The MCG Medical Teacher’s Handbook

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Introduction

Our purpose in writing this handbook is to provide brief, practical, useful written information on teaching, learning, evaluation, and career development for medical educators who have interest, but a limited background, in formal educational theory and methodology.

The handbook is intended for medical school educators, particularly those who teach medical students. It should be especially helpful to faculty who are beginning their teaching careers, and those who are assuming more of a research or leadership role in medical education.

Medical school educators typically have extensive knowledge in the area of their professional discipline, but little or no formal training in educational theory or techniques. Their demanding clinical, teaching, and/or research responsibilities leave them little time for improving their own educational skills by attending scheduled courses or workshops. This handbook is intended to be a resource on educational theory and principles that they can consult at their leisure.

The authors have extensive, collective experience with medical education from different perspectives—basic science teaching, clinical teaching, curriculum development, testing and evaluation, advising and mentoring students, developing and using teaching technology, planning and conducting educational research, and faculty development. All are faculty at the Medical College of Georgia; most are members of the Career Development and Education Center (CDEC). The CDEC faculty have developed and conducted faculty workshops on the topics included in this handbook.

The handbook comprises five chapters, each containing sections that are formatted as follows: introduction, background, discussion, and pearls to remember. Chapter 1 provides some general background on learning theories and implications for teaching. Chapter 2 discusses some specific teaching techniques, such as giving a lecture with impact and using PowerPoint effectively. Chapter 3 deals with other aspects of teaching, such as tips on incorporating cultural competency issues and how to deal with problem learners. Chapter 4 discusses curriculum issues, such as how to write objectives and construct good examination items. Chapter 5 focuses on career development, including promotion and tenure, building an educator’s portfolio, and planning and conducting educational research. Each section is freestanding and concise; a few key references are listed at the end for readers who want to explore the topic further.

Finally, I would like to thank the authors who conceptualized and contributed sections to this handbook and Jeanne Aycox, Office Specialist, for her able help with coordinating, formatting, and assembling the final version.
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Teaching and Learning Fundamentals
Learning Theories and Implications for Teaching
Janis A. Work, PhD

INTRODUCTION
Medical educators typically are content experts in their professional field, but generally have little or no background in educational theory about how people learn. This section presents a brief overview of learning theories and suggestions for teachers.

BACKGROUND
How teachers structure a learning experience depends to some extent on their view of learners. Table 1 shows some of the major learning theories that were developed during the 20th century. They represent a continuum, from teacher-centered, highly structured learning environments that focus on behavioral change to learner-centered environments that focus on problem solving and integrating new knowledge into existing knowledge. Behaviorists see learning as a process whereby the learner forms a connection between a stimulus and a response. The learner is motivated by drives (hunger, thirst) or rewards (good grades) and punishments (failure, remediation). Learning is demonstrated when the learner shows the appropriate behavior in response to a stimulus (provides the right answer to an exam question). This may or may not include understanding on the learner's part. Traditionally, medical education has tended to use a behaviorism approach, emphasizing the concrete facts and skills learners need to attain defined behavioral objectives.

Table 1. Learning Theories and Their Implications

<table>
<thead>
<tr>
<th></th>
<th>Behaviorism</th>
<th>Cognitivism/Constructivism</th>
<th>Humanism</th>
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<tr>
<td><strong>Theorists</strong></td>
<td>Skinner, Thorndike</td>
<td>Ausubel, Bruner, Gagne,</td>
<td>Knowles, Maslow,</td>
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<td></td>
<td></td>
<td>Piaget</td>
<td>Rogers</td>
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<td><strong>Teacher's Role</strong></td>
<td>Behavior modifier</td>
<td>Information source, prompter,</td>
<td>Facilitator,</td>
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<td></td>
<td></td>
<td>challenger</td>
<td>coach</td>
</tr>
<tr>
<td><strong>Learner's Role</strong></td>
<td>Passive: acquire</td>
<td>Active: construct</td>
<td>Active: extract</td>
</tr>
<tr>
<td></td>
<td>new facts, skills</td>
<td>understanding and link it to existing knowledge</td>
<td>lessons from experience</td>
</tr>
<tr>
<td><strong>Level of Structure</strong></td>
<td>High</td>
<td>Moderate to low</td>
<td>Varies by learner needs</td>
</tr>
<tr>
<td><strong>Conceptual Processing Levels</strong></td>
<td>Low</td>
<td>Moderate to high</td>
<td>High</td>
</tr>
</tbody>
</table>
DISCUSSION
A more contemporary view of learners has evolved from research conducted in the past few decades in the area of cognitive science. Learners are now seen as people who are actively seeking knowledge. They bring their existing knowledge, skills, and beliefs into a learning experience. Learners need to assimilate the new knowledge into their existing knowledge, or to alter their existing knowledge to accommodate the new knowledge. They use their existing knowledge to construct new knowledge and a more mature understanding. Active learners, those who control their own learning, develop better understanding and recognize when they need more information. Active learners are better able to transfer what they have learned in one setting to new experiences and problems. Teachers can improve learning when they are aware of what learners bring to the learning experience, i.e., what the learners already know. The teacher then can structure the new instruction to meet the students’ needs and monitor their progress in mastering it.

Medical educators recognize the need for students to develop self-directed, life-long learning skills. Changes in the medical school curriculum, such as incorporating problem-based learning, now include learning experiences that represent the cognitive end of the continuum, where students are active learners. Humanistic concepts of learning incorporated into the curriculum help prepare students to care for patients of different cultures or belief systems.

PEARLS TO REMEMBER
Which theory is best? The one that is most effective in helping learners master specific tasks. Behaviorism is appropriate for rote memorization, cognitive strategies are useful for problem solving, and humanism is better suited to high-level cognitive processing.

The National Research Council identifies the following implications for teachers:

- Teachers must draw out and work with the preexisting knowledge that their students bring to them.
- Teachers must teach some subject matter in depth. They should provide many examples in which the same concept is at work and provide a firm foundation of factual knowledge.
- Teachers and the curriculum should help students develop their metacognitive skills (their ability to monitor their current level of understanding and decide when it is not adequate).
Learning is influenced in fundamental ways by the context in which it takes place. The National Research Council offers the following recommendations to optimize learning:

- Make schools and classrooms learner centered.
- Provide a knowledge-centered classroom environment. Pay attention to what is taught (information, subject matter), why it is taught (understanding), and what competence or mastery looks like (outcomes).
- Conduct formative assessments. Formative assessments help both teachers and students monitor progress.

Medical students are both learners and adults. Knowles, a pioneer in the field of adult learning, identified the following characteristics of adult learners:

- They bring years of life experience and extensive knowledge to a learning situation. The teacher should help them link new knowledge to what they already know and have experienced.
- They are autonomous and self-directed. Teachers should serve as facilitators, guiding their learning rather than supplying them with facts.
- They are goal oriented. Teachers should show them how the learning experience will help them meet their goals.
- They are practical and interested in relevance. Teachers need to help them see how the learning material will be useful to them.
- Like all learners, adults need to be shown respect. Teachers should acknowledge and encourage them to express their experiences.

REFERENCES
Teaching and Learning Styles
Janis A. Work, PhD; Peggy J. Wagner, PhD

INTRODUCTION
Research indicates that both learners and teachers may have different ways of learning and solving problems. Many different models of learning styles exist. Some emphasize cognitive processing, while others take into consideration other ways of learning (see Gardner, 1983).

BACKGROUND
One of the most popular models is the Kolb Experiential Learning model (1984). It is a self-report, information-processing model that focuses on how people prefer to learn and solve problems. Researchers have used it to study health-care learners, such as nursing students and medical students. Kolb proposes that there are two primary ways for understanding the world and two primary ways of impacting it (making things happen). Table 1 shows these four approaches.

<table>
<thead>
<tr>
<th>Ways of Understanding the World</th>
<th>Learning Stage</th>
<th>Learning Strengths</th>
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<tbody>
<tr>
<td>Concrete Experience (CE)</td>
<td>Learn from feeling and personal experience, is sensitive to feelings and people</td>
<td></td>
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<tr>
<td>Abstract Conceptualization (AC)</td>
<td>Learn by thinking, logically analyzes ideas, plans systematically</td>
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<table>
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<tr>
<th>Ways of Impacting the World</th>
<th>Learning Stage</th>
<th>Learning Strengths</th>
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<td>Reflective Observation (RO)</td>
<td>Learn by observing and listening, looks for meaning</td>
<td></td>
</tr>
<tr>
<td>Active Experimentation (AE)</td>
<td>Learn by doing, gets things done, takes action</td>
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DISCUSSION
Kolb suggests that people tend to combine ways of understanding the world with the ways the world is impacted, producing one of four learning styles:
- Accommodator (CE & AE)
  - Understands the world by feelings, impacts the world by doing
  - Action taken in a team: try to get everyone to agree with the converger’s list (below)
  - Teacher’s role: help students discover for themselves
- Diverger (CE & RO)
- Understands the world by feeling, changes the world by reflecting and presenting
- Action taken in a team: brainstorm the questions under discussion
- Teacher’s role: motivator
- Assimilator (AC & RO)
  - Understands the world by thinking, changes the world by reflecting and presenting
  - Action taken in a team: create a plan or model for action
  - Teacher’s role: expert
- Converger (AC & AE)
  - Understands the world by thinking and changes it by doing
  - Action taken in a team: would like to develop a list of possibilities
  - Teacher’s role: coach

No one style is best. Good problem solvers can function in all four styles. However, individual learners and disciplines tend to emphasize one of these learning modes over the others, and this is their preferred learning style.

**PEARLS TO REMEMBER**
What does this mean for the teacher? If a student is having trouble learning, try to assess his preferred learning style. He may be a student who learns more from concrete experiences than from a lecture, for example. Asking questions such as the following may help:
- How do you like to learn? What has been successful for you?
- What drives you crazy in a class?
- What has been your favorite class and why?
- What are your favorite activities? Do you like to read? Try new things? The teacher may be able to suggest learning strategies that are better suited to the student’s style.

Teachers who have a preferred teaching method may need to build strengths in other areas to reach all students regardless of their learning style preference. Rotating activities, lectures, or reflective exercises is a good option.

The Kolb model is based on information-processing style, or how an individual prefers to process information. Some research using this model with medical students suggests that they become less reflective and abstract and more concrete as they progress through medical school. However, current educational trends, such as the emphasis on professionalism, are encouraging more reflection in medical student training.

Although the Kolb model is not particularly useful for prediction, such as predicting career choice, it does give us additional insight as to how to reach some of those difficult students.
Selected discussions of different models are listed in the references.

SELECTED REFERENCES
Teaching

Skills
Teaching in Basic Sciences  
Stephanie Wragg, PhD

INTRODUCTION

Fact 1: Medical students spend 50% of their time in the pre-clinical curriculum.

Fact 2: Medical students spend approximately 1200 hours learning about the basic sciences.

BACKGROUND

Teaching in the two pre-clinical years of medical school is challenging for basic scientists in the academic medical center arena. Teaching objectives are different for medical students compared to graduate students. Medical students must pass rigorous tests to demonstrate knowledge competency and so they retain characteristics of the undergraduate student in being grade-driven in their learning. Science graduate students can shift into problem-based and topic-driven learning modes much earlier than the medical students because they complete the Graduate Record Examination at the end of undergraduate training and there is no subsequent testing. The medical school experience is foreign to the basic scientist.

DISCUSSION

Why are basic sciences taught in medical school?

“Long ago it became evident that the key to every biological problem must be finally sought in the cell, for every living organism is, or sometime has been, a cell.” The overarching goal is to teach students the mechanisms of life at a molecular level. The practical side is that teaching basic science is a requirement for the accreditation of the medical school. A solid basic science core enables students to perform well at the first examination hurdle (USMLE Step 1) and may enhance the academic reputation of the medical school through their performance evaluation. At MCG, the basic sciences courses are as follows: gross anatomy, histology and development, biochemistry and medical genetics, neuroscience, physiology, psychiatry, medical microbiology, pathology and pharmacology.

How can basic sciences be taught effectively in a medical school?

A good basic science teacher should strive to

- Use the scientific method to present the material, because the skills behind an effective diagnostic method are fundamentally similar. Identifying a problem, proposing and testing a hypothesis, and analyzing the data are the basis for formulating clinical questions (diagnosis-etiology-therapy-prognosis). The medical student-turned-physician exposed to this method will be more likely to revisit his knowledge of the basic sciences when confronted with a challenging medical problem.
Communicate the core concepts that medical students need to understand, while using detailed information to strengthen the concept and reveal the true nature of life. A medical student who internalized the concept initially is more likely to retain relevant details longer and apply the information than a student who learns large amounts of detail by rote memorization.

So where is the dilemma?
Graduate school training is designed to achieve different goals, mainly through small-group and individual teaching. The basic scientist will approach the large-group lecture format of teaching, which is prevalent in the medical school, with different motivations and objectives that may not be ideally suited to achieving the goals of medical education. Part of the dilemma is that basic scientists are recruited to MCG mainly for their research skills, but they are responsible for the majority of basic science teaching in the medical school. Because these individuals are rarely MDs, and unless their research interests happen to be particularly clinical, they likely have no significant experience or knowledge related to health care. Finally, they are faced with the challenging task of maintaining active research programs, while providing effective teaching to a group of students who do not share their interests or expertise.

Where do basic scientists get help in honing their teaching skills?
At MCG, at least two venues are open to the basic scientist wanting assistance with teaching:
- The School of Graduate Studies (SGS) is the starting point for developing the skills required to effectively mentor graduate students and postdoctoral fellows as well as teach in the small-group setting of the SGS core curriculum.
- The Career Development and Education Center of the School of Medicine provides assistance in developing skills needed for teaching in the large-group lecture format, which is used for teaching the basic sciences to medical students. CDEC also can help the basic scientist identify the experienced and successful educators at MCG who could serve as teaching mentors.

PEARLS TO REMEMBER
- Basic scientists may have difficulty relating to the medical school experience.
- Basic scientists are recruited for their research skills, not their teaching abilities, yet are expected to teach medical students.
- Basic scientists need assistance in aligning their teaching objectives to fit the goals of medical education.

REFERENCE
Giving a Lecture with Lasting Impact
Christopher B. White, MD

INTRODUCTION
Lectures are an efficient way to teach, and they remain a major form of teaching in undergraduate, graduate, and postgraduate medical education. Unfortunately, many lecturers focus solely on the content and not on the quality of the presentation, leaving the audience frustrated and/or bored. With planning and practice, however, anyone can be a successful lecturer.

BACKGROUND
Lectures still comprise the most common educational medium in medical education, yet how many medical school lecturers have had the following experience?

“A medical school professor is lecturing to a virtually empty classroom and a spinning tape recorder. As the talk ends, one of the few students present retrieves the recorder and prepares to transcribe the lecture and distribute copies to classmates who stayed away.”¹

“The major principle of facilitating learning is to engage the thinking of the listeners,” says Whitman (1982).²

Schwenk and Whitman (1987)³ say the lecture has two proper uses:
- To present information that is not in print
- To present information that has to be synthesized from a variety of sources

“In addition to conveying information, a lecture can present information with an emotional impact.” “The lecture provides medical teachers with opportunities to convey their personal interest in the subject.”³

In general terms, the main purpose of a lecture is to⁴
- Motivate the students so that they appreciate the importance of the subject material in the overall scheme of things
- Transmit a body of information not readily attainable elsewhere
- Have the student leave the theatre having learned some important concepts and principles

The following information may not make you a perfect lecturer, but it will definitely make your lectures more effective and memorable for your audience.
DISCUSSION
Six Steps in Creating and Giving a Powerful Presentation:

1. Choose a Topic
   - In which you’re interested
   - About which you are knowledgeable
   - That is relevant to your learners. Here are some questions to ask to help you hone in on your purpose:
     - “What is the listener supposed to know as a result of the lecture?”
     - “What is the listener supposed to feel/value/or believe?”
     - “What is the listener supposed to do with this knowledge and feeling?”

2. Prepare the Content – (This is like doing a “Rough Draft” of a report.)
   - Select the main points
   - Develop an outline
   - Prioritize the content
   - Revise and complete the outline – make sure it fits in with your purpose

3. Organize the Presentation
   - Introduction
     - Make it an attention-grabber
     - State the purpose and points you will cover – Ausubel (1968) describes this as “advanced organization.” The audience will be able to follow your presentation more easily if the content fits into an overall structure from the outset
     - Explain how the topic will help the learners (remember – students will be motivated and intellectually engaged when they see a clear need for the information you are about to present to them)
   - Body - main points of presentation:
     - Link to the overall structure
     - Present essential information first
     - Use examples/stories to illustrate the main points
     - Restate each main point to reinforce
     - Provide transition to next point(s)
   - Conclusion
     - Restate the main points
     - Finish with a flourish!
     - Leave enough time for questions -- “As a rule, lecturers attempt to achieve too much in their lectures.”
       - For a 60-minute lecture, aim for 45 minutes of content
       - For a 45-minute lecture, plan for 35 minutes of content
4. Delivering the Presentation

Prior to the delivery, take the following steps:

- Know the room and equipment—and how to use it!
- Prepare your materials (PowerPoint, handouts, other materials)
- Prepare yourself and your learners
- Talk to early arrivers
- Channel your energy
- Review your notes, especially the introduction
- Sequence your speaker notes (be sure to number each page/card in case you drop them!)
  - Include enough detail to help you cover the major points
  - For a research presentation or presentation with a tight timetable (10 minutes is typical), use more notes to keep you on schedule
  - For a 50-minute presentation, use fewer notes with less structure; make sure you hit the key points
  - Make transitions between major points
  - Use cues for examples (e.g., visual aids, questions)
  - Give reminders, if needed (e.g., eye contact, gestures, movement)
  - Use a style that works for you (e.g., cards vs. PowerPoint notes)

During the delivery, keep the audience engaged, otherwise people will start bringing their tape recorders!

- Ask questions
  - Open-ended questions are best, because they stimulate thinking instead of just asking for recall information
  - Don’t be afraid to wait awhile – if you give a quick answer, learners will not have time to think through the question on their own – remember, you want your audience to think!
  - Try to wait 5 to 10 seconds before rephrasing the question or giving an answer
- Use an Audience Response System
- Try brainstorming to get ideas from the students
- Use demonstrations
- Try role play (this is difficult in a large group)
- Use problem-solving (individually, or in pairs or small groups)
- Play games

Heed the advice of experts:

- “On average, the mind of an adult listener will wander within 15 to 20 minutes when there is one-way communication.”
- “The lecture method frequently employs one-way communication, from instructor to students. This procedure may result in students being passive receivers of information. The amount and kind of mental activity encouraged and required of students will directly affect their interest in the lecture and what they learn.”
Practice!

“It is helpful to practice lectures, both mentally and actually, to routinize [sic] the lecture. This does not mean memorization. It does mean becoming confident of what is to be said and done next in a lecture . . . .  Ironically, making a lecture more routine will result in more spontaneity. Speakers who are more sure of the lecture material will feel more free to alter their plans and respond to unexpected situations.”

- **Verbal Tips**
  - Use your natural tone of voice – be conversational
  - Use controlled pauses for emphasis and to promote questions
  - If needed, put cues for pauses or questions in your notes

- **Nonverbal Tips**
  - Move around
  - Look at the learners
  - Show enthusiasm

- **PowerPoint Tips**
  - Keep the slides simple and consistent
  - For large audiences, follow the Rule of 7s (seven lines per slide – seven words per line)
  - Use a font size no smaller than 20 point
  - Make transitions between slides and animations (if any) on individual slides consistent and thoughtful
  - If possible, use your own computer to present

5. **Handouts**

- Be clear about their purpose
- Detail should be appropriate for the audience
  - CME conferences: always have a good handout
  - Medical student or resident lectures: handout should cover important “take home” points
  - PowerPoint slides -- remove unimportant slides
- List your references, if appropriate

6. **Evaluation**

Every lecture you give should have some type of evaluation mechanism to provide you with feedback from the audience. Use this feedback to improve the quality of your lectures. Ask a colleague or course director to observe your lecture and to offer feedback on the following components:

- Content
- Organization
- Presentation and Delivery Style
- Visual Aids
- Relevance
- Effectiveness
- Conflict of Interest (a big issue for most CME Conferences)
PEARLS TO REMEMBER:

- "If you believe in your subject and you believe that you are there to help the audience, everything else will fall into place." Chris Reznich, PhD, Michigan State University, College of Human Medicine (personal communication, 1996).
- "We must acknowledge again that the most important, indeed, the only, thing we have to offer our students is ourselves. Everything else they can read in a book or discover independently, usually with a better understanding than our efforts can convey."7
- A Good Lecturer has the following attributes:8
  o Presents the material clearly and logically
  o Enables the student to understand the basic principles of the subject
  o Can be heard clearly
  o Makes the material intelligibly meaningful
  o Adequately covers the ground
  o Maintains the continuity of the course
  o Is constructive and helpful in his/her criticism
  o Shows an expert knowledge of the subject
  o Adopts an appropriate pace during the lecture
  o Includes material not readily accessible in textbooks
  o Is concise
  o Illustrates the practical applications of the theory of the subject.

REFERENCES
Effective Use of PowerPoint
Clare Billman

INTRODUCTION
Creating effective PowerPoint presentations does not have to be difficult. Simple presentation skills will enhance your content.

BACKGROUND
Reflect on presentations or lectures you have liked. What appealed to you? What grabbed your attention? Chances are the presentation was not nearly as important as the presenter. Follow the easy, basic guidelines below to create clean, clear, and concise PowerPoint presentations. Do not distract the audience with the technology; instead, focus on engaging the listeners with your enthusiasm and passion for your subject.

DISCUSSION
By following a few simple steps, you can impress your students or peers with your presentations. Do not overwhelm the message with the technology. You do not want the media to upstage what you are saying. Focus on being clean, clear, and concise.

- 7-7 Rule: Use seven lines per slide, seven words per line.
  - This makes the slide easy to read, and requires frequent slide changes. Each time you change a slide, you regain attention.
  - Each slide should address only one major concept.

- Contrast and color: Use strong, contrasting colors.
  - Colors on your monitor will look different when projected. For clear text, use contrasting background and font colors.
  - Some viewers may be colorblind, so choose colors they can see.
  - Use bolded or italicized fonts rather than a color change for emphasis.
  - Select one or two main colors and use their tints and shades for variety.

- Graphics: Reduce the file size of presentations; keep them to a manageable size. This speeds up the display of graphics, improves the chances of your presentation running smoothly, and enables you to open it on a public computer.
  - Select one or more pictures in a file.
  - On the Picture toolbar, click “Compress Picture.”
  - Select the options you want.
  - Note: Selecting the “Delete cropped areas of pictures” check box discards the parts of the picture that were hidden during cropping.
• Fonts: Keep your fonts consistent. Try to have no more than three types of fonts in any presentation. Base your font size on the size of the room. Font 28 + is a good starting point.
  o On the Format menu, click “Replace Fonts.”
  o In the “Replace Font” dialog box, click the font you want to replace in the “Replace” list.
  o In the “With” list, click the font you want to apply.
  o Click “Replace” and review the font change. If you like what you see, click “Close.” If not, you can continue making choices in the “Replace Font” dialog box until you find what you want.

• Slide Layouts: Use corresponding slide layouts for your content.
  o If the slide is all text, select a title and text layout.
  o If the slide is an image, use the title and content layout.
  o Use left justification for text, unless you have a good reason not to do so.

PEARLS TO REMEMBER
• You control the room. With a simple, yet elegant presentation, you can focus the attention where you want it.
• Control the focal point. Look at the screen when you want the audience to focus on it. If you are showing a movie clip or animation, watch it with the students. Use gestures, make eye contact, and change voice inflection to focus the attention on you.
• Do not read your slides. Use the text to jog your thoughts. Pace the lecture to allow the students time to read the slides. Expand upon the bulleted text without actually reading it.
• Use an appropriate image when possible. An image can be a very powerful way to stimulate memory. An image will break the monotony of a bulleted list, but an image that distracts from the message is worse than no image at all.
• Use transitions and “builds” carefully. When only one bulleted point shows up at a time, you must address each point. If your time is limited, or you want to stress one item, having all the bullets show on the slide still gives enough time for the students to see all the information and for you to focus on your key point. It is never good to click your way through content to get to the “important” part.

REFERENCES
INTRODUCTION
Using the Web for instruction requires sound instructional design and an understanding of what works well and what does not. Best practice includes an understanding of how learning takes place and how learners, especially adult learners, use the Web. Pages must be concise and objective, and capable of being scanned.

BACKGROUND
There should be no barriers to a learner’s access or understanding of the materials. The Web allows students to have control over time, place, and relevance of content. What they already know, they can skip – if they need to learn something new, they can review it as needed. Using the Web appropriately as a learning resource allows students to
• Collaborate
• Remediate
• Explore diverse resources
• Engage in discovery learning
• Think

DISCUSSION
Keep in mind that people generally scan text on the Web.
• Short, bulleted lists are best, accompanied by images that are appropriate to the content.
• Anytime you can, add sound. Students are used to listening to a lecture. On the Web, they can listen repeatedly to what is important.
• Provide opportunities for critical thinking and problem solving.
• Don’t underestimate the value of a hyperlink; conversely, don’t overuse hyperlinks. Be aware that when scanning on the Web, students will read hyperlinks as important text. When possible, locate hyperlinks apart from the content.
• Judicious and appropriate selection of Web resources gives the student the option to explore as briefly or deeply as he wishes, yet stay within the guidelines you set by the resource choices you make.
PEARLS TO REMEMBER
A well-designed, interactive course with multimedia, activities, and problem or case-based learning can enhance the classroom in ways that were unimaginable 5 years ago.
• Online learning addresses multiple learning styles.
• Adult learners want and need the control afforded by online learning.
• Practice is private, and the opportunity for self-assessment is a learning experience.
• If the material can be read in the textbook, reference it rather than recreating it.
• The Web is a visual medium; use images and short video snippets.
• Think beyond PowerPoint; look at your favorite sites on the Web and incorporate those modes as appropriate.

REFERENCES
2. SEVEN PRINCIPLES FOR GOOD.htm SEVEN PRINCIPLES FOR GOOD PRACTICE. Retrieved 3 July 2003, from http://www.hcc.hawaii.edu/intranet/committees/FacDevCom/guidebk/teacthtip/7princip.htm
Handouts  
Carol Nichols, PhD

INTRODUCTION  
Handouts typically are such things as prepared lecture notes, worksheets, case studies, or problem sets designed to promote learning both in and out of class. Most medical school courses use some type of handout, primarily to help students learn large volumes of information.

BACKGROUND  
Handouts can be a valuable learning resource. Anecdotal evidence suggests that a prepared handout given before classroom activities relieves stress and anxiety, because students have a tangible starting point for organizing important concepts. Handouts are especially useful for presenting flow charts, complicated equations, case studies, and complex ideas. This section introduces several types of useful handouts and presents tips for making them effective.

DISCUSSION  
Text Handouts  
These handouts are written in prose and often are virtually complete in terms of content. They are most useful for covering a lot of information, difficult concepts, and confusing equations and pathways. Booklets, pamphlets, comprehensive lecture notes, and chapter summaries are examples.

- Pros:
  - They provide the student with most of the information related to a presentation topic.
  - They provide a thorough reference for study and review after class.
  - They may reduce time spent in class discussing details, which, in turn, allows more time for learner-centered activities.
  - Students appreciate having important information available for easy reference.

- Cons:
  - Students may not feel the need to stay for class.
  - Students may read the handout rather than pay attention to the instructor during class.
  - Students may not take notes and they may become disengaged before the class is over.
  - The teacher will need to request permission to use copyrighted materials.

Skeletal and “Gapped” Handouts  
These handouts are most useful when covering content rather than methods. Skeletal handouts, as their name implies, are “bare bones” outlines to which students may add information during class. They usually contain only key words and ideas, leaving much white space for students to add notes. “Gapped”
handouts provide partial information, using incomplete sentences, thoughts, graphs, charts, equations, etc.

- Pros:
  - They organize the presenter’s thoughts and the topic.
  - Students are aware of the important topics to be addressed and may add notes during the presentation or when studying later.
  - Students must actively listen and add relevant details to the handout without having to take exhaustive notes.

- Cons:
  - They are not particularly useful for students who are unable to attend class.
  - Lecture time may be spent repeating key elements.
  - Students may fail to add important details or may add incorrect statements.
  - Students may consider them childish.

**Worksheets**

Examples are case studies, discussion questions, or other problem sets for students to discuss and solve, either in class or as homework. They typically are used in addition to other types of handouts. They are most useful for small discussion groups.

- Pros:
  - They are effective in assessing whether students understand the material.
  - They provide a springboard for discussing concepts and new ideas.
  - They are useful in promoting the relevance of presented topics.
  - They help promote critical thinking skills.

- Cons:
  - They are not useful for covering new content or presenting factual details.
  - Students must have some prior knowledge of the subject matter.

**PowerPoint Handouts**

These are copies of the PowerPoint presentation, usually printed with either three or six slides per page and space for notes. They are most useful for students who do not have access to a Web-based PowerPoint presentation.

- Pros:
  - The handout is easy to prepare.
  - Students have lecture content, complete with figures and graphics, as a study resource.

- Cons:
  - They can be overloaded with information and contain figures that do not reproduce well.
  - Students may feel they don’t need to come to class.
PEARLS TO REMEMBER
Handouts are an integral part of medical education. They are effective for disseminating information and promoting discussion. There is no right or wrong type of handout. The style and content should reflect the educational goals and setting.

Tips for developing better handouts
- Type the handouts
- Use clear, concise language
- Use learning objectives when appropriate
- Leave plenty of white space for adding notes
- Add figures at appropriate places within the handout rather than at the end
- Add date, course number and name, author, title, and page numbers
- Use an easy-to-read font
- Omit extraneous information
- Cite references when appropriate

REFERENCES
1. How to use handouts effectively. Available at: http://www2.wmin.ac.uk/mcshand/TEACHING/handouts.htm
Small Group Discussions with Medical Students
Ralph A. Gillies, Ph.D.

INTRODUCTION
Small group discussions provide opportunities for students to ask questions, express opinions, consider alternatives, and express themselves to peers. Research has demonstrated that group discussion promotes greater synthesis and retention of materials and more creative problem solving. Small groups are intended to challenge and expand students’ understanding of the material presented earlier in lectures and reading assignments.

BACKGROUND
Small group facilitators are pivotal in how well small groups function and, ultimately, how much group members gain from discussions. In addition to the expected tasks of ensuring that meetings occur, assigning grades, and giving feedback, facilitators are responsible for prompting students to examine the learning material at deeper levels (i.e., from simply reporting basic definitions of concepts to synthesizing them into an integrated whole). By eliciting more thorough explanations and encouraging applications of concepts in increasingly complex situations, facilitators stimulate students to think in manners similar to how the students will think later as physicians. At the same time, with the help of facilitator feedback, students are developing their professional skills on how to work with peers, examine patient factors, and consider personal biases.

The following sections summarize common tasks of facilitators and highlight suggestions for implementing.

DISCUSSION
1. Preparing for Leading a Group
Considering your role as a facilitator in advance of the first group session will improve your level of competence and confidence. Small group discussions are not simply lectures with a smaller number of students. Facilitators may want to remind themselves of key differences between lecturing and facilitating. Facilitators direct the flow of the discussion by asking questions and interjecting points; they should talk far less in discussions than the students. Facilitators are encouraged to practice being brief and getting out of the way of a discussion. Keep in mind that students are gifted at getting a facilitator to talk about a topic and then becoming passive as the facilitator goes on and on.

If you are co-facilitating a group, meet with your co-facilitator before the first session to discuss your expectations. Potential issues to address include how you will grade students, how you will facilitate the session (e.g., whether one will take the lead on specific days or topics, or both will direct), how you will communicate concerns with one another during the session (e.g., time
limitations, lecturing, unprofessional student behavior). Facilitators will have differences of opinion on topics, and these differences can prove very useful to students when the facilitators articulate these differences professionally. Remember to ultimately shift the discussion back to the students.

If you expect students to have read the assigned materials and to have completed the assigned tasks, you must model these behaviors for them. Students quickly recognize when a facilitator has not read the material. Similarly, students will want facilitators to be informed about overall course expectations and be able to relay them clearly. If you do not understand an upcoming assignment, check it out before meeting the group or as soon as possible after a question is raised in a session.

2. Establishing the “Group”

The first session of a small group is critical and sets the norm for the remainder of the group sessions. A facilitator has two main tasks in the first session: 1) promote rapport or cohesion among group members and 2) establish expectations for the group.

When a group first meets, the students typically do not know each other well and likely know you minimally. Introduce yourself to the students. Tell them what you do professionally and what you like about teaching. Students enjoy hearing how others have traveled the road from college to medical school, residency, and on to a career. This helps students relate to you and perhaps they will trust you more when you are challenging them later. Facilitators also may choose to offer some aspects of their personal lives (e.g., family, hobbies, hometown) that may help students feel more comfortable with you. The professional and personal information that you share will likely become the model for the type of information that the students will share when it is their turn.

Next, ask students to introduce themselves. Encourage each student to introduce himself or herself and to tell the group how he or she made the trek to medical school. If students are overly brief, ask them to tell the group more about where they are from or what they enjoyed in college. Students will vary widely in their experiences, including clinical experiences, as well in their personal backgrounds. These differences will prove beneficial to the group later in discussions as well as be potential sources of conflicts. Finally, as students are describing themselves, practice recalling and using their names.

The second task of the initial session is to begin establishing the expectations for the group. Students will want to know how to behave in the sessions. You can address this question by describing your expectations for them, modeling these behaviors, and soliciting their expectations for the group. Facilitators will vary in their expectations for the group. Perhaps the most salient expectation of interest to students is “How will I be graded?” Facilitators need to take time to
explain the course’s evaluative process and how the individual facilitators interpret that process. Be clear about what meets or exceeds expectations. Examples are helpful. Tell students how they will know how they are doing. Other expectations may include when class will start, how students can contact you, and what to do if a session will be missed.

I tell my students that I intend to start each session on time, so they should be punctual. I expect them to be prepared (i.e., to have read the assigned readings or completed the assigned task for that session). I inform them that being unprepared reflects poorly on their professionalism and will impact that aspect of their grade. Finally, I emphasize participation in discussions as paramount. I describe different levels of participation (e.g., asking a question, expressing an opinion, drawing conclusions from readings, applying information from external resources to the current topic, facilitating peers’ involvement).

Finally, ask the students what their expectations are for the group. Students often will not make suggestions, but asking them to offer ideas demonstrates the expectation of them being active participants in the process. This also is a good time to highlight basic social and professional expectations, such as listening to peers without interrupting, disagreeing without verbally attacking a person, and taking turns.

3. Facilitating During the Group Session
Facilitating a small group discussion is similar to conducting an orchestra. The conductor does not play an instrument, but guides the musicians as they play the music. The facilitator has opinions, knowledge, and experience, but his or her primary role is to guide students to practice clinical and professional skills in the group. A variety of strategies are listed below, and a brief description is offered for some of them.

- **Foster interaction** between students.²
  - Avoid lecturing by keeping your comments to a few sentences. If you are talking more than a minute or two, the students are becoming increasingly passive.
  - Limit eye contact when a student is speaking. Look at other students. This reinforces that a student should talk to fellow group members rather than to the facilitator. Similarly, if you ask a question, motion for the student or group to discuss amongst themselves rather than back and forth with you.

- **Reinforce students’** efforts and development, e.g., “That’s a good summary of a complex issue.” “Your questions are becoming more focused.” “Highlighting that outside article added to the discussion.”
• **Tolerate a certain amount of ambiguity** and confusion on the part of students as they explore a topic. Avoid rushing to give the “correct answer” or to move things along. The process of discovering solutions is where the learning occurs.

• **Brainstorming** can be a fun and energy-producing exercise for students. The goal is to generate several possible items (solutions, explanations, alternatives) without critically evaluating merit of any proposed item. Ideas are evaluated afterward.

• **Ask questions** rather than make statements. Whitman and Schwenk\(^3\) offer these recommendations for asking questions.
  - **Factual questions** are used to get information and open discussions. For example, all the “W” questions: what, where, why, when, and who.
  - **Broadening questions** are used to introduce additional facts and encourage analysis. For example, “What is the relationship between x and y?” “What other facts are important?”
  - **Justifying questions** are used to challenge old ideas and develop new ones. For example, “Why do you think so?” “In what ways is this important?” “How should this be done?”
  - **Hypothetical questions** are used to explore unknowns and, when necessary, change the course of the discussion. For example, “Suppose we did it this way... what would happen?” “Another hospital does this... is this feasible here?”

• **Alter group arrangements** to vary discussions.\(^4\)
  - **Buzz groups** – Break a larger group into smaller groups for 3 to 5 minutes to discuss a topic or generate a possible solution.
  - **Group round** – Each student has 20 to 30 seconds to make a comment.
  - **Fishbowls** – Half the group addresses a topic while the other half observes, looking for themes and any overlooked items.

• **Encourage students to adopt alternate points of view** on a topic.
  - Assign roles for a topic.
  - Suggest students adopt more than one position on a topic (“devil’s advocate”).

• **Provide feedback** to non-participating (silent) or over-participating (dominant) students.
  - Ask for their perspective on their participation.
  - Decide whether to give feedback inside or outside of group.
    - Students may be more responsive to personal feedback and engage in problem solving when feedback is received away from their peers.
    - Feedback can be given in the group context, but this is usually appropriate when there is more than one student who needs feedback or when an event has occurred that needs to be addressed in front of the group.
  - Provide examples.
  - Suggest opportunities to alter behavior and set goals for change.
• Acknowledge in advance that a topic may be emotionally charged and that differences of opinion will likely occur. Remind students to practice their professional skills when commenting on a topic and disagreeing with others.
  o Prompt patients to highlight available evidence or qualify their statements with “in my opinion.”
  o Prompt students to repeat back what they hear others say before responding. This clarifies misunderstandings and highlights the importance of active listening.

4. The Final Session
Facilitators will differ in how they wish to end a final group session, but here are some points to consider.
• Ask students to discuss what went well in the group and what they wished the facilitators had done differently. Encourage students to use the facilitator evaluation form to offer more suggestions.
• After students have spent a year with you, they may see you as a resource for them as they progress in their education. Welcome students to contact you if they have professional development questions (e.g., I like pediatrics and family medicine; so how do I choose a specialty?).
• Be prepared for students to approach you for your advice on personal (e.g., depression, substance abuse, family) or professional (e.g., ethical dilemma, discrimination) matters. In many instances, they are looking for basic guidance. When warranted, refer them to resources such as the student health center or the academic affairs office.

5. Conclusion
Facilitating a small group is an exciting opportunity for faculty to interact with and teach medical students who are developing critical clinical and professional skills. Facilitators have the challenge of shaping discussions without making them mini-lectures.

PEARLS TO REMEMBER
• Small group discussions enable students to develop and practice clinical and professional skills.
• In small groups, facilitators talk less and students talk more than in lectures.
• Talk less. (This is important enough to highlight again.)
• Coordinate with your co-facilitator.
• Promoting rapport among group members and establishing expectations for the group are critical in the first session.
• Knowing and using your students’ names demonstrates your commitment as a facilitator.
• Make your expectations for the group explicit.
• Students will want to know exactly how they will be graded. Make your expectations clear, using examples.
- When a student is talking or asking a question, direct your attention (eyes) to other students to reinforce that the discussion is between them and not between you and the student.
- Both under- and over-participation by students need to be addressed.
- Ask the group what went well and what changes to consider for next year.
- Welcome them to contact you in the future.

REFERENCES
Teaching in the Clinical Setting
Christopher B. White, MD

INTRODUCTION
At some point in the medical school experience, medical students transition from the classroom to the bedside. The paradigm of medical education changes dramatically from one in which the student is at the center of the learning experience, to one in which the patient is at the center and the student learns from going to the patient (see figures). This new learning environment presents a challenge for both the clinician and the student.

BACKGROUND
One of the greatest challenges to teaching medical students and residents is that most of the teaching occurs in the setting in which patient care is being delivered. Clinical educators must provide high quality patient care while simultaneously teaching learners who have a variety of backgrounds and experiences. Time is short, clinical demands are great, and educational opportunities are brief. What follows is one approach to teaching medical students and residents in a clinical setting. It works in both an inpatient and outpatient setting.
DISCUSSION
The key to successful clinical teaching involves the accomplishment of three tasks:

- Diagnose and manage the patient
- Diagnose the student
- Teach the student

What follows is a system to enable a busy clinician to do all three of these tasks in any clinical setting. Some of this material is derived from Neher’s “Five-Step ‘Microskills’ Model of Clinical Teaching.”

1. **Diagnose and Manage the Patient**
Teaching students takes time away from patient care, so the key to enjoying the teaching process is to make the student as efficient as possible in his/her evaluation of patients.

- Orient the student at the start of his/her time with you:
  - People: With whom will the student be working?
  - Places: Key locations
  - Process:
    - How things work in your office/setting
    - The “Chain of Command”
- Establish performance expectations
  - What performance do you expect from a good student?
    - Be specific
    - Provide a handout if desired for the student to refer to
  - Provide guidelines for written notes
  - Provide guidelines for oral presentations
- Allow the student to see and evaluate the patient first:
  - Allowing the student to “shadow” you can be helpful initially, but active learning will only take place if you give the student “hands on” experience, practicing and developing his/her clinical skills.
    - Ideally, try to observe the student doing a complete history and physical exam several times during his/her rotation. If this is too difficult to do all at once, consider doing it “piecemeal” or in stages.
  - Allow the student to make an oral presentation of his/her patient encounter before you evaluate the patient.
    - For efficiency, in most cases, this can be done in the presence of the patient/parent.
    - Allow the student 2 minutes for his/her presentation. Try not to interrupt.
      - Using this model, the student’s presentation is analogous to the history you would obtain from the patient/parent. At the end of the presentation, you will likely have the diagnosis or a solid differential diagnosis, which will enable you to be more efficient in your history-taking and physical examination.
2. Diagnose the Student
No two students are alike. They have different learning styles, backgrounds, and experiences. Since students rarely retain large volumes of new information, one only needs to identify one point to teach the student with each patient encounter. The challenge is to identify or target the deficiency in each student’s knowledge, skills, or attitude for teaching. This can be done remarkably easily by asking the student two questions at the end of his/her presentation:

- **WHAT** do you think is going on?
  - Ask the student to make a verbal commitment regarding the patient’s condition.
- **WHY** do you think so?
  - Ask the student to verbally provide evidence to support his/her decision.
- The student’s answer to these two questions provides you with a wealth of information about what he/she knows and does not know concerning the patient he/she just evaluated. This provides areas for teaching, and for feedback.
- Ask the student to **SUMMARIZE** the case in a single sentence at the end of his/her presentation.
  - Some students have difficulty synthesizing all the data and findings into a differential diagnosis or a cohesive picture. They do well at memorizing isolated facts, but they have difficulty putting those facts into perspective. Asking students to summarize the case in a single sentence identifies these students.
  - All students can be overwhelmed by the information they gather. Good clinicians are able to synthesize information and make sense out of it. Giving students the opportunity to summarize the case will encourage them to develop these same skills.

3. Teach the Student
Each clinical patient encounter provides the opportunity for teaching the student two things: 1) Identifying a key point of emphasis from the patient encounter and linking it to a teaching point that is relevant to the student’s needs; 2) Providing the student with feedback on his/her performance.

- **IDENTIFY** a specific key point of emphasis from the case and **LINK** that key point to a generalizable, relevant teaching point.
  - Identifying the key point was done by asking “What” and “Why” (see above).
  - Key points can be knowledge, skill, or an attitude.
  - According to Arseneau:³
    - “Understanding develops as new elements are acquired and linked with the existing pattern of association between elements of knowledge.”
    - “Meaning and understanding have to do with the ‘connections’ of a new element of knowledge to existing knowledge, rather than with the new element itself.”
"The greater the number of links to a piece of knowledge, the greater the number of ways to access that piece of knowledge. Elaboration requires that students be actively involved in ‘handling’ new information, making links both within and between subjects, linking what they are learning to what they already know, and most important, linking theory to practice.”

- What you are trying to do with your teaching content is to provide a new “link” to an existing piece of knowledge that the student already knows. This link can take many forms:
  - A new bit of content knowledge (an antibiotic that can be used to treat a particular type of infection, for example).
  - An item in the history or physical examination that provides a clue to a particular diagnosis (abdominal pain that awakens a child from sleep is more likely to be organic, and not functional).
  - A laboratory test that is particularly helpful in establishing a diagnosis in a patient.

- By providing a new “link” with every patient encounter, you will enable the student to build upon what he/she already knows, making the content and teaching point more memorable (and hence, useful).

- PROVIDE FEEDBACK to the student on his/her performance.
  - Every patient encounter provides an opportunity for the student to learn a skill, attitude, or new knowledge. Unless students receive feedback on their clinical performance:
    - Mistakes will go uncorrected
    - Good performance will not be reinforced
    - Clinical competence will be achieved empirically (trial and error), if at all.

- Characteristics of effective feedback:
  - Descriptive: Based on first-hand observations.
  - Focused on issues the student can change
  - Well-timed
  - Limited in amount

- Why is feedback so difficult?
  - “Observations are the currency of feedback, and without them the process becomes ‘feedback’ in name only.”
  - Failure to obtain observations. Preceptors easily recognize a “good” student and a “weak” student, but effective feedback requires that you identify the specific behaviors performed by the student that made him “good” or “weak.”

- Giving positive feedback:
  - Reinforce what was done right. It is not general praise (“You did a good job with that patient.”)
  - Identify for the student a specific behavior or action that was done well and provide him/her with an explanation for why that behavior should continue to be performed.
Giving negative feedback:
- Identify a specific behavior that was done wrong, and tell the student how to avoid or correct the error in the future.
- Sometimes allowing the student to critique his/her own performance first will provide an invitation to provide constructive feedback. When solicited from the student, it is more likely to be adopted.

PEARLS TO REMEMBER

How to be an Efficient & Effective Clinical Teacher

Diagnose the Patient

Before the Student Sees Patients:
- Orient the Student to Your Practice / Clinic
- Establish Performance Expectations

Diagnose the Learner

WHAT
Summarize the case in a single sentence

WHY
Ask the student to make a commitment or decision

Teach the Learner

Identify a key point of emphasis from the case & Link the key point of emphasis to a generalizable, relevant teaching point for the student to learn, based upon the student’s learning needs.

Provide feedback for specific, observed behaviors

Reinforce positive behaviors

Correct mistakes or misconceptions

REFERENCES:
Giving Feedback
T. Andrew Albritton. MD

INTRODUCTION
Feedback should follow directly from formative evaluation. Conveying your observations and insight about a student’s performance provides guidance in enhancing his or her future performance toward meeting or exceeding clerkship expectations.

BACKGROUND
One of an educator’s most important responsibilities is providing feedback to learners. This is particularly true for clerkship directors. Without feedback, learners are unlikely to recognize strengths or specific areas for improvement. By giving feedback, you help students meet clerkship expectations and develop the desired knowledge, skills, attitudes, and behaviors.1

DISCUSSION
Basic Elements of Effective Feedback: First, create a climate of mutual trust and respect. Feedback should take place in an appropriate location that offers privacy. Second, make sure the learner clearly understands clerkship expectations. Review the goals and objectives of the clerkship and the criteria for evaluation. During the clerkship experience, learners usually want to know about their performance as it relates to a projected grade and what steps are necessary to teach the next level. Third, feedback should be timely and occur on a regular basis. After a specific incident, provide feedback as soon as possible after the event occurs. Also, weekly scheduled feedback sessions with faculty are important for learners to appreciate their performance over time. Sometimes the learner may not realize that feedback is taking place. Labeling feedback as “feedback” will avoid this situation.

Giving Feedback: The following steps help ensure that feedback is effective in helping students improve their performance:2,3

• Solicit feedback from the student. Ask the student what went well during the experience at issue to assess his or her performance in the various areas that are to be evaluated, as well as what skills he or she should develop further. Feedback can be solicited from the learner by asking questions like, “How did things go?” or “What went well?”
• Share your actual observations with the student regarding the skills, attitudes, or behaviors that he or she is performing well.
• Help the learner identify areas for improvement and suggest next steps to improve performance. Using the behavior-based clerkship evaluation form during the feedback session will assist you in giving feedback to improve the student’s performance. For example, to identify specific areas for improvement, ask the student, “If you had an opportunity to do it again, what would you do differently?”
• Ask the learner if he or she understood or had any questions about the feedback. Using interactive feedback has two great benefits: first, it allows the student to verbalize the problem before you, thus “saving face”; second, you can see whether the student has any insight into how things are going – this is very useful information (especially if he or she lacks insight).

**An Example of Feedback**

A student presents a patient during rounds or in clinic. The presentation includes the pertinent information, but is lengthy and disorganized. In the appropriate setting, ask the student how he or she feels about his or her presenting skills (soliciting feedback from the learner). Tell the student that you are giving feedback about the presentation on that particular patient (labeling feedback). The presentation included all the pertinent information (positive feedback). To improve the organization of the presentation, omit the extraneous information (be specific about the information that was not needed) to make it more concise and focused (suggestions for improvement). Ask the student if the feedback was helpful and if he or she has any questions (making sure the learner understands the feedback).

**Feedback about the Clerkship**

Periodically obtaining feedback from students during the clerkship experience also is important. By soliciting feedback, you frequently will identify students’ concerns before major problems develop. Be open and receptive to their problems and even their criticisms. Consider scheduling a time to meet with the students or spend a few minutes before a conference asking for feedback about how things are going or if there are any concerns or problems. Students are more likely to be open and honest in a group than individually. Group feedback gives you an opportunity to determine whether the issues are related to one or a few students, or are of more general concern.

**PEARLS TO REMEMBER**

**Effective Feedback should be**

• descriptive and nonjudgmental. Talk about “what” the students did, rather than “who” they are.

• based on direct observations of specific skills, attitudes, or behaviors rather than generalizations, interpretations, or assumed intentions.

• focused on areas that the learner can control or change.

• limited to what the learner can use. Avoid “feedback overload” caused by providing too many suggestions during a session. Instead, make two or three important points and schedule additional feedback sessions to address other areas for improvement.

• given in such a way that the student understands it and knows how to take the next step.
REFERENCES
Course Development
Carol Nichols, PhD; Stephanie Wragg, PhD

INTRODUCTION
Logical and well-organized course development is the first step in designing an effective curriculum. A course should be designed to help students develop a fund of knowledge or master particular skills and/or competencies.

BACKGROUND
To develop their diagnostic skills, medical educators teach students to use the scientific method. The same method can apply in the development of new courses. Identify the need for a course, propose objectives for the course, use appropriate educational methods to accomplish the objectives, and assess competency for each objective with appropriate testing methods.

DISCUSSION
Consider the following questions when designing new courses:

Who is the target audience?
- Will the course be required or offered as an elective? If the course is to be offered as an elective, is there sufficient interest?
- Students at various educational, attitudinal, and skills levels may express interest in the course. If a minimum fund of knowledge or skills set is needed to complete the course successfully, consider requiring students to successfully complete prerequisites.

Who will direct and teach it?
- Presumably, the person who designs a new course will also direct it. If the course is long and complex, consider asking faculty with expertise in specific areas to participate in either the planning or execution of the course. Designing and directing a new course does not have to be a solo activity.

What are the goals and objectives?
- Outline the learning objectives that the students need to master. Do these objectives correspond to the knowledge or skills sets that are important for the students to learn? In what sequence should the material be presented for optimal learning?

What is the content and style?
- Courses may be taught with seminars, lectures, discussions, and/or problem-based learning cases. Decide which method or combination of methods to use to achieve each objective. Handouts, worksheets, journal articles, group or individual projects, and videos often are viable alternatives to traditional textbooks.
Technology in the classroom is becoming more popular. Extensive technology is available for instruction and often can be used to enhance student learning and interaction. Classroom and library services are available to assist with learning to implement new technology.

When will the course meet?
- How often will the course be offered? Will it meet for a few weeks, a semester or an entire year? Will it meet once a week or more often?
- Where will students report for class? Consider the number of students taking the class and arrange for a classroom or laboratory appropriately sized for optimal interaction.
- The number of contact hours and amount of time students need to devote to the class are other issues to consider.

How will the course outcomes be assessed?
- Consider the testing method and whether it will accurately assess the important aspects of the course.
- Competencies and objectives may be assessed by a variety of methods including, but not limited to, standard multiple-choice questions, essay-style questions, student participation, oral presentations, completing a project, and demonstrating a set of skills. Pretests and posttests may be appropriate.

How will the success of the course be determined?
- Have an evaluation tool in place to assess how well the course succeeds in teaching the objectives. This feedback is necessary to improve the syllabus, objectives, and teaching and assessment methods.

Why is the course important?
- Determine if need or interest warrants the new course.

PEARLS TO REMEMBER
Courses should be designed with thought to the following issues:
- Which competencies and objectives need to be taught?
- What teaching methods are most useful to teach the material?
- How is competency assessed?
- Is there a mechanism to establish feedback for the purpose of improving the course and its content?

REFERENCES
1. [http://www.cmu.edu/teaching/resources/coursedesign_guide.html](http://www.cmu.edu/teaching/resources/coursedesign_guide.html)
2. [http://depts.washington.edu/cidrweb/TLBulletins/2(1)CourseDesign.html](http://depts.washington.edu/cidrweb/TLBulletins/2(1)CourseDesign.html)
3. [http://www.ucd.ie/teaching/good/cou.htm](http://www.ucd.ie/teaching/good/cou.htm)
Timeline Guide for Course Administration

Three Months
- Finalize Syllabus
- Order books
- Schedule lecturers

Two Months
- Request Room
- Request AV needs
- Request permission to use copyrighted materials

One Month
- Determine teaching methods
- Begin assembling presentations (slides, PPTs, overheads, etc.)
- Arrange for Web CT component (if applicable)

Two Weeks
- Send printed materials to copy center
- Place materials on reserve in library

One Week
- Meet with lecturers and assistants to finalize course responsibilities
- Reconfirm Room and AV requests

Day Before
- Check out the setup of the classroom (lighting, AV setup, seating)
Special
Teaching
Issues
INTRODUCTION
What is it? “... the knowledge and interpersonal skills that allow providers to understand, appreciate, and work with individuals from cultures other than their own. It involves an awareness and acceptance of cultural differences: self-awareness; knowledge of the patient’s culture; and adaptation of skills.”

BACKGROUND
Medical educators are expected to teach and assess cultural competency (CC), but both teaching and measurement remain elusive. The thoughts listed below may help educators address cultural competency.

DISCUSSION
Many approaches to CC “stages” have been described and used for both individuals and organizations. The table below (Cross, 1989) is mentioned frequently.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Definition</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural destructiveness</td>
<td>Culture/race-based oppression, forced assimilation, or even genocide. Just think of Tuskegee experiments, Nazi medical experimentation using Jews, the disabled, etc.</td>
<td>Women are good caregivers, which is why they make good nurses but not good surgeons.</td>
</tr>
<tr>
<td>Cultural incapacity</td>
<td>Not intentionally destructive, but an inability to help minority clients or communities because the system remains biased, e.g., discriminatory hiring, subtle messages to people of color that they are not valued, such as building locations, using only Whites as models, etc. Also includes generalized lower expectations of minority patients based on stereotypical beliefs.</td>
<td>Why do we need special telephone lines for the hearing impaired? We don’t have any in our office.</td>
</tr>
<tr>
<td>Cultural blindness</td>
<td>Operating as if all people are the same and that helping methods used by the dominant culture are appropriate for all. Good intentions here, but service delivery remains ethnocentric. Outcomes are measured by how closely a patient approximates a middle-class, non-minority existence.</td>
<td>We just need to treat everyone the same. After all, we all have the same health care needs.</td>
</tr>
<tr>
<td>Cultural pre-competence</td>
<td>Agencies and persons at this stage have at least examined their values, strengths, and weaknesses. In an agency, new programs may have been developed, probably assigned to minority members, but may not be taken up by those in power.</td>
<td>I understand that some Latin Americans perceive time differently and that’s why you are often late for your appointments. However, I will not tolerate your being late for my appointment.</td>
</tr>
<tr>
<td>Basic cultural competence</td>
<td>Continuing self-assessment regarding culture, careful attention to differences, continuous expansion of cultural knowledge and resources, and a variety of adaptations to service approaches to meet the needs of all populations. Both minority and majority group members are aware of their cultural identities and values and those of others.</td>
<td>When I provide medical care, I try to put myself in the patient’s shoes.</td>
</tr>
<tr>
<td>Cultural proficiency</td>
<td>Have overcome many layers of racism, prejudice, discrimination, and ignorance. Accept a broader social responsibility to advocate social diversity.</td>
<td>I feel equally at home with the African American employees as I do with the Caucasian employees.</td>
</tr>
</tbody>
</table>

Here are three good reasons why culture matters in the practice of medicine.
1. **Shifting Demographics.** Projections for the Year 2030 . . .
   - 5.5 million more Hispanic children
   - 2.6 million more African-American children
   - 1.5 million more children of other races
   - 6.2 million fewer white, non-Hispanic

2. **Health Disparities**

3. **Patient Preferences Influence Health Outcomes**

**What are typical teaching approaches?** Usually either a culture-specific approach (where specific health issues are tied to specific cultural groups) or a general approach to learning about the individual patient’s “personal illness model” is taught. The latter is more useful if a future physician deals with many cultures, although specifics of those subgroups in one’s own practice will certainly be helpful over time.

**Personal Illness Model:** People always try to figure out what is going on when they’re sick, so they develop what we call a "Personal illness model" -- a hypothetical explanation for their illness. It usually includes what causes the illness (etiopathology), how it develops within the body (pathophysiology), how to treat it, and what the future will bring (prognosis). Teaching students to try to understand the patient’s personal illness model will give them insight into how the patient will respond to treatment recommendations.

**Some Teaching Strategies**
- Increasing Self Awareness
  - Consideration of privilege
- Simulations
  - BaFa BaFa⁵
  - Barnga⁶
- Discussion Group Triggers
  - Films
  - Worlds Apart
  - Critical Articles on Health Disparities
  - Readings
    - When the Spirit Catches You and You Fall Down
- Exposure to the Medically Underserved

Here’s an overall excellent site recently developed by the Association of American Medical Colleges. Lots of resources.

[http://www.aamc.org/meded/tacct/start.htm](http://www.aamc.org/meded/tacct/start.htm)
PEARLS TO REMEMBER
Some useful tools for culturally competent care are shown below.

**Clinical Interaction Teaching Aids**

<table>
<thead>
<tr>
<th>E</th>
<th>Explanation (how do you explain your illness?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>Treatment (What treatment have you tried?)</td>
</tr>
<tr>
<td>H</td>
<td>Healers (Have you sought any advice from folk healers?)</td>
</tr>
<tr>
<td>N</td>
<td>Negotiate (mutually acceptable options)</td>
</tr>
<tr>
<td>I</td>
<td>Intervention (agreed on)</td>
</tr>
<tr>
<td>C</td>
<td>Collaboration (with patient, family and healers)</td>
</tr>
</tbody>
</table>

| L | Listen with sympathy and understanding       |
| E | Explain your perceptions of the problem      |
| A | Acknowledge and discuss differences and similarities |
| R | Recommend treatment                          |
| N | Negotiate treatment                          |

**Kleinman’s Eight Questions**

1. What do you call the problem?
2. What do you think has caused the problem?
3. Why do you think it started when it did?
4. What do you think your sickness does? How does it work?
5. How severe is the sickness? Will it have a short or long course?
6. What kind of treatment do you think you should receive? What are the most important results you hope to receive from this treatment?
7. What are the chief problems the sickness has caused?
8. What do you fear most about the sickness?
REFERENCES
Professionalism: Defining, Teaching, Assessing
Andria M. Thomas, PhD; T. Andrew Albrtton, MD; Valera Hudson, MD

INTRODUCTION
It is not titles that honor men, but men that honor titles. ~Niccolo Machiavelli

BACKGROUND
What is professionalism?
The Association of American Medical Colleges and the National Board of Medical Examiners convened a meeting in 2002 of 25 experts to develop recommendations for the teaching, assessment, and promotion of professionalism in medicine. These experts identified and recommended eight categories of professionalism that should be targeted at medical teaching institutions.¹

- **Target Areas:**

  - Altruism
  - Honor and Integrity
  - Caring and Compassion
  - Respect
  - Responsibility
  - Accountability
  - Excellence and Scholarship
  - Leadership

DISCUSSION
- Teaching professionalism:
  - Should be planned and integrated and “continuous” across the curriculum. Everyone involved should receive recurrent, formative feedback.

- Assessment of professionalism:
  - Multiple methods should be used.
  - Professionalism expectations should be applied to everyone, including faculty.

- Promotion
  - The group identified the need for institutions to raise faculty and student awareness of these areas and to maintain a professional environment.
• Barriers to cultivating professionalism in medicine identified were as follows:
  o Sometimes faculty behavior can be unprofessional and destructive.
  o There is a lack of support and/or readiness to address lapses in professionalism.
  o Professional behavior is not actively promoted.
  o Poor role modeling by faculty who demonstrate unprofessional and destructive behavior with little evidence of accountability

**Why is it important?**
A recent study by Papadakis and colleagues (2004)\(^2\) revealed that “problematic behavior” (i.e., problematic comments in two or more courses) exhibited in one medical school was related to disciplinary action by the state medical board after graduation. In a longitudinal study, students who exhibited problematic behavior during medical school were more likely to be disciplined after entering medical practice than students who were not cited for behavior problems during their medical education. This difference was statistically significant.
What we do at MCG?
To provide a method for tracking professional behavior (both positive and problematic) the following form was developed.

### MCG Medical Student Citation Form

This form is used to document noteworthy medical student performance involving a specific incident or event. This may be completed by faculty, residents, nurses or support staff. These comments will be used to provide a more complete picture of a student’s performance and professionalism. After you have completed this form please fold, seal securely in half, and send to the clerkship director at the address printed on the back. Thank you.

<table>
<thead>
<tr>
<th>Student:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluator:</td>
<td>Ph/Contact #:</td>
</tr>
</tbody>
</table>

**Brief Description of Incident:** If additional space is needed, use a continuation sheet

<table>
<thead>
<tr>
<th>Needs Improvement</th>
<th>Outstanding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Care</td>
<td></td>
</tr>
<tr>
<td>Professionalism</td>
<td></td>
</tr>
<tr>
<td>Interpersonal &amp; Communication Skills</td>
<td></td>
</tr>
</tbody>
</table>

☐ Discuss with student ☐ Not discussed with student
PEARLS TO REMEMBER
The Process
- Reporting Process
  - Step 1
    - Completed forms go to the course/clerkship director for review.
  - Step 2
    - The course/clerkship director notifies the student and meets with them if necessary.
  - Step 3
    - The form is sent to the Associate Dean for Student Affairs.
  - Step 4
    - The Associate Dean for Student Affairs and the Associate Dean for Curriculum meet with the student if necessary.
- Administrative Issues
  - Students may complete a form in conjunction with a faculty member or course/clerkship director. The student’s signature must be on the form.
  - The student cannot contact the person who completed the form. However, the course/clerkship director can arrange a meeting with the student and the individual completing the form. The course/clerkship director or a designee must be present at the meeting.
  - If a student has two forms submitted for inappropriate or unprofessional behavior, the Promotion Committee is notified in writing regarding the student’s conduct.

REFERENCES
1. Center for Innovation: http://ci.nbme.org/Professionalism/default.asp
Advising Medical Students  
Sylvia Smith, PhD

INTRODUCTION
Academic Advisement falls under the purview of the Office of the Associate Dean for Student Affairs. It is imperative that students enrolled in the medical school curriculum have appointed faculty contact persons who are knowledgeable about information relevant to a student’s matriculation and eventual graduation from the Medical College of Georgia. In addition to needing to understand the process of medical education, students occasionally need a faculty advocate. This can be an advocate under positive circumstances, such as writing a letter of recommendation or supporting the student for an opportunity (such as a research or clinical experience). The circumstances can also be negative, such as serving as an advocate during a promotions subcommittee meeting or a dismissal hearing. As outlined below, there are three types of advisors: the Medical School Faculty Advisor, the Clinical Advisor, and the Match Advisors.

BACKGROUND
Over the past several years in academic medical centers across the nation, it has become increasingly apparent that students have varying needs for advice on issues ranging from career counseling, academic difficulties, personal concerns, professional concerns, etc. At the Medical College of Georgia, for many years students had an appointed freshman faculty advisor, but the interactions with the faculty member varied widely. The interactions tended to fall off by the end of the first year and sophomore students often felt as if they were “on their own.” The need for a more formal guidance system has been evident also when students at any level of their training encountered personal/academic problems. To ameliorate this deficit, a more formal system of academic advisement has been put into place to manage the needs of students throughout their training. The goals of the advising system in the School of Medicine are as follows:

- Offer a comprehensive advising system that includes all 4 years of medical education.
- Provide career development guidance and counseling for all students.
- Provide intermittent advice/counseling to students as needed.
- Ensure a smooth interface between career advising and individual need-based advising/counseling (e.g., for academic or personal problems).

DISCUSSION
Three types of advisors and duties associated with each type of advisor:

Medical School Faculty Advisor: the faculty member is a Core Clinical Educator who assumes the duties of overseeing the progress of a student from freshman year through graduation. This advisor is necessarily distinct from a “clinical”
advisor, who is knowledgeable about the particular clinical field of interest to a student. It is not as important that the general advisors know all details about all aspects of the curriculum as it is that they know to whom to direct students in need of advice. These individuals have a proven record of knowledge about the curriculum and active involvement in student-related issues. They are willing to be available to students to advise them in a professional capacity.

Specific duties:

- Meet six incoming Phase I students during freshmen orientation in August of each year. This is a formal meeting with the group and will set the tone for the advising process for the next 4 years.
- During the freshmen orientation meeting, each student will sign a waiver, which allows the faculty member access to the student’s record, including academic transcript and evaluative comments from clinical rotations.
- During the first meeting, the advisor will outline the first year of study in a general way and reinforce the notion that if the student has difficulties (academic, personal, professional) that the “first line” of interaction is to seek the guidance of the advisor. The advisor will have subsequent group and individual meetings with students as outlined below. It is important to keep contact with students and make them aware that we are concerned with their progress and want them to succeed. We have a limited budget for lunch and advisors will be apprised of the fund’s availability as the information is known.
- Meetings required for advising Phase I students:
  - Group Meetings
    - orientation
    - meeting during the first semester
    - meeting during the second semester
  - Individual meetings
    - meeting during the first semester
      - discuss adjustment to first semester
      - discuss plans for summer (clinical, research, etc.)
    - meeting during the second semester
- Continue interactions with Phase II students. For the 2005-06 year as this plan is implemented, the advisor will meet with Phase II students as a group during the first available ECM session, as indicated by the ECM course director. For all subsequent years, the advisor will designate a time to meet with the group within the first 2 weeks of the second year. In this initial group session, the advisor will outline the second year of study in a general way and will continue to reinforce the concept that the advisor is available for counsel about academic, personal, and professional issues.
- Meetings required for advising Phase II students:
  - Group meetings
    - meeting within first 2 weeks of beginning of school
• Individual meetings
  § first semester – discuss study plans for USMLE I
  § second semester – monitor progress
• Advisors will provide their professional contact information (office phone numbers, MCG e-mail, office address) to the students. Advisors are discouraged from providing personal contact information and are strongly discouraged from fostering a social relationship with their advisees.
• For junior and senior students, meetings will likely be individual meetings and typically will be at the request of the student.
• Throughout the 4 years of study, if an advisor believes that a student should receive additional counseling, it is entirely appropriate to request a meeting with a student.
• It is expected that an advisor will be available to students needing counseling and should be willing to meet with a student during a scheduled appointment convenient to both parties. An advisor should be prepared to counsel students about time management issues, studying appropriately, balancing personal and academic responsibilities, etc. Much of this counsel will be intuitive and will largely be based on the experience of the advisor. The Core Clinical Educators have a proven record of excellence in interacting with students and were selected in part based on this record. In certain instances, a student may require more extensive counseling. The student should be referred either to the associate dean for student affairs or the associate dean for curriculum. If the student requires additional services, a list of contact information is provided that can be used to direct students for academic, health, psychological counseling, etc.
• The advisor should be willing to write letters of recommendation for clinical and research opportunities and scholarships to enhance the students’ training.
• The advisor should be available to attend meetings of the promotions subcommittee if an advisee is called before the subcommittee. The advisor should be available to serve as an advocate and/or as a source of information for a student who is being considered for dismissal. The advisor will be given the current edition of the Student Promotions Manual and will be aware of the curriculum requirements for promotion and graduation.
• The advisor can contact the associate dean for student affairs at any time with concerns about a student or for any information about services to assist a given student. The advisor should contact the Office of Student Affairs in the event that a student has a serious personal matter.

Clinical advisor: a faculty member selected by students when they are completing their third year of studies. This person practices in the specialty to which the student is aspiring. Obviously, students may change their advisor if their interest in a given field of medicine changes.
Specific Duties:
- The clinical advisor is best qualified to advise on appropriate electives the student should take to best prepare for a career in a given specialty.
- The advisor should meet with the student toward the end of the third year of studies, should review his or her academic record and be candid, especially in counseling students who aspire to particularly competitive fields and have marginal records. The student should provide the advisor with a CV and a personal statement. The advisor should have access to a current transcript.
- The advisor may be requested to write a letter of recommendation for residency, if appropriate.

Match advisor: a faculty member who is very familiar with the details about the Residency Match Process and who has expertise in guiding students through the process.

Specific Duties:
- These faculty members must be aware of the NRMP and other match services.
- The advisor should meet with each student at the end of the junior or beginning of the senior year, review the student’s CV and personal statement, give candid advice about realistic expectations for residencies and assist in guiding the student through a successful residency application process. Note, the details of the application process (electronic application, etc.) are handled through the Office of the Associate Dean for Student Affairs.
- In the event that a student does not match and must go through the “Scramble,” the expertise of the match advisor is tremendously valuable. Interestingly, not all medical schools offer the assistance that the Medical College of Georgia offers to students who find themselves in the difficult position of being “unmatched.” These faculty members must be available the Monday evening of Match week to begin developing a plan to make the most use of information about available residency positions that are posted on the day of Scramble (the Tuesday of Match week). The faculty member must be available on Scramble Day to assist the student in making contacts with programs that have unfilled positions.

PEARLS TO REMEMBER
The imperative in decision-making for medical students is that they ask themselves prior to making critical decisions: What is in the best interest of my [future] patients? When students answer that question, then issues of studying, time management, personal decisions, etc. will be managed much more readily.
Finding Quality Health Information in the Information Age  
Kathy J. Davies, MLS

INTRODUCTION
The Greenblatt Library provides access to over 1,800 online journals, 40+ online medical textbooks, and multiple biomedical databases. Broad access is crucial to provide health professionals the opportunity to incorporate the latest research into clinical practice and training. According to Choudhry, Fletcher, and Soumerai in Annals of Internal Medicine, “more experienced physicians may not always incorporate the latest standards of patient care.”1 There are 15 million citations in MEDLINE alone; how can a clinician filter the literature for answers to a specific question?

BACKGROUND
The current explosion of health information available to health professionals has become a double-edged sword. Finding information on a health topic is quickly done via PubMed or Google. However, this type of searching may miss critical evidence, as the tragedy at Johns Hopkins illustrates.2 Incorporating the best evidence into clinical practice and teaching results in greater patient safety and better decision-making by clinicians. Unfortunately, as many of 70% of residents’ questions remain unanswered due to time constraints or their belief that the answer is not available.3

DISCUSSION
Focus on the following questions: What, Where, How, Why, and When.

What type of information am I seeking?
- Patient Care Research
  - A clinical trial comparing effectiveness of antibiotics vs. wait and see approach in treating otitis media?
- Drug Safety Information
  - Concurrent use of Oxandrin and warfarin raises bleeding risk?
- Standard Practice For Disease/Condition
  - Practice guidelines for diagnosis and treatment of hypertension in regard to initial laboratory testing and possible secondary cause?
- Biomedical Research
  - Is Nitinol a potential new source of cast biomaterial?
- Evidence-Based Review of Literature Topic
  - Is iron deficiency linked to higher risk of gastrointestinal cancer?

Where should I search for the answer to my question?
- MEDLINE (Via PubMed OR Ovid)
  Contains journal articles addressing clinical questions. Publication types included are clinical trials, RCT, double blind studies, and case reports. Key categories of therapy, diagnosis, prognosis, and etiology are emphasized.
• **EBM Reviews (Ovid)**
  Identifies clinically relevant studies with sound methodology and clinical trials that are not included in MEDLINE. You can access systematic and topic reviews on current evidence-based medical practice for clinical care.

• **MICROMEDEX**
  Contains pharmacology information, including dosage, IV compatibility, toxicology information, laboratory test information, and patient handouts. The disease section focuses on diagnosis and treatment, with clinical summaries available. This is an excellent source for comparing prescriptions, drug updates, complementary medicine and basic medical information.

• **UpToDate**
  Focuses on evidence-based information for patient care, diagnosis, and treatment questions. The contents of 200+ journals are peer reviewed and synthesized into topic reviews by clinical experts. References and patient education handouts also are provided. On-campus use only.

• **ImagesMD**
  Contains visuals you can incorporate into lectures; includes histology, pathology, radiographs, graphs, and tables. This is a valuable tool for diagnosis, teaching, and faculty presentations. On-campus use only.

• **Web of Knowledge**
  Provides access to research across science and social sciences disciplines in 8,000+ journals. You can track the citation record of an idea/author over time, or select quality journals for future publications. Its scope is broader than MEDLINE, making it a good choice for scientific/biomedical questions.

• **STAT!Ref**
  This collection of online medical textbooks has links to PubMed and practice guidelines as well as medical calculators. Key texts include Harrison’s Internal Medicine, ACP PIER, Basic & Clinical Pharmacology, and Griffith’s 5 Minute Clinical Consult.

• **MEDLINEPlus**
  This highly recommended resource for patients/general public is from the National Library of Medicine (NLM). It provides access to 700+ health topics, interactive procedures/disease tutorials, and basic drug information, medical encyclopedia and health news. All sites are reviewed by NLM.

### How Should I Organize The Search Process?

• **General Searching Techniques**
  - Decide which key concepts must be included in your search. The PICO model components—patient/problem, intervention, comparison, and outcome—are a good framework to find terms.
  - Many databases have a set of index terms to define conditions; myocardial infarction instead of heart attack is an example used in MEDLINE’s Medical Subject Headings. These controlled vocabulary terms yield more relevant results when searching.
MEDLINE and STAT!Ref will suggest an appropriate term(s) after the user types a word/phrase to search. Using one of the suggested terms rather than a generic phrase is recommended.

Keyword searching is the only option for some databases such as UpToDate, Web of Knowledge, ImagesMD, and EBM Reviews in Ovid. These databases require you to think of similar terms to increase the number of search results. Use OR between each term so that either word choice will be present in the selected article(s).

Use Boolean operators to determine the relationship between terms. AND means that both terms are present in an article; for example, AIDS AND tuberculosis. OR is a good method for comparing effectiveness of treatments or drugs; for example, penicillin OR cipro. NOT can be used to eliminate certain aspects of a term; for example, AIDS NOT sarcoma.

Limits are a powerful method of eliminating less useful results. Each database has a specific set of options to narrow the search set. Common limits are date of article publication, language, age/gender of patient population, type of article (clinical trial), and human.

**Database-Specific Search Features**

MEDLINE has evidence-based filters for the “Big Four” categories of therapy, prognosis, etiology, or diagnosis as well as cost, economics, and practice guidelines. Ovid EBM filters are on limits page; PubMed uses a Clinical Queries search option.

STAT!Ref searches across all books or by specific category, such as primary care or oncology. You can choose specific books to search from the Advanced Search option. Click on additional resources to view the medical calculators available.

MICROMEDEX general search includes drug, disease, and lab information. Choose a specific tab, such as Drugs, to limit to IV compatibility, for example.

UpToDate requires a simple topic search on the first screen. Clicking any of the search results reveals a Narrow Your Search button. You can add a secondary search term or choose a category such as diagnosis, screening, or monitoring to refine your search.

Web of Knowledge allows for truncation to expanding results. Diabet* will find diabetes, diabetic, etc. You can restrict to title search only.

ImagesMD allows browsing images by medical specialty or disease/condition in addition to keyword searching.

EBM Reviews will limit to protocols, therapeutics, diagnosis, prognosis, and systematic reviews.
Why should I change my strategy?

- **Too Many results:**
  - Choose additional limits or add terms to your search set
  - Use the search history option to combine different terms
  - Look at the index terms common to “good articles”
  - Check your Boolean operators; consider using “and” or “not”

- **Not Enough Results:**
  - Consider alternate or related keywords for your topic
  - Search abstract, title, headings for words representing key concepts
  - Choose keyword search option in MEDLINE for recent topic/unique phrase
  - Consider what the title of an ideal article would be and use these terms

- **Few Relevant Results:**
  - Use the related articles features in MEDLINE and Web of Knowledge to match articles with a relevant result
  - Enter the information from a good article in Web of Knowledge to track articles that are citing the original article
  - Try an author search from a good article
  - Choose a more basic term in UpToDate to view possible related articles; do not use AND, OR in the search screen in this database
  - Try searching with closely related terms suggested in MEDLINE, try synonyms in UpToDate and Web of Knowledge

**PEARLS TO REMEMBER**

- Become familiar with other databases/resources in addition to MEDLINE
- Frame your search topic as a clinical question to help define the key concepts
- Each database/resource has specific tools for searching; check the help menu or tutorial for more advanced searching suggestions
- In Ovid MEDLINE, enter each term separately; then combine sets or apply limits to results
- The easiest method to find known citations is to do a title search using key words/phrases. Use the citation matcher service in PubMed/Ovid
- Recommended order of searching:
  - Define key terms and synonyms/related terms as necessary
  - Choose subject heading from list if database offers this option
  - Search each term separately to increase results
  - Combine search terms using Boolean operators
  - Limit to appropriate population, publications, gender, language
  - Consider using an evidence-based filter to focus results
- One relevant citation can be a useful tool to expand your results
  - Look at the Mesh subject headings or keywords for alternative search terms
o Use Related articles/records feature in PubMed, Web of Knowledge, and Ovid to run a comparison algorithm of your selected article against the database(s)
o Web of Knowledge will link to all articles with common references to the original article as well as articles citing the original work
• UpToDate provides an excellent overview of specific clinical topics, such as otitis media, and links to related information from the main topic.
• The most comprehensive listing of full-text resources is the ePublications list on the library electronic resources page.
  o Use the search box to enter the name of a specific journal
  o Browse by subject or alphabetical listing.

REFERENCES
**TIPS for Clinical Feedback with the Problem Learner**

Andria M. Thomas, PhD; Chris B. White, MD

**INTRODUCTION**

Vaughn and colleagues (1998) defined the problem learner as a learner “whose academic performance is significantly below potential because of a specific affective, cognitive, structural, or interpersonal difficulty.”

**BACKGROUND**

Faculty face unique challenges when attempting to effectively educate the problem learner. The TIPS model\(^2\) provides a simple method for (1) categorizing the types of problems that learners experience, (2) understanding and practicing the principle of “perception versus reality” when giving feedback, and (3) identifying strategies for following up with the problem learner.

**DISCUSSION**

The following content is based on a presentation and consequent article by Lucas and Stallworth\(^2-3\) as well as the other works listed in the references. This model provides a useful model for clinical faculty for giving feedback to difficult learners.

**Target the specific ineffective behaviors**

Direct observation of problem behaviors by faculty or staff in contact with a learner can be a sign that intervention is needed. Ask yourself the following questions as you assess the situation:

- Is it a struggle to teach this learner?
- Does the learner exhibit poor communication skills?
- Are you receiving complaints about this learner from staff, patients, or other faculty?
- Is the learner performing at the expected level?
- Is the learner complying with system rules and regulations?
- Does the learner exhibit a noticeable deterioration in appearance, attitude, interest in work, or other marked behavior changes?

**Identify the type of problem learner based on identified behaviors**

- *Affective* problem learners are not successfully adjusting to life events such as moving away from home, financial strain, illness, or family problems.
- *Cognitive* problem learners are having problems in tasks of communication (written or oral) or knowledge.
- *Structural* problem learners experience challenges with time management, organization, and study skills.
- *Interpersonal* problem learners have difficulty interacting with others.

**Perception versus reality feedback**
One challenge to giving feedback is the possibility that learners may not be cognizant of the issue or do not agree with the feedback you are giving. Lucas and Stallworth suggest that at these times, the learner will need help to “realize that he or she does not have to agree with the feedback to hear it and understand it.” Differences in perception should not preclude you from giving the feedback.

**Strategies for treatment/follow-up**

Lucas and Stallworth provide the following examples of treatment strategies to target each type of problem learner:

- **Affective**: professional assessment and treatment, possibly to include medication
- **Cognitive**: professional assessment and treatment, possibly to include tutoring or training
- **Structural**: skills training
- **Interpersonal**: interpersonal skill training, possibly to include communication or anger management skills

**PEARLS TO REMEMBER**

Using the TIPS model, faculty may improve their ability to educate learners with problem behavior. Resolving these issues effectively will increase the success of the learner and of the system as a whole.

**REFERENCES**

2. Lucas, J, Stallworth, J. TIPS. Presented at the Society for Teachers of Family Medicine (Regional); 2002; Charleston, SC.
**Time Management**

Peggy J. Wagner, PhD

**INTRODUCTION**

As clinicians and educators, we are always too busy. Principles of time management can help us make better use of our time. Time management involves using our resources the best we can and increasing our satisfaction with what we do, how we teach, and how we care for our patients and ourselves.

**BACKGROUND**

Generally, people use two approaches to time management:

- Do more in less time.
- Choose to do the things that really matter to them.

**DISCUSSION**

Figure 1. Time Management Quadrants

<table>
<thead>
<tr>
<th></th>
<th>Important</th>
<th>Not Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urgent</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Not Urgent</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

The classic four-box model emphasizes working in quadrant 2 to reduce your stress. Instead, most of us work in quadrant 1! The following suggestions may give you an idea or two for your own use. Collect your own ideas and share with colleagues. When we can manage time together, we will all be more efficient.

**PEARLS TO REMEMBER**

**Make Lists**

- Create quick sheets, lists of needed items, for repetitive tasks. For that class you teach every year, what are the repetitive tasks?
- Use A, B, C ratings and assign to all activities a date, a time, and a person who will be responsible.
- At the end of each day, list six things you did not accomplish today that you should do tomorrow.
- Make “To Do” lists for those who work for you or for your students.
- Use daily, weekly, monthly, and/or yearly lists.
Deal with Clutter
• Work on dreaded tasks or lectures for just 5 minutes, using the 5-minute rule.
• Maintain your paperwork.
  o Toss envelopes immediately.
  o Schedule appointments immediately and discard reminders now.
  o Set up file now.
  o Prune periodicals.
  o Put a red dot on a paper every time you touch it. Soon you’ll be trained to handle it immediately.
• Keep the most frequently used items in the most accessible place.
• Use templates for repetitive tasks, such as for a recommendation letter.
• Don’t give a lecture just once. Find another place to give it. It counts twice on your CV.

Don’t Procrastinate
• To avoid procrastinating on a task, break it down into smaller, manageable parts, and set yourself the goal of doing a small step by a specific deadline. When you finish one step, do the next one, or reward yourself for progress.
• Identify the most difficult part of the task and do it first.
• Try the “Remember Forgetting” technique. Whenever you remember a task you keep forgetting to do, do it—or at least part of it—immediately.
• Use cost-benefit analysis. Make a list of all the good things that will happen if you stop procrastinating on an important task, and review the list regularly. List all the miserable results of your procrastination, and review them each night before leaving work.
• Control your environment. Make as many changes in your environment as necessary to remove distractions, ensure privacy, become neater, and have important materials on hand.

Manage Your Time
• Make yourself scarce.
• Try these tactics to set time boundaries when a colleague or student is in your office:
  o “Sure I’d love to discuss that; unfortunately, I only have 5 minutes at this time. If we don’t finish, we’ll have to reschedule for another time so we don’t have to rush.”
  o “I’ve really enjoyed chatting with you, but I’ve got to speak with some others before they leave.”
  o “Hi, I’m on a tight schedule today and just wanted to make sure everything gets covered; what’s the most important thing?”
• Schedule appointments for 10:35 instead of 10:30—this shows you think promptness is important and that you have very short appointments.
• Use non-verbal cues with lingerers. Stack papers. Stand up, push your chair back, escort people to the door.
• Stage an interruption.
Learn to Interrupt to Save Time.

- “Excuse me for interrupting you--and don’t lose your train of thought—but I would like to suggest that . . . .”
- Jump in when people breathe.
- Call people by name.
- Use body language; hold up an open hand and say, “let’s look at the other side.”
- Touch the other person, it’s a definite way to make them pause and you can jump in.

REFERENCES
Writing an Effective Letter of Recommendation
Christopher B. White, MD

INTRODUCTION
Faculty who teach medical students often are asked to write a letter of recommendation (LOR) on behalf of a student with whom they have worked. These letters form part of the student’s residency application packet.

BACKGROUND
While the Medical Student Performance Evaluation (commonly referred to as the Dean’s Letter) has become more standardized in recent years, there are few guidelines on how to write a LOR. Students may perceive the LOR to be much more important than do residency program directors. Further, there is very little evidence that they are an effective means of discriminating between applicants. However, these letters are likely to be a fixture in most residency application programs for the foreseeable future. By following these guidelines, gleaned from the literature and personal experience, your LOR will have the best chance of helping both the candidate and prospective residency training programs find their best match.

DISCUSSION
What are the important components of an exemplary letter of recommendation?2
• It should be based upon first-hand experience:
  o Residency directors can easily obtain information about a student’s grades, clerkship performance, and board scores in the Dean’s Letter. A letter that is based upon first-hand knowledge of the candidate’s skills helps provide information about skills and personal attributes that usually are not captured in standardized clerkship evaluations and transcripts.
  o The first paragraph of a good LOR should say more about the author and the context of the relationship he or she had with the student than about the student.
• It should be honest:
  o The letter should avoid exaggeration or hyperbole.
  o This is a difficult balance, because most letters have some degree of “superlative inflation.” For example, Morgenstern et al.3 estimated that “excellent” was a third-tier superlative, bested by “outstanding,” with the highest superlative being “one of the best.” Within that category, however, was another hierarchy: “one of the best students ever” beat out “one of the best students in recent history” and “one of the best students this year.” No physician wants to penalize a student because of insufficient praise, but program directors sometimes consider a few caveats or words “red flags.”3
“Very good” or “solid” may imply that the student is mediocre.
Ironically, “showing improvement” is something that all physicians should strive to do. However, a LOR stating that a student “showed improvement” might be perceived as a way of attributing a positive characteristic to someone who otherwise was not very strong.

The letter writer is left in a conundrum. If the writer is objective and avoids hyperbole, the student may be penalized. However, the student’s potential residency program needs honest information to make an accurate assessment about that student’s potential for the program. Each writer must find the appropriate balance between hyperbole and honesty. Discussing this issue with your own department’s residency program director might be helpful, and keep in mind the issues brought up earlier.

The Council of Emergency Medicine Residency Directors has attempted to address the problem of hyperbole and grade inflation by developing a standardized LOR for emergency medicine residency candidates. Much of it is not actually a letter, but is a form with boxes to check, rating scales, and a section for written comments at the end. Whether this has helped make the LOR more honest and objective remains to be seen, but it is an attempt to create a common yardstick for describing resident candidates within a single specialty. Just as the Medical Student Performance Evaluation has become more structured and standardized in recent years, perhaps all LOR will soon have a more standardized format as well.

- It should accurately describe key elements of the student’s character and performance (not necessarily in this order):
  - Work ethic
  - Personal attributes
  - Interpersonal skills
  - Ability to develop a differential diagnosis and treatment plan; clinical problem-solving skills
  - Commitment
  - Overall comparative ranking
- It should be easy to read and follow a consistent format:
  - Length: No more than one page, single-spaced
  - Three Paragraphs:
    - Introductory paragraph:
      - Describe who you are.
      - State the context in which you know and/or have observed the student.
    - Body paragraph (the key portion of the LOR):
      - Describe the key elements of the student’s performance (see above).
      - Provide one or two specific examples to highlight some of the elements.
Concluding paragraph:
- Provide a final summary of the student’s performance, and your recommendations.
- Recommending a student “without reservation” may convey a hidden message and undo any superlatives used in the body of the letter.³ Avoid using this phrase.
- Similarly, stating that you would be happy to provide additional information upon request implies that there might be other information (negative, by implication) you do not want to put in writing.³

Waiver:
- If the student waives the right to review the contents of the LOR, this should be documented somewhere in the letter. Similarly, if the student does not waive the right, this also should be mentioned.
- Typically, waiver information comes at the end of the LOR.
- If the student signs a waiver, the implication is that the letter writer will be more objective in the information provided. However, this has never been substantiated.³

Preparation for writing the LOR:
- Students usually will contact their attending to request a LOR shortly after completing their clinical experience, or in late spring or summer, when they are beginning to organize their application packet.
- Before writing the LOR, arrange a brief meeting with your student to become reacquainted and to discuss the student’s career ambitions. This is also a good time for the student to provide administrative information that you might need, such as the following:
  - Waiver
  - Deadlines for submission of the LOR.
  - Names and addresses of program directors, if the program is not part of the ERAS system.

PEARLS TO REMEMBER
- Keep your LOR short. Remember, the person who reads it has a lot of information to process, and is unlikely to read a long, descriptive letter.
- A good LOR focuses on the most important elements of the student’s character and performance, and gives specific examples for emphasis.
- Be aware of “superlative inflation” – be honest, but do not handicap your student by using words that might convey a hidden meaning.
REFERENCES
Assessment
And
Evaluation
Creating Objectives
Andria M. Thomas, PhD; Stephanie Wragg, PhD

INTRODUCTION
“A goal or objective is defined as an end toward which an effort is directed.”¹

BACKGROUND
We need objectives to
• Communicate our expectations to learners
• Organize the curricular content
• Identify the learning materials needed

DISCUSSION
Ask yourself the “who-how-what-when” question as you write your objective. This will help you make sure your outcome is both specific and measurable.

WHO will do HOW much (how well) of WHAT by WHEN?

Example:
First-year students (Who) will give (Will do) a 30-minute (How much) presentation of the health needs of their assigned county (Of what) by the end of the second semester (By when).

Types of Objectives
Learner objectives: Relate to learning in the cognitive, affective, and psychomotor domains.

• Cognitive: KNOWLEDGE

Example:
By the end of the curriculum, each resident will be able to list the 8-step approach to effective smoking cessation counseling.

• Affective: ATTITUDE (including values, beliefs, biases, and emotions)

Example:
By the end of the curriculum, each resident will be able identify his or her attitudes toward working with homeless patients.

• Psychomotor: SKILL OR COMPETENCE

Example:
By the end of the lab, each student will be able to conduct an interview using the Bayer model of communication, exhibiting the four skills of engagement, empathy, education, and enlistment.
Process objectives: Relate to implementation of the curriculum or expected response and participation from learners.

Example:
Student will spend 3 hours in class or seeing patients.

Outcome objectives: Relate to long-term effects on health; can be shorter term, if looking at a change in behavior or exam performance.

Example:
After completion, the student will be able to perform a procedure unattended.

To make an objective specific, use words that are specific. The following list contains words that are open to the reader’s interpretation:

- Know
- Understand
- Really understand
- Appreciate
- Fully appreciate
- Grasp the significance of
- Enjoy
- Believe
- Have faith in
- Internalize

The following list contains examples of words that make the objective more specific:

- Write
- Recite
- Identify
- Sort
- Solve
- Construct
- Build
- Compare
- Contrast

PEARLS TO REMEMBER
The key to a well-written objective is to ensure that the following question is answered: **Who will do how much (how well) of what by when?** Ask a colleague to read your objectives and explain them to you. This will help you determine whether you are getting your message across accurately and effectively.
REFERENCE
Writing Multiple Choice Questions
Ruth-Marie E. Fincher, MD

INTRODUCTION
Assessment drives learning. What and how you test is the single most important stimulus for students to learn. Your outline of an examination’s content should follow the important course topics. The items themselves should be consistent with the format used for the National Board of Medical Education (NBME) USMLE licensing examinations. These exams use only two types of multiple-choice questions (MCQs), the one-best-answer (A-type) and extended matching (R-sets). Other types of questions, such as true/false or multiple right options, can be confusing and are not used.

BACKGROUND
Your test questions should reflect the material you value and your educational goals for your students. If you want them to memorize minutiae, test them on their recall of minutiae. If you want them to learn and think, test them on important concepts and their application. If you want them to acquire skills, assess them on those skills. The NBME has found that one-best-answer questions are better for assessing higher-order thinking than true/false questions. Research on examination questions has shown that faculty who have training in writing NBME-style questions write higher-quality items. This section offers suggestions on how to write good NBME-style items.

DISCUSSION
Guidelines for Item Writing
- Address important concepts, not trivia
- Ask a focused question that contains no ambiguous terms (frequently, seldom, usually, rarely, etc.)
- Provide homogeneous options (so they can be rank ordered on the same dimension), for example:
  - All diagnoses
  - All anatomic sites
  - All antibiotics

The Anatomy of A-Type Items
- The stem: typically a clinical vignette or case presentation
- A lead-in question
- The options: at least 4 (preferably 5 to 10)
Example of an A-type Item:

A 50-year-old woman comes to her physician because of somnolence, constipation, and muscle weakness for 6 months. She appears depressed. Her hair is dry and brittle. The relaxation phase of her DTRs is delayed.

Laboratory studies show:
  Serum T4 – Low; T3 – Normal; TSH – High

This patient’s endocrine disorder most likely is:
  A. Primary  
  B. Secondary  
  C. Tertiary  
  D. Quarternary

The Anatomy of Extended Matching Items
Focus on a theme (diagnoses, pathways, therapies, etc.)
- A lead-in statement (for each patient with ____, select the most likely____.)
- A list of options (answers)
- At least two item stems (clinical vignettes)

Example of an Extended Matching Item:

For each respiratory response, select the most likely site of causal stimulus
  A. Medullary respiratory center  
  B. Apneustic center  
  C. Pneumotaxic center  
  D. Medullary (Central) chemoreceptors  
  E. Carotid and aortic bodies

Items
  A. Stimulated by low oxygen tension  
  B. Stimulated by fall in blood pH

Summary of Guidelines
- Focus on important concepts
- Included needed, but no superfluous, information in stems
- Use long stems, short options
- Avoid negatively phrased stems
- Write items that can be answered without looking at options
- Distracters should be plausible and about the same length as the correct option
- Avoid absolutes
PEARLS TO REMEMBER

- Assess the student’s ability to apply knowledge rather than recall facts.
- Knowledgeable students should be able to answer the question from the stem without looking at the options.
- Keep the stem focused and the options short.
- Distracters (wrong answers) should be
  - Plausible, but not deceptive
  - Same length
  - Same category (homogeneous)
  - Same perspective (all positive or all negative, not a mixture of both)
  - Mutually exclusive (no overlap)

Example of inconsistent/implausible distracters:
Suicide risk is increased by which one of the following factors?
- A. Social support
- B. Younger age
- C. Hopelessness
- D. Hope for the future
- E. Marriage

Example of option overlap:
What is the range of normal intracranial pressure?
- A. 0—50 mm water
- B. 50—100 mm water
- C. 65—185 mm water
- D. 150-250 mm water

- Do not cue the test-wise student:
  - All options should be grammatically consistent with the stem
  - All options should be approximately the same length (long options tend to be the correct choice)
  - Avoid repeating words from the stem in the correct option
  - Avoid “always” and “never” in the options (correct options typically do not use absolute terms)
Example of a test-wise item:
The receptor that responds both to muscle stretch and muscle contraction, is located in the tendon, and has a large-diameter myelinated axon is the

A. Muscle spindle  
B. Golgi tendon organ  
C. Free nerve endings  
D. All of the above  
E. None of the above

[A and B are the only viable options; “is” rules out C; D and E are grammatically incorrect.]

REFERENCES
INTRODUCTION
Since the advent of the Step2 Clinical Skills exam, use of standardized patients (SPs) for controlled assessment of clinical skills has become increasingly important. Originally, the SP technique was developed for use in neurology.\(^1\) Now, SPs have become akin to a “gold standard” for teaching and assessing student interviewing, data gathering, and physical examination skills. New opportunities continue to be developed and increasing exposure to this teaching strategy suggests further innovations in the use of SPs.

BACKGROUND
SPs are real persons who are trained to portray particular health issues. Sometimes they are actors, sometimes former patients, and sometimes just people who need part-time work.\(^2\) The health issue could be a specific disease (e.g., diabetes or chest pain), a cultural issue (e.g., incorporation of critical cultural information into the interview, such as the use of blood products with Jehovah’s witnesses), a behavioral change (e.g., obesity reduction or using a bicycle helmet), or almost any other issue that a physician must address (e.g., calming and treating a patient with possible anthrax exposure). Learners, in a simulated clinical manner, “take care” of these SPs. After the interaction, the SP completes a checklist indicating whether certain content was addressed, whether they felt comfortable during the interaction, or otherwise responding to any question that can be consistently examined. A substantial body of evidence suggests that this is a reliable and valid teaching and assessment approach.\(^3\)

SPs are recruited largely by word of mouth, but also through acting guilds and among patients. Training at MCG is done by Clinical Skills Center staff, including behavioral scientists, actors, and physicians. Anyone can use SPs, although there are charges because SPs are paid for training and performance time.

DISCUSSION
Two primary ways of using SPs are popular, for teaching and for assessing. Some ways we have used SPs at MCG are discussed below.

Using SPs to Teach. SPs can be trained to (a) complete checklists and (b) give “live” feedback to learners. Checklists need to be developed and reviewed by clinical experts, and the SP’s completed checklist needs to be compared to an “expert” completed list to establish sufficient reliability. Although exact checklists are not typically given to students, modified versions can be given. Written feedback for learners can be developed in aggregate form and can be highly informative. SPs can be used in small groups in a “tag team” format; they provide personal feedback after the interview so that the whole group benefits. We have used this technique to teach students how to promote
behavior change, give bad news, work with difficult patients, and to desensitize them to difficult conversations.

**Using SPs to Assess Skill.** An SP-derived examination is often referred to as an Objective Structured Clinical Exam, or OSCE (pronounced aah-ski). Typically, a group of clinical experts will set standards, deciding on the minimum score needed to meet base competency in a particular scenario. That establishes the “passing” score, which at MCG is set at 70%. Learners go through multiple stations consisting of interviews, oral presentations, working with models, writing progress notes, deriving evidence from the literature, or demonstrating any other skill the educator is trying to assess. With SP-based stations, the SP then completes a checklist, which is used as the basis for scoring the student’s performance. These individual station scores are combined to calculate a grade with numerical values that are set based on the fundamental passing standard established by the team of clinical experts. Currently, we conduct a first-year OSCE that primarily assesses interviewing and communication skills, a second-year OSCE that assesses the acquired first-year skills and physical examination skills, and a third-year OSCE that adds the elements of clinical reasoning and therapeutic planning.

Use of SPs for teaching and assessing is time consuming, but has high value in terms of learning potential. Educators can create many different opportunities, limited only by their imagination and the available talent.

**PEARLS TO REMEMBER**

Become familiar with what currently exists; drop by the Clinical Skills Center or view some videos of SP-student interactions
- Frame your learning issue as a clinical scenario
- Do not limit yourself to using SPs in the Clinical Skills Center; consider bringing them to a lecture or small group to provide controlled practice of demonstration opportunities
- Consider developing teaching videos or DVDs, using our team of trained SPs
- Consider how you might use an SP to teach or assess that new hot topic
- Consider using Standardized families, family members, team members, and students to build skills in any teaching arena
- Remember, SPs bring a level of reality not present in paper cases and a level of control not present in “real” patients, thus providing the best of both worlds.

Contact Morri Kernaghan at the Clinical Skills Center at 706-721-9417 to discuss possibilities. New ventures are encouraged.
REFERENCES
Interpreting Test Results
T. Andrew Albritton, MD; Andria M. Thomas, PhD; Peggy J. Wagner, PhD

INTRODUCTION
To make accurate decisions about cut-points and to monitor student, course, and class projects, teachers need to understand the data generated by both the NBME exams and in-house exams. How does a teacher interpret those data?

BACKGROUND
First, here is some standard statistical information. A few key definitions are listed below:

- **Weight**: The importance assigned to each question. A weight of 1 means no additional weight was specified. A weight of 2 means that question will count double, a weight of 3 means that question will count triple, and so on.
- **Correlation**: A numerical index of the relationship (degree of association) between two or more variables. The magnitude of the correlation coefficient indicates the strength of the relationship; its sign indicates the direction (positive or negative).
- **Alpha**: A method for assessing reliability that provides an index of average inter-item consistency. Primary sources of error are content (item) sampling differences and heterogeneity of the content domain. Item alpha indicates what the test alpha would be if that item were removed. If the item alpha is higher than the test alpha, that item is lowering the test’s reliability.
- **Standard Error (SE)**: An index of measurement error. It is used to construct a confidence interval around an examinee’s obtained test score. Its magnitude depends on two factors: the test’s standard deviation and its reliability coefficient.
- **Mean**: The measure of central tendency that is the arithmetic average of a set of scores.
- **Standard Deviation (SD)**: A measure of variability (dispersion) of scores around the mean of the distribution. It is calculated by dividing the sum of the squared deviation scores by N (or N-1) and taking the square root of the result. A small SD does not necessarily mean that the test was good.

DISCUSSION
Now, let’s look at subject exams scored by NBME.

- **Relative vs. Absolute Standard**: A relative standard is based on the performance of the groups taking the same exam, whereas an absolute standard does not compare the performance of one examinee with others who are taking the exam. Standards are used to determine passing scores.
- **Standard Deviation**: As noted above, a measure of variability of scores around the mean. A small SD does not necessarily mean that the test was good. The subject exam SD is 8.
- **Hofstee Method**: A method of standard setting used for the NBME subject exams. It has the advantage of both relative and absolute standards.
• **Mean**: As noted above, the arithmetic average of a set of scores. The subject exam mean is 70.
• **Range**: A measure of score variability, obtained by subtracting the lowest score from the highest.
• **Standard Error (SE)**: As noted above, an index of measurement error. For the subject exam, the SE is approximately 4 points. An examinee’s true score can be expected to fall plus or minus 2 SEs.
• **Frequency Distributions Table**: The number (frequency) and percent of students with each score, together with the cumulative frequency and percent, along with other summary data (e.g., mean, standard deviation, and high/low scores).
• **Percentile Rank**: This indicates the percent of examinees in the normative group who obtained a lower score.

Finally, let’s look at the in-house grading sheets that we receive from the MCG Testing Service.

**Overall Test Questions**
• Was this a hard test or an easy test?
• What is the purpose of the test? Is it to select the few best, the few weakest, or to assess basic competency? Your strategy of item examination will differ depending on your goals.
• How internally consistent was the test?

**Item Questions**
• Percent of correct answers: if fewer than 75% of the students got it correct, review the item.
• Item difficulty index. This ranges from 0 to 1. A good estimate for a 5-item multiple-choice item is .63; for a True/false item, .75.
• Did the high-scoring students perform better on this item than the low-scoring students?
• What is the distribution of responses to the item?
• Are responses scattered across the choices? Everyone is just guessing.
• Did the student select two responses? Consider giving credit for two answers rather than across-the-board credit.

**PEARLS TO REMEMBER**
• Good post-test analysis helps you with student challenges
• Good post-test analysis helps you improve your test for the next session.
• As your question quality improves, so will student responses.

**REFERENCE**
INTRODUCTION
The Accreditation Council for Graduate Medical Education (ACGME) is responsible for evaluating and accrediting residency programs. Its mission is “to improve the quality of health care by improving the quality of graduate medical education experiences for physicians in training.”

BACKGROUND
In 1999, in response to consumer demand for better measures of quality and patient safety, the ACGME made a shift in its approach to assessment of residency programs from measuring a program’s “potential to educate” to focusing on “actual accomplishments of a program.” This change to outcomes-based data has resulted in a shift in resident education from program/process accreditation to competency-based accreditation.

DISCUSSION
This shift results in dramatic changes in the continuum of graduate education:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Structure/Process</th>
<th>Competency-based</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driving force for curriculum:</td>
<td>Content: Knowledge acquisition, application</td>
<td>Outcome: Knowledge</td>
</tr>
<tr>
<td>Driving force for process:</td>
<td>Teacher</td>
<td>Learner</td>
</tr>
<tr>
<td>Path of learning:</td>
<td>Hierarchy</td>
<td>No hierarchy</td>
</tr>
<tr>
<td>Responsibility for learning:</td>
<td>Teacher</td>
<td>Student &amp; Teacher</td>
</tr>
<tr>
<td>Typical assessment tool:</td>
<td>Proxy</td>
<td>Authentic (mimics real tasks of profession) “In the trenches” (direct observation)</td>
</tr>
<tr>
<td>Location of assessment:</td>
<td>Removed (gestalt)</td>
<td></td>
</tr>
<tr>
<td>Evaluation:</td>
<td>Norm referenced</td>
<td>Criterion referenced</td>
</tr>
<tr>
<td>Typical evaluation tool:</td>
<td>Subjective &amp; single</td>
<td>Objective &amp; “Portfolio”</td>
</tr>
<tr>
<td>Timing of evaluation:</td>
<td>Emphasis on summative</td>
<td>Emphasis on formative</td>
</tr>
<tr>
<td>Completion:</td>
<td>Fixed time</td>
<td>Variable time</td>
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</tbody>
</table>
Residency programs must require their residents to obtain competence in the six areas listed below to the level expected of a new practitioner. Programs must define the specific knowledge, skills, behaviors, and attitudes required, and provide educational experiences as needed for their residents to demonstrate the following:

- Patient care that is compassionate, appropriate, and effective for treatment of health problems and the promotion of health;
- Medical knowledge about the established and evolving biomedical, clinical and cognate sciences, as well as the application of this knowledge to patient care;
- Practice-based learning and improvement that involves the investigation and evaluation of care for their patients, the appraisal and assimilation of scientific evidence, and improvements in patient care;
- Interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and other health professionals;
- Professionalism, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to patients of diverse backgrounds;
- System-based practice, as manifested by actions that demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.

The ACGME now requires each residency program to demonstrate that it has an effective plan for assessing resident performance and uses assessment results to improve resident performance. This plan should include the following:

- dependable measures to assess residents’ skills, knowledge, and attitudes in the six core competencies
- mechanisms for providing regular and timely performance feedback to residents
- a process involving use of assessment results to achieve progressive improvements in residents’ competence and performance

For each area assessed, it is recommended that at least two different methods be used; clinical competence is complex and multi-dimensional and each assessment technique has strengths and weaknesses. Assessment should occur on multiple occasions, using multiple assessors to improve reliability, provide thorough and complete assessment, and enhance fairness and reliability.

To assist with this process, the ACGME has developed a “Toolbox of Assessment Methods” and suggests best methods for each competency.
Examples of Assessment

<table>
<thead>
<tr>
<th>Record recall</th>
<th>Chart stimulated recall</th>
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</thead>
<tbody>
<tr>
<td>Checklist</td>
<td>Global rating</td>
</tr>
<tr>
<td>Standardized patient</td>
<td>OSCE</td>
</tr>
<tr>
<td>Simulations and models</td>
<td>360° global rating</td>
</tr>
<tr>
<td>Portfolios</td>
<td>Exams (MCQ; Oral)</td>
</tr>
<tr>
<td>Procedure or case logs</td>
<td>Patient surveys</td>
</tr>
</tbody>
</table>

**What does this mean for educators?**

For each rotation we must identify the following:

- the learning goals and objectives
- the experiences that will be provided to attain those objectives
- how we will measure progress,
- how we will document that the resident has achieved an appropriate level of competence

The resident should be an integral part of establishing the specific learning objectives to help foster life-long learning skills. Historically, at the end of a rotation the attending would complete a single evaluation form, previously norm referenced (how does this resident compare to his/her peers) and, more recently, criterion or behavior based (does this resident demonstrate behaviors that indicate an appropriate level of skill and knowledge). This behavior-based “global evaluation” form is still useful when linked to the core competencies, but it is not sufficient. Additional evaluations that may be used for a subspecialty rotation might include a rotation-specific procedure evaluation form, a portfolio of exercises completed by the resident over the course of the rotation (in part driven by the learning needs of the individual resident), and a multiple-choice question exam specific to the rotation.

**PEARLS TO REMEMBER**

- Taken together, all of these evaluation tools provide a more comprehensive assessment of the resident’s performance and can provide more specific feedback to the resident regarding focus for improvement.
- Some areas of competence, such as professionalism and interpersonal skills/communication, require input from individuals other than the faculty attendings, e.g., resident colleagues, nurses, ancillary staff, and patients.
- Ask the Program Director for your discipline for specific information about the curriculum and evaluation of competencies in your department.

**REFERENCES**

1. ACGME Outcome project: [www.acgme.org](http://www.acgme.org)
Developing Your Academic Career
Promotion and Tenure
Ruth-Marie E. Fincher, MD, Janis A. Work, PhD

INTRODUCTION
“Promotion is the major way in which an institution recognizes and rewards a faculty member’s contributions and academic achievements.”¹ Most faculty members want to be promoted. Those in the tenure track want to be granted tenure.

BACKGROUND
Neither promotion nor tenure is automatic. You should begin planning your academic career from the time of your appointment to the MCG faculty or your last promotion. Time in rank is only one indication of whether you should consider going up for promotion. You also must meet the expectations for your track. You and your chair need to determine your responsibilities and the expected outcomes. You then need to do the work and document your accomplishments. If your department does not have a mid-cycle “mock” progress review, consider requesting one to ensure there are no surprises when you are considered for promotion.

DISCUSSION
Tenure: Probationary time in the tenure track is only one requirement for tenure. You must be tenured by the first day of your seventh year on the faculty, or you will receive a “terminal” letter. You may be considered for tenure after 5 years as a fulltime MCG faculty in the tenure track. If you are considered for, but not granted, tenure after your fifth year, you may apply again after your sixth year. A terminal letter grants you 1 additional year as a faculty member, after which your contract would not be renewed. You may also request up to 3 years of probationary credit toward tenure at the time of your appointment to MCG. Probationary credit is not granted after appointment to the MCG faculty. Probationary credit toward tenure is advantageous if you are confident you meet the requirements for tenure, but many faculty want as much time in the probationary period as possible. You do not need to “use” your probationary credit toward tenure. That is, you do not have to be tenured until the first day of your seventh year on the faculty, even if you were granted probationary credit.

Most physician clinical faculty members are hired in the non-tenure track. Those hired in the tenure track are clinician-scientists and are expected to spend at least 50% their effort in research, and to garner extramural funding to support at least 50% of the total cost of their research program, and typically more. All faculty are expected to participate in activities to improve their teaching skills.
The promotion and tenure cycles each take approximately 1 year. They are separate processes, but occur at the same time. If you apply for promotion and tenure in the same year, you must submit two separate applications. They are considered by the same committee, but in separate deliberations.

Time in rank for promotion
- To assistant professor 3 years minimum
- To associate professor 4 years minimum
- To professor 5 years minimum

Meeting expectations in your track
- Demonstrate outstanding contribution
  - Non-tenure track: 1 area - usually that of greatest effort
  - Tenure track: 2 areas – one must be research
- Demonstrate competence
  - Non-tenure track: 2 areas – usually scholarship and teaching or clinical care
  - Tenure track: 1 area – usually service
- Your chair agrees you are ready

**Documenting Teaching**: Develop an Educator’s Portfolio (see section 5.1 for details). Start it now and maintain it regularly. Evaluation Services will analyze the student evaluations of your teaching in required courses in the School of Medicine for your promotion packet.

**Documenting Service**: Clinical Care
- Discuss the expected type of documentation with your chair
- Documentation could include
  - Relative value units
  - Billings
  - Patients seen
  - Referral patterns
  - Evidence of satisfaction
  - Collections

**Documenting Service**: Committees
- List in your CV – include position and appointment dates
- Be proactive if there is a committee you would like to serve on or chair
- Your service should correspond with effort allocation and career goals

**Documenting Research**: Tenure Track
“Documentation of research/scholarly achievement should include evidence of original research and scholarship leading to significant advances in the discipline and to publications in refereed journals, textbooks, or chapters in
books.”¹ (For additional details, see the MCG web site listed in the reference section.)

PEARLS TO REMEMBER
Document, document, document – your teaching, your service (clinical and/or committee), your research or other scholarly activity. In developing your documentation, ask the following questions:

- What data are needed and who is responsible for collecting them?
- What evidence of quantity and quality is expected?
- What documentation do you have now or can you assemble?

Research or other scholarly activity is expected of all faculty. Those on tenure track are expected to conduct traditional research, i.e., discovery of new knowledge. Those on non-tenure track are expected to conduct creative activity that results in a product equivalent to a manuscript. All scholarly products must be reviewed by peers for quality and disseminated publicly for others to learn from and build upon. But, no one has been promoted with no publications.

Be proactive, so that when the dean’s office notifies you that you are eligible for promotion based on time in rank, you are putting the finishing touches on your packet.

REFERENCES
Mentoring: The Key to a Successful and Satisfying Academic Medical Career
Christopher B. White, MD

INTRODUCTION
Mentors and mentoring can be defined as follows:

- “A trusted counselor or guide”¹
- A dynamic and reciprocal relationship in a work environment between two individuals where often, but not always, one is an advanced career incumbent and the other is a less-experienced person. The relationship is aimed at promoting the career development of both.²,³

BACKGROUND
Why is mentoring important in academic medicine?

- “Most newly appointed assistant professors have a general idea what being a professor is all about, or at least what they think it entails. But since there’s no West Point for professors, real training for the assignment comes from being in the assignment. So they learn from role models and from making their own mistakes.”⁴
- In a survey of academic medicine faculty members, a lack of mentoring was the first (42%) or second (56%) most important factor hindering their career progress in academic medicine. Faculty members who identified a mentor felt more confident than their peers, were more likely to have a productive research career, and reported greater career satisfaction.⁵
- Although medical schools have structured programs for training medical students, residents, and fellows, there are very few structured training programs for faculty development. Thus, physicians frequently enter academic medicine with little or no socialization to the attitudes, activities, and beliefs that characterize successful faculty in academic medicine. Mentoring is one method through which doctors become socialized to their faculty roles.⁶

DISCUSSION
Mentoring has several purposes:

- Teaching
  - Feedback on research ideas
  - One-on-one didactic sessions in a content area
  - Advice on important reading and coursework
- Professional & Personal Guidance
  - Advice about attending a conference that could enhance the mentee’s career and professional contacts
  - Advice about joining or participating in a certain committee to provide visibility and experience
• Sponsorship
  o Inviting the mentee to participate in a workshop at a national meeting, providing an opportunity for professional development and networking
  o Inviting the mentee to work on a research project or paper
• Role-Modeling (learned more from observation than interaction)
  o Providing an example in professional or personal life that the mentee may wish to emulate
• Socialization into the profession
  o Inviting mentee to social functions to encourage a sense of belonging to the department
  o Advising the mentee about the social and professional hierarchy that is unique to each institution and department

Can You Have More Than One Mentor?
• Yes! Mentors often can serve specialized functions and offer different perspectives. For example, one mentor may help with career planning, another with a research or educational project, and yet another may help with clinical work.
• Having multiple mentors makes sense, since no single mentor can meet all of the mentee’s various needs.

How Do You Find a Mentor?
• YOU are responsible for finding a mentor!
• Choose a mentor based upon your needs:
  o Advice
  o Accountability (keeping you on target)
  o Network building (finding the right people, enhancing your visibility outside your department or institution)
  o Providing career and research advice
  o Improving communication, clinical or technical skills

Where Can You Find a Mentor?
• In your department
• In areas where you spend most of your time (with others teaching in the same course, working on the same committee, etc.)
• In areas where you need skill development

While it is important to have mentors within your local organization, do not overlook sources in regional or national organizations. For example:
• If you are a pediatric clerkship director, COMSEP (the national pediatric clerkship director’s organization) can be a rich source of faculty who have years of experience as clerkship directors.
• If you are a general internist in an academic medical center with few other generalist colleagues, the Society of General Internal Medicine (SGIM) could be a very rich source of support and mentors.
Online mentoring resources can help you link up with a mentor. For example, “MentorNet” is an “e-mentoring network that addresses the retention and success of women in engineering, science, and mathematics.” (http://www.mentornet.net)

Some institutions have a formalized system for linking mentors and mentees. For example, Stanford School of Medicine’s Faculty Mentoring program not only helps pair up mentors and mentees, it also provides monthly workshops and meetings to facilitate contact between them. (http://facultymentoring.stanford.edu). This shift from a “dyad” model of mentoring (mentor and mentee) to a “triad” model (mentor, mentee, and organization) is seen as the key to mentoring for the new millennium.  

When looking for a mentor, choose someone who is

- Responsible
- Knowledgeable
- Well-respected and successful
- A motivator
- Supportive

**How do you ask someone to be your mentor?**

- Clarify your needs (what are your specific tasks or needs that a mentor can help you with?).
- Identify possible mentors based upon your needs.
- Ask for a specific task and/or time commitment:
  - “I need to learn about the promotion system and how to prepare myself for promotion. Since you’ve been through it, can you help me?”
  - “You have a reputation as a terrific attending on the inpatient service. I would like to improve my clinical teaching skills. Can you help me?”
  - “I need help in setting priorities and managing my time. You seem to be very successful and organized in handling all your responsibilities. Can you show me how to manage my time more efficiently?”
- Be respectful of your mentor’s time – try to give as much notice as possible. An advance e-mail to your potential mentor would help him or her know the purpose of your request, maximizing the chances of success at your initial visit together.

What can the mentee bring to the mentor?

- Appreciation
- Mutual support in dealing with issues common to both
- Trusted and confidential feedback
- Development of mutually useful collaborations
- Help with clarifying each partner’s goals
- Building the mentor’s reputation
• Career satisfaction

PEARLS TO REMEMBER
• You are responsible for finding your own mentor(s)
• Mentors are the key to
  o Learning about the “culture” of your department, medical school, and other organizations to which you belong
  o Helping you develop new skills after you complete your residency or fellowship training
  o Enhancing your career advancement (promotion, tenure)
  o Achieving job satisfaction in academic medicine

REFERENCES

ADDITIONAL REFERENCE

INTRODUCTION
Teachers who want to contribute to the scholarship of education can find many opportunities within their regular teaching responsibilities to pursue educational research. Well-designed educational research can lead to the scholarly products and papers that support promotion and tenure. Below are some issues to consider when you are planning an educational research project.

BACKGROUND
The most important first step in developing a research project is to formulate a clear, concise, focused research question. Everything else in the project will flow from the question:

- the hypotheses
- the study design (whether descriptive, relational, experimental, or perhaps a qualitative design or mixed design)
- the population you will be sampling
- the variables of interest
- the types of manipulations (if any) you will use
- the outcomes
- the statistical analyses you will perform to determine whether your outcomes are significant

Starting with a well-constructed question will make it much easier to develop a well-designed study, whether on your own or with the help of a more experienced researcher.

DISCUSSION
Once you have formulated your research question, you need to select a research design that will help you answer that question. Educational research can take the form of descriptive studies, relational studies, and experimental studies.

Research Designs
Descriptive studies are exactly that, descriptions of the way things are when you study them. [Example: What percentage of this year’s entering class had previous experience working in a health-care field?] Descriptive studies tell you how things are, not why they are that way.

Relational studies look for relationships between two or more variables. [Example: Do students who have previous experience working in a health-care field have high GPAs in their preclinical years?] Relational studies show
whether and to what degree the variables are related, but not whether a change in one variable causes a change in the other.

True experimental studies are designed to show a causal link, if one exists. [Example: Do students who are taught with Method A have higher UMSLE Step 1 scores than students taught with Method B?] These studies randomly assign subjects to either a control or an experimental group, which theoretically produces comparable groups of like subjects. This often is not feasible in educational settings.

More commonly, educational researchers use quasi-experimental designs, such as pre- and post-testing, or they compare classes made up of nonrandomized groups of students – groups that may not be comparable. These are weaker designs and less useful for prediction, but many do get published in educational journals. Surveys, questionnaires, and self-assessments, such as Likert scales or other types of scales also are used frequently in educational research.

Measurement
Often researchers will use a variety of measures in the same study. These might include a questionnaire that asks about demographic variables of interest, such as age, gender, level of education, undergraduate GPA, and place of birth. If the researcher hypothesizes that a student’s preferred learning style will be related to learning outcomes, he might have the subjects complete a self-assessment learning style inventory. He might also have them fill out a Likert-type scale to determine their level of satisfaction with the type of instruction they received. The final grade for the course could be used as an indicator of learning achievement.

Novice researchers tend to underestimate the time needed to construct, validate, and pilot test assessment instruments. Good surveys and questionnaires require careful planning and pre-testing to assure that you are collecting the information you really need. When feasible, use existing measurement tools that someone else has developed and validated, if they meet your needs. A measurement tool needs to be both valid – measuring what you want it to – and reliable – giving similar results over repeat administrations. Invalid, unreliable tools introduce measurement error and your results will be questionable.

Evaluation
Whenever you are planning to make an educational change, consider evaluating its impact on learners. A new course added to the curriculum, a change in existing course content or the way it is presented, implementing a different way of evaluating learners, or a new use of teaching technology all present opportunities for scholarly study. Many research opportunities are lost because the teacher fails to plan ahead. After the intervention is completed,
you must work with the data you have. Plan for evaluation while you are planning your educational change or intervention rather than after the fact. Examples of tools that can be used to measure student impact include

- grades
- questionnaires
- focus groups
- self-assessment forms

**HAC Approval**

Because you are working with human subjects, you will need approval to conduct your research from the Human Assurance Committee (HAC). Depending on your study design, this may be expedited or it may require full approval. Either way, allow plenty of time for this process. If you are gathering data from the subjects, you will need to obtain their informed consent, and the informed consent document will need HAC approval. You do not need informed consent if you are using existing data obtained from publicly available sources and the study subjects cannot be identified individually. Be aware that many journals now require HAC approval before publishing a research study. HAC policies, procedures, and forms are available through the HAC home page at [http://mcg.edu/Research/octc/hac/](http://mcg.edu/Research/octc/hac/). Some other useful references on designing and conducting educational research are listed in the references below.

**PEARLS TO REMEMBER**

- You can incorporate educational research into your regular teaching activities.
- A well-formulated research question is the key to designing good research.
- Do your homework (a thorough literature search) before you do your research.
- Don’t reinvent the wheel; if an existing, validated instrument meets your needs, ask permission to use it.
- Seek advice from an experienced researcher or biostatistician if you need help.
- Your project will take more time and other resources than you think it will.
REFERENCES