

On the Road to ROI

A Current Report on How Audience Response Systems
Deliver Value in Corporate Training Applications

Mike Broderick
CEO, Turning Technologies



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Today more than ever, the importance of productivity to growth and increased effectiveness to profitability is clear. In response, organizations are harvesting the workforce for only the best and brightest employees. The mounting competition over the upper echelon of recruits is often referred to as "the global war for talent," and defined as the challenge to hire, train and retain the top human capital on the market. Increasingly, HR leaders and learning officers are being required to provide solid empirical data justifying training and development costs.

Keeping the attention of a tech-savvy generation takes more than handouts and overheads. Today's effective training programs go far beyond normal lectures and require enhanced participation from both trainer and trainee. During the past decade, technology-based solutions have found their niche in training environments in need of engaging, interactive instruction. When budget cuts are enacted, however, it is often training that sees less and less dollars in their expense account - and not without reason. According to industry leaders Bersin & Associates (2006), an esteemed research and consulting firm for enterprise learning and talent management, "There are not enough clear approaches, methodologies and tools to measure the business impact of training" (p. 14). Producing tangible results that will support spending initiatives is a great challenge for trainers.

One tool being increasingly used to maintain, justify and enhance an effective learning environment is audience response technology. Although originally developed over 30 years ago, the technology has been perfected in the last 10 years so that the systems are relatively inexpensive and integrated with standard presentation tools such as Microsoft® PowerPoint®. Audience response provides a connection between speakers and participants through the use of polling software and handheld response devices, eliminating the need for paper-based surveys or worksheets. The collected data and reporting capabilities of advanced response technology provides a way for trainers to measure effectiveness and incorporate the popular themes of innovation and evidence that industry experts encourage in learning environments. As support for audience response continues to grow in the training industry, its many benefits are becoming clearer to trainers who are preparing for a new generation of trainees. Used to acquire and keep valuable employees, audience response has paved a path for interactive training programs that provide instant connection, collaboration, assessment and data collection.

History

Audience response was first developed in Hollywood, California (Bugeja, 2008). Designed in the 1960s and used at the Audience Studies Institute of Hollywood, audiences participated in test screenings of then unreleased movies, commercials and television shows and voted based on their preferences (Collins, 2008). Although the concept is relatively simple, the technology was not. Response devices were large, awkward and wired to even bigger receivers that required extensive installation to function. Often early systems could only convey a "yes" or "no" response and did not allow for any specific details from audience members to emerge.

During the 1970s, Bill Simmons, a retired planner from IBM, developed a basic response system for anonymous voting in meetings (Bugeja, 2008). Labeled the "Consensor," the system consisted of dials in which participants could turn from zero to 10 to respond, and a hard-wired receiver that flashed red, yellow or green based on collective audience votes ("Consensor," 2009). Simmons patented the technology in 1974 and went on to form one of the first audience response companies, Applied Futures. While the technology provided a strong business that still



exists for the company today, the "command and control" style of management and meeting where employee input is regarded as irrelevant proved to be an obstacle in the early 1980s ("Consensor," 2009, para. 3). It was during this time that the response systems were beginning to be adopted in the education market by college professors seeking engagement.

In 1985, the Classtalk system was developed by a former NASA engineer and several educational researchers from reputable universities with National Science Foundation funding (Beatty, 2004). Graphing calculators were placed in the hands of students for responding, and were hard-wired into a Macintosh computer in order to calculate results. Its "pedagogically sound and feature-rich design" was so advanced that it still remains in high regard among educational response systems (Beatty, 2004, p. 3). However, due to its expensive price tag and special installation requirements, the system failed to gain mainstream popularity. The initial values of interactive learning models and student participation, however, were not lost in learning and training environments. When IBM was looking to enhance management training, audience response was incorporated into the curriculum.

IBM Corporate Education Study

In a study published in 1988, Dr. Harold M. Horowitz., Program Director of Educational Technology at the IBM Corporate Education Center, detailed the results of a six month experiment that tested the validity of response systems in corporate training (Horowitz, 1988). At the time, IBM's training policy required "all new managers to attend a one week course at corporate headquarters within three months after appointment" (Horowitz, 1988, pg. 1). Typically, a class consisted of 100 students divided into five groups of 20, which met separately but occasionally convened for a special presentation.

Detailed observations of all classes were taken during the six months and did not interfere with active learning. One specific course, regarded as the best at the Center, was selected as the control of the experiment. During class, observations confirmed objectives were met, but improvements could be made to productivity and effectiveness. Technology was considered as one of the instruments that could increase training efficiencies.

Soon after the first experiment concluded, an "Advanced Technology Classroom" was created to affirm the conclusion that "technology could play a vital role in focusing attention, supporting interactivity, improving logistics and foster the facilitation style of an instructor" (Horowitz, 1988, pg. 6). The classroom was outfitted with various presentation technology, but was also suited with a basic response system of wired keypads for student responding and a special program that integrated with the latest version of the PC. The goals of implementing the response system included student activity, communication, learning desire and commitment, customized instruction and data collection. From the study, the following conclusions were reached:

- **Increase in productivity by 20-30%**; learners grasped more points in the same allocation of time
- **Test scores went up by 27%** as a result of new facilitation models that included the application of audience response
- Participants rated the environment a **6.6 out of 7 in favor of audience response**



The conclusions drawn from the study look to advance the "classroom of the future" and the relatively inexpensive technology that plays a vital role in meeting educational requirements (Horowitz, 1988, pg. 12). The study championed the use of interactive response systems to enhance learning and training initiatives, providing additional evidence that corporate training could benefit from the use of audience response.

Training the Next Generation

In spite of the IBM study, throughout the 1990s and 2000s, the largest growth in implementation of audience response technology occurred at the college and university level. The technology evolved greatly during that time with major drivers contributing to improvements in both cost and ease of use. The systems became smaller, wireless and functioned hand in hand with computers. Some of the most advanced response systems on the market today have response devices no larger than a credit card, utilize radio frequency numbered keypads in lieu of wires, and rely on USB receivers with plug and play portability for easy transportation. Polling software is often integrated with standard presentation programs such as PowerPoint or Keynote®. Further development has provided for polling in conjunction with any application so that presenters using PDFs, web pages or multimedia files can still ask questions and gather data instantly. Justifying training dollars spent and measuring return on investment could easily become a click of a button with reporting capabilities that export into learning management systems and provide detailed reports in Excel®. In the past few years, higher education institutions have once again been quick to embrace the newly-designed response technology for lecture, testing and tracking purposes. Administration aside, students are reaping the benefits of audience response in the form of better test grades, improved GPAs and pleased parents.

In one of the largest studies known to date, professors Tanya Joosten and Robert J. Kaleta headed up a project to integrate response technology in University of Wisconsin classrooms (Joosten & Kaleta, 2007). The keypads, affectionately dubbed "clickers" for their resemblance to TV remotes, were given to nearly 3,500 students in classes taught by 28 faculty members in four UW campuses. Grade and course completion data were compared during the 2004 fall semester without clickers and the 2005 fall semester with clickers. At the conclusion of the study, faculty members were asked to complete a 68 question survey as well as participate in focus groups and written narratives. Students were also asked to complete a 61 question online survey about their experience with the clickers. The following conclusions were reached:

- A majority of faculty agreed or strongly agreed that the use of clickers helped **improve student engagement (94%), participation (87%) and interaction (68%)**
- A majority of students agreed or strongly agreed that the use of clickers **helped them feel more engaged (69%), increased participation (70%) and allowed them to pay closer attention (67%)**
- A majority of faculty (74%) and students (53%) agreed or strongly agreed that that the **clickers improved student learning**



- More students **achieved a grade of C or better in clicker classrooms (85.27%)** compared to non-clicker classrooms (83.04%)
- A majority of faculty (81%) and students (59%) agreed or strongly agreed that **using clickers produced a positive experience**

The statistics produced from the study confirmed what professors had experienced on an individual basis. During the experiment, the classroom dynamics changed to produce more attentive, active learners. Many students reported no longer being afraid to share opinions or think critically when questions were asked. The majority of students agreed that the clickers were beneficial to learning initiatives, making response technology an advantage to participating classes.

From Thermodynamics to Times Tables

Audience response may carry the connotation that its use is only relevant in elective classes, but when the technology was implemented in a required physics course, similar results were found. Dr. Neville W. Reay, a physics professor at The Ohio State University, noted the improvements a response system and the clickers had on his classroom during the 2006-2007 academic year in a series of articles published in the *American Journal of Physics* (Gorder, 2008). For three consecutive semesters, student performance in clicker and non-clicker classes of an introductory electricity and magnetism course was carefully monitored and analyzed. The findings included the following:

- Approximately **10% increase on final exam scores** earned by students using clickers throughout the physics curriculum versus those students who did not use clickers
- **Instant assessment of student understanding in real-time**, allowing instructors the ability to dictate the direction of class material
- Development of the "question-sequence method," that offers a series of questions to test a concept instead of a solitary question, **allowing students to grasp ideas in a shorter period of time** (Gorder, 2008, para. 13)

According to Dr. Reay, "A hundred years ago, not so many people went to college, and classes were smaller. It was easier to engage students in learning. Now, we have a class with 700 students in it. And the question is, how do you engage 700 kids? Well, clickers can do it. When we conduct our quarterly surveys, we find that the percentage of students enthusiastically favoring the use of clickers is higher than 90 percent" (Gorder, 2008, para. 8, 18). Dr. Reay continues to advocate using clickers in his class, although he does not require it. The results of his findings, however, support further implementation of response systems in education settings.

With the passing of laws such as the No Child Left Behind Act (NCLB), the campaign to develop the best learners has reached our playgrounds. NCLB holds schools more accountable for student achievement in the form of statewide standardized testing and district-wide "report cards," giving parents the option of removing children from low-performing schools ("Four Pillars," 2004). In an effort to meet advanced NCLB criteria, response technology has steadily



been trickling into K-12 classrooms. Researching the idea that response systems will improve motivation, engagement and achievement in students, Dr. Tina Sartori completed a study at Pepperdine University in 2007 (Sartori, 2008). A district in the southeast United States collected the results of using response technology in five middle school classrooms, asserting the belief that response systems were beneficial to learning. The data showed that on average, each class using the technology experienced a 15 point increase between pre-test and post-test scores. The most significant information, however, came from the survey conducted at the conclusion of the study.

Teachers reported that they preferred to teach with the response technology, and it proved to be a useful instrument rather than a waste of valuable class time (Sartori, 2008). Students also agreed in survey findings that the use of clickers allowed for more involvement in class materials and learning was simply more fun. A majority of students were in agreement that if the clickers were implemented in all classes, grades would improve. In its conclusion, the study indicated that with the use of response systems, assessment "may experience a historical shift from a labeling process to an instructional practice used to enlighten and direct learning goals" (Sartori, 2008, p. 125). From the findings in the educational realm, using audience response as a learning tool has made an impression in the minds of tomorrow's business leaders.

Kirkpatrick Evaluation of Audience Response

Delivering cost-effective training to employees with measurable results has long been a struggle of learning officers. Ensuring that a training environment is equipped with useful tools to achieve such results remains another challenge. As suggested in the findings from the IBM study conducted over 20 years ago, the significant evidence discovered with the application of response technology in classrooms indicates that corporate training sessions would greatly benefit from similar programs. While Dr. Sartori (2008) describes her research with response technology as "overwhelmingly positive" (p. 129) corporate education has been slow in adopting audience response as compared to educators in higher education and K-12. In order to successfully measure the effectiveness of audience response in corporate training settings, the Kirkpatrick Model of Learning Measurement can aid in the evaluation of potential outcomes.

During his time teaching at the University of Wisconsin, Dr. Donald Kirkpatrick needed a way to evaluate his seminars (Hayes, 2008, para. 2). Initially, he began by only evaluating the reaction of his students, but soon took the study a step further. He wanted to determine if his teachings were being applied in the workplace, and consequently improving employee behavior. In an effort to tap into his audience, Kirkpatrick developed four levels of assessment including: **reaction**, what was thought and felt about the training by participants; **learning**, the resulting increase in knowledge, skills and change in attitude; **behavior**, extent of behavior change; and **results**, the impact of business resulting from the learner's performance.

In 1959, the editor from the American Society of Training and Development asked Kirkpatrick to explain his levels in a series of four articles (Hayes, 2008, para. 4). Due to the simplistic and universal nature of his technique, Kirkpatrick's four levels gained tremendous popularity, spawned several books and remain today the foundation in which training programs are examined. In recent years, a fifth level has been suggested by Dr. Jack Phillips in his book "Return on Investment in Training and Performance Improvement Programs" (Strother, 2002, p. 2). In this level, data is converted to monetary values and compared to the cost of training programs. The now-adopted five levels of learning evaluation demonstrate the merit audience



response can have in training programs, verifying return on investment.

As demonstrated in previous studies, the benefits of using audience response for training purposes, analyzed through the lens of the Kirkpatrick model, include the following:

Level One:

- Engaging, interactive presentations produces enhanced user experience
- Anonymous polling increases participation with confidential responding
- Interactive environment sparks impromptu conversations and facilitates group discussion
- Gaming activities and group competitions create camaraderie and an exciting atmosphere

Level Two:

- Tracked polling provides insight into individual trainee retention
- Pre- and post-testing allows for detailed review of material and higher overall retention rates
- Pre- and post-testing allows for instant audience assessment to gauge class and individual trainee understanding
- Real-time data collection and detailed reporting provides for further analysis of training results and identification of potential outcomes
- Collected information provides insight into effective and non-effective learning methods

Level Three:

- Post-training survey at a later date allows employees to note perceived behavior changes
- Post-training survey at a later date allows co-workers to note perceived behavior changes of colleagues
- Post-training survey at a later date allows supervisors to note discernable behavior changes in subordinates

Level Four:

- Post-training survey of all employees at a later date provides insight into the influence and effectiveness of training on organization



- Post-test of material covered at a later date provides insight into retention of training

Level Five:

- Tracking of sales figures for sales departments that received training provides confirmation on whether or not training had a direct correlation to revenue
- Tracking of sales figures for the noted individual "best performing trainees" within sales departments provides confirmation whether or not training had direct correlation to revenue

In Level Three, the question "Did participants apply what was learned in training to their jobs?" becomes harder to answer. A 2008 study by The Aberdeen Group entitled "Achieving Real Business Value with Learning and Development" shows that only 29% of industry average companies are measuring the extent that employees are applying learning and changing their workplace behavior (Martin, 2008, p. 16). Level Four business impact and Level Five ROI measurements are applied in even fewer organizations, often the result of inadequate use of proven learning technology and methods. Nearly 60% of companies surveyed noted the ability to "identify and assign specific quantifiable metrics to learning" as a high priority over the course of 2009, making a case for the implementation of technology like audience response (Martin, 2008, p. 16).

Polling information gathered using response technology can measure learning retention, evidence of affected behavior and job impact analysis; however, many companies are slow to adopt measurement tools. According to Josh Bersin of Bersin & Associates (2006), "there is almost a completely inverse relationship between the value of a measurement and the frequency of its use. Training managers are focusing their efforts on measuring the things that are the 'easiest' to measure, not the most valuable" (p. 7). Audience response is a tool that can effectively enhance learning environments while measuring results - beneficial for trainers wanting to yield both qualitative and quantitative results.

Engaging Future Employees

With technology playing an increasingly important role in our everyday lives, trainers must adapt to the new wave of employees reliant on such tools. Utilizing technology has never been more vital to organizational outcomes. So how do you engage a population of learners that text more than they talk? Technology is clearly making a difference when reaching the next generation of employees. But what tool can yield useful, measurable results at a low cost? As frequent studies indicate, audience response may just be the answer that trainers discover. Creating the connection between knowledge retention and workplace behavior may be as simple as asking meaningful questions during training and instantly collecting data for further analysis. However, which response system is the best for your establishment's needs? There are seemingly many to choose from. The following are a few key points to keep in mind when evaluating available audience response technology for your application:

- Simple, intuitive polling software 100% native to PowerPoint and Microsoft Office Suite - assess ease of use



- Flexible polling program that will also integrate and poll in conjunction with other applications including web browsers, Word[®], Keynote or Adobe[®] applications
- Option to poll anonymously or track by individual for further audience analysis
- Ability to insert questions “on-the-fly” during live presentations without difficulty
- Ability to ask multiple choice, fill-in-the-blank, ranking or even essay questions
- Ability to instantly compare two sets of polling results side-by-side
- Ability to "slice" question results by demographic data in presentations and reports
- Gaming and team competition options for further participant collaboration
- Numerous detailed reports that will automatically generate in Excel[®]
- Ability to export results into learning management system or employee tracking system
- Real-time feedback that will instantly generate graphical information
- Plug and play hardware setup that requires little technical assistance
- Radio frequency (RF) technology that will effectively communicate 1000s of responses
- Portable, compact hardware such as credit-card size keypads for easy transportation
- Keypads with alphanumeric entry and LCD screen for open-ended questions
- Ability to poll without the use of a computer or projector via handheld receiver
- Support for web-based polling and other virtual collaboration tools
- Ability for participants to respond using mobile devices, laptops, desktops and more
- Support for hosting multi-site conferences and polling remote locations

The implications for the future of audience response in the training industry remain clear. Technology like audience response is playing a critical role in learning success within classrooms, which can only translate into further training success across corporations due to its powerful effect on return on investment. Bersin (2007) contests, “In today’s economic model, the training organization itself must take on significant investments in technology. This technology (e.g. LMS, tools, infrastructure and the staff to support it) is fixed, regardless of the number of learners served. The end result is that we can reach far more people with much more



content for the same cost” (p. 8). With support for audience response in corporate environments growing, the business impacts are certain to be numerous and notable.

For more information on audience response provided by Turning Technologies, visit www.TurningTechnologies.com.



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