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Research

Use of student pharmacist peer feedback during a journal club in an advanced in pharmacy practice experience

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Abstract

Objective: The purpose of this study was to evaluate the use of peer feedback during a journal club by student pharmacists during an advanced pharmacy practice experience (APPE). We hypothesized that students providing constructive feedback to their peers would positively affect learning.
Methods: Students from two different universities and three different APPE practice specialties participated in the study. Students received training on providing constructive feedback and then provided written and verbal feedback to their peers after their journal club presentations. Students were then surveyed on this experience.
Results: Forty-three APPE students completed the study. Students reported the activity positively affected their ability to evaluate and provide feedback to peers. The students also stated the experience positively promoted their growth and learning.
Conclusions: This APPE activity provided an opportunity to learn how to provide constructive feedback. Activities should be created at schools of pharmacy that engage students while teaching ways to provide quality feedback.

Keywords: Student pharmacist; Peer feedback; Journal club; APPE

When student pharmacists transition into a pharmacist role, they are often required to provide performance feedback to individuals under their supervision. This may include pharmacy technicians, student pharmacists that they precept, and even other pharmacists. Based on the limited data in the literature, it is likely that many colleges of pharmacy do not provide formal training on peer evaluation in their curricula. Historically, our own colleges have not offered such training. This disconnect of learning experiences as a student and expectations as a pharmacist in the workforce may possibly cause young pharmacists to struggle when providing feedback to peers or those under their supervision. This likely results in frustration for both those providing and receiving feedback. In a survey of pharmacy students and preceptors, Sonthisombat suggested that some pharmacist preceptors might overestimate the quality of their teaching behaviors compared with student evaluation, particularly in the area of feedback.[1]

The American Council for Pharmacy Education (ACPE) Standards require multidimensional assessment of pharmacy students' skills and behavior.[2] Standard 15 of this document addresses the assessment and evaluation of student learning and mentions the inclusion of preceptor, faculty, and self-assessments. In addition, peer evaluation and assessment has also been described as a successful tool for providing student feedback in education literature.[3] Additional studies have suggested that peer assessment is useful among medical students and is accepted and valued by

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resident physicians.[4,5] In fact, peer assessment has even been described among board-certified internists as a practical way to evaluate humanistic qualities and communication skills in the clinical setting.[6] Peer assessment has been analyzed among pharmacy students at various levels of the pharmacy curriculum with variable success.[7-11]

Observation of performance by peers can be important because students tend to observe a different set of skills compared with faculty.[12] A possible added benefit to peer assessment is that a student may gain valuable insight into the proper assessment process.[13] This is often seen as beneficial by students and creates an opportunity for critical self-reflection that may eventually allow a student to improve his or her self-assessment skills.[3,14]

In the American Association of Colleges of Pharmacy (AACP) Center for the Advancement of Pharmaceutical Education (CAPE) Education Outcomes from 2004, an emphasis is placed on the ability of students to "retrieve, analyze, and interpret the professional, lay, and scientific literature to provide drug information" to various stakeholders, including patients and other health care providers.[15] "Journal clubs" are designed to meet this outcome and are a common exercise during advanced pharmacy practice experiences (APPE). The delivery of journal clubs allows students to acquire further knowledge of the respective medical condition, to learn critical literature evaluation skills, and to enhance presentation skills.[16] The evaluation of this process is also of great importance to student learning. Blommel and Abate developed and refined a rubric scale to adequately and effectively evaluate second- through fourth-year doctor of pharmacy students' journal club presentations.[17]

Rationale and objectives

The purpose of this paper is to describe the impact of peer evaluation during an APPE journal club exercise. We hypothesized that student learning would be positively affected by participating in a journal club component of peer feedback and anticipated that this experience would positively influence students' ability to provide constructive feedback. Specifically, the objectives of the study were to (1) evaluate the effectiveness of peer evaluation in APPEs as a way to promote student growth and learning, (2) assess student perceptions of their ability to provide feedback, (3) consider the impact on learning when evaluated in journal club by peers, (4) gauge the impact of verbal feedback in journal club by peers compared with faculty preceptors, and (5) evaluate the impact of participating in journal club with peers from other colleges of pharmacy and practice specialties.

Materials and methods

This study was a prospective analysis of pharmacy students completing a journal club during their APPE at Broadlawns Medical Center in Des Moines, IA. The study was designed using Fink's taxonomy of Significant Learning, specifically to affect human dimension (i.e., learning about oneself and others); integration (i.e., connecting ideas, people, and realms of life); and application (i.e., critical thinking skills and managing projects).[18] All students completing an APPE at Broadlawns Medical Center from August 2009 to May 2010 ($n = 43$) were enrolled in the study. Pharmacy students participating in the study attended either the University of Iowa College of Pharmacy or Drake University College of Pharmacy and Health Sciences and were assigned a rotation experience in ambulatory care, internal medicine, or psychiatry with a faculty member from one of these colleges of pharmacy. There were ten 5-week rotation cycles with three to eight students completing the experience with their faculty preceptors (who were also the investigators of the study). A timeline of the 5-week experience is detailed in Table 1. The journal club presentations occurred on the second and fourth week of each rotation block and all students attended each presentation. Before the journal club activity, all students participating in the study received a feedback instruction session in the form of a lecture and discussion from faculty on techniques to provide meaningful feedback (Appendix 1). The short lecture concluded with a discussion by preceptors and students of their past experiences, personal strategies, social differences in evaluating a peer (compared with someone under their authority), and other thoughts regarding quality feedback. For example, the Johari Window was one model used in the discussion to depict the aspects of feedback. This depicts a four paned "window" (see Appendix 1) that divides personal awareness into different types, presented by four

Table 1
APPE rotation and journal club timeline

Week 1
• Study explained to students
• Students decide whether they would like to participate
• Consent obtained by preceptors
Week 2
• All students participate in a training session on giving constructive feedback
• Half of students deliver a journal club presentation. All other students will have read the article before the session to engage in discussion
• All students evaluate the presenter using the Journal Club Presentation Evaluation Rubric
• Students are paired with other students from a different university or specialty rotation; one student provides verbal feedback to each presenting student after the completion of the journal clubs
Week 4
• Second half of students deliver a journal club presentation
• Student who was evaluated at week 2 in the pair becomes the evaluator and provides feedback to the presenter
Week 5
• Survey given to students

quadrants: open, hidden, blind, and unknown. Receiving feedback allows the lines dividing the four panes to be like window shades, moving from one quadrant to another.[19] After the discussion, students were then introduced to the grading rubric and oriented to the process of how to grade and provide written feedback to their peers for their journal club presentations. The rubric used was the Journal Club Presentation Evaluation Rubric developed by Blommel and Abate (Appendix 2, used with permission).[17] In the days after the journal club session, each student was assigned to prepare and provide verbal feedback to another student in the presence of a faculty preceptor. Students were preferentially paired with a student from a different university or from a subspecialty rotation other than their own. Each student provided feedback to another student as well as received feedback on their own journal club presentation. Using the rubric as a guide, students were encouraged to use written comments and evaluations from other students to inform the feedback they presented to their peers; however, students were allowed to select their own areas of discussion and structure of their feedback session. Faculty preceptors then discussed the quality of feedback and the tactics used by each student and suggested areas for improvement. After the feedback sessions, each student received all the Journal Club Presentation Evaluation Rubrics that were completed by fellow students regarding their presentations. Students also received feedback individually on their journal club presentation from their faculty preceptor, but this was done at a point after the peer feedback session at the discretion of the preceptor using their own assessment and feedback methods they typically used for their APPE.

Near the end of the rotation, the students were asked to complete an anonymous survey (Table 2) to evaluate the journal club and peer feedback experiences. Students who had more than one rotation at Broadlawns Medical Center with the investigators ($n = 1$) were surveyed during their first journal club experience only. The students were surveyed on 13 total items with regards to the experience. Questions 1 to 3 collected student demographics, questions 4 and 5 dealt with prior rotation history, and the remaining questions evaluated this activity. Results from items 6 and 7, 9 and 10, and 12 and 13 were expressed on a five-point Likert-type scale where 1 = negatively, 2 = somewhat negatively, 3 = no effect, 4 = somewhat positively, and 5 = positively. In addition, students were allowed to write in their own comments about the experience. No specific subject identifiers were included on the survey. Students were asked to submit additional comments to each question and allowed to skip any questions they did not wish to complete. Statistical analysis was performed using SPSS version 17 (IBM Corporation, Somers, NY).

The study was approved by each of the institutional review boards of the representative universities. The investigators obtained informed consent from all students at the beginning of their five-week experiential experience. If students chose not to participate, they did not receive the survey portion of the study; however, the journal club presentation and peer feedback portions remained requirements of normal Broadlawns Medical Center APPE. Because the preceptors were also serving as study investigators, it was made explicit during the informed consent process that participation in the study would have no implications on the students' final APPE evaluation. Subjects were permitted to remove consent at any time during the process.

Table 2
Survey questions

Demographics
1. University
2. Gender
3. Race
4. Number of rotations completed
5. Have you experienced and/or participated in a journal club before?
6. How do you feel your learning was impacted by participating in a journal club with peers from another college of pharmacy?
7. How do you feel your learning was impacted by participating in journal club with peers on a rotation with a different practice subspecialty?
8. Have you used any sort of peer evaluation/peer feedback process before?
9. How do you feel your learning was impacted by being evaluated in journal club by your peers?
10. How do you feel your learning was impacted by being given verbal feedback in journal club by your peers when compared to your preceptor?
11. What did you find to be MOST difficult about critically evaluating your peers in journal club?
12. Do you feel that this experience influenced your ability to evaluate/give feedback?
13. Do you feel that peer evaluation in APPE is an effective way to promote student growth and learning?

Results

Demographic data collected from students are reported in Table 3. None of the students opted out of the study or withdrew consent. Students were primarily female (60.5%) and Caucasian (79.1%). There were no statistical differences between students based on gender or school throughout the survey. The mean number of rotations completed before Broadlawns Medical Center was 3.53. Nearly three fourths of the students surveyed had delivered a journal club before, but none had given written or verbal feedback to a peer presenting a journal club before this project. More than one third (37.2%) of students reported giving feedback to other students in a different learning experience.

Nearly all students (88%) indicated a somewhat positive (score of 4) to positive (score of 5) impact on learning when asked "Do you feel that this experience influenced your

Table 3
Student demographics

University	
Drake University	30 (69.8%)
University of Iowa	13 (30.2%)
Gender	
Male	17 (39.5%)
Female	26 (60.5%)
Race	
Caucasian	34 (79.1%)
Asian	5 (11.6%)
Other	4 (9.3%)
Rotations completed, mean (range)	3.53 (0-9)
Previous journal club	
Yes	32 (74.4%)
No	11 (25.6%)
Given feedback before	
Yes	27 (62.8%)
No	16 (37.2%)

ability to evaluate/give feedback?" (mean 4.35, mode 4) and "Do you feel that peer evaluation in APPE is an effective way to promote student growth and learning?" (mean 4.33, mode 4). See Figure 1 for further detail. Students reported in their written comments that they found the training session on providing feedback worthwhile, and they were more critical and attentive listeners because they had to find constructive comments for their peers. They also found value in the fact that everyone was "going through the same situation."

When asked about the impact of learning from feedback of a peer compared with a preceptor, students scored this slightly lower (mean 3.76, mode 4) compared with other survey questions. According to the written comments on the surveys, students found peer feedback to be helpful, but oftentimes preferred the "expertise" of the preceptor.

In addition, students scored the impact of participating in a journal club with peers from another college of pharmacy (mean 3.71, mode 4) and different specialties (mean 4.2, mode 5) showing a somewhat positive effect.

When asked "What did you find to be MOST difficult about critically evaluating your peers in journal club?" the responses of students varied. Nearly one third (32.6%) of participants stated the most difficult aspect was not having ever provided feedback before. Almost the same number (30.2%) did not feel they were qualified to provide feedback to a peer. A smaller number were fearful of a peer reaction (9.3%) from their feedback. Only one student (2.3%) stated they did not feel the activity was relevant.

Discussion

In his 1991 presidential address to the American Association of Colleges of Pharmacy, Dr. Nicholas Popovich stated that students must realize that peer and self-evaluations are an integral part of the educational process.[20] Dr. Popovich went on to state that peer evaluations must be created within educational settings to become the standard of practice. Students giving or receiving peer feedback in other disciplines report the value of this method.[21] Twenty years later colleges of pharmacy are still working to build peer and self-evaluations into their curricula.

We feel our study is novel in its approach in using a journal club to teach peer evaluation skills. Peer evaluation and assessment in pharmacy education is somewhat rare in the literature. Previous studies regarding peer evaluation and assessment have been completed primarily in the classroom and may not completely reflect the intricacies of

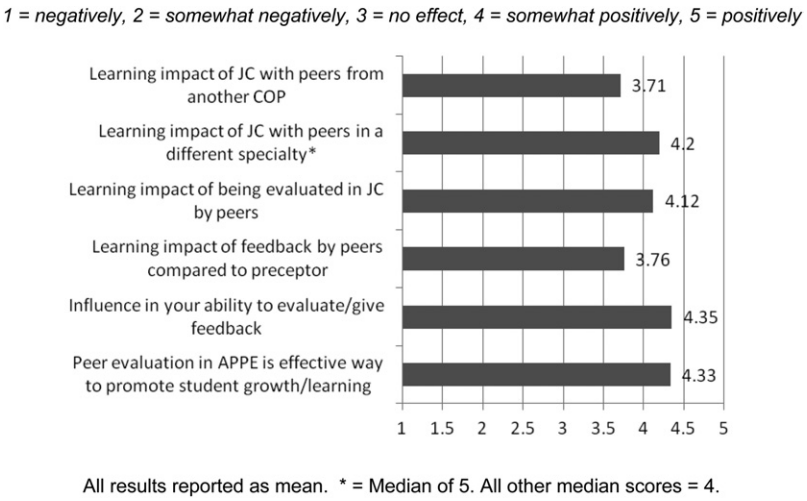

Figure 1. Survey results.

learning in an APPE and the expanded role of providing feedback as a pharmacist in the workforce.[7-11]

In prior studies, Krause and Popovich describe self- and peer assessments among third professional–year pharmacy students in a pharmacy practice course. Self- and peer assessments were found to be similar and student attitudes were generally positive toward the peer assessment process.[7] Steensels et al. used peer assessment in a similar course at KU Leuven University in Belgium. They found that students tended to grade at the high end of their assessment scale with a narrow range, but found their assessment tool to be helpful in differentiating student contribution in group work.[9] Malcolmson and Shaw used a peer assessment as part of a grading strategy in a pharmaceutics course, but unlike the study by Krause and Popovich, students did not necessarily find the process helpful and found it to be distracting in some situations.[8] Basheti et al. recently described a process of peer assessment of medication management reviews (MMRs) for fourth-year pharmacy students at the University of Sydney during their clinical placement. This study found that although students tended to give their peers' assignments higher marks than an expert in MMRs, the quality of feedback was similar and students overall found it to be valuable.[10] One of the major differences between this study and ours is that Basheti et al. used electronic processes to provide peer feedback, whereas our student peers provided much of the feedback in person. We feel that this is an added strength to the process of teaching feedback because it allows the student to practice delivery of face-to-face feedback, just as it is typically given in the workforce.

As stated in the Results section, nearly three fourths of the students participating in this project had delivered a journal club before this experience without a component of peer feedback. Although the actual content and presentation of the journal clubs by students improved over the course of the year, the ability of the students to give constructive feedback to one another remained consistent. Regardless of the timing in the academic year, some students gave highly informative and insightful feedback to their peers without a great deal of assistance from the faculty preceptor, and others required much assistance.

Although students indicated that this peer feedback exercise was helpful, they generally found it very difficult to provide constructive feedback. One student wrote, "My preceptor is more likely to critique me honestly, whereas my peers are more likely to sugar coat." The faculty preceptors also noticed this trend over the course of the year; however, the reasons for this might be multifactorial and varied. Students may not want to appear "mean" to their peers or they may want to "stick together." One student wrote, "Criticism from peers may not be as accurate as an authority figure for they may want the same leniency." This is why faculty preceptors attempted to pair up students from different schools and rotations to give and to receive verbal feedback from one another. Preferential pairing of students from different universities for the feedback process may allow for some anonymity versus a student providing feedback to classmates they may have known for several years already. Although this might not necessarily reflect the reality of the sometimes intimate work conditions many pharmacists practice in, we felt that in this exercise it would encourage honesty and diversity of opinion in feedback style. Students did find working with students from other colleges of pharmacy to be a somewhat positive factor in this experience. Many health care institutions have concurrent rotation experiences for students from multiple colleges of pharmacy and may benefit from the interuniversity feedback approach.

Students mentioned the benefit of participation in this activity with students from other rotations. We acknowledge that although two to four interactions in a brief, five-week rotation may not create a deep, varied perspective, we feel that students may acquire additional knowledge and may learn to appreciate current clinical controversies in a different specialty. We recognize that this may have no direct effect on the ability of a student to provide more effective peer feedback, but we chose to highlight this diverse aspect of our study setting for its unique nature.

Our study is not without limitations. First, we did not make comparisons between faculty preceptor assessments and the quality of the assessments made by peer evaluators. We felt that this was not an essential comparison in this study because our main objective was to evaluate the effectiveness of peer feedback to promote growth and learning as well as student perceptions. However, this process would have strengthened our evaluation of question 10 in our survey (Table 2) and may have added greater validity to the Journal Club Presentation Evaluation Rubric we used. A few students commented on the complexity of the rubric and stated they did not have enough time or experience to optimally evaluate the presenters using this tool. Although many students felt the feedback instruction session was helpful, more training on different techniques might be useful. Because this was a limited and exclusive experience, continued opportunities to provide feedback longitudinally throughout the curriculum would solidify learning. Another limitation to consider is the possibility that students may have felt pressure to participate in this project despite faculty preceptors telling them that participation was optional. In addition, the training and background of students from different colleges of pharmacy could have contributed to an inconsistent effect of the feedback process. This was not explored statistically because of the small sample size. Finally, our statistical tests assumed interval data.

We plan to continue this learning activity with future students completing APPE at our site. Minor revisions will be made to the feedback instruction session per student feedback and evaluations. This will also include a more thorough orientation to the grading rubric and further dis-

cussion of students' positive and negative experiences with receiving or providing feedback. The format will remain in each of our APPE syllabi with hopes it will be integrated into additional APPE sites.

Conclusions

This APPE activity provided students with an opportunity to learn how to provide constructive feedback through a journal club evaluation of a peer. Students positively viewed the learning experience and felt it positively affected their learning and ability to provide feedback. Activities should be created at schools of pharmacy that engage students while they learn how to deliver quality feedback. Preceptors should attempt to collaborate on student activities with colleagues from other subspecialties and schools of pharmacy, if the setting allows.

Appendix 1: "Giving Feedback" Student Handout

Giving Feedback

Through the feedback process, we see ourselves as others see us.

Feedback is communication from others that presents data to a person about what the others are experiencing and how this is impacting them.

The purpose of giving feedback is to give a person insight that they may not see in themselves and provide them with your perception of their strengths and areas of improvement.

Some guidelines for feedback—

1. **Objective rather than subjective—stick to the facts, use the evaluation form as a guide**

   "Seemed to me that you pretty much covered everything, but you must have left some stuff out."
   You accurately addressed each of the sections; however, the limitations were not discussed.

2. **Use of I rather than you**
   "You talk too fast."
   I found it difficult to understand at times because of the rate of speaking and looking down.

3. **Descriptive rather than evaluative and judgmental—use specific examples**
   "You left a big section out. You failed discuss all the results of the study."
   The primary outcome was significant; however, the secondary outcomes were significant, but not mentioned.

   "I think you left some sections out."
   The limitations to the study, such as population size, were not completely explained from what I recall.

4. **Share information rather than give advice**
   "If I was you, I would . . ."
   The guidelines suggest . . .

5. **Check to see if your feedback is understood**
   Is this an area you agree you may need to improve?
   Has my feedback to you been helpful?

Feedback Oreo sandwich

Two positives with a negative

Johari Window

Arena	**Blind spot**
Hidden Area	**Unknown**

Appendix 2: From Am J Pharm Educ 2007;71:Article 63 (used with permission)

Journal Club Presentation – Evaluation Rubric

Presenter(s): _____ **Reviewer:** _____

Criteria					
I. STUDY OVERVIEW	**3 Points**	**2 Points**	**1 Point**	**0 Points**	**Score**
Introduction ❑ Authors' affiliations/study support ❑ Study objective(s) & rationale **Methods - *Design*** ❑ Case-control, cohort, controlled exp, etc. ❑ Type of design (cross-over, parallel, etc) ❑ Type of assignment used ❑ Blinding **Methods - *Patients/Subjects*** ❑ How enrolled/from where? ❑ Inclusion/exclusion criteria ❑ # enrolled per group		**Accurately** and **completely** reported ALL relevant introduction, study design, and patients/subjects components	**Accurately** and **completely** reported MOST of the relevant introduction, study design, and patients/subjects components	Did not **accurately** and **completely** report most of the relevant introduction, study design, and patients/subjects components	
Methods - *Treatment Regimens* ❑ Treatments used ❑ Dosages/administration ❑ Therapy duration **Methods - *Outcome Measures*** ❑ Primary measures ❑ Secondary measures **Methods - *Data Handling*** ❑ Intention to treat, per protocol, etc.. ❑ # lost to follow-up ❑ Reasons for dropouts		**Accurately** and **completely** reported ALL relevant treatment regimens, outcome measures, and data handling components	**Accurately** and **completely** reported MOST of relevant treatment regimens, outcome measures, and data handling components	Did not **accurately** and **completely** report MOST of relevant treatment regimens, outcome measures, and data handling components	
Methods - *Statistics* ❑ Tests used ❑ Power of study **Results** ❑ Results for each outcome measure ❑ Confidence intervals ❑ *p*-values ❑ Compliance ❑ Adverse events **Conclusion** ❑ Authors' conclusion(s)		**Accurately** and **completely** reported ALL relevant statistics, results, and authors' conclusion components	**Accurately** and **completely** reported MOST of the relevant statistics, results, and authors' conclusion components	Did not **accurately** and **completely** report MOST of the relevant statistics, results, and authors' conclusion components	
Comments for Study Overview:					

II. STUDY ANALYSIS AND CRITIQUE	**4 Points**	**3 Points**	**2 Points**	**1 Point**	**0 Points**	**Score**
Analyzed all parts of study (refer to Supplement sheet for guidance)	ALL parts appropriately critiqued, with ALL relevant questions accurately addressed with strengths, weaknesses, and their impact described	Missed only ONE or TWO considerations or relevant questions in critique, with the rest appropriately addressed with strengths, weaknesses, and their impact described	MOST parts appropriately critiqued; some relevant questions with strengths, weaknesses, and their impact overlooked or inaccurate	Only SOME parts appropriately critiqued; most relevant questions with strengths, weaknesses and their impact overlooked or inaccurate	Failed to appropriately critique any part; all relevant questions with strengths, weaknesses & their impact overlooked or inaccurate	**Multiply x 2 for this field only**

Appendix 2: Continued

Comments for Study Analysis and Critique:

III. STUDY CONCLUSION	3 Points	2 Points	1 Point	0 Points	Score
Clear, Concise Conclusion Stated	Conclusion summarized accurately & completely all of the following: key points to be taken from study (which reflected study limitations); drug's role in therapy or clinical practice implications; AND need for any further research in area	Conclusion did not summarize accurately & completely one of the following: the key points to be taken from study; the drug's role in therapy or clinical practice implications; or the need for any further research in area	Conclusion did not summarize accurately & completely two of the following: the key points to be taken from study; the drug's role in therapy or clinical practice implications; or the need for any further research in area	Failed to give conclusion OR conclusion completely inaccurate	

Comments for Study Conclusion:

IV. PREPAREDNESS	3 Points	2 Points	1 Point	0 Points	Score
Knowledge of Study Details		Presenters each well prepared; thoroughly explained ALL details of study	Not all presenters well prepared OR thoroughly explained only some study details	No presenter well prepared OR did not thoroughly explain any study details	
Response to Questions	Correctly answered ALL questions in a confident manner	Correctly answered ALL questions in a non-confident manner OR correctly answered MOST questions in a confident manner	Correctly answered MOST questions in a non-confident manner OR correctly answered only SOME questions	Incorrectly answered all questions OR handled questions unprofessionally	

Comments for Preparedness:

V. PRESENTATION	3 Points	2 Points	1 Point	0 Points	Score
Speaking Style		Spoke clearly; easy to hear and understand	Difficult to hear or understand SOME things spoken	Difficult to hear or understand MOST things spoken	
Timing			Within 12 minutes (+/- 3 minutes)	>15 or <9 minutes	
Distracters ("uhs, uhms, etc.) OR Distracting Mannerisms		Used few (or no) distracters or distracting mannerisms	Used several distracters or distracting mannerisms	Used distracters or distracting mannerisms throughout	
Eye Contact		Maintained eye contact throughout	Occasionally looked at evaluators	Read the presentation	

Comments for Presentation:

Additional Comments:_____

TOTAL SCORE FROM BOTH SIDES (Maximum = 29 points)	

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