and discuss their ideas with each other. Finally, selected pairs (either volunteers or teams called on by the instructor) share their understanding of the issue or the solution to a problem with the rest of the class.

### **Debate**

A debate is yet another form of a discussion to engage students, where two (or more) opposing teams of students reflect and pre- pare statements related to the issue. Debates are usually scheduled in advance, so the teams have the time to prepare their arguments, but can also emerge spontaneously in the classroom, with proper direction. This technique can be especially useful for presenting still contentious concepts (i.e., being under active research) but can also be applied to established themes (e.g., different under- standings of a concept can be debated). Debates require skillful moderation, and ground rules must be specified beforehand.

## **Peer-evaluation**

Peer-evaluation is a very effective tool of student engagement. Not only does it allow students to realize that their voice is heard and important, but when students are charged with evaluating somebody else's performance in the same categories that their competence is evaluated in, they must inadvertently think about their own aptitude. The students' peer-evaluation may be included in the actual grade calculation, but the rules need to be communicated beforehand. Furthermore, caution must be exercised to identify and avoid situations in which interpersonal relations between students may bias evaluations, especially when they are included in the official grade.

## **Peer-instruction**

Peer-instruction is a very powerful didactical instrument. Volumes of research studies indicate significant improvements in attaining learning objectives by students on either end of the activity (both the instructors and the instructed). Peer-instruction can be organized in various ways. Students can be formally or informally divided into groups, which meet on a regular basis for study sessions. For each of those sessions, a member is responsible for a specific topic (or a collection of topics) that he or she will need to first learn by him or herself, and then teach to the other members. This approach has several benefits, including the perceived better manageability of the material, as the students realize that they are not "alone in this" and are responsible for only a specific portion of the topics. Of course, that does not mean that they should not and will not learn the material that was assigned to other group members. On the contrary, studies show that peer-instruction is very effective and, in most cases, knowledge is well disseminated within groups.

An alternative way to implement peer-instruction is to formally assign topics to all students and have them prepare mini-class-meetings on those topics. The students are responsible for gathering the material, as well as preparing the required instructional tools (e.g., lecture, in-class exercises, etc.). In addition to the obvious benefits of increased mastery of the material by those preparing the instruction, studies demonstrate that it is often easier for other students to assimilate knowledge presented by their peers.

## **Problem-Based Learning (PBL)**

Problem-Based Learning (PBL) presents students with "real-life" scenarios or examples. Instructors pose a specific problem to be solved to reach a particular learning goal. In order to solve the problem, students, usually working in groups, must first assess what they already know and determine if the knowledge they possess is relevant and useful in solving the problem. Thus, the complexity of the problem itself becomes the motivation for, and the means of, organizing the learned material. The limitations of the students' knowledge drive further

learning, as the students identify the areas in which additional comprehension is needed in order to solve the problem at hand. Obviously, the specifics of the PBL activities implemented in a classroom will depend on the particular field and topics being taught, but the general process of Problem-Based Learning remains unchanged.

### **Case-Based Learning (CBL)**

Like Problem-Based Learning, Case-Based Learning (CBL) offers the students the opportunity to explore and learn from “real-life” situations. In contrast to PBL, however, case studies are usually open-ended and do not have a single, “correct” answer. Therefore, the complexity of the answers, and not the problem itself, becomes the means of assessment and evaluation of student knowledge. In CBL, students must make a decision based on the case described, using their existing knowledge. They need to identify all the pertinent information presented in the case and decide if that information is sufficient to make an informed decision. In Case-Based Learning, the “broader aspects” of a given issue are usually also considered. Since the decision being made is one of many possible choices, what consequences does this particular one carry?

Although implementing Problem or Case-Based Learning may seem like an extremely time and resource-consuming effort, there are many problems and cases in various fields already available through various on-line resources.

In addition to keeping students engaged and interested, the above techniques offer a very powerful educational apparatus: formative assessment. In contrast to the traditional forms of assessment (i.e., tests, exams, reports, etc.), formative assessment is a bi-directional process between instructors and students whereby the mastery of learning objectives is continuously monitored so that instruction can be adapted to enhance the learners’ achievement. Active learning, due to its interactive nature, allows for this kind of feedback to reach the instructor early so that adjustments can be made. Perhaps even more importantly, through formative assessment, students can monitor their own progress and understanding of the material, giving them the opportunity to request assistance, if needed, before it is too late.

Other tools also exist, specifically designed for the purpose of providing formative assessments (“EnGaugement,” as coined by Handelsman et al.).

### **Electronic Audience Response Systems**

Electronic audience response systems, often called “clickers,” have gained much popularity in the past several years. Clickers are wirelessly linked to computer software that collects data. Typically, every student in the classroom has a clicker, which he or she uses to enter answers to questions asked by the instructors during a class meeting. Student responses are immediately tabulated and can be displayed in a form of a barplot or a pie-chart, illustrating the distribution

of answers in the classroom, and assuring complete anonymity to the respondents. The benefit of such a procedure to the instructor is quite obvious—he or she can immediately assess if a given concept has been properly absorbed by the students or if it needs to be reinforced or presented again in a different form. Another benefit, perhaps not immediately evident, is that the students, without any fear of being singled out or ridiculed (only they know their answers), can instantly assess their own learning and decide if they have truly mastered the material, or if they need to revisit some concepts on their own, or seek assistance. The CTL has I-Clicker workshops and I-Clickers available on a first-come, first-serve basis for faculty to use.

## **Teaching Tips**

In this section of the guidebook, many instructors have contributed ideas about teaching and routine classroom procedures. We hope that these will be helpful as you begin teaching at DSU. Please contact the CTL (Center for Teaching and Learning) with any questions or for further explanations.

### Ideas for the First Day of Class

Starting off on the right foot is important not only for marathon runners, but equally important for classroom instructors. As the new semester begins, classroom instructors need to remember that what they do and what they say on the first day of class will set the mood and tone for the next fifteen weeks. First impressions are lasting impressions. This was recently reinforced in a research project where students were asked to rate the instructor just after the first class meeting. These results were compared with the instructor's rating after the course was over and guess what? The ratings were almost identical (Weimer, 2002). Below are some tips for the first day of class:

- Arrive to the class location early, smile and greet the students as they arrive. Give the impression that you are happy to see them and you look forward to being their teacher.
- Write the course name, number and section where it is visible (power point slide, board). Include your name, rank or title and home department. If students are in the wrong location, be helpful and assist them in finding their class.
- Make an outline of what you plan to say and do on the first day of class. **DO NOT DISMISS CLASS EARLY** or start class late on the first day; this gives the impression that classroom instructional time is not important or valuable.
- Introduce yourself; let students know your academic background, areas of expertise, and research agenda. Keep it brief but professional.

- Gather information about your students. You can use a 3x5 card and ask them for personal information or you can ask them to complete a schedule of their classes and work so that you can set office hours that accommodate their schedules. Contact the CTL for more information and templates. You can also have an ice- breaker activity, like “Introduce your Partner”. Have students find a partner, on a pre-determined set of personal questions like name, major, year in college, include some fun questions like what’s your birth sign or what’s your favorite food, color, etc. have students ask their partner the questions and have them record each other’s answers. Now, go around the room and have the students introduce their partners to the rest of the class by reading the answers to the questions. As it is important that students become familiar with each other, ask them to find a “buddy” on the first day. A “buddy” is the person that they will call when they have missed class to get class notes or handouts, etc. Emphasize that this is important because coming to class is valuable and they cannot afford to miss any information. Be sure they let you know who their “buddy” is on the personal information sheet so that they understand that you fully expect them to utilize this person instead of you, the instructor, when they are absent from class.
- Ask students what they hope to gain from the class. How they learn best? What most concerns them? etc. Try to personalize the course as much as possible.
- Do not read the syllabus to students; instead assign an activity for them to complete that includes information in the syllabus. Some questions they can respond to in writing on the first day might include: what topic do you think you will enjoy the most? The least? Why? What do students do if they are late with an assignment? Where can I find the instructor if s/he is not in the office? What is the best way to contact the instructor? Do you think the weight on the midterm and final exams are fair? Why or why not? Be sure to ask the students questions regarding the grading policy to make sure they understand how you will grade their work. After they have completed the questionnaire, have them grade each other’s papers as you give the correct responses to any questions that have a right/wrong answer. Clarify any mistakes and listen closely to any concerns they express. Be open to making any changes they might suggest. Research tells us that the more ownership they feel when it comes to class rules and procedures the more likely they are to comply with the rules and procedures (Weimer, 2002). Also be sure to give them a few grade points for completing the questionnaire; this sends the message that you will reward their effort and time spent on class assignments and activities.
- Describe the course to students. Explains how it fits into the general curriculum, is it a core course, an elective, etc.
- Review any rubrics or standards you have for assignments, writing, projects, etc.
- Introduce them to any additional resources like websites, journals, etc.

- Be sure to let them know about the tutoring and academic support services available on campus.
- Learning Student Names

Knowing and calling students by name is a critical first step in setting a positive tone for learning. Students feel cared for, and you convey the idea that they are important when you quickly learn their names. Remember that using someone's name as you talk to them elicits a positive emotional response as most of us like to hear the sound of our own name.

On the first day of class, print students' names from your class roster on 3x5 index cards that have been folded in half and made into tent cards. Place these in alphabetical order on each desk and ask students to find their names and have a seat where the tent card is located. Any student who does not have a tent card is not on your class roster so be sure to send the student to the Records office to properly register for the class. Collect the tent cards at the end of each class section and again at the next class meeting have the students sit in alphabetical order. The use of these tent cards can facilitate the teacher getting to know the names of students. Let the students know that as soon as you learn all their names, the tent cards and sitting in alphabetical order, may not be necessary. Always take attendance so that there is an official roll book that verifies a students' attendance to class.

### **Tips for Group Work**

- Always distribute group rules and procedures and expectations for group behavior in writing so that students have something to refer to when they have questions. Be sure to include the purpose of the group work (have an Objective stated for the learning that you expect).
- Make sure you have determined the rationale for students working in groups.
  1. If it is to teach cooperation, then choose projects or work that requires them to share opinions and explain to them that the purpose is for them to learn how to discuss and share opinions in a calm rational way.
  2. If the group work is to streamline a project thus making it less work for everyone, be sure they understand that everyone must contribute in order to complete the project.
  3. Let students know what they will be expected to do or to present or to complete.
- Give a clear deadline for completing the group project. Make sure students know how they will be graded, as a group, an individual, or both.

- Try to work with pairs of students rather than 3 or 4 in a group. Pairs have a better chance of readily starting the work and maintaining involvement.
- Pairs make it easier to monitor the participation of each person.
- Pairs are less noisy.
- Pairs promote good eye contact and promote respectful relationships.
- Ask students to select different partners each time they have group work to do if working in pairs.
- Require students to keep a log or to document somehow what they accomplish in groups, make it count for something so that there are consequences for not completing it. You can guide this by giving them a sheet a paper with intros like: “Today in group I learned.....”, “Today in group I had trouble with.....” or “Today in group I felt really good about.....” etc.
- When using larger groups, always make sure that each person has a role (i.e.: group leader, group recorder, group observer, etc.)
- Have groups share work with the other groups. Allow them to make presentations and let them know that each member of the group must speak.
- Use critical thinking types of activities so that students are forced to brainstorm answers or rationale.
- Always have students explain the “why” part of their opinions or ideas. The idea is to get them to explain to others their rationale for making certain decisions.
- Make the group work as fun as possible so that students enjoy the group work. For example, make it a competition, with the best group winning a prize, or let them be creative and let the class judge and determine the best group.

### **Tips for Getting Students to Read, Discuss, and Participate**

- For a current events discussion, have students list 3 topics they have read, heard about or seen on television in the news. Collect these and list 3 of your choices on the board. Ask students to write down, very quickly (in 5 minutes or so) what they have read, heard, etc. regarding the topic. Have students share with the class what they have written down. If no one is able to write or share anything, ask the entire class to read at least one thing on each of the 3 topics and be prepared to write something about it, for a grade, to be turned in or completed at the next class meeting. Most students would rather be able to write and share something in

class rather than do it for homework, so some will get the idea that they need to stay current with the news.

- It is important for students to know what the purpose of reading is and/or what they are expected to know after the reading, so create some directed reading activities such as:

1. Give students 2 or 3 pivotal questions that they should be able answer after the reading. Be sure to make these analytical rather than factual.

2. Help students to get the “bigger” picture. In order to hold them accountable, collect these responses and review them and return responses to students on the day of a quiz or exam and allow them to use them. Announce this policy prior to their writing so that they know they will be allowed to use these on a quiz or exam.

3. Construct a graphic organizer and leave boxes empty where students have to write. In a few boxes, write the main ideas and in another box explain the relationship between the topics. Reverse it, list some details in boxes and have the students write down the main ideas. Some students who are poor readers benefit from having the reading organized for them. Eventually they should be able to get a graphic organizer with all the boxes empty and fill in all the boxes.

4. When you assign reading, let students know that they are to write 2-5 questions about the reading on separate pieces of paper and place their name on the question so you know who submitted the question. As students arrive in class, have a basket or container in which they can place their questions. Look through the questions and write 3 to 5 on the board for a quiz. On the quiz, they not only get points for answering the questions, they get points for submitting questions. Try to make this fun for the students, ask them to write a question that might “stump” their classmates. Let them know ahead of time that you will probably pick the harder questions for the quiz and, of course, always reserve the right to add your own questions.

5. List what ideas, information, etc. you want them to get from the reading. While they are reading, they are to document by page, paragraph and sentence, where that information is located in the reading. It may be explicit in the reading or implicit across different statements the author makes. Again, tie this to some incentive, like being able to use the sheet on a quiz or exam or give points for doing it (no grade). Try not to give grades for this type of activity as some need practice and a poor grade might discourage them from reading.

6. Ask students to write a question and/or a statement after reading a section of material. The questions should be what they don’t understand after reading, the statement should be what they understand about the reading. Have students share these in class or collect them, give them points for doing it and then select some to be shared with the class.



7. The Internet has many websites with more information on reading strategies. List some good reading habits and distribute them. Students may benefit from strategies such as reading in “chunks,” reading for 10 minutes, then writing some thoughts or ideas from the reading, and alternating through the chapter.

### **Reflective Teaching**

A very important component of effective teaching is for instructors to reflect on their own methodology. The following survey contains questions that can be used by instructors to reflect on instructional practices. Test yourself to see where your strengths lie and areas where you might want to try some of the effective teaching practices described earlier, by rating each of the areas below on a scale of 1-5 with 1 meaning - Never, 2-Rarely, 3-Occasionally, 4-Often and 5-Very Often:

1. During a lecture it is best to use Power Point slides or other graphics.
2. When using a Power Point presentation it is best to make copies of the slides using the Notes format so that students can take notes during the lecture.
3. During a lecture it is best to pause every 12–15 minutes and check for students understanding by posing critical thinking questions.
4. It is best to invite guest speakers/lecturers to class.
5. Students and I decide together on the criteria/requirements for an assignment/ project or some of the class rules.
6. I take students on field trips for the purpose of extending something that we are learning in class.
7. I use group projects (any type of activity where students have to work together outside of class).
8. I have students present information to the entire class
9. I have students share information in class by way of discussions and/or group activities.
10. I use demonstrations or models to reinforce a concept I am trying to teach.
11. I use concept mapping by making a visual aid for students to connect the important ideas and show how they are related.
12. I use graphic organizers when I am presenting a lot of information so that students categorize the information under major headings, thus facilitating retrieval at a later date.

13. I use real world case studies, so that students can see the application of theory to actual practice.
14. I use current events to develop assignments or to guide a discussion where theory or concepts we are learning can be applied to a current, real world issue.
15. I use problem-based learning where students are asked to solve a complex problem using information that was presented in class.
16. I use inquiry-based learning methods where students are asked to explore a question and they develop the “learning” by formulating a hypothesis and then researching it.
17. I use role-playing to reinforce learning and actively engage students.
18. I use debates to reinforce learning and actively engage students.

For improvement in any of the above areas please contact the Center for Teaching and Learning for advice and resources.

**(Chapters 11,13 and 17 *Teaching at Delaware State University, A Guide for Faculty, Academic Staff and Teaching Assistants 2015-16*, Center for Teaching and Learning)**