

Transcript

A Free-Text Audience Response System A Web-based, Open Access ARS to Facilitate Team Learning by Bob Badgett, MD and Glen Medellin, MD

Intro Trailer (1:15)

Badgett: There's a number of audience response systems that are available today. They have in common that most all require forced-choice inputs of answers – meaning yes/no or multiple-choice. Our Free-Text system at the University of Texas Health Science Center in San Antonio is different because of its free-text input. This allows teachers more flexibility in the questions that they ask and it even allows students to input unanticipated answers.

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Gabriel: Since we use an ARS system it didn't matter if they were hundreds of miles away, we were actually able to see what they were thinking and interact with them.

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Teaching Team-Based with Free-Text

Rationale (1:12)

Vines: Dr. Badgett, you introduced me to audience response systems on the Free-Text side. Instead of having one person in a classroom that could dominate the series of questions, and then having to call people out, the Free-Text audience response system allowed me to see numerous, or at least small groups at one time. So I could get who understood and who did not.

Allison: I had a great experience working with my classmates for the ARS activities. It was great collaborating not only with the people right next to you, putting your answers in, but also with the separate groups that were putting their answers in as well.

Medellin: We'll be moving into the groups, staying in the groups. You'll enter stuff in to the audience response system. We'll look at the answers and see if everybody's on the same wave length. My feeling is, if you all know the answers, I'm not going to sit up here and talk for ten minutes about something you know. If it's something you didn't know and you want to talk about, then we'll discuss it. And the thing about discussing it in groups first is, the questions that you all generate are going to be things that are really important for us to discuss as a group.

Ease of Use (1:04)

Vines: I felt that it was easy to incorporate and the way that, especially in the end, after you fixed it where you could have the PowerPoint running, realize that, hey, this could be a thought question and then you could pull the system up immediately, send them the question, and as I'm stating the question, I'm typing it. And then they have a chance to respond to it after they've thought about it. About the only issue or difficulty that we had was having enough computers for the groups to always use. The second thing was having adequate wireless coverage in the lab.

Gabriel: One of the greatest challenges, I think, is just basically technology and you know, when you get started off you may not be clicking the right buttons or there may be some kind of problem with the internet and that can slow down the class at the very beginning, but once you get going I think it's mainly a positive thing in the lecture halls.

Team-Based Teaching Theories (1:45)

Badgett: Team-based learning is having the learners work in groups or teams to solve problems or answer questions that reinforce key concepts from class. Here at our Health Science Center we have found that Free-Text Audience Responses Systems work very nicely facilitating team-based learning. There's four key principles for successful team-based learning.

The first is that the teams are well formed. Most importantly is that they're a random assembly of students. The second principle is that the tasks that they do are germane to the class and reinforce key concepts. The third principle is that the students get frequent and timely reinforcement. This is well done with the

audience response system. The fourth key principle is that the students are held accountable, both for their group's work and their individual contributions to the group.

It's difficult asking a faculty to commit the time to convert a straight lecture to team-based learning. However, this process can be made easier by achieving the first three key principles in the first year, and delaying implementation of individual and group accountability to the second year. Once you've made the change, you'll be glad. I know I have been. When I find myself in a situation where I have to do a straight lecture, I worry that I'm less engaged and that the students may detect that and they'll be less engaged.

Free-Text in Action (1:01)

Badgett: In this example of using Free-Text Audience Response System, I was teaching a class, "Information Retrieval." So in this example, I asked the students, or the teams, to look up in a prominent online medical textbook what the textbook said was the underlying evidence to support a recommendation. The teams then used the internet, found the answer to my question, and then either copy/pasted the answer in, or they could key the answer in. After the system told me that all the answers had been received, I then revealed the answers to the group at large. In this case I knew that the textbook had incorrectly summarized the underlying source evidence. Therefore, of course, all the students got the answer wrong, but it led to a teaching moment on the quality of online textbooks.

Benefits (1:57)

Vines: I think that with using an audience response system you certainly get to see whether they're following you and understanding what you're asking them. And by having to think about it, and processing it during class, the material, and there's other ways to do this than audience response systems, but if you use it, having them process in class, then I certainly think it helps with their grasp and understanding the material. So when they come back to review those for an exam it would cut down on their study time.

Gabriel: I do definitely think the ARS enhances one's learning just because, especially in Medical School, you go through so many lectures and they're eight hours long throughout the day that it allows you to stay alert and allows you to stay awake. I think that on point alone it enhances learning.

Vines: Grades in the course were increased by a letter grade in some cases, and they were actually, but now they were pretty religious about studying the material beforehand, all the time, being ready to go for the classroom activities.

Badgett: Seems like it might have increased their willingness to prepare in advance.

Vines: I think so, which helped their understanding, so they walked out of class with more and would show up in the board exams. Now that isn't, you know, I have no data, randomized study. It could have been pure coincidence. But it was certainly, I can tell you that their participation in class, from my observation, was much greater than without the system.

Allison: The Free-Text ARS activity was easy to use and actually made this class a lot more enjoyable.

Distance Learning (2:26)

Badgett: Let me take a little bit of a side trip here because we've both been using it in a distance learning setting. And I find distance teaching very difficult and it depends a lot on your technology beyond what the audience response system can do. But still, what was your impression? Did you ever, given the technology that you had in addition to the audience response system, did it get that other class to where it was seamless and you felt like you were teaching them as well as your local class?

Vines: Oh, yes. I thought it was.

Medellin: What will you give this child to correct her sodium? Someone down at the RAHC have an answer to that? What would you all give this child to try to stop the seizures?

RAHC Student: If it's a hyponatremic seizure, 3% hypertonic saline solution.

Medellin: Ok. What fluid would you use?

RAHC Student: 3% hypertonic saline.

Medellin: Ok.

Vines: Having that audience response system put everybody on the same level so when they entered the answers they'd come up and I saw a much greater participation at the distance site than without it. Even at the junior or senior level. And having them answer the questions and go through with the audience response system, they were much more engaged. They were less likely to be

distracted by activities going on around them in Laredo. They were paying closer attention because they knew they had to potentially answer a question within a minute or two minutes. I thought that it enhanced the distance education.

Gabriel: In regards to how it enhanced interaction between my classmates, I just had an experience where we had a class that was video-conferenced with students in Harlingen, in a distant campus. Whereas, if this was just a lecture without an ARS system we would have never even heard any of their thoughts. Since we use an ARS system it didn't matter if they were hundreds of miles away, we were actually able to see what they were thinking and interact with them.

Team-Based Audience Response Implementation

Converting a Course to Team Learning (2:32)

Badgett: Two things that were difficult for me when I started using team learning and interactive teaching is that you had to cut out a lot of your content because you could not cover as much in class, but yet the good side of that is you felt like what you covered, they really were getting it now. And what you didn't cover were things that they probably could have just memorized offline at other times. Did you have to change your class much and reduce content or were you already doing a question/answer format to a degree?

Vines: What I did was, it depends on the course, right. Now my, some of the course I would deliver, you know, part of the content first. And then I would back up and I would then use an audience response or question and answer session where I would demonstrate what I was talking about or provide them a case or something and then ask them to answer questions, short answer questions. So, I can still get the material covered, I just did not cover every objective. So if it was an objective where they had to memorize a group of things or actions or so forth, I would tell them, "Here is your objectives and this you can find on x page in Chapter 10, 12," whatever it was. And so they could then go and learn that on their own time, especially if it was around memorization. If they needed that for application, I could just say, "Well, while you're looking at Table So and So, tell me how you would use that. So if you have a patient with persistent asthma according to the NIH guidelines, if they're also on a long-acting bronchodilator and they're on an inhaled steroid and they're still not controlled, what would you add?" So either they would use the table then and learn how to answer the question using the table, or they would have already memorized the table and answered part of the game.

Engaging Students (1:31)

Vines: We also, in one course, as you know, I incorporated it into a game. So I took a team, divided them into teams, and incorporated the audience response system into a series of short answer questions that was played on a game like the Millionaire Game. So they would have, it would start with a little game software, "Are you ready?" and then they would all have a chance to answer the question. Whichever team answered the question correctly got a point. I found class participation greatly increase with that active learning strategy. I saw them be more participatory. I saw them laughing and having a good time in class versus sitting back, some falling asleep, some not following you, some not processing what you're saying. These kind of things.

Allison: I think ARS offers an advantage in that rather than sitting passively listening to a lecture, it allows you to develop your thoughts and work as a team.

Gabriel: I have been involved in two other courses during my college experience with an ARS-type system. One in which we used a clicker, remote control, and another one where we logged in on the internet. Looking back on those two classes, this sort of system did allow us to learn a lot more and they kept you awake and alert throughout the whole time.

Team-Based Learning (1:20)

Badgett: The evidence for team-based learning, some of it is indirect evidence in that when students have to debate answers with their colleagues, it leads to more durable learning.

Vines: I have used it in a small group team learning, like three in a group and I would put a strong student, an A student, B student, C student together, spread the diversity out so that they actually learn to deal/work in small groups and teams and they had those things to deal with and they were resources for each other. And we might deal with a case and they would have to go through and answer a series of questions.

[Ambient classroom noise]

Kyle: Free-Text ARS was helpful in the classroom because it facilitated discussion in a group, separate from outside influence and allowed us to work together to fully develop ideas.

Allison: The ARS activity enhanced my learning opportunity by allowing me to collaborate with others members on my team which is something that we don't get to do often.

Critical Thinking (1:20)

Vines: Instead of having one person who may have asked the question to think about it critically, I think it forces students if they have to type you a response, to a larger number, critically think about the material, and then post, "Well, why do you think that happened?" or "Why is that correct answer?" and have them answer very shortly. So you can, again, get them to grasp, or at least see if where they are in their thought patterns in assimilating the material.

Medellin: You're in a small community emergency room and asked to evaluate a baby that was delivered at home yesterday. The triage nurses are worried because he is dusky with oxygen saturations of 65%. The respiratory rate is 60. His heart rate is 180. Ok. I want you all to focus back in and talk about this for a few minutes. So what are you going to do? You're sitting in the emergency room. What's your first thing to do for this child? How are you going to tell if he has pulmonary or cardiac etiology and what diagnostic tests will you order? Remember, you're in an emergency room in Uvalde.

Evaluation (1:01)

Vines: I didn't always reveal their answers to each other. When I was doing that in the smaller groups, mostly the answers were revealed to me so I knew who the stronger students were and the weaker students. But just the process of them having to think about it and being engaged - I have heard students tell me it reduced their study time. Certainly the evals were as good.

Medellin: So for the people down at the RAHC, what did you think about his weight gain?

RAHC Student: The weight gain is a little poor for a one month old. He's only gained two ounces. We'd expect a little more than that so we think it's probably due to the heart defect.

Gabriel: In regards to the Free-Text ARS, I felt like it was a great way to participate with the professor in a way in which you weren't ever scared about answering wrong and a way in which everyone could get involved. You can see how everyone else is thinking in the class.

Tips (1:36)

Badgett: Do you have any advice for other faculty who are starting out thinking about using audience response systems? Any advice, maybe particularly related to using a Free-Text audience response system?

Vines: Start small. Think about some questions ahead of time that you would want to ask during class, during a lecture. I would suggest that you limit the responses. You don't want to ask large discussion questions for the Free-Text. You should limit it to answering within a sentence or a few words. And so a lot of times I would use "Increase, Decrease, Stay the Same, Is it going to be larger/smaller?" "Is compliance going to increase/decrease? Is blood pressure going to increase/decrease?" Just to have them involved in the process of thinking about. So I'd ask them a critical thinking question that they had to then answer within one or three words of what was going to happen.

Gabriel: In regards to giving an instructor who is using ARS advice, I think just from the students' perspective, ARS can sometimes slow down a little bit the pace of the course. So if they just set a good time limit instead of allowing everyone to answer and waiting for that. They just set a strict time limit and everyone can vote in within a certain amount of time, I think the pace of the class at a steady rate.