

**INTEGRATING THE BENEFITS OF TEAMWORK AND  
AUDIENCE RESPONSE SYSTEMS (ARS) IN AN ACCOUNTING CLASSROOM**

Keith Atkinson  
University of Central Arkansas  
204 Donaghey Avenue, COB 204C  
Conway, Arkansas 72035  
(501)450-5332  
keitha@uca.edu

Constance A. McKnight, contact author  
University of Central Arkansas  
204 Donaghey Avenue, COB 204O  
Conway, Arkansas 72035  
(501)450-5076  
cmcknight@uca.edu

Stephanie F. Watson  
University of Central Arkansas, COB 204J  
204 Donaghey Avenue  
Conway, Arkansas 72035  
(501)450-5311  
swatson@uca.edu

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## **INTRODUCTION**

Student participation and satisfaction in the classroom pose a challenge for accounting instructors. Some students often appear uninterested, unprepared, or confused during class, if they attend at all. Instructors must find unique ways to engage students to become active participants during class time to enhance the learning process and increase the comprehension and appreciation of accounting. Many have successfully utilized Audience Response Systems (ARS), also known as clickers. Others have effectively implemented group projects or team activities. This paper examines the combination of using clickers and teamwork in accounting courses over an entire semester.

Today's technology-driven, fast-paced competitive environment has opened doors for innovative ways students receive, study, transmit, and interpret information to enhance the traditional university classroom setting. For example, students can work homework assignments online, gather information at a touch of the button, utilize online quizzes, receive class notes instantaneously, and hold study sessions. Business colleges, textbook publishers, authors, and others constantly invent, enhance, and/or improve technology-driven education tools to enhance the learning experience.

The dilemma faced by instructors becomes which resources to utilize in and out of the classroom. Accounting instructors must attempt to identify which resources will effectively promote the study and understanding of accounting, help increase student core competencies, and in general enhance the overall learning experience. To be effective, instructors must combine technological advances and basic pedagogical methods to achieve course learning objectives. Different approaches and strategies will enhance the learning experience, and hopefully achieve learning outcomes. According to Needles (2014), the appropriate learning activities are dependent on the learning levels of the students, the skills the instructor is trying to develop, the interaction required, the placement of the activity during the semester, student motivation, class size, and time frame.

One technological tool that has proven to be successful in the accounting classroom is the Audience Response System (ARS), also known as clickers. Clickers allow students to respond anonymously to questions posed by instructors during class sessions. Each student has a clicker, similar to a television remote. After students answer, instructors can view how many students answered correctly and then adjust the lecture accordingly. Prior research has indicated that clickers increase accounting student satisfaction and performance in the class (Premuroso et. al, 2011).

In line with the AICPA's suggested teaching strategies and classroom techniques that address the core competencies, Needles (2014) suggests that there are a number of learning activities that are effective in motivating students to become more involved in their learning process. This

semester long activity combines an Audience Response System with the traditional pedagogy method of teamwork activities. Students are placed into groups at the beginning of the semester and compete for team points in the areas of participation, attendance, and preparedness. Students are called upon to be punctual (attend class and arrive on time), participate (actively contribute to classroom discussions), and be prepared each day for the topic at hand. Students are able to reap the benefits of ARS anonymity to answer questions in class while at the same time work as a team for reward and recognition. This combination actively engages students and increases satisfaction while encouraging and developing the AICPA identified personal competencies of interaction and communication.

### **ACTIVITY DESIGN AND IMPLEMENTATION**

This activity presents a unique approach to provide immediate feedback on learning, increase interaction among students, develop personal competencies, and increase student satisfaction in the classroom. It is designed for students to actively participate in a team setting for an entire semester. It has been used effectively at the sophomore, junior, and senior level (see evidence of efficacy section). Before the semester begins, the instructor should determine the desired number of teams. It should be based on the size and layout of the classroom. Team size tends to be between ten and twenty students. For example, three teams could be used if the classroom holds 45 students and seats are easily divided into three sections. Students can be randomly assigned to teams, self-select, or sorted based on predetermined criteria.

We sorted students based upon their perceived personal strengths/characteristics. Grouping students by personal strengths was an attempt to mirror the sorting of students in the Harry Potter books. The majority of students are familiar with this franchise. This component adds an additional level of excitement and interest in the classroom. Personal strength information can be obtained when students complete an online questionnaire, a required homework assignment on the first day of class. Students can identify the top three words from the predetermined list that describe themselves. Characteristics used effectively in the past include the following: intuitive, powerful, self-motivated, wise, balanced, honest, loyal, trustworthy, independent, intelligent, reliable, and truthful. In line with the Harry Potter theme, we also identified team or “house” colors and mascots.

The instructor should set aside approximately ten to fifteen minutes at the beginning of the second class to describe the semester activity, announce team members, and provide time for students to get to know other people in the class. Throughout the semester, the instructor can take attendance and present multiple choice questions using the clickers to the students based on the accounting topic at hand. The Audience Response System captures student scores on each question presented. The following scoring scale is suggested, although instructors may choose what works best to meet the objectives of the activity: 2 points for attendance (taken at the beginning of class) to capture punctuality, 2 points for a correct response to a multiple choice question to demonstrate preparedness, and 1 point for an incorrect response to a multiple choice question to reflect participation. Points can also be deducted or rewarded for other activities

during the semester, for example, actively participating in classroom discussions. Student scores can then be combined to determine team scores.

Regularly during the semester, the instructor should display team scores to encourage friendly competition. Scores should be displayed as an average student score instead of a total score since the number of students per team may slightly differ due to initial enrollment size and withdrawals. Displaying team points will promote interaction and communication among group members, as they will try to win the competition.

Near the end of the semester, team points should be totaled and averaged. The winning team should be awarded a professional honor or award, such as a pizza party with accounting professionals. The award should be appropriate for the class level. It is suggested that it not be for class points, however, as students cannot require other members to attend or participate in class.

### **EVIDENCE OF EFFICACY**

This activity was successfully used by three professors in four classes during the spring 2014 semester (one sophomore level class, one junior level class, and two senior level classes) and presented at the American Accounting Association annual meeting (Effective Learning Strategies session) in the summer of 2014. At the end of the spring semester, students completed a survey and responded to statements about the effectiveness of the clickers and the team competition using a five-point Likert scale (1=strongly disagree to 5=strongly agree). Students who were in two or more of these classes completed only one survey, resulting in 47 useable responses. In addition, clickers only with no team competition were used in two classes (one sophomore level class and one senior level class) as a control, resulting in 24 useable responses. Not all questions were answered by all students, resulting in varying sample sizes.

The questions and responses are summarized below in Table 1. The scores indicate that the students perceive that clickers increased their understanding of course material (Q1, 86% students agreed) and are effective in accounting courses (Q7, 72% students agreed). Utilizing a univariate test of proportions between the teamwork students and the control group, results indicate that clickers can be effectively combined in a student team setting to enhance the interest in accounting (Q9), punctuality (Q10), and participation via asking questions in class (Q15). The combination also encouraged communication and interaction among students at a significant level (Q17-20). Finally, the majority of students who participated in the team competition enjoyed its collegial atmosphere (Q23, 73% agreed).

**Table 1**

Clicker Follow-up Questions		Percentage of students who agreed with statement (4 or 5 response)			
		Total	Teamwork	Control	
Q1	The clicker questions increased my understanding of course material.	86%	87%	83%	
Q2	The use of the clicker increased my learning experience compared	76%	81%	67%	

	to other classes where my instructor did not use the clicker.				
Q3	Practicing problems using the clicker in class prepared me for exams.	76%	77%	75%	
Q4	I was more likely to attend class because of the daily use of the clicker.	38%	43%	29%	
Q5	I retained more the lecture materials as a result of using a clicker.	55%	55%	54%	
Q6	Using a clicker in class helped me stay more focused during class.	58%	57%	58%	
Q7	Overall, I believe using a clicker is very effective in an accounting course.	72%	74%	67%	
Q8	I believe the use of the clicker improved my final grade in the course.	37%	34%	42%	
Q9	The use of the clicker increased my interest accounting.	35%	45%	17%	*
Q10	I was more likely to be on time for class because of the clickers.	41%	49%	23%	*
Q11	I was more likely to participate in class because of the clickers.	51%	55%	41%	
Q12	I was more likely to prepare for class in advance because of the clickers.	35%	43%	18%	
Q13	I was more likely to pay attention in class because of the clickers.	61%	62%	59%	
Q14	Seeing clicker responses of all students make me feel less self-conscious about my own knowledge.	67%	70%	59%	
Q15	Using clickers and seeing clicker responses encouraged me to ask questions in class.	39%	47%	23%	*
Q16	Clickers in the classroom made me feel like I was part of a team.	61%	66%	50%	
Q17	I was more likely to get to know people in the class compared to classes that don't use clickers.	36%	47%	14%	*
Q18	Because of clicker use, I encouraged other students to answer questions correctly.	33%	45%	9%	*
Q19	Because of clicker use, I encouraged other students to be on time to class.	28%	36%	9%	*
Q20	Because of clicker use, I encouraged other students to attend class.	28%	36%	9%	*
Q21	I wanted my team to win the competition	84%	84%	N/A	
Q22	The reward at the end of the semester made me try to get more clicker questions right.	73%	73%	N/A	
Q23	I enjoyed the collegial atmosphere of a team competition.	73%	73%	N/A	
Q24	I was encouraged by periodic postings of house/team points.	73%	73%	N/A	
Q25	I enjoyed being sorted into houses/teams based on personal traits.	67%	67%	N/A	
Q26	I enjoyed the initial sorting day.	60%	60%	N/A	
* Significant difference between teamwork group and control group at the .05 level					

In summary, the combination of and ARS system and this team activity actively engages students, increases satisfaction with accounting, and encourages interaction and communication.

## REFERENCES

- Needles, B. E. Learning Activities: Building Blocks for Constructing a Successful Course. *Accounting Instructors Report* (Winter 2014).
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