Integrating Clicker Technology at Nursing Conferences:
An Innovative Approach to Research Data Collection

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ABSTRACT

Purpose: A pilot demonstration of integrating an audience response system i.e. “clickers” at a nursing education conference as an engaging tool for using the research process for learning through immediate research results is presented.

Method: A convenience sample of nursing conference attendees were surveyed using clicker technology prior to a panel presentation on the “Impaired Health Professional.”

Findings: The 208 subjects who used the clickers were mostly women (93%) and were nurse educators (81%) with at least 20 years of nursing experience (75%). The ease of data collection, real-time analysis, the active engagement of both participant and presenter were all findings of this study. The utility of this tool as a stimulus for discussion and learning was also reported.

Conclusions: Pilot testing the clicker at an education conference for data collection and educational purposes was an important goal and positive outcome of this study. Researchers and educators are advised on the planning steps required to make this a successful experience.

Keywords: audience response system, clickers, nursing education conference.

INTRODUCTION

“A large body of research shows that classroom methods that make students active result in substantially greater learning than pure lecturing does.” [3]. The value of audience response systems as an enhancement for the classroom learning environment has been well documented in the literature [2]. In order to promote a learning environment, clicker technology combined with the computer software’s ability was used to conduct immediate data collection, but more importantly to also analyze and display survey descriptive findings of audience feedback to material presented instantaneously.

AUTOMATED AUDIENCE RESPONSE SYSTEMS

The use of audience response systems, better known as “clickers,” has been integrated into many educational environments to engage students in interactive learning. Using a small handheld device, similar in appearance to a calculator, students are able to answer questions that are imbedded into a PowerPoint presentation. The planning process requires the development and insertion of these questions into a software program which is projected during the presentation. The participants essentially “point and click” their responses to questions that appear on the PowerPoint slide, therefore requiring minimal training for this user-friendly technology. The “clicker” device transmits an infrared signal to the location of the presenter’s receiver device [2]. This receiver allows for a nearly immediate visual display of the audience’s statistical response to a designated question on the PowerPoint slide. This instant feedback provides clarification of the state of the audience’s knowledge and a learning assessment, and promotes audience dialogue. A powerful feature of an audience response system is that it can be set to accept responses anonymously or identify unique users. This ability to collect responses anonymously and voluntarily opens the possibility that audience response systems may be well suited for research, provided the appropriate steps are taken in the planning stages including obtaining human subjects protection through the institutional review board (IRB) at your facility. This maintenance of privacy offered by the clicker technology is beneficial because it permits responses to sensitive queries that avoids the need for participants to speak openly or raise hands overtly. This creates a nonjudgmental and nonthreatening learning environment.

PURPOSE OF THE PILOT STUDY

For the June 2008, Drexel University Nursing Education Institute (DUNEI) in Atlantic City, New Jersey, the planning committee determined that it would be helpful to integrate this
technology into an expert panel presentation on the Impaired Health Care Professional, one of the major themes for the conference. Through many discussions, it was evident to the planning committee that this is a sensitive, even controversial, issue. As there was no clear agreement among ourselves based on either our own experiences as nurses or a knowledge base, or from both legal and ethical perspectives, it was likely that conference attendees had similar divergent opinions and knowledge levels. This topic seemed particularly fitting for use of an electronic input system that would allow participants to express their opinions anonymously. In addition, the presenters believed that it would be informative to use the clicker during this presentation for the same reasons it is used in academia. These reasons include the ability not only to assess opinions, but also to identify knowledge of a topic and to engage participants actively in learning, not only about themselves, but also about colleagues in an anonymous and safe environment. Furthermore, there was interest in assessing whether the technology would be a helpful data collection tool, recognizing its limitations (i.e. the use of a convenience sample). In addition, the presenters assumed that some inherent bias might exist on the part of attendees. For example, it would be possible that nurses attending the panel might be pursuing more knowledge on the topic, might have known some impaired professionals, or were themselves struggling with the issue. Despite these limitations, the presenters conducted the survey with these conference attendees, and worked with the data throughout the panel presentation. It was learned later that the data was of great interest to the panel of presenters who were able to adjust and respond to audience data that was shared and readily available.

BACKGROUND

One of the major themes of the DUNEI conference concerned the issues of working with impaired health care providers. This topic proved controversial among the conference planning committee members and lead to heated discussions during meetings. This committee felt that strong opinions related to this topic may not often be shared publically. Clicker technology offers an ideal data collection tool for sensitive information like chemical impairment as the data can be collected in an anonymous, safe format. Members of the conference planning committee developed the initial questions and forwarded the questions to an expert panel of presenters for review and modification. This technique helped to engage the expert panel in a more comprehensive preparation of their presentations. Subsequently, the immediate feedback from the audience during the panel presentations allowed the panelists to respond immediately to the expressed needs of the audience. Furthermore, at least one of the panelists reported that he had altered an individual workshop presentation later that same day based on the outcome of the audience response during the panel presentation.

METHOD

In contrast to the classroom use of the clicker technology, preparation for this pilot study involved completion of the University’s institutional review board (IRB) process and development of written and verbal disclosure statements for conference member participants prior to the conference date. This was a critical step once consensus was reached to include this technology as part of the panel presentation as ethical review, and protection of human subjects must always be obtained prior to data collection. It was determined that it was not necessary to secure individual consents from conference participants based on the inclusion of written and verbal disclosure prior to the expert panel’s presentation. Responses to projected PowerPoint questions were deemed to be voluntary, confidential, and anonymous. The IRB process was uncomplicated because of this exemption as the ethical protection of participants was assured.

INSTRUMENT DEVELOPMENT

As part of the process, DUNEI committee members developed a variety of case studies, as exemplified in Table 1, integrating more complex scenarios to create a stimulus for discussion. The planning committee also developed focused multiple choice questions requiring short answers (agree/disagree and yes/no) with the intent to enhance interaction and discussion without overburdening the respondents with content or excessive response time. These included 8 questions related to: workplace issues (3 questions), legal responsibility and consequences (3 questions), and professional issues (2 questions). A large majority (75%) of respondents reported that they had the experience of working with an impaired health professional. Many (67%) were supportive of rehabilitation and monitoring processes that enabled the impaired nurse to return to work. See Table 2 for more detail. The expert panel presenters reviewed the multiple choice stems to questions for their face validity. The question creation feature of the audience response system program was used to insert these questions into an interactive PowerPoint presentation to facilitate data collection and analysis. As noted by Twetten et al. [6], the software can be complex to faculty unfamiliar with technology and may necessitate assistance from information technology (IT) staff support. However, technical difficulties were not experienced during the length of the conference. The audience response system proved intuitive and easy for those preparing the PowerPoint presentation to use and for the attendees who operated the clickers to indicate their responses.

DEMOGRAPHICS

The conference study participants were a convenience sample of 208 respondents that were predominantly women (93%). The majority were directly involved in education as either academic faculty (63%) or as staff education faculty (18%). Fifty-eight percent reported that their current and primary practice setting was at a college or university setting, while thirty-five percent were in a hospital setting. Twenty-four percent had less than 5 years experience in the role of nurse educator; however, more than half (58%) had twenty-five years experience as a nurse. Demographics details are listed in Table 3.

FINDINGS OF PILOT STUDY

In a debriefing session with the researchers and planning committee members, observations regarding the process were shared. The concerns regarding system dysfunction
were not realized. In addition, observers noted active engagement of participants and enthusiasm when slides were projected. Participants were able to see results in two formats; one with percentages of responses, the other represented as a bar graph. The graphic image is much easier for interpreting the frequency statistics, and thereby user-friendly for non-research oriented attendees. It was noted that the case studies generated animated dialogue of shared experiences that promoted a sense of group cohesiveness among the conference attendees.

DISCUSSION

Since we lacked experience with the technology and format, we were not sure how participants and panel presenters would react to integrating the clickers into the presentation. A pleasant and unexpected experience was that the presenters actually included the data into their discussions as the results were being projected, leading to an active exchange with the audience. This parallels the benefits of contingency teaching addressed by Brown and Draper [1] that learning sessions can be modified based on learner response to questions. With the ease of integration of the clicker technology into the presentation, speakers were able to clarify, address and respond to clicker questions, and encourage open dialogue with the presented case studies on sensitive and common experiences, thereby fulfilling an enhanced learning experience for all. Conference participants were observably delighted with the technology appearing to enjoy using the clickers and the apparent provision of immediate feedback. Participants were actively engaged throughout the presentation. The questions and audience discussion generated unsolicited comments made by attendees after the session indicating that they valued the questions posed and appreciated learning how their responses compared to fellow attendees.

The conference committee and researchers were very satisfied with the ease of implementing the computer software and its reliability for obtaining and immediately analyzing data. As a data collection tool, it collects and analyzes quantitative data using a convenience sample. Typically attendees at conferences, also a convenience sample, are often surveyed using a pencil/paper format and may wait months to hear information about the survey. Using the clicker provides fun, quick, responses thereby enhancing the learning and research experience (i.e. respondents get immediate feedback as to how they and others react to a given topic). Given the limitations previously identified, this process has clear advantages for people who often experience frustration in taking surveys and rarely finding out study findings.

CONCLUSIONS

The positive participant response to the “clicker” audience response system and the results obtained has identified this method not only as easy and reliable, but also as an enjoyable and engaging tool for learning and research in a nursing education conference environment. Clearly the ability to collect responses easily, anonymously and voluntarily in real-time indicates that this tool is well suited for both education and research. This benefit does not override the ethical responsibility of ensuring IRB approval for protection of human subjects prior to the data collection process. Carnegie Mellon and other institutions of higher education view the technological phenomena of mobile computing as an opportunity for integration of systems that are useful for people [4]. These efforts will provide increased opportunities for engagement and can lead to a major shift in how and where learning and research take place. The successful application of clicker technology to our pilot study demonstrates its exciting potential as an innovative tool for bridging nursing education with nursing research in a conference setting.

Table 1: Impairment of the Health Care Provider Case Study

<table>
<thead>
<tr>
<th>Clicker Question: Have you ever experienced a situation similar to this in your nursing career?</th>
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<tbody>
<tr>
<td>1. Yes</td>
</tr>
<tr>
<td>2. No</td>
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</table>

A nursing student, Ann, is found sleeping in the nurses’ lounge. Ann states she “borrowed” a Darvon for her migraine headache from her fellow nursing student, Beth, because she did not want to miss her clinical day.

Beth, who had a prescription for the Darvon for treatment of her chronic back pain, freely admits to lending her friend Ann the narcotic medication.

Ann denies any recreational drug or alcohol use and, up to this incident, is doing well in the course and clinical experience. Ann was sent to employee health and submitted a urine test which was positive for the Darvon derivative.

Beth freely admits to sharing her medications with her friends as needed.
Table 2: Impaired Health Professional Questions

1. Have you ever had the experience of working with a health professional that was impaired?
   - Yes
   - No
2. Have you ever had to report a professional peer for possible impairment?
   - Yes
   - No
3. Can an employee take action against a reporting nurse if the allegations turn out to be false?
   - Yes
   - No
4. Failing to report a case of known impairment can have legal ramifications.
   - True
   - False
5. If a nurse is convicted of a DUI, it has no impact on their professional license.
   - True
   - False
6. Anyone who suffers from an addiction should not be in the health care profession.
   - Agree
   - Disagree
7. I would be comfortable assisting with the rehabilitation program monitoring process of a chemically impaired nurse returning to work.
   - Agree
   - Disagree
8. I have the right to refuse to work with a known, rehabilitated, chemically dependent professional peer.
   - Agree
   - Disagree

Table 3: Demographic Data

1. Gender:
   - Women (93%)
   - Men (7%)
2. Current and main job classification:
   - Nurse Educators (81%)
   - Nursing administrator (9%)
   - Advanced practice nurse (4%)
   - Other (4%)
3. Total years of work experience in the above role:
   - < 5 years (38%)
   - 6-20 years (40%)
   - 21-25 years or more (23%)
4. Total years of work experience as a nurse:
   - < 5 years (2%)
   - 6-10 years (5%)
   - 11-20 years (9%)
   - > 20 years (75%)
5. Total years of experience as a nurse educator:
   - < 5 years (24%)
   - 6-10 years (22%)
   - > 10 years (53%)
6. Current & main practice setting:
   - Academic and Hospital (93%)
   - Technical school (2%)
   - Home care (2%)
   - Industry (1%)
   - Clinical research (0%)
   - Office practice (0%)
   - Long term care (0%)
7. Highest degree achieved:
   - ADN (0%)
   - BSN (10%)
   - Graduate (89%)
   - Other (1%)

REFERENCES


