Implementing On-Line Case Presentation Evaluations

Sara L. Lanfear, PharmD, BCPS, Brian Seiz, PharmD, Jennifer B. Kasiar, PharmD, BCPS

Assistant Professors. Division of Pharmacy Practice, St. Louis College of Pharmacy, St. Louis, Missouri.

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Abstract

To improve and expedite feedback and ensure confidentiality, an on-line assessment form was developed and compared with a traditional paper based assessment form. Thirteen discussion group leaders in two different therapeutics courses evaluated four to six students each week using a password protected on-line assessment form. When the assessment was complete, an automated notification was emailed to students. Subsequently, the student could access a password-protected site to obtain their individual feedback. The 7 discussion group leaders who had used the paper form the previous semester, and the on-line assessment form now, completed a questionnaire to compare the timeliness, the quality of feedback given, and the confidentiality of the on-line and paper systems. Discussion group leaders concluded the on-line system took longer to complete, but the quality, timeliness, and confidentiality of the feedback was improved, making it a better means of administering feedback. An on-line assessment can be employed to provide better feedback in a timely manner and can increase confidentiality for individual students.

Key Words: assessment, technology, web-based, feedback, pharmacy education, on-line evaluations

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Introduction

The exploration of effective uses of technology is critical to higher education. It is important that as educators we do our best to capitalize on the capabilities of new technologies to improve operational efficiency and day-to-day practice. Not only can technology improve efficiency, but it can also provide many useful ways to improve our education and assessment methods. In the Pharmacy Practice Department at the St. Louis College of Pharmacy, on-line lecture and course evaluations have been shown to be an effective means to elicit feedback from students. The on-line system provided both quantitatively and qualitatively superior student comments, enhanced student satisfaction, and allowed for more efficient use of time by faculty and staff [1]. Due to the success of the on-line evaluation tool used by students to provide faculty feedback, we implemented an on-line case presentation assessment tool for faculty to provide feedback to students in our therapeutics courses.

Throughout the therapeutics sequence, two-hour case discussions were held on a weekly basis (10 times per semester). Each class of approximately 150 students was divided into discussion sections that consist of approximately 25 students. Within each section there were 5 groups of 4 to 6 students, and 1 faculty discussion leader. Each week, 1 or 2 cases were assigned for the groups to prepare prior to the discussion meeting. During the discussion period, a group was randomly chosen to present 1 of the cases. Each student in the group was then randomly assigned one of the following sections for verbal presentation: assess patient specific medical problems, evaluate current therapy, select and recommend therapy, monitor patient's medical problems and therapy, or educate the patient or the health care professional. Each student's performance was graded on the information presented and the ability to communicate the information, which accounts for 70% of their score. The remaining 30% of their score was determined by an overall group score. Previously in our therapeutics courses, feedback for case presentations had been done on a group assessment form (Appendix A). Many problems existed with this method of providing feedback.

First, the form itself was not conducive to providing formative feedback. The form was designed as a checklist to ensure that students addressed all components of the case performance criteria, but did not allot space for additional comments, which could be directed at helping students improve the following week. Second, the form did not allow for confidential, student specific feedback . Each group received one feedback form with all of the scores, thus negating any attempts to maintain confidentiality for individual group members. Finally, the timeliness with this system was poor in that students did not receive the feedback until the following week in class.

Web-based technology such as Web CT (4.1 Standard Edition, WebCT, Inc, 2003) and Blackboard Learning System (Release 6, Blackboard Inc, 2003) are now available to enhance course work in both distance and on-campus courses. In addition, many health sciences training programs are utilizing other forms of computer-assisted instruction to improve student performance and enhance learning [2-10]. Little, however, has been published on using the Internet solely as a feedback tool for instructors teaching on-campus courses. The importance of the "classroom feedback loop" and the need for students to receive appropriate and focused feedback early and often is stressed by experts in the field of assessment in higher education [11]. An on-line assessment tool has the potential to assist faculty in better closing that loop, by providing improved feedback in a timely manner. The purpose of this study was to describe the implementation and evaluation of an on-line assessment tool for the case presentation component of the therapeutics courses. Specific emphasis was placed on determining if

deficiencies identified with an existing evaluation system could be overcome with this new technology.

Methods

An on-line assessment tool was created with the current case presentation criteria using Active Server Pages connected to an Access database (Appendix B). The decision to create an on-line assessment tool came about when third party vendor software could not be found to support the specific application requirements. The tool was created and maintained internally by members of the pharmacy practice department. Prior to the start of the fall semester, a short teaching session was held for the 13 discussion group leaders in the 2 therapeutics courses (Therapeutics 1 and 3) on how to use the on-line tool. The 147 and 156 students in Therapeutics 1 and 3 respectively, were oriented to the system on the first day of class. Following each discussion meeting, faculty group leaders accessed a password-protected site to complete the on-line assessment of the students. Once the instructor was finished, an email was generated that informed the students that their assessment was complete. Students could subsequently access the password-protected site to obtain individual feedback.

At the end of the fall semester, discussion leaders who had used both the traditional paper system in previous years and the current on-line system completed a survey created by the course coordinators. Discussion leaders used a five-point Likert scale (strongly agree, agree, no opinion, disagree or strongly disagree) to answer the following questions: 1) the feedback I was able to give was more useful using the on-line system versus the traditional paper system, 2) the feedback was timelier with the on-line system versus the traditional paper system, 3) I believe confidentiality was increased with the on-line system, 4) it is important that confidentiality was increased, and 5) I had easy access to providing feedback with the on-line system. In addition to these questions, discussion leaders were asked which method they preferred and which system took longer to provide feedback.

Results

All 7 discussion leaders who used both systems for assessment completed the survey. Overall, discussion leaders indicated that the quality, timeliness, and confidentiality of the feedback were improved with the on-line feedback system compared to the traditional paper assessment (Table 1). While each discussion group leader stated the on-line system took longer to complete, each rated it as a better means of administering feedback and preferred using the on-line system when compared to the traditional paper system.

While we did not formally poll students regarding their opinion of this on-line system, almost all comments received by the course coordinators were positive. Students appreciated the timeliness and increased confidentiality of the feedback. Several students noted that the quality and quantity of the feedback provided was much improved with the on-line system compared with the old paper form. Student satisfaction with using on-line systems for providing feedback was previously evaluated when students providing feedback to faculty was studied, and was overwhelmingly positive. [1]

Table 1. Median discussion group leader opinion of on-line versus traditional paper assessment. (1 = strongly disagree; 5 = strongly agree)

Question	Median n=7
The feedback I was able to give was more useful using the on-line system versus the traditional paper system	4
The feedback was timelier with the on-line system versus the traditional paper system	5
I believe confidentiality was increased with the on-line system	4
It is important that confidentiality was increased	4
I had easy access to providing feedback with the on-line system	5

Discussion

The on-line assessment system appears to be an effective means of administering student feedback on weekly case presentations. Despite the increase in time required to complete the evaluation, the discussion leaders agreed that the on-line assessment system improved the quality and timeliness of feedback. The flexibility of the on-line system appears to benefit both faculty and students. Staff time was also decreased as the need for copying and distributing paper assessment forms was no longer present.

One of the aims of this study was to determine if the deficiencies of the old paper evaluation system could be overcome with Internet based technology. Based on the results from the discussion leader survey and from course coordinator observation, it appears that it has. First, the on-line system provided adequate space for comments as needed by the instructor. By placing the evaluation tool on the Internet, space on the paper and the length of the form were not an issue. Instructors overwhelmingly felt they were able to provide more useful feedback using the on-line system rather than the paper form. Second, instructors rated the system as one that increased the confidentiality provided to students, which likely allowed them to provide more detailed feedback. The on-line system allowed for confidential, student specific feedback without the instructor being required to fill out multiple forms. Finally, according to the faculty surveyed, the timeliness of the evaluations was greatly improved. Faculty were asked to complete their evaluations within 24 hours of the presentation and were able to do so from any computer with Internet access. Students were able to access the feedback at their leisure and reply by email for rapid clarification or questions. This allowed students to make adjustments in their case work-up prior to the next discussion.

In order for formative assessment to be useful, several obstacles must be overcome. First, feedback must be given in a timely manner. Second, it must be tailored to the individual, and third, feedback must be both diagnostic and prescriptive[12]. While the on-line system helps us overcome the first two obstacles, it is still the quality of the faculty feedback that ultimately drives student improvement.

Limitations

One possible limitation to utilizing an on-line evaluation system could be computer access. In order for students to retrieve and review on-line assessments, computers must be available. At the St. Louis College of Pharmacy, several measures have been taken to provide adequate computer access for the students. There are currently two large computer labs available for

student use. In addition to this, a new laptop computer initiative was begun in the fall of 2002 where all entering freshman were equipped with a laptop computer. Coinciding with this program is the installation of a wireless network, eventually providing campus wide Internet access.

Secondly, the increase in time needed to complete the student assessments can be viewed as another limitation. However, providing formative and useful feedback is one that takes time and effort, regardless of the method used. Although time to complete the on-line assessment was increased, faculty agreed that it was a more effective means of providing feedback that allowed them to give written evidence to support their assessment.

A final consideration is our relatively small number of faculty (n=7) that were surveyed. While this may be considered a limitation, it is believed that the 7 that were polled were representative of the entire therapeutics faculty. They were chosen because they had experience providing feedback with both systems and could objectively compare the two. The overwhelming agreement among those polled makes us comfortable in accepting the overall positive responses regarding the system.

Conclusion

Faculty providing diagnostic and prescriptive feedback will continue to be what drives the assessment process. An on-line assessment tool may assist faculty in better closing the feedback loop, by providing better feedback in a timely manner. At the same time, this type of tool allows for feedback to be tailored to the individual student who is working in a group, allowing for more specific and directed feedback that might not otherwise be provided. Based on these findings, it is planned that all courses in the pharmacy practice division that provide formal group feedback will utilize on-line assessment systems.

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Appendix A: Paper Assessment Form

INDIVIDUAL ABILITY RATING SCALE (applies to non-shaded grids)

1 Not Acceptable	2 Needs Development	3 Competent Performance	4 Excellent Performance
Generally incomplete or incorrect. Requires frequent & extensive assistance or intervention; facilitator and/or peers must complete sections.	Only partially complete or correct. Requires consistent assistance or intervention ; facilitator and/or peers must often assist in answering questions.	Generally complete and correct. Requires infrequent assistance or intervention; student is consistently able to answer questions without assistance.	Exemplary. Requires rare assistance or intervention; student is able to answer questions without assistance. Could be used as a model for best practice/performance.

INDIVIDUAL COMMUNICATION ABILITY RATING SCALE (applies to shaded grids)

1 Unsatisfactory	2 Needs Improvement	3 Competent Performance
Student does not address the criterion and/or is unable to satisfy the criterion; student may satisfy the criterion, but only rarely.	Student addresses and occasionally satisfies the criterion; performance is still inconsistent enough to warrant improvement.	Student consistently addresses and satisfies the criterion; performance could be used to model competence for peers or underclass students.

Assess patient-specific medical problems

ABILITY-SPECIFIC CRITERIA	1	2	3	4
Develops a differential list for the primary problems				
Identifies a complete problem list, starting with the primary problem				
Determines etiologies (e.g., non-compliance, drug-induced, etiologic organisms, etc.) and risk factors for development of the patient's problems				
Assesses status of the problems (e.g., Stage II HTN, uncontrolled type 2 DM, acute renal failure, etc.)				
Justifies assessment based on analysis of data (by defining assumptions, describing patterns, justifying inferences made)				
Appropriately Interprets data: filters relevant from irrelevant; identifies as normal/abnormal				
Upon questioning, describes the pathophysiology of the primary problem and the relationship between the mechanism of disease and the clinical manifestations present in the patient				
Overall student performance				

COMMUNICATION CRITERIA	1 Unsatisfactory	2 Needs Improvement	3 Competent Performance
Uses specific and clear terminology			
Presents in an organized and logical sequence			
Is appropriately concise			
Maintains eye contact and uses notes appropriately			
Displays confidence			
Persuasively supports assessment and answers			

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questions well			
Exhibits professional demeanor			
Overall student performance			

Evaluate current therapy

ABILITY-SPECIFIC CRITERIA	1	2	3	4
Evaluates appropriateness of drug regimens (i.e., drug dose, route, frequency and duration) currently prescribed				
Evaluates potential contraindications to drug(s) prescribed (e.g., nonselective B-blockers are appropriate for patients with hypertension but no if they have concurrent bronchospastic disease)				
Critically evaluates efficacy of current drug regimen for patient-specific medical problems				
Identifies adverse drug effects present in this patient				
Critically analyzes drug regimen for significant drug interactions				
Identifies factors likely influencing patient adherence to treatment				
Supports evaluation with drug- and patient-specific data				
Uses literature to support evaluation when appropriate				
Overall student performance				

COMMUNICATION CRITERIA	1 Unsatisfactory	2 Needs Improvement	3 Competent Performance
Uses specific and clear terminology			
Presents in an organized and logical sequence			
Is appropriately concise			
Maintains eye contact and uses notes appropriately			
Displays confidence			
Persuasively supports the evaluation of therapy and answers questions well			
Exhibits professional demeanor			
Overall student performance			

Select and recommend therapy

ABILITY-SPECIFIC CRITERIA	1	2	3	4
Incorporates Assessment and Evaluation when justifying therapy decisions				
Includes plan for existing therapy (modifies drug regimen by deleting or adjusting medications. e.g., modify dose based on renal function; change antibiotic based on culture & sensitivity results)				
Includes non-pharmacologic therapy (e.g., bed rest, low sodium diet, exercise)				
Identifies correct drug regimens (i.e., drug, dose, route, frequency and duration)				
Justifies correct drug regimens based on drug- and patient-specific data				
Upon questioning, is able to explain why other agents were not chosen				
Uses literature to support drug therapy decisions when appropriate				
Overall student performance				

COMMUNICATION CRITERIA	1 Unsatisfactory	2 Needs Improvement	3 Competent Performance
Uses specific and clear terminology			
Presents in an organized and logical sequence			
Is appropriately concise			
Maintains eye contact and uses notes appropriately			
Displays confidence			
Persuasively supports recommendations and answers questions well			
Exhibits professional demeanor			
Overall student performance			

Monitor patient's medical problems and therapies

ABILITY-SPECIFIC CRITERIA	1	2	3	4
Defines and justifies goals of therapy				
Identifies symptoms to monitor and justifies monitoring based on evaluation of efficacy and/or detection of adverse effects				
Identifies physical findings to monitor and justifies these based on evaluation of efficacy and/or detection of adverse effects				
Identifies laboratory data and other tests to monitor; justifies these based on evaluation of efficacy and/or detection of adverse effects				
Identifies additional data needed to fully assess the problems or evaluate therapy				
Suggests reasonable intervals and frequencies for monitoring and justifies these based on acuity of illness and expected rate of change in parameter				
Incorporates the identification of patient-specific risk factors that affect monitoring for the				

development of adverse effects				
Overall student performance				

COMMUNICATION CRITERIA	**1 Unsatisfactory**	**2 Needs Improvement**	**3 Competent Performance**
Uses specific and clear terminology			
Presents in an organized and logical sequence			
Is appropriately concise			
Maintains eye contact and uses notes appropriately			
Displays confidence			
Persuasively supports monitoring plan and answers questions well			
Exhibits professional demeanor			
Overall student performance			

Educate Patient (Role-Playing)

ABILITY-SPECIFIC CRITERIA	1	2	3	4
Appropriately meets/greets patient (i.e., introduces self, establishes rapport, explains the purpose of the pharmacist-patient interaction)				
Counsels patient on indication, dosage and administration ("What did the doctor tell you this medication is for? How did he/she tell you to take it?"; asks the patient to demonstrate, whenever appropriate)				
Explains expected response to therapy ("What results did the doctor tell you to expect from this medicine?)				
Highlights any precautions and side effects important for the patient to be aware of				
Stresses compliance and provides techniques to improve compliance (e.g., use of calendar, pill box, color-coded bottles)				
Verifies understanding ("Just to make sure I didn't leave anything out, would you please tell me how you are going to take the medication")				
Answers questions well				
Provides appropriate closure ("Is there anything else I can help you with today?")				
Overall student performance				

COMMUNICATION CRITERIA	1 Unsatisfactory	2 Needs Improvement	3 Competent Performance
Uses lay terms (e.g., "high blood pressure" rather than "hypertension")			
Presents in an organized and logical sequence			
Is appropriately concise			
Maintains eye contact and uses notes appropriately			
Displays confidence			
Displays a caring attitude toward patient			
Allows patient to answer before moving to the next question			
Exhibits professional demeanor			
Overall student performance			

Educate Health Professionals (Role-Playing)

ABILITY-SPECIFIC CRITERIA	1	2	3	4
Appropriately meets/greets provider (i.e., introduces self, establishes rapport, explains purpose of the pharmacist-provider interaction)				
Provides accurate and pertinent information				
Provides adequate explanation and justification, including application of primary literature when needed or requested.				
Provides written material to support verbal information				
Suggests appropriate monitoring				
Provides appropriate closure				
Demonstrates insight into other health professional's role				
Overall student performance				

COMMUNICATION CRITERIA	1 Unsatisfactory	2 Needs Improvement	3 Competent Performance
Uses specific and clear terminology			
Presents in an organized and logical sequence			
Is appropriately concise and utilizes time efficiently			
Maintains eye contact and uses notes appropriately			
Displays confidence			
Displays tact in his/her approach			
Explains or disagrees articulately and persuasively			
Exhibits professional and credible demeanor			
Overall student performance			

GROUP PRESENTATION PERFORMANCE CRITERIA

0 Not Acceptable	1 Needs Development	2 Competent Performance	3 Excellent Performance
Group case presentation requires extensive corrections; group members do not help each other; group members should review topic and stress group interaction.	Group case presentation requires many corrections; group members help each other to complete case presentation; group members should review the topic presented.	Group case presentation requires infrequent corrections; group members help each other to complete case presentation.	Group case presentation is organized and complete; rare or no corrections are necessary.

CUMULATIVE SCORE

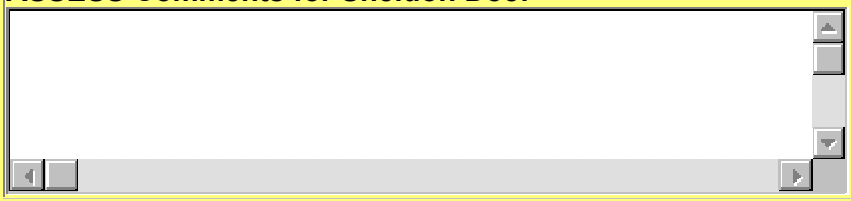
Ability Outcome	Content Score	Communication	Group Presentation	Total Score
A. Assess medical problems				
B. Evaluate current therapy				
C. Select/Recommend therapy				
D. Monitor medical problems & therapies				
E. Educate patient				
F. Educate Health Professional				

Appendix B: On-line Assessment Tool

Assess Patient-Specific Medical Problems **Student: Sheldon Doe**			
INDIVIDUAL ABILITY RATING SCALE			
1 Not Acceptable	**2** Needs Development	**3** Competent Performance	**4** Excellent Performance
The student requires frequent & extensive intervention by facilitator; the facilitator and/or peers must complete sections.	The student requires consistent intervention by facilitator; facilitator and/or peers must often assist in answering questions.	The student requires infrequent interventions by facilitator; student is consistently able to answer questions without assistance.	The student requires rare interventions by facilitator or peers; students is able to answer questions without assistance.

ABILITY-SPECIFIC CRITERIA	Score (1-4)
Develop a differential list for the primary problem	
Identifies complete problem list; starting with primary problem	
Determines etiologies (e.g.-noncompliance, drug-induced, etiologic organisms, etc..) and risk factors for development of the patient's problems	
Assesses status of the problems (e.g.- stage II HTN, uncontrolled type 2 DM, acute renal failure, etc...)	
Justifies assessment based on analysis of data (including defining assumptions, describing patterns, justifying inferences made)	
Appropriately interprets data: filters relevant from irrelevant; identifies as normal/abnormal	
Describes the pathophysiology of the primary problem and the relationship between the mechanism of disease and the clinical manifestations present in the patient	
Sheldon Doe's overall performance (ASSESS)	

ASSESS Comments for Sheldon Doe:



INDIVIDUAL COMMUNICATION ABILITY RATING SCALE		
1 Unsatisfactory	**2** Needs Improvement	**3** Competent Performance
Student does not address the criterion and/or is unable to satisfy the criterion; student may satisfy the criterion, but only rarely.	Student addresses and occasionally satisfies the criterion; performance is still inconsistent enough to warrant improvement.	Student consistently addresses and satisfies the criterion; performance could be used to model competence for peers or underclass students.

COMMUNICATION CRITERIA	Score (1-3)
Uses specific and clear terminology	
Presents in an organized and logical sequence	
Is appropriately concise	
Maintains eye contact and uses notes appropriately	
Displays confidence	
Persuasively supports assessment and answers questions well	
Exhibits professional demeanor	
Sheldon Doe's overall performance (COMMUNICATION)	

COMMUNICATION Comments for Sheldon Doe:

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