

Classtalk in two Distinctly Different Settings

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An Introduction to Politics

The system was used in a very large section of a required Introduction to Politics Class. Several times during each class session the 400 students in the class were asked to answer questions using the system. Immediate feedback enables the instructor to determine student responses and to react to reinforce or clarify the material as needed. The system records student response by individual, making record keeping very simple. Indeed this is the first, and most obvious advantage of Classtalk: it makes much of the record keeping in large classes much easier. The login record serves to keep attendance, and the scoring and record keeping enables the instructor to quiz the students frequently without having to grade and record the quizzes. Indeed, the system could also be used for major exams, although we have not used it because the major exams in the class are essay type.

The most important benefits come not merely from the ease with which the system allows grades to be scored and recorded, but with the pedagogical tools this facility allows the professor to employ. In a large class, no matter how interesting the material or how well it is presented, it is easy for students to nod off, do other homework, let their attention fade, chat with others, skip class, and so on. Classtalk creates an atmosphere in which each student must regularly interact with the material in class. It encourages attendance, but it also encourages attention. As the students own comments show, it keeps people alert and engaged because they might have to answer a question at any moment. In some cases the motivation to get the questions right is enhanced by a certain competitiveness among the students or a certain pride in getting answers correct, motives that are heightened by the fact that the answers are calculated immediately, and students can readily compare their answers to one another and to the correct response. As a news report noted, (<http://www.bedu.com/NEWS.avi>) despite the size of the class, each student comes to feel personally involved every day. In short, Classtalk develops an active learning atmosphere even in a very large class.

Classtalk can also be used to incorporate cooperative learning techniques into a class. Usually between two and four students share the same calculator. Sometimes a question is asked so that only one answer is submitted for the group of students on the same calculator (although individual students are permitted to "dissent" and enter a response different from the group's). This, of course, encourages discussion and debate. Another technique is to ask a question and have the students respond. When there is wide variety in the answers or when most or many have the answer wrong, the students can be asked the same question again and told to convince one another that they are right before responding the second time. In most occasions the correct response will gain more adherents through this process, showing that the students are teaching one another and that they are open to changing their opinions when they see a better argument. At first when this technique was used students would tend to change in favor of the answer most had opted for the first time around. Before long, however, they realized that the majority or plurality can easily be wrong, and they became more sophisticated in thinking things through. As you can see if you run the video clip (CTALK.avi), the classroom can become quite animated when the students work together to answer a question.

Classtalk is an useful tool for helping instructors and students gauge what the students know. More than that, however, it is an effective tool for developing comprehension of difficult, abstract concepts. A good lecture always attempts to involve the students actively in the reasoning process of the argument under discussion. Classtalk aids in that effort. Often questions are asked not primarily

to judge whether students can identify the correct response, but to help students to see a difficulty, identify an assumption, apply a principle, or draw a new conclusion from a body of information. Here instead of following a reasoning process from a book or lecture, each student makes the reasoning steps actively, either alone or working with others, and thereby comes to appreciate concepts, inferences, or difficulties more readily. For example, Aristotle often leads his reader to appreciate a concept by beginning with ordinary opinion and then showing the difficulties with, inadequacies of, or contradictions within it, thus preparing his reader to move to a deeper level of conceptual understanding to resolve or understand the problem. Classtalk is useful in doing exactly the same thing: showing a student contradictions or difficulties in ordinary phenomena and opinions, and preparing him or her to ascend to a different level of understanding.

The system can also be used to lead students to draw conclusions themselves. After presenting them with evidence and premises the students themselves work to determine what conclusion follows. The student and instructor both can be more certain that the student understands the point when the students are working to find it and know whether he or she had found it than when the instructor states and restates the point several times in lecture and then tests later on a major exam. Then once the conclusion is drawn, the student can be asked to apply it, either by considering what inferences might be drawn from it or by applying its principle to a different set of facts or circumstances.

Law and Justice Class

The appreciation of the power of Classtalk to assist students in conceptual understanding led to the decision to use the system in a setting very different from the large lecture hall. This was a class in "Law and Justice" with the purpose of learning the material, but also with a strong focus on developing analytical skills and skills in critical reading and argument as preparation for Law School and the Law School Admission Test. The course material consisted of classical texts from Plato and others with difficult, complex, unfamiliar, and sometimes contradictory arguments, and the students' job was to learn about relationships between law and justice by analyzing and applying the arguments. To do so effectively takes care, diligence, attention, patience, memory, openness, and a willingness to reach conclusions one does not necessarily like when the evidence warrants it. A major goal of the course was to encourage the development of those qualities.

Using Classtalk, the course was structured so that the students had to confront the text and actively work to analyze it and understand it at every point. There was no lecture or direct instruction from the instructor. The class was conducted entirely through multiple choice questions. Carefully constructed difficult questions led the students to work intensely with the material and with one another to understand the arguments. Students usually worked in groups and would engage in much discussion in deciding how to answer questions. Typically, especially with the most difficult questions, groups would decide upon different answers and in the ensuing discussion when students and groups were explaining their thought processes the whole group often worked its way to the correct answer. Each student knew that he or she could be called on at any time to justify an answer, so each student worked conscientiously to answer as well as possible. Two kinds of information available to the instructor through Classtalk were especially helpful here. When a student would dissent from his or her group, it was helpful to the instructor to know that so as to be able to call on that student to explain the dissent. Similarly, the instructor would watch the Classtalk screen on his computer while the students were working through their answers to spot students or groups who changed their answers, and then ask for an explanation of the change.

The system involved every student in every problem and issue. It encouraged them to work together and to profit from one another in advancing their own understanding. Typically when a question (<http://www.bedu.com/PLCLASS.avi>) was presented the students would read it, digest it, research it on their own, and then discuss it with their group to come to an answer. The classroom changed from a very quiet to a quite noisy place as the students proceeded through this set of steps. Quickly students learned to leave their own opinions about what ought to be the case aside and to confront the arguments as presented. The questions were much more difficult and complex than would be fair on an examination for a grade in an undergraduate class, but the students learned not to question the question but to accept it as a problem that had to be solved through analysis of the text before them. They learned to draw conclusions from premises even if they did not like the result. (One student put this as distinguishing between "me" and the argument at hand.) The students learned to be dispassionate about their answers, or to avoid the temptation to defend an answer simply because it had been their own. As the course proceeded the students grew to be very careful about language, analyzing both the text and the questions with great precision, and appreciating the difference in meaning that would come with slightly different word uses (putting more than a little pressure on the instructor to write the questions well!). Questions became harder and harder as the students' skills developed, and by the end of the course the students had clearly made great strides in developing their analytical skills.

Student Reaction

Student response is extremely positive. Ninety-nine percent of students (<http://www.bedu.com/CTALKPL.avi>) in the large class thought the class was better with Classtalk than it would have been without it (despite the bugs inevitably connected to the first semester of use). They thought the system made them more attentive and allowed them to see what they understood and did not understand well. They felt more involved in the class. When asked about the utility of the system in promoting their learning, the students in the small class tended not to discuss the technology itself, but what it permitted and encouraged them to do. Thus, they focused on the advantages of active learning and cooperative learning associated with the system, indicating that indeed Classtalk is an effective tool for promoting success.

Large Class

QUESTION:

- Do you think the course was improved by the use of Classtalk (the interactive question system)? Please explain.

RESPONSES:

- "Yes, that was the best thing in the course. That was one of the two reasons for why I came to class."
- "Yes, because we could see the results right away. I could tell that I wasn't always the only one that was confused."
- "Yes, because it allowed the entire class to get involved during the quiz questions."
- "Yes, it allowed more lecture time and allowed us to interact with one another. We got to know of the people around us."

QUESTION:

- Do you think you had the opportunity to learn the material in the course more thoroughly than you would have had Classtalk not been used? Please explain.

RESPONSES:

- “Yes, it allowed me to interact and constantly be caught up with what I needed to know to be prepared for the questions.”
- “Yes, because it makes me think more, also its like a competition between us (friends I sit next to) to see who gets the right answer and why.”
- “Yes, it pushed us to listen to the lecture and group the main ideas.”

Small Class

QUESTION:

- Did Classtalk (the system with the calculators) help make the instruction and/or your learning more effective? Please explain.

RESPONSES:

- “Yes. We were all able to answer the questions put forth to us and we were able to learn from our mistakes whenever we answered wrong. An element that’s indeed worth praising!”
- “Yes, it keeps the class from being just a lecture class. We were forced to analyze a series of probable answers and choose, very interactive. And the turn-around rate was much quicker than if we had to use paper and pen.”
- “Yes, because it took most of us out of that same class routine where the same people always answer or where no one wants to answer, rather it made all of us answer and defend our thoughts.”
- “I especially enjoyed working in groups and learning from my peers. Classtalk with the calculators was competitive and a new and interesting experience for me.”
- “Yes, because before we debated and argued as a class, we first argued within our group. It was also interesting to see the graphs on how we answered.”

Practical Concerns

Classroom management problems were easily handled. The students were quick to learn the system- in a large class it took one full session plus some extra time in the next couple of sessions, but within a week the students had mastered the system. At UTEP it would not be possible to require the students to provide their own graphing calculators to use to answer questions, so a system (<http://www.bedu.com/CTALKIN.avi>) was devised for distributing and collecting calculators before and after class without taking up class time. Students are signed in and ready to go at the beginning of class and the class can last for the full fifty minutes. It might be expected that using Classtalk to ask several questions during each session would reduce the amount of material that could be covered. In fact this did not happen because lectures can be more efficient when the instructor knows when students have mastered a concept and when Classtalk questions themselves are used in place of a lecture to draw conclusions and point out inferences.

Classtalk saves time grading quizzes and making some points in lecture, but it can take some preparation time. Devising questions for the large class requires the instructor to approach class differently and to reconsider the way material is presented and related to other material. Writing a series of questions to replace classroom lecture in the smaller class was a very difficult and time consuming process, although presumably it will be much less so the second time around.