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# Enhance Learning in Athletic Training Education with Audience Response Systems

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Audience Response Systems (ARS) are now being used to enhance learning in various higher education disciplines.[1-4] With several ARS brands available,[5] it is most important to consider various facets of this interactive technology prior to implementing it into your athletic training courses. This column will outline strategies to incorporate this learning tool into your classroom.

## THE PROBLEM

An instructor in an athletic training education program has a class of 90 students enrolled in a competency-based anatomy course. The large class size makes it a challenge for the instructor to not only engage the students and keep their attention but also to track their learning of specific content. The faculty member seeks a solution to increase student engagement and gauge their learning while leveraging the students' desire to use technology.

## AUDIENCE RESPONSE SYSTEMS

Audience response systems (ARS), also known as student response systems, or clickers, use software programs designed to increase student interaction, collect assessment data, provide each user immediate knowledge feedback, and generate higher ordered thinking and discussions. Current ARS brands include but are not limited to eInstruction®, i>Clicker®, Smart Response®, and Turning Point®. The company you choose will depend on information gathered from your Information Technology Department, University Bookstore, other faculty, your textbook publisher, and the ARS customer service representatives.

## ADMINISTRATIVE PROCEDURES

**Step 1:** Work with your Information Technology Department to determine the following: Current usage of ARS technology, current ARS licensing agreements, availability of loaner ARS devices, and availability of overhead projection units and PCs (needed for radio frequency and web-based ARS) available in your classroom. Also check if ARS compatible software is downloaded onto your classroom computer and if ARS user training sessions are available on campus.

**Step 2:** Contact your bookstore regarding what ARS technology is currently available for purchase and for which courses. The bookstore administrators can also apprise you of any specific ARS equipment polices (purchasing of used clickers, return of defective clickers, disassembled textbook bundles). Also, some companies may require a preferred pricing agreement from your institution that assures a minimum purchase volume, resulting in decreased costs for your students. A plus side of this agreement, however, is the inclusion of faculty training sessions and technical support.

**Step 3:** Chose your operating system by contacting the customer service representatives of various ARS companies. It is important to discuss each system's compatibility with PCs and MACs. The program will need to be compatible to your hardware (eg, PCs, MACs), institutional software (eg, Microsoft, Apple), learning platforms (eg, Blackboard, Desire2Learn, WebCT), and any statistical analysis programs you plan to use (eg, SPSS, SAS).

**Step 4:** Determine which mode of ARS to use. Three standard ARS modes of communication are Infrared, Radio Frequency, and Web-based.

- Infrared (IR) devices require a clear line of sight from each device to the receiver. The range is approximately 90 feet, and the signal is only one way. This does not permit feedback to be sent back to each student.

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- Radio frequency (RF) devices require no line of sight to the computer-mounted receiver. Two-way communication back to the clicker allows immediate student feedback. The range from the devices to the computer receiver is 200 feet, and some brands have LCD screens on which text answers can be submitted. When compared to web based options, the RF devices are lower in cost per unit.

- Web-based (WB) devices require students to purchase website access. They can then view the class activity easily on their personal device (laptop, personal computer, Apple® iPhone®, iPad Touch®, Blackberry® smartphones). It is important to test the range in all class rooms using the WB system (wireless signals may vary between and within classroom buildings). Your institution's legal department may also require written confirmation from the ARS company, assuring that all student records stored externally will remain confidential and not be used for marketing purposes.

## PEDAGOGICAL BEST PRACTICES

After you have waded through the myriad of administrative steps, you must determine what you can accomplish with the technology. Teaching can be improved with critical thinking activities, pre- and post-assessment, cumulative assessment, polling, and statistical analysis. Learning can be improved through increased attendance and participation, understanding of course materials, peer instruction, increased retention, and student satisfaction.[1-3, 6-8]

### Start Small

Training is available by contacting your customer service representative. You may also find other faculty to form ARS learning circles. The group can meet every few weeks to trouble shoot best practices. It is important to take time to develop your familiarity and comfort level with your chosen ARS program, mode, and activities planned for your course. Mastering the use of ARS technology takes time. After learning how to set up a learning activity, add the new technology to the learning environment slowly. Start with simple polling questions (favorite TV show, sports team, or food) to allow students to learn to use the technology in low-stress situations.

### Data Collection

To use the ARS program for collecting student generated data, each ARS must be registered into the system. When using the RF with PowerPoint®, each clicker identification number must be entered. This can be completed by students if they purchase their personal ARS RF clickers or by the faculty if the clickers are institutionally owned. Web-based ARS can be registered online by each student.

### Assessments

Questions can be loaded at the beginning of class to test the students on the assigned readings. This strategy has the potential to increase on-time attendance, preparation for class, student engagement, and cumulative examination scores. It also sets the tone for the daily lecture. If students show a need for information clarification from the readings, the lecture can focus on these key points.

### Peer Education

A great activity that increases student interaction and collaboration is peer education. A question is posed to the class, all students enter their answer, and the data is collected. The answers are hidden from the class and the faculty indicates the percentage of the class that answered incorrectly. The students are then shown the question on a second slide and instructed to talk in groups of three to determine the correct answer. Additional time is allowed for this activity. Students are then asked to resubmit their answer; the data is collected, and then shown to the class. This exercise increases group collaboration communication skills, improves critical thinking skills, and increases student engagement.

## OVERALL IMPRESSIONS

### Budgetary Considerations

ARS clickers owned by the institution can be a cost saving choice when used for several classes. Each clicker has an identifying number and can be assigned to a specific student in each course. The data are entered and stored by course name and number to facilitate data analysis at a later date.

### Faculty Productivity

It is highly recommended that your chosen ARS program be 100% compatible with your institutional learning management system (eg, Blackboard, Desire2Learn, Web CT, etc.). The efficiency of loading attendance and assessment data directly into a grade book or statistical program will increase your productivity. Specific education competencies can be align with assessment questions, and then downloaded for statistical analysis. This is especially important when assessing subsequent courses that are dependent on knowledge acquisition in anatomy. Incorporating this technology opens up new opportunities for all athletic training education courses in planning and documenting ongoing program assessment.

### Practice Makes Perfect

When first implementing ARS you may need to schedule additional course time to accommodate the administrative aspects of ARS. You will need to set aside time for distribution of equipment, troubleshooting, and follow-up impromptu discussions. As with any new technology, your efficiency will improve over time.

## ADDITIONAL RESOURCES

The following list of resources will provide additional information to support your objective of incorporating ARS technology into your athletic training courses. These company websites and publications are a small sample of ARS companies, training opportunities, teaching strategies, and expected learning outcomes.

- Audience Response Systems, Inc.: http://www.audienceresponse.com/
- iRespond: http://www.irespond.com/?gclid=CMfqkong9KUCFQY65QodwXkxsA
- Meridi Audience Response: http://meridiaars.com/?gclid=CNTt0Mnf9KUCFcNM4Aod6iWanw
- Padgett Communications: http://www.pcipro.com/?gclid=CMK1wOff9KUCFUGo4Aodkiq2nQ
- Turning Technologies: http://www.turningtechnologies.com/

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