

Evaluating the Impact of an Interprofessional Education Simulation: A Methodology

Introduction

In an effort to improve the quality of health care delivery, training health professional students to work effectively in interprofessional teams has become a high priority of many educational establishments, and the health professional community (Institute of Medicine, 2015; Association of Departments of Family Medicine, 2013). Giving students the opportunity to learn about and interact with students from other health professional programs is the purpose of interprofessional education (IPE), which is a required element of most foundational health professional curricula, including medicine, pharmacy, nursing, and others (Association of Departments of Family Medicine, 2013). IPE curriculum is not standardized across different education settings and is delivered using a variety of methods. Assessing the impact of these IPE activities on learners' ability to work effectively in interprofessional teams is difficult due to the lack of established cost-effective assessment methods. Limited assessment tools has also contributed to difficulties in efforts to improve interprofessional education curriculum.

The University of Utah Interprofessional Education program has developed an IPE curriculum including a number of simulations and activities to provide students across the health sciences with opportunities to work in interprofessional teams to find solutions to common problems encountered in interprofessional health care practice. One such IPE simulation focusses on the disclosure of medical errors as an interprofessional team and includes students from pharmacy, medicine, nurse practitioner, and physician assistant programs. Students participating in the simulation were divided into interprofessional groups and given the details of a fictional medical error scenario wherein an eight year old patient was inadvertently given three incorrect doses of antibiotics. The students were instructed to act as the patient's clinicians and inform the patient's guardian (the role being played by an actor) of the medical error as an interprofessional team. In order to evaluate the impact of this IPE simulation and compare the impact on pharmacy

students with students from other programs, we implemented a mixed methods research study, given exempt status by the University of Utah IRB, utilizing a validated survey instrument and student focus groups. This study also sought to develop assessment methods that were cost-effective and generalizable to other IPE activities at the University of Utah and at other educational institutions.

Methodological Justification

The methodology utilized in this study was a mixed methods approach collecting and interpreting information on student experiences with the disclosing medical error disclosure simulation. By utilizing student perspectives, the research team increases the understanding of the impact of simulation on the students, improving the potential for program improvement (O’Neill & Wyness, 2005). The mixed methodology was chosen largely due to an article the Institute of Medicine Committee on Measuring the Impact of Interprofessional Education on Collaborative Practice and Patient Outcomes published recommending the use of mixed methods approaches in evaluative research on IPE (Institute of Medicine, 2015). This article emphasized that mixed methods research would “yield insight into the ‘what’ and ‘how’ of an IPE intervention/activity and its outcomes” (Institute of Medicine, 2015). A mixed methods approach enables the research team to benefit from the strengths of quantitative and qualitative methods to provide an in depth exploration in to the impacts of IPE simulations (Creswell, 2014; Institute of Medicine, 2015).

The University of Utah regularly collects electronic quantitative survey data and limited qualitative data through reflective essays from students before and after IPE simulations. The surveys are conducted within one week before the simulation (pre-IPE) and within one week after the simulation (post-IPE) and are required by all students participating. These surveys

contain Likert scale multiple choice-based questions on attitudes towards interprofessional education and medical error disclosure, several open-ended questions, and some basic demographic information. The pre-IPE and post-IPE surveys utilized the validated Interprofessional Attitudes Scale (IPAS), a tool designed to assess attitudes associated with Core Competencies for Interprofessional Collaborative Practice (Norris et al., 2015). The pre- and post-IPE surveys also contained questions used to generate a unique anonymous code associated with each student that allowed the pre- and post-IPE responses to be compared.

In order to provide more comprehensive qualitative data on the impacts of the medical error disclosure simulation on interprofessional competencies, it was decided to have an additional data collection method to complement the survey information. Focus groups were chosen because “the group interaction can serve as a catalyst to generate unique insights into understanding shared experiences and social norm” (Bradley, et al., 2009). The discussions facilitated by focus groups help to illustrate the similarities and differences in opinion of the various groups of student simulation participants, e.g., pharmacy students compared to nursing students (Bradley, et al., 2009).

Selection and Recruitment of Participants

In order to gather a wide range of perspectives on the simulation, all students who had participated in the IPE disclosing medical errors simulation during the summer of 2016 were invited to attend a focus group. This particular simulation included 3rd year students in the Doctor of Nursing Practice program, 3rd year students in the Doctor of Medicine program, 2nd year students in the Doctor of Pharmacy program, and 2nd year students in the Physician Assistant program. Participants were recruited primarily through email invitations from the research team to the students’ university email addresses. Another recruitment technique was

researchers making announcements about the focus group opportunities at the end of classes. Student representatives and program administrative staff also contacted students about the opportunity. The incentives for students to participate in the focus group were explained in all communications. These incentives were a \$5 gift card to the campus store and lunch provided during the focus group.

Focus groups were conducted several months after the simulation so that students would have sufficient time to assimilate the knowledge and experience gained from the simulation into their educational and professional careers. Prior to scheduling the focus groups, the research team distributed availability polls to the students to find what days and times would be the most convenient. The researchers also coordinated with program administrators to choose times and days that would not conflict with classes and other program requirements.

36 total students participated in the focus groups. The majority of students that did not attend a focus group did not give a reason, and rather did not respond to the invitation. Of the individuals unable to attend that did respond cited their busy schedules and unavailability to be the reason for their nonattendance. Though a relatively small sample size, the data collected in the focus groups, paired with the survey data offers valuable information on the impact of the disclosing medical errors simulation.

Focus Group Demographics				
Health Professional Program	Number of Focus groups	Number of Attendees in Each Focus Group	Total Number of Students Participating in a Focus Group	Total Number of Students Participating in the Simulation
Medicine	3	10, 3, 4	17	85
Pharmacy	2	3, 3	6	50

Nursing	1	3	3	36
Physician Assistant	2	5, 5	10	15

Focus Group Implementation

Focus groups were conducted in group meeting rooms, accommodating up to fifteen individuals, located in the campus’ health sciences buildings. These rooms were chosen due to in part to their convenience for students to travel to. Additionally, these spaces, as opposed to rooms used for classes, were neutral to the student with no significance to the student programs, ensuring that the space did not impact the study (Beyea, 2000). Another reason for their selection was the fact that these rooms were comfortable in size and layout (Beyea, 2000). Prior to each focus group, a member of the research team provided a consent form to the participants. The research team members explained the consent form, including the risks and benefits of the research study, then gave the participants the opportunity to ask questions, and then sign the provided consent forms if they elected to participate. Each participant was also given a copy of the consent form for their records.

Trained volunteers moderated the focus groups utilizing a script (included below). In addition to a moderator, each focus group also had a trained volunteer to act as observer, taking notes, starting the recorder, and providing a summary to all participants at the end of the focus group to ensure understanding and accuracy (Glitz, Hamasu, Sandstrom, 2001). The volunteers were trained and supervised by experienced members of the research team, helping to ensure that the focus groups ran effectively. The moderators and observers were taught the principles of running effective focus groups and provided with the necessary materials to facilitate the

discussions (Glitz, Hamasu, Sandstrom, 2001). A number of the volunteers were librarians with the health sciences library. Other volunteers included master’s students from a variety of non-health professional degree programs on campus. All volunteers had no affiliation with a specific health profession included in the simulation. By selecting neutral moderators, professional bias was minimized and students could feel comfortable to speak openly without fear of having their comments impact their progress in their program (Beyea, 2000).

The script the moderators utilized included seven open-ended questions. These discussion questions were developed from the primary research question by the research team. Prior to the script’s utilization in focus group setting, the questions were tested for effectiveness with simulation facilitators. The questions are included in the figure below.

Focus Group Questions
1. Think back to the beginning of the summer session. What did you know about disclosing medical errors prior to the simulation?
2. IPE is students from 2 or more professions learning with, from, and about each other in order to work more effectively in collaborative teams. How did this simulation impact your ability to work collaboratively on an interprofessional team?
3. How would you describe your experience working as a team to address a simulated medical error?
4. What do you now feel are the important elements of an effective medical error disclosure?
5. We are interested if you have observed or participated in a medical error disclosure following the simulation? If so, how would you describe that experience?
6. What is your confidence level in disclosing medical errors?
7. <i>What additional comments do you have on the educational impact of the medical error disclosure IPE simulation?</i>

The audio of the focus groups was recorded by the research team. These audio files were stored on a member of the research team’s password protected computer and a secure file sharing website accessible only to the research team members. The files were transcribed by a third-party company and checked by the research team for accuracy. Hand-written notes by the observer of the focus group were also transcribed. These notes acted as a back-up data source in case of

technical difficulties regarding the recordings. These notes became the primary source for two focus groups due to malfunctioning of the recording device. The subjects' anonymity was protected through removal of their names and any identifying information from all transcripts.

A total of eight focus groups were held. Data collection ended in May of 2017.

The table below shows the number focus groups per program, and the number of attendees. After multiple focus groups had been conducted for the majority of the programs, data collection was concluded due to the fact that the research team found two focus groups per discipline to be sufficient to answer the research question when paired with the previously collected survey data. Only one focus group was performed for the nursing graduate programs because many of the students had participated in their program remotely and were therefore unavailable to participate in the on-campus focus groups.

Data Analysis

Transcribed data from the interview audio files were uploaded to the qualitative software NVivo™ where an initial deductive content analysis took place using the Core Competencies for Interprofessional Collaborative Practice and the Interprofessional Attitudes Scale as codes. The transcripts were divided between three pairs of researchers, and each member coded the assigned interviews individually. Each pair of researchers included a member who attended the focus group represented in the transcript and a member who did not attend. Once individually coded the members met to discuss outcomes and resolve coding disagreements. Upon completion of the deductive analysis, the entire team revisited the data to conduct a basic inductive thematic analysis to identify emerging themes related to the initial research questions. This recursive process explored the entire data set, separately and jointly, to identify themes of interest and offer a way to cross-check patterns in the entire data set. (Morse & Field, 1995).The entire

research team met repeatedly to thoughtfully discuss interpretations and relationships. The team compared focus group results within and between disciplines in order to understand similarities and differences. Extensive group discussions assisted in consolidating codes and reaching consensus of themes.

Cost-Effectiveness

This research study was conducted while adhering to a strict budget. It was completed primarily through volunteer efforts with one paid graduate student intern project manager. Costs associated with project included: intern salary, gift card incentives, participant food, nametags for attendees, printing, and transcription costs. The research team also took advantage of resources provided by the university such as meeting space, audio recorders, and NVivo™ subscription. The total cost of the study was \$5,190.41, making this approach to IPE evaluation highly cost-effective.

Conclusions

The mixed methods model of evaluating a specific IPE simulation described here is cost-effective, sustainable, and applicable to a variety of IPE activities during foundational health professional training. The electronic survey results provided quantitative measures of the immediate impact of the simulation on interprofessional attitudes, whereas the focus group discussions conducted several months later identified intermediate-term profession-specific impacts of the simulation on interprofessional attitudes and behaviors. The combination of quantitative survey results and qualitative focus group data provided complementary and corroborative evidence that the IPE medical error disclosure simulation had a positive impact on attitudes related to teamwork, roles, and responsibilities, particularly among pharmacy students. Future goals are to develop methods to assess the impact of foundational IPE activities on the ability of our graduates to work collaboratively and effectively in interprofessional health care teams.

References

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IPE FOCUS GROUP OPPORTUNITY

**Tell us about your IPE medical error
disclosure simulation experience**

**The focus
group will take 1.5
hours or less**

**Contribute
your
perspectives
to IPE
curriculum
improvement
efforts**

**Receive free food
and a \$5 giftcard for
participating**

**Sign up at <http://www.signupgenius.com/>
Contact colleen.marshall@eccles.utah.edu with questions**

Handout 1: IPE Disclosing Medical Error Simulation Focus Group Research Study

Background

The University of Utah Interprofessional Education (IPE) program provides interprofessional training for students at the Colleges of Health, Nursing, Pharmacy, Social Work, School of Dentistry, and the School of Medicine. This curriculum is designed to prepare students to work collaboratively in interprofessional teams in order to improve the quality of healthcare outcomes. One specific training provided to these students is a simulation centered on disclosing medical errors to patients as an interprofessional team. Actors played patients and the participating students took various roles related to their respective disciplines. 188 students from various disciplines participated in this simulation in the summer of 2016. These students are invited to participate in focus groups to express their opinions on various aspects of the simulation experience. To increase the comfort level and encourage openness of participants, each focus group will be made up of students from the same program (medical school, pharmacy school, etc.). The results of these focus groups will be presented in a research paper exploring the impacts of the Interprofessional Education medical error disclosure simulation. Such research will enable educators to enhance the quality of Interprofessional Education trainings in order improve the way in which healthcare is delivered.

Research Question

What is the educational impact of the medical error disclosure simulation on health professional students in the Interprofessional Education program?

Key People Involved

Tim Farrell – Interprofessional Education Program Director

Donald Blumenthal – Associate Dean for Interprofessional Education and Assessment, College Of Pharmacy

Claire Hamasu – Health Sciences Library Research Librarian

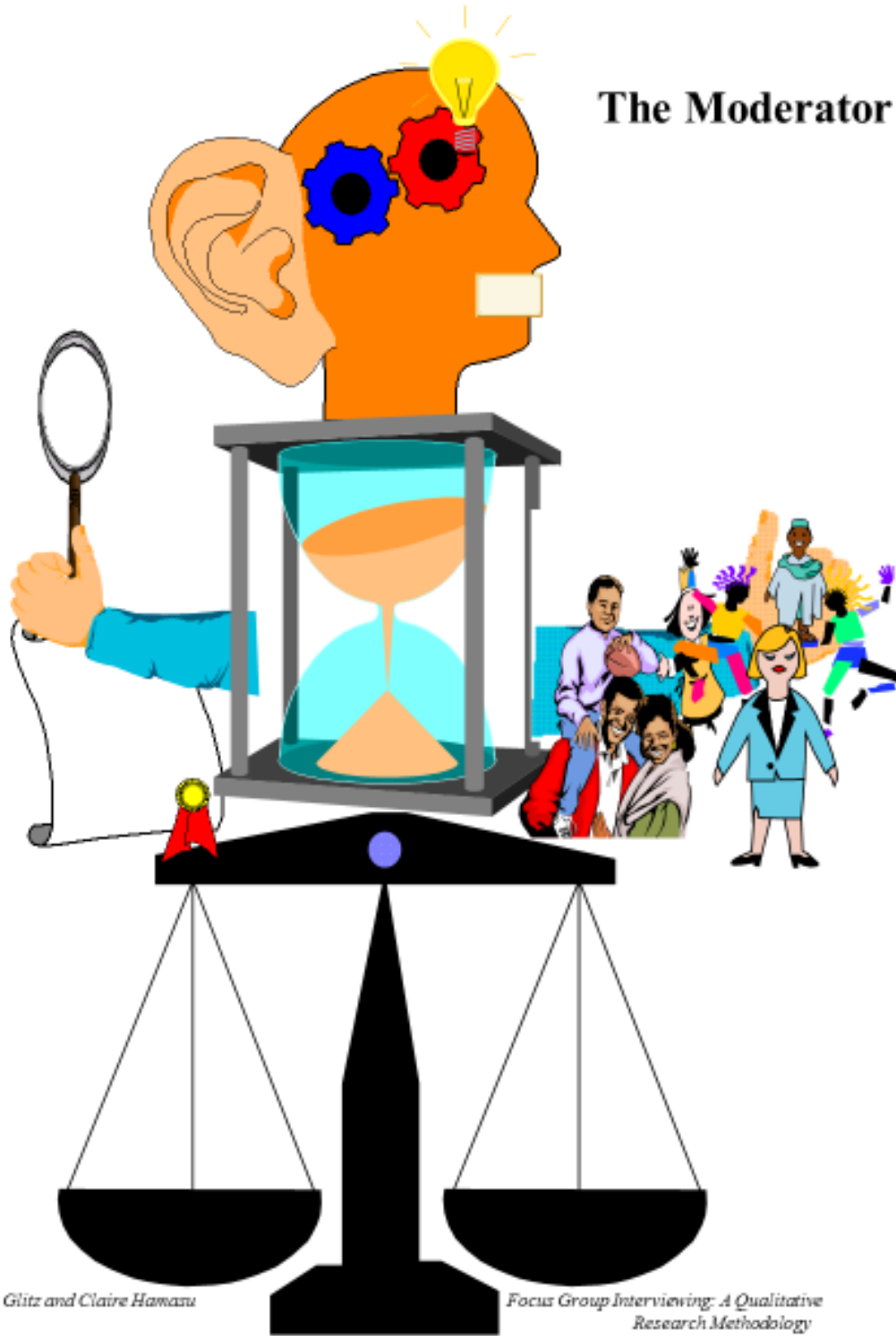
Colleen Marshall – Interprofessional Education Focus Group Project Manager

IPE Website

<http://healthsciences.utah.edu/ipe/>

Handout 2

The Moderator



Beryl Glitz and Claire Hamasu

Focus Group Interviewing: A Qualitative Research Methodology

Handout 3: Focus Group Script

Introduction

Welcome to the IPE Focus Group today. Thank you all for participating! Please start by telling us your name and where you're from.

Background

The University of Utah Interprofessional Education (IPE) program provides interprofessional training for students at the Colleges of Health, Nursing, Pharmacy, Social Work, School of Dentistry, and the School of Medicine. This curriculum is designed to prepare you to work collaboratively in interprofessional teams in order to improve the quality of healthcare outcomes. One specific training that all of you participated in was the simulation on disclosing medical errors to patients. We've invited you to this focus group to discuss your simulation experience. The question we want to investigate is, "What is the educational impact of the medical error disclosure simulation on health professional students in the Interprofessional Education program?" The results of these focus groups will be submitted for publication. If you want to be notified when the article is published, please leave your email address with us.

Ground Rules

1. Please silence your cellphones and put them away. If you need to take a call or respond to a message, please step out of the room and then return as quickly as possible.
2. There are no right or wrong answers so please be sure to respect each other's' opinions. It is okay to disagree as long as it is done respectfully.
3. We would like hear everyone's opinion, so I may address those that have not commented on a question to speak.
4. We are recording this conversation to capture what you say. No one will be identified by name in the publication that results. In order to protect everyone's anonymity, we ask that you do not use individuals' names.
5. The opinions shared will be kept confidential, so please be honest.
6. As we have limited time, I (the moderator) may need to interject during the conversation in order to cover all of the necessary questions.

Focus Group Questions:

1. Think back to the beginning of the summer session. What did you know about disclosing medical errors prior to the simulation?
 - a. How familiar were you with the importance of medical error disclosure?
 - b. How familiar were you with the purpose of disclosing?
 - c. How familiar were you with the how to do it?
2. IPE is students from 2 or more professions learning with, from, and about each other in order to work more effectively in collaborative teams. How did this simulation impact your ability to work collaboratively on an interprofessional team?

- a. What did you learn from or about the various professions on your team in this simulation?
3. How would you describe your experience working as a team to address a simulated medical error?
 - a. Pros and cons of working in a team?
 - b. How did your the team decide who would have which responsibilities (lead the team, disclose the medical error, etc.)?
 - c. How did you feel about the team's decisions regarding leadership and roles?

You've had x months since your simulation experience. The following questions will ask what you think about medical error disclosure now that you've had some time to assimilate the experience.

4. What do you now feel are the important elements of an effective medical error disclosure?
 - a. Specific techniques?
 - b. Team elements?
 - c. Which member(s) of the team should disclose?
 - d. When to disclose – to your team (if you discover an error); to the patient?
 5. We're interested if you've observed or participated in a medical error disclosure following the simulation? If so, how would you describe that experience?
 - a. How does it compare to what you learned in the simulation?
 - b. Have you been able to utilize the principles in other scenarios such as difficult conversations with patients or decisions requiring teamwork?
- 5a. (If no one in your focus group is able to answer question 5, here is an alternative question) How do you predict that your simulation experience will impact you professionally?
6. What is your confidence level in disclosing medical errors?
 - a. What would help you increase your level of confidence?
 7. What additional comments do you have on the educational impact of the medical error disclosure IPE simulation?

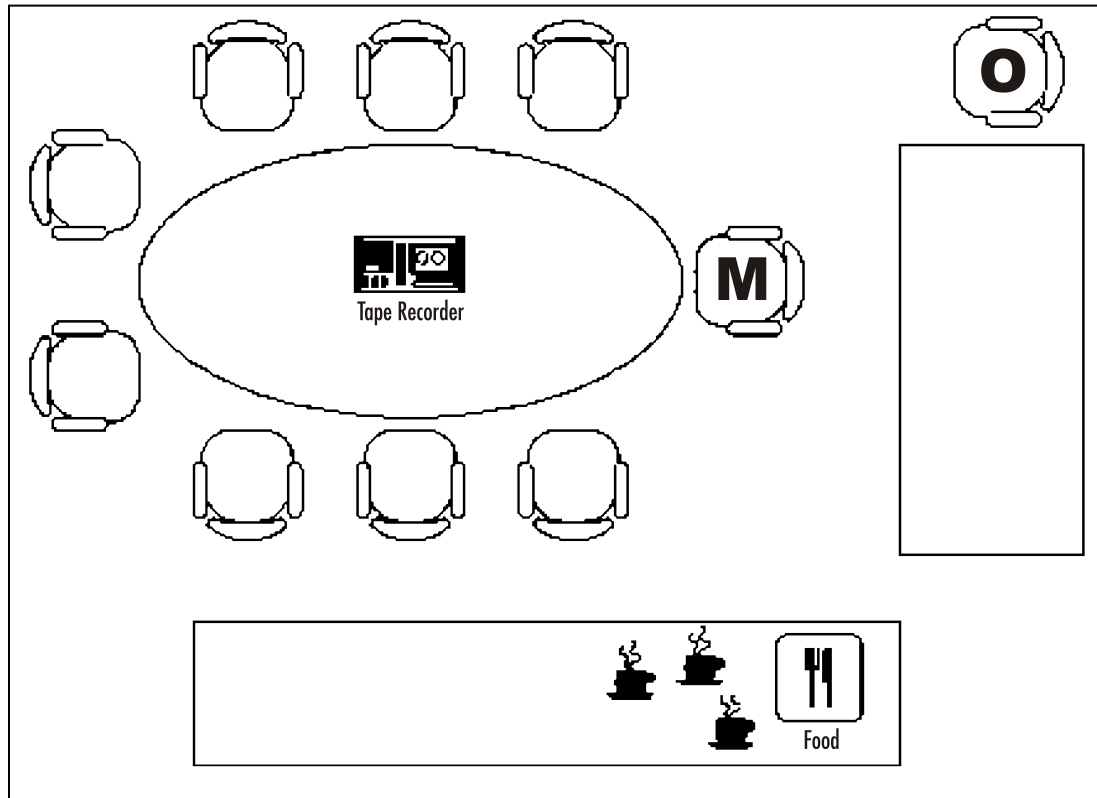
Summary

(Key ideas from focus group shared by observer)

Conclusion

Thank you again for participating! Please make sure that you left us with your email address if you are interested in being notified about this research study article's publication. Goodbye!

Handout 4: Focus Groups – The Physical Setting



M=Moderator

O = Observer

Room arrangement:

Circle of comfortable chairs around a table

Moderator is part of the group

Location of Observer can be flexible

Room location:

Away from daily activities

Neutral for participants and moderator

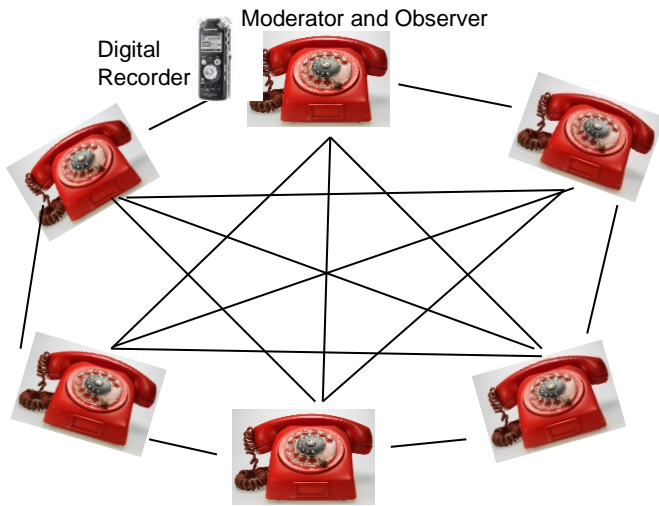
Refreshments available

Easy to find

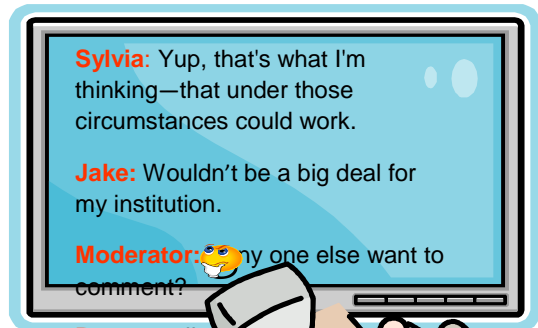
Quiet and without distractions

Focus Groups – The Virtual Setting

TELECONFERENCING



INSTANT MESSAGING



VIDEOCONFERENCING



Handout 5: Prompts and Probes for Use in Focus Groups

Encouraging Thought

Give me a [picture, description] of...

Tell me what goes on when you...

Describe what it's like to...

Tell me about...

I'm wondering what you would do if...

Just say anything that comes to mind.

Before we move on, let's hear any burning thoughts that you have to get out

What's bothering you?

How come the energy level of the group just went down?

Think about a situation in which you... Tell me about it.

Save that thought because we'll be discussing it later

Enhancing Understanding

Somebody sum this all up...

Here's what I've got so far, tell me what I am missing or not getting correctly...

So, it sounds like you're saying...

So, the message you want me to get from that story is...

I can't seem to read the groups' reaction to that. Help me out.

Including Everyone

That's helpful. Do others have different thoughts?

Let's hear a different perspective on this.

Let's see, we haven't heard from...

I'd like to go around the room and ask each of you to comment on...

Expanding the Topic

Who can build on this last idea?

I'm surprised that no one has mentioned... Is that important or not?

How might someone do that?

How important is that concern?

Can someone turn that [wish, dream, request] into a reality? Does anyone know how to do it?

Boy, that got quite a rise out of everyone. What is everyone reacting to?

Give me an example.

You seem to have a lot of excitement and energy around that. Tell me more.

Tell me more about that...

Excerpted from: How to Get Below the Surface in Focus Groups by George Silverman, Market Navigation, Inc. <http://www.mnav.com/bensurf.htm>

Handout 6: Planning & Implementing a Focus Group Project

Phase I

- Identify and discuss the problem/question to be researched
- Decide that focus groups are the appropriate method to collect data
- Identify those who will be involved in implementing the project and what roles each will play
- Decide on participant pool and criteria for selection

Phase II

- Formulate questions
- Draw up a budget, time-line, and plan of action, including a list of tasks, and equipment and supplies needed
- Decide if and how participants will be remunerated
- Estimate number of sessions to be held
- Decide on site, dates and times of sessions
- Contact and screen participants
- Obtain IRB approval, if necessary

Phase III

- Call to remind participants 1-2 days before session
- Set up room with table, chairs, refreshments, recording equipment
- Run session(s) and record discussion
- Hold debriefing immediately after session(s) – moderator, observer

Phase IV

- Have notes and recording transcribed
- Review transcription, notes and tapes as needed to analyze data
- Discuss findings among team members, check back with participants as needed for verification
- Write up findings and prepare report (oral or written) for library management or whoever authorized the focus group study
- Discuss findings with management
- Make decisions based on project findings and convey decisions to staff
- Thank participants and inform them of the results and decisions made

From: Focus Groups for Libraries and Librarians by Beryl Glitz. New York: Forbes Custom Publishing and the Medical Library Association, 1998.

Focus Group Checklist

Before Focus Group

- Participants fill out consent forms with Don or Colleen
- Participants write their names on nametags (only first names)
- Interested participants write their email address down for publication information
- Recorder is set and ready to go
- Chairs are set in a circle, square, or oval
- Observer has note taking material
- Both moderator and observer have a copy of the script
- Food is set in an easy to access location
- Participants are invited to help themselves to food

During Focus Group

- Moderator opens focus groups
- Moderator explains the background of the study and lays out ground rules
- Moderator asks questions and utilizes prompts
- Moderator ensures each participant has an opportunity to speak
- Observer takes notes
- Observer interjects if necessary
- Observer gives summary at the end
- Moderator closes focus group and thanks participants for coming

Immediately Following Focus Group

- Check recording, make sure it worked
- Debrief by quickly discussing the focus group
- Write down impressions or trends that could prove helpful for data analysis
- Drop off materials (notes, recorder, consent forms, etc.) to Claire's office Health Sciences Library Room 102

Weeks After the Focus Group

- Check the transcript with the recording for accuracy
- Provide feedback or suggestions for the focus group research team