INNOVATIONS IN TEACHING

A Systems Approach to Scaffold Communication Skills Development

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Objectives. To implement a communication skills development (CSD) system and evaluate its effectiveness in a clinical communications course.

Design. Students conducted baseline interviews and wrote SOAP notes, and based on faculty, patient, self- and peer assessments, set goals for improvement of their communication skills. Students participated in various activities to scaffold their learning, several of which took place in a web-based environment to enhance access and function for both students and faculty members. Quantitative and qualitative analyses were performed.

Assessment. Students' communication skills improved as evidenced by assessment scores. Student and faculty comments offered additional evidence of the effectiveness of standardized patient interviews, learning strategies, and assessment methods.

Conclusion. The CSD system effectively integrated various types of learning activities and feedback processes. The use of scaffolding strategies appeared to enhance the development of students' communication skills.

Keywords: assessment, communication skills, goal setting, scaffolding, self-directed learning

INTRODUCTION

Effective interpersonal communication skills are essential for pharmaceutical care practice. These skills are important for fostering therapeutic relationships with patients, promoting dialogue, engaging patients in collaborative problem solving, influencing patient behavior, and ultimately, optimizing patient outcomes. Furthermore, effective interpersonal and written communication skills are important for interacting with physicians, nurses, and other health care providers. Communication skills are not immutable traits with which individuals are born. They can be developed and improved through awareness, training, and practice. The Accreditation Council for Pharmacy Education (ACPE) and the Center for the Advancement of Pharmaceutical Education have recognized effective communication skills in their standards, guidelines, and educational outcomes for preparing pharmacy students to provide patient-centered care.^{1,2}

The state of communication teaching and assessment in US colleges of pharmacy has been summarized in the literature. The majority of patient communication skills assessments are video-recorded and summative, as opposed to assessments that are formative in nature. Communication skills assessments are typically completed by

instructors and students.³ Yet, faculty concerns regarding communication teaching and assessment include lack of opportunity for students to practice skills and receive feedback for improvement, the need to develop better assessment tools and procedures with increased reliability, and the need to enhance the authenticity of assessment processes by using standardized patient actors.⁴ An American Association of Colleges of Pharmacy Communications Skills Assessment Advisory Board reviewed assessment forms from 50 US colleges of pharmacy and concluded there was a lack of consensus on the essential components of effective pharmacist-patient communication.⁴ Additionally, less than 20% of communication skills assessment forms contained behavioral measures for promoting patient adherence to appropriate therapy, encouraging patient involvement in communication and problem-solving, and establishing plans for patient follow-up, all of which are components of pharmaceutical care practice.⁵ These findings point to a need for reliable, authentic, and comprehensive assessments of pharmacy students' communications skills.

In addition to the above issues, the pharmacy education literature has limited reports of specific learning strategies and instructional designs in communications courses. Reflective journaling in a communications course through the use of web log technology has contributed to student learning and raised awareness of their and others' communication.⁶ Instruction on emotional

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intelligence and its applicability to communication in pharmacy practice has been positively received by pharmacy students.⁷ Additionally, communication inventories and self-reflection activities related to self-concept have been used to enhance students' awareness of their and their peers' communication styles.⁸ Despite these reports in the pharmacy education literature, more needs to be known about the use and outcomes of self-directed learning strategies in communications teaching and assessment.

Self-directed learning activities, such as goal setting and evaluation, self-assessment, and self-reflection, empower students to monitor and direct their attainment of learning outcomes. Placement of responsibility on students through self-directed learning is in accordance with the 2007 ACPE Accreditation Standards and Guidelines for the Professional Program in Pharmacy Leading to the Doctor of Pharmacy Degree.¹

Along with self-assessment and self-reflection activities, peer feedback activities can be valuable tools for engaging students in their learning. As previously mentioned, peer feedback takes place in most communication courses.³ However, the instructional design of such activities and their integration with other course activities are seldom reported.

Scaffolding is an example of a strategy that can be used to integrate various types of learning activities. Scaffolds are instructional procedures used to aid a learner in working through problems or tasks to attain a higher level than would have been possible without assistance.^{9,10} The use of scaffolds emulates a constructivist approach to instructional design. One of the major roles of teachers in a scaffolding system is to "coordinate their efforts with those of the students to support the students as active partners in constructing the learning activity."¹¹ Vygotsky's "zone of proximal development" has been used to characterize scaffolding.¹² Scaffolds allow learners to participate at an ever-increasing level of competence while at the same time gradually withdrawing support as the learning process unfolds and learners become more proficient. Scaffolding techniques include interactive activities, such as peer feedback and dialogue to mediate learning,¹³ as well as external supports, such as question prompts to guide self-reflection, comprehension-monitoring strategies, and metacognition.^{14,15}

Effective teaching and assessment of communication skills are important to the professional development of pharmacy students. These skills are necessary for them to provide pharmaceutical care and interact with members of the health care team. The objectives of this paper are to (1) describe a communication skills development (CSD) system that integrated self-directed learning activities,

peer feedback, web-based assessment processes, and scaffolding strategies, and (2) evaluate the system's effectiveness in a clinical communications course.

Clinical Communications is a 4-credit course in the third-professional year of the doctor of pharmacy curriculum at the University of Oklahoma College of Pharmacy. The course has 3 general objectives for students upon completion of the course:

- (1) Recognize their communication strengths and areas for improvement.
- (2) Implement and evaluate strategies to improve their communication skills.
- (3) Appreciate the role of interpersonal communication in their personal and professional lives.

DESIGN

A CSD system was designed for *Clinical Communications*. Students were enrolled in the course at 1 of 2 campuses: Oklahoma City or Tulsa. The course consisted of a lecture and a laboratory component. Lectures were synchronously transmitted to the distance classroom. Laboratories were facilitated locally by faculty members; no distance technology was used. Each student was assigned to a laboratory section. There were 3 laboratory sections in Oklahoma City and 2 laboratory sections in Tulsa. Within each laboratory section, students were assigned to laboratory groups of 3-4 members. These peer groups participated in various activities during the course.

The CSD system was designed and implemented for 4 reasons. The primary reason was to facilitate student achievement of the *Clinical Communications* course goals. A second reason for implementing the system was to increase opportunities for students to receive useful performance feedback at various times from multiple sources, including faculty members, standardized patient actors, and other students. Receiving input from multiple sources can reinforce students' perceptions formed through self-assessments.¹⁶ Allowing students to gain more independence in conducting activities to apply and develop their communication skills was a third reason for implementing the system. The use of scaffolding strategies was aimed at this particular reason. The final reason was to create a web-based environment that would enhance course activities. The web interface was designed to be convenient and personalized. Student and faculty users could access the system's web-based components from any computer with an Internet connection using a unique username and password and view web pages containing individually tailored content.

A graphical representation of the CSD system from the student's perspective is depicted in Figure 1. It is

Figure 1. Graphical representation of the communication skills development system.

considered a system because it is a dynamic and complex whole, interacting as a structured functional unit. Information flows between the system's different elements and various activities are simultaneously performed by different individuals. Information flows from students to faculty members, from faculty members to students, from students to students, and from students to themselves. Learning activities in the CSD system are designed to address the following learning outcomes:

- Communicate effectively while conducting patient interviews.
- Gather and use pertinent information during patient interviews to optimize patients' drug therapy outcomes.
- Compose a well-written SOAP note after a patient-pharmacist interview.
- Provide constructive feedback to self and peers, and receive/apply constructive feedback from self, peers, faculty members, and patients to improve communication with patients.
- Construct, present, implement, and reflect on a plan of action to achieve goals for improved communication with patients.

Various topics to facilitate students' attainment of these learning outcomes are covered in *Clinical Communications* (Table 1).

The first and second interview/SOAP notes were completed during the second and twelfth weeks of *Clinical Communications*, respectively. Each student conducted a patient interview with a standardized patient actor and wrote a SOAP note based on the encounter. The exercises were based on an ambulatory care or community pharmacy clinic setting. Learning objectives for the exercises are listed in Table 2.

The standardized patient actors who participated in these exercises received patient roles and attended training sessions before each set of interviews. Patient roles contained information on health status, diseases, prescrip-

tion medications, nonprescription medications, medication allergies, and lifestyle (eg, tobacco use, alcohol use, diet, exercise). Patients in all cases were currently experiencing or at high risk of experiencing a drug therapy problem with their current medication. Examples of problems used include nonadherence, drug-food interaction, drug-drug interaction, and subtherapeutic dosage. Additionally, all cases contained an emotional concern that the actors expressed during the interview. These concerns ranged from a hypertensive patient's frustration over having to take multiple medications on a chronic basis to a diabetic patient's worry and fear about his disease after his diabetic sibling underwent a leg amputation. The intent of the emotional concern was to trigger an empathic response from the student.

One week prior to the exercise, students received a list of 5 possible medications their patient could be taking. Although in the actual scenario the patient would be taking only one of these medications and beginning a new regimen with another, students were expected to be prepared to discuss all 5 medications.

Table 1. Clinical Communications Topics

Interpersonal communication principles	Patient-centered communication
Self-concept and perceptions	Patient interviewing ^a
Nonverbal communication	Patient assessment and evaluation ^b
Communication barriers	Patient counseling and education ^c
Constructive feedback	Helping patients with change
Active listening	Motivational interviewing
Empathy	SOAP notes

^aQuestion phrasing and ordering

^bPatient care process and interview structure to assess drug therapy problems

^cIndian Health Service Model (eg, prime questions)

Table 2. Learning Objectives for Communication Skills Development System Components

Interviews and SOAP Notes

Conduct two standardized patient interviews, including assessment of current therapy and other health issues, counseling/education on a new medication, problem intervention, and plan for follow-up.

During standardized patient interviews:

- (1) Demonstrate appropriate nonverbal communication.
- (2) Actively listen and respond empathically to patient concerns.
- (3) Involve patient in identifying and selecting strategies to solve problems.
- (4) Use appropriate questioning techniques.
- (5) Use appropriate patient counseling and education techniques.

Following a standardized patient interview, document appropriate information, assessments, and plans in a SOAP note.

Given a video of a student (self)-patient interview, evaluate own performance using criteria and checklists.

Given a video of a student (peer)-patient interview, evaluate peers' performance using criteria and checklists.

Given a video of a student (peer)-patient interview, provide peers with constructive feedback on demonstration of communication skills.

Analyze self, peer, faculty, and patient evaluations of two patient interviews (ie, #1 and #2).

Goal Setting and Oral Presentations

Deliver an oral presentation based on review of all interview #1 assessments.

- (1) Identify three communication strengths and three communication areas for improvement.
- (2) Select and play portions of digitally archived interview in which two communication strengths and two communication areas for improvement are clearly displayed.
- (3) Construct three specific and measurable goals for improvement of communication skills.
- (4) Discuss plans to progress toward each goal.
- (5) Describe specific evidence to evaluate achievement of each goal.

Selected Labs*Constructive Feedback*

List 8 strategies for providing constructive feedback.

List 8 strategies for receiving constructive feedback.

Evaluate examples of feedback for constructiveness.

Given a video of a student-patient interview, provide the student with constructive feedback in order to improve his/her future communication with patients.

SOAP Notes

List characteristics and components of a well-written SOAP note.

Evaluate a SOAP note and recommend improvements.

Given a patient-pharmacist dialogue, write an accurate and appropriate SOAP note.

Goal Evaluation and Reflection Paper

Assess progress towards three goals formulated following interview #1.

- (1) List each goal.
 - (2) Describe what you learned and/or did this semester that facilitated your progress toward each goal.
 - (3) Cite specific evidence you used to determine whether you achieved each goal.
 - (4) State if you achieved each goal or describe progress you have made toward achieving each goal.
- Discuss two additional clinical communication skills not addressed in your goals.

- (1) Describe your skill level and experience at the beginning of the semester.
- (2) Describe your skill level and experience now.

- Examples: providing and receiving constructive feedback, assessing current drug therapy for potential problems, patient counseling techniques, listening, empathy, organizational skills during patient consultations, nonverbal communication, SOAP note writing.
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Students also received interview criteria to assess their performances (Appendix 1). A copy of the assessment checklists are available upon request from the corresponding author. Students were encouraged to create interview guides based on the assessment criteria, but they were not allowed to bring the original criteria to their interviews. SOAP note assessment criteria were not provided before the exercise because the criteria were case-specific and thus, would have revealed pertinent case facts. Students were permitted to view the SOAP note assessment criteria after their SOAP notes had been graded.

In previous offerings of the course, faculty members serving as laboratory instructors had assessed all students in their laboratory section. However, with increasing student enrollments, laboratory sizes grew to numbers that were not feasible given faculty resources. In the fall 2006 semester, 15 College of Pharmacy faculty members (9 in Oklahoma City, 6 in Tulsa) assessed students' patient interviews and SOAP notes. Each faculty member assessed both the first and second interview/SOAP notes for 7-9 students. Before the beginning of the semester, faculty members attended a 1.5-hour orientation to discuss course goals, their roles in helping students achieve the course goals, assessment materials, schedules, and timelines. During the orientation, faculty members viewed and graded a digitally archived interview from a previous semester and discussed their assessments.

The interview and SOAP note exercises took place over 5 days (3 days in Oklahoma City, 2 days in Tulsa). Each day, 3 faculty members viewed and assessed 7-9 interviews. Three standardized patient actors participated on each day of the exercise. On the day of their interview assessment, faculty members came to a designated room and viewed the standardized patient interviews live via video streaming on a computer or television monitor. Faculty members were also provided with headphones to minimize external noise. The time commitment for faculty members to view and grade interviews was approximately 3 to 3.5 hours, depending on the number of students. The time was allotted so that students had a maximum of 15 minutes to conduct their interviews. Actors had approximately 5 minutes to provide students with verbal feedback immediately following their interviews and another 5 minutes for a break before their interview with the next student.

After students completed their interview and received verbal feedback from their patient, they went to a designated room to write and submit their SOAP note based on the patient encounter. SOAP notes were written and submitted online via a web site created for the course.

Faculty members received an assessment form for each student and filled it out during the interview. Following all their interviews, faculty members submitted their assessments via a web site created by the College's web developer. Each student received a grade from the faculty member who assessed their interview. Grades were made available after completion of the self/peer assessments.

Approximately 1 week after the exercise, students received web access to archived media clips of their interview and those of their laboratory group members. Students were instructed to watch the interviews and assess the pharmacy student's performance using the criteria listed in Appendix 1. A snapshot of the web interface for a peer interview assessment is shown in Figure 2. Each student earned a self/peer grade based on the mean of all the self- and peer assessments of their performance. Students received access to their graded faculty, self-, and peer assessment forms after the submission due date for all assessments.

The faculty assessment criteria were identical to that of the students except for a few sections that were omitted. The rationale for this was that since the faculty members were grading the students live, they would not be able to evaluate the content as critically as the students, who were watching an archived digital media file with pause and rewind capabilities. The entire online assessment process is depicted in Figure 3.

Following assessment of the first interview, students reviewed their faculty, self-, peer, and patient assessments. They identified 3 communication strengths, 3 communication areas for improvement, and 3 goals for improvement. Each student's goal had to include a plan of action and specific evidence for determining whether the goal was achieved after watching their second interview. During weeks 6-8 of the course, students were scheduled in groups of 6-7 (2 laboratory groups) to deliver oral presentations using Microsoft PowerPoint. The learning objectives for the presentation are listed in Table 2. Students were required to support their self-assessments during their presentations by accessing their archived patient interview on the course web site to demonstrate specific evidence of their strengths and areas for improvement. This process of verification was an essential component of increasing the accuracy of self-assessments.¹⁷

Students participated in 9 laboratory sessions during the semester. Two of these were the patient interviews and SOAP notes and another was the oral laboratory presentation. The topics of the other 6 laboratory sessions were self-concept and perceptions,⁸ providing constructive feedback, problem assessment, empathy, writing SOAP

Figure 2. Web interface for peer interview assessment.

notes, and practicing for the second patient interview. Students were instructed to answer online reflection questions following each laboratory session. An example of a set of reflection questions regarding the first patient interview and SOAP note were: (1) What went well during

your patient interview? (2) What did not go well during your patient interview? (3) What did you learn about conducting a patient interview as a result of this experience? (4) If you could turn back the clock, what would you do differently?

Figure 3. Web-based assessment process.

At the end of the semester, students wrote a reflection paper about what they had learned and how they determined whether they achieved their goals. They were also asked to reflect on changes in 2 additional communication skills that were not addressed in their goals. Students could view online logs of their laboratory reflections to aid in writing the reflection paper. Modified objectives for the reflection paper are listed in Table 2.

Scaffolding

The learning and assessment activities in the CSD system were organized and sequenced to scaffold students' communication skills, with the exception of the first standardized patient interview and SOAP note, which merely served as baseline assessments. The primary scaffolding tools in the system were peer interaction and laboratory instructor guidance. In one of the earlier laboratories on patient assessment and evaluation, students interviewed a standardized patient (ie, the laboratory instructor) in their peer groups. This was the first time since the baseline assessment that they conducted a patient interview. After their interviews, the laboratory instructor facilitated a discussion about what information was gathered, what drug therapy problems were identified, and what solutions were proposed as interventions. After this laboratory, students participated in active-learning activities during lectures and other laboratories in which they practiced parts of an interview. They received peer and instructor feedback after each activity, yet performed the activities individually. Additionally, after laboratory sessions, they answered reflection questions, which were external scaffolding supports.

For the second to last laboratory prior to the second patient interview and SOAP note, students critiqued a SOAP note in their laboratory group and individually wrote a SOAP note after viewing a patient-pharmacist dialogue. This laboratory activity mimicked what they would be doing in 2 weeks when they would write a SOAP note based on their own standardized patient interview.

For the last laboratory prior to the second patient interview and SOAP note, students were assigned patient and pharmacist roles. They interviewed each other within their peer group, and provided one another with feedback. By this time in the semester, the students were functioning independently and were practicing an entire interview with little to no laboratory instructor guidance. This activity prepared them for what to expect the following week when they had their standardized patient interviews.

Over the course of the semester, students were given multiple opportunities to apply and practice communication skills they had learned about in lecture. The amount of support, primarily peer feedback and laboratory in-

structor guidance, lessened as their communication skills developed. This pattern of participating at an ever-increasing level of competence while at the same time gradually withdrawing support as the learning process unfolded was an application of scaffolding to the CSD system.

Many of the CSD system components were web-based. The assistance and support of the College's multimedia education specialist and web developer were vital to the implementation of the CSD system. The multimedia education specialist was primarily responsible for ensuring the patient interviews were properly recorded and formatted. Specific duties consisted of (1) coordinating the use of audiovisual equipment during the interview videotaping; (2) ensuring the accuracy and quality of the interview video streaming for faculty grading; (3) encoding, editing, and labeling the recorded interview footage into individual student files; and (4) sending student media files to the web developer for uploading onto the course web site. The multimedia education specialist used Windows Media Encoder to digitize the video footage and Windows Media Server to deliver the media files. The web developer's primary responsibility was creating a web environment for students and faculty members. This responsibility entailed (1) uploading student media files of patient interviews received from the multimedia education specialist; (2) designing web versions of assessment forms, including setting point values for all assessment items as indicated by the course coordinator (eg, checkboxes for criteria on interview assessment forms); (3) designing the laboratory reflection web page; (4) creating the student database containing information that individualized each student's and faculty member's web access; and (5) creating notification mechanisms (eg, pop-up boxes) to assure students and faculty members that they had correctly submitted their work. The web developer used Microsoft Active Server Pages to create the online assessment forms and Microsoft SQL Server to store student information and scores.

The course coordinator had oversight of all web-based activities by having the ability to view all archived interviews, interview assessments, SOAP notes, and reflections. Additionally, the course coordinator could view class performance data on any quantitative assessment item and conduct comparisons between campuses, laboratory sections, or laboratory groups.¹⁸ At certain points during the semester, the web developer provided the course coordinator with Microsoft Excel spreadsheets containing scores and/or submission times for particular web-based assessments. Receiving scores in this format allowed easy uploading to a course management system, such as Blackboard or WebCT. Receipt of submission

times permitted the course coordinator to make graded interview assessments accessible to students at the appropriate time and to deduct points from laboratory reflections that were submitted late.

RESULTS

Student enrollment in the fall 2006 offering of *Clinical Communications* was 123, with 76 Oklahoma City students and 47 Tulsa students. Laboratory enrollments were between 23 and 26 students.

The effectiveness of the CSD system in the *Clinical Communications* course was evaluated by determining whether the course's learning outcomes were achieved. Additionally, 3 faculty graders and 2 students were interviewed regarding the influences of patient interviews, learning strategies, and assessment methods on CSD.

Students demonstrated significant improvements in their ability to communicate effectively in patient interviews. Comparisons between the first and second interview scores are shown in Table 3. Improved scores were seen on assessments conducted by faculty members, students (self- and peer), and patients ($p < 0.001$).

Faculty members who were interviewed strongly agreed that the patient cases were appropriate and advocated the use of standardized patient interviews. They argued that the more students are put into real life situations, the better prepared they will be when they are pharmacists and officially responsible in those positions. One negative comment provided by a faculty member was that there was a time limit for both interviews. This limitation was seen more in the second interview when most students took longer to complete their interviews due to their more structured flow and the students' improved problem-assessment skills. Having a time limit was seen as counter-productive for marginal students because it put them in a position to be nervous rather than in an environment where they could build their confidence. Although

students generally understood the rationale for having a time limit, many felt that the time limit added to the simulated nature of the exercise and increased pressure to finish on time. Approximately one third of students did not finish the second interview in 15 minutes. However, almost all of these students were close to finishing the interview when time ran out. They generally were arranging a follow-up or ending the consultation (see Sections H and I in Appendix 1). However, students who severely lacked efficiency in their organizational and interviewing skills, or who tended to be very anxious about the exercise, tended to be at earlier stages of their interviews when time ran out. For these students, not finishing on time prohibited them from completing the interview and possibly from gaining a sense of accomplishment from the activity.

Students were expected to gather and use pertinent information during interviews to optimize patients' drug therapy outcomes. Not only is it important for students to communicate effectively with patients, it is also important for the communication to serve a purpose. Through appropriate question-asking, relevant information can be obtained from a patient and can be used to optimize drug therapy outcomes. Since each standardized patient case included a drug therapy problem, students were assessed on whether they identified and appropriately addressed the relevant drug therapy problem. Active patient involvement was also important given the fact that patient-centeredness was a running theme throughout the course. Finally, arranging a follow-up with the patient to evaluate the intervention at a later date was another critical component of optimizing the patient's drug therapy outcomes. All of these elements constitute the patient care process (ie, assessment, care plan, and evaluation).⁵ According to the faculty assessments, class performance on drug therapy problem identification, intervention, patient involvement, and follow-up improved from the first interview to the second (Table 4).

Students exhibited significant improvement in their ability to compose a well-written SOAP note following a patient interview. The mean class percentages on the first and second SOAP notes were 51.5% and 81.2%, respectively ($p < .001$). Another course learning outcome was for students to provide, receive, and apply constructive feedback to improve communication with patients. The students who were interviewed noted that it was nice to receive feedback on both the good and bad aspects of their communication skills. They did not find the way their peers phrased feedback to be detrimental; instead, it influenced their understanding of how to improve their communication skills. Similarly, students learned to recognize and appreciate receiving feedback that

Table 3. Interview Assessment Percentages

Source	Interview 1 ^a	Interview 2 ^a
Faculty	66.4	90.9
Self ^b	71.0	92.7
Peer ^b	70.3	91.0
Patient	82.9	91.9

n = 123 faculty, self, and patient assessments; n = 284 peer assessments

^a $p < 0.001$ using paired *t* test statistic for all interview 1 and 2 comparisons (eg, faculty, self, peer, patient)

^bCriteria that faculty did not assess were excluded from self- and peer percentages reported above. Full-criteria self/peer percentages were as follows: Self 1 = 70.9%, Self 2 = 93.3%; Peer 1 = 70.2%, Peer 2 = 91.6%

Table 4. Percentage of Students in Interview #1 and #2 Faculty Assessments Who Appropriately Intervened to Address Drug-Therapy Problems and Arranged a Follow-Up Interview (N = 123)

	Interview 1	Interview 2
Intervened to address problems		
Identified relevant drug therapy problem	50.4	91.9
Targeted intervention to precise cause of the problem	38.2	87.8
Actively involved patient in identifying and selecting strategies		
Yes	17.1	69.1
Marginal	20.3	19.5
No	62.6	11.4
Follow-up		
Proactive (ie, pharmacist contacts patient)	18.7	76.4
Timely	32.5	74.0
Specific purpose	25.2	69.9

was constructive because it helped them improve their communication skills. Lastly, students commented positively about receiving multiple forms of feedback. When asked to rank forms of feedback, the students who were interviewed indicated faculty assessment as first and self-assessment as second in value.

Students were also expected to construct, present, implement, and reflect on a plan of action to achieve goals for improved communication with patients. One of the faculty members who was interviewed was impressed by the students' presentations on their perceived strengths and areas for improvement with corresponding goals that they themselves identified. This faculty member believed this type of learning strategy was essential if the College wanted student to be more independent thinkers. As one student noted, this novel approach had not been implemented in other courses and had helped her to be more specific in improving her communication skills. She also stated, "if you don't have any goals, then how are you going to measure your success. . . in the course or in different things. So you have to have something to look forward to or keep reaching towards."

DISCUSSION

One may look at the CSD system and comment that other colleges of pharmacy have already implemented some of the same components. The components themselves, such as using standardized patient actors and peer

feedback, were not innovative. What made the approach innovative was the integration of the elements into a system with a specific purpose to scaffold CSD. A systems view looks at the whole and takes into account the dynamic nature of the moving parts and how they are interrelated. With this perspective, we believe our approach was innovative.

The use of web-based assessments was also innovative. Multiple users accessed the web environment (ie, faculty evaluators, students, course coordinator) for multiple purposes (ie, SOAP notes, videos, assessments, reflections). In today's academic environment, and with the number of distance campuses increasing, web-based tools are more valuable than ever.

The approach of using goal setting to hold students accountable to deliver an oral presentation with evidence from their interviews was also innovative. This process seemed to enhance students' intrinsic motivation to achieve their goals and take responsibility for their learning. Students appeared to take ownership of the assignment and worked hard to improve their skills so they could achieve their goals.

The assessment materials used were also innovative because they measured elements of problem-solving and patient collaboration that are lacking from the majority of communication assessments at US colleges of pharmacy.⁴ To prepare students to deliver pharmaceutical care, it is important to help them make connections between developing effective communication skills, fostering collaborative pharmacist-patient relationships, gathering more and better quality information from patients, having a greater influence on patient behavior, and ultimately, optimizing patients' drug therapy outcomes.

The CSD system could be implemented at other colleges of pharmacy, in both didactic or experiential learning environments. The system components may need to be modified, such as the use of web-based assessments, depending on college resources for web developers or multimedia educational specialists. Most colleges or campuses have information technology staff members who have the skills to develop web-based tools. Adequate planning and mutual understanding regarding the demands of a web-based system are crucial. Other important discussions include coordinating multiple web users, integrating a database for student information and scores, and clarifying who has access to what information and when (eg, not releasing graded peer evaluations until after a designated due date).

The current system used volunteer faculty evaluators for the patient interviews and SOAP notes. In most cases, these faculty members were separate individuals from laboratory instructors in the course. Other alternatives for

graders are preceptors or residents. Depending on various factors, such as student enrollment and faculty resources, the course coordinator and/or course laboratory instructors may be the sole graders for the patient interviews and SOAP notes.

In experiential learning environments, actual patients could be interviewed with the faculty preceptor and another student as an interactive group for feedback. Scaffolding activities could be streamlined to fit the length of time of the practice experience.

Several aspects of implementing the CSD seemed to go well. The number of students that each faculty member was asked to grade was perceived as reasonable. The interview assessment criteria were seen as being clear. Finally, the web site for conducting the patient interview grading was perceived as easy to use. This information was obtained from faculty periodically during the semester and on a written survey that was e-mailed to the faculty graders at the end of the semester. Since 40% of the faculty filled out the survey instrument, there may be some response bias.

Some faculty expressed a concern about grading the patient interviews in real time. They were worried they might miss something during an interview. To remedy such a situation, the course coordinator implemented an appeals process in the course. After students received their faculty interview grades, they could review their interviews for discrepancies. Since students had already completed their self-assessments, and since they had the added benefit of watching a recorded interview that could be paused and rewound, they sometimes found errors in faculty grading. If students found an error in grading, they could e-mail a description of the error and when it occurred on the media file (eg, minutes:seconds) to the course coordinator. The course coordinator would review the appeals and adjust the grades if appropriate. In the fall 2006 offering of *Clinical Communications*, approximately one third of students submitted appeals, and of those, over 80% were approved.

The CSD system appeared to contribute to the magnitude of improvement in students' communication skills. Based on faculty assessments, student scores improved an average of 24.5 percentage points between the first and second interview. In contrast, a mean improvement of 17.9 percentage points was seen the previous year, during which the CSD system had not been implemented in the course. This comparison supports the effectiveness of the CSD system in enhancing student development of communication skills.

Planned modifications to the CSD system include enhancing motivational interviewing training in the course. This will be done to give students more options

for helping patients move toward healthy behavioral changes, such as lifestyle, self-monitoring, and medication adherence. This modification will take place over a couple of years. First, a motivational interviewing laboratory will be added, followed by revising patient roles to require more advanced behavioral interventions. Finally, assessment criteria will be revised to measure aspects of motivational interviewing during a patient interview. If other aspects of the interview remain the same, the time limit will likely need to be increased.

Another planned modification is the integration and documentation of CSD outcomes into students' reflective portfolios.¹⁹ The goal setting and reflection activities inherent in the CSD system bode well for its complementary use with reflective portfolios and continuing professional development.

CONCLUSION

A CSD system that integrated self-directed learning activities, feedback, and scaffolding strategies was shown to be effective in helping students recognize their communication strengths and areas in need of improvement, as well as implement and evaluate strategies to improve their communication skills.

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Appendix 1. Interview Faculty and Self/Peer Assessment Criteria. (*Italicized* criteria are omitted from faculty form for ease of live grading)

A. Introduction

1. Introduces self.
2. *Identifies patient or patient's agent by name.*
3. Explains the purpose/importance of the counseling session in terms of benefit to the patient.
4. *Conveys time frame and obtains patient consent.*
5. Encourages patient to ask questions or seek clarification at any time.

B. Assessment of Potential Problems with Medications Currently Taken

1. Makes sure records of Rx and relevant OTC and other self-care (eg, herbals) use are complete.
2. PURPOSE: Assesses patient understanding of purpose for each medication.
3. *REGIMEN PRESCRIBED: Assesses patient understanding of strength of med, dose, dosing schedule, and duration prescribed.*
4. USE: Assesses how each medication is actually being used (including times of day; number of doses missed in a typical week & reasons for missed doses OR freq of use and maximum doses in fixed interval of PRN meds).
5. PROBLEMS: Assesses problems with each medication. Problem assessment should have broad opening question with specific question on side effects as a follow-up question.
6. EFFECTIVENESS: Assesses
 - (a) patient perceptions of effectiveness of each medication,
 - (b) how condition is being monitored by MD, and
 - (c) results of monitoring information from MD monitored criteria.

C. Assessment of Other Health Issues

1. Assesses other health concerns/health problems patient has been experiencing; finds out whether these problems have been discussed with physician; finds out how patient has been treating problem.
2. Assesses allergies to medications.
3. Assesses lifestyle issues (smoking, alcohol use, diet, exercise) that might relate to specific medical conditions or medications being used.

D. Intervening to Address Problems

Targets interventions to precise cause of the problem. Actively involves patient in identifying and selecting strategies to solve problem.

E. Providing Information on New Medication

Information is provided or understanding assessed on the following items of information.

1. Name of the medication
2. Purpose
3. Dose
4. Dosage schedule with times that fit patient routine identified
5. How to take (eg, with meals, don't crush)
6. What to do if a dose is missed with specific criteria for making decisions (eg, How close to the next dose is "too close?")
7. Duration of treatment
8. Precautions (driving, drug-drug interactions, alcohol use, etc.)
9. Proper storage, ancillary instructions (eg, shaking)
10. Benefits of medication
11. What to expect (eg, when drug should show an effect)
12. Techniques and criteria for self-monitoring of response, including when to contact pharmacist or physician
13. Common or potentially dangerous side effects and whether they will go away in time
14. What to do to manage side effects
15. Refill information (#, when next refill is due)

F. Assisting Adherence

Tailors the new medication regimen to patient habits and/or suggests cues (eg, setting alarms) if existing habits cannot be tied to regimen demands.

G. Assessment of Understanding of New Information

Assesses how well patient understands key information about new medication.

H. Monitoring

Arranges for timely follow-up to assess effectiveness, problems, and answer patient questions.

I. Ending the Consultation

1. Asks if patient has any additional questions or concerns.
2. Makes self available in the future if patient has questions or problems arise.

J. Conveying Empathy

Shows empathy, caring and acceptance of patient feelings throughout the counseling session. Is not judgmental.

K. Nonverbal Communication

Has consistent eye contact, encourages patient to talk through head nods, does not interrupt or rush patient, speaks clearly and unhurriedly, etc.

L. Listening to the Patient

Provides feedback to indicate that information provided by the patient has been understood. Understands patient meaning or seeks clarification on information not understood.

M. Questioning Technique

1. *Uses primarily open-ended questions when beginning a new area of inquiry; follows up with directed questions.*
2. *Uses open-ended questions to assess patient's prior understanding of new medication before providing information (purpose, use, effectiveness, problems/side effects).*

N. Education Techniques

1. *Emphasizes important points.*
2. *Gives reasons or tells why key pieces of advice should be followed.*
3. *Uses terms the patient can understand.*
4. *Provides and directs appropriate attention to written information.*

O. Organization

1. *Conducts counseling in a logical flow, starts with most important issues, and does not skip back and forth.*
2. *Uses transition statements such as: "First, let's discuss your prescription medication. . .Next, I'd like to ask you some questions about your lifestyle.."*

Overall Comments and Suggestions for Improvement

Please include two strengths and two suggestions for improvement. Please be as specific as possible (eg, "consistent eye contact" vs. "good nonverbal communication").

Adapted with permission from CL Kimberlin, University of Florida College of Pharmacy.