Approaches to Effective Preceptor Teaching

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At the end of the workshop, participants should be able to:

- LO1: Describe four major preceptor teaching roles and their associated teaching strategies
- LO2: List the five systematic steps of clinical teaching (“microskills”) using the “One Minute Preceptor” model, explain their rationale, and provide some examples
- LO3: Apply the five steps to your teaching encounters
- LO4: Explain why asking questions as opposed to presenting content should be the dominant preceptor teaching activity
- LO5: Contrast the following question categories: “low level” versus “high level” cognitive; affective; and closed versus open
- LO6: Describe the types of questions that should be avoided
- LO7: Describe guidelines for asking questions effectively
- LO8: Develop questions that can help students understand common clinical problems.
- LO9: Recognize effective and ineffective types and methods of questioning
- LO10: Describe the four components to a teaching script
- LO11: Develop a teaching script
- LO12: Use strategies to promote self-directed learning.

Workshop Outline

I. Preceptor Teaching Roles
II. Systematic Approach to Clinical Teaching
III. Asking Effective Questions
IV. Developing Teaching Scripts
V. Promoting Self-Directed Learning
I. Preceptor Teaching Roles and Strategies

<table>
<thead>
<tr>
<th>Teaching Role</th>
<th>Teaching Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert</td>
<td>Conveys information directly to learner</td>
</tr>
<tr>
<td>Role Model</td>
<td>Articulates thought processes during a real clinical encounter (“think aloud”)</td>
</tr>
<tr>
<td>Coach</td>
<td>Asks the learner to execute a previously modeled skill; asks questions and provides feedback</td>
</tr>
<tr>
<td>Facilitator</td>
<td>Provide opportunities for systematic practice and self-evaluation; asks questions and provides feedback</td>
</tr>
</tbody>
</table>

In response to a student who just counseled a patient taking metformin…

**Preceptor to student:**

“Remember, taking metformin with food minimizes GI side effects. The dosage should be slowly increased 500 mg/day every two weeks.

You should advise patients to avoid taking metformin on an empty stomach and if our patient continues to experience nausea and bloating, you should consider recommending the extended-release tablets versus immediate-release dosage form.”

What role do you think the preceptor is demonstrating?

A. Expert  
B. Role Model  
C. Facilitator  
D. Coach

What role do you think the preceptor is demonstrating?

A. Expert  
B. Role Model  
C. Facilitator  
D. Coach

As an expert, this preceptor is providing information which relates to a specific drug AE.
Student:
fill a prescription for Yasmin. I told her to be careful with her potassium intake, but I couldn’t remember if she should avoid or get extra potassium in her diet. Could you remind me again why this is an issue for this particular oral contraceptive and not others? Can you give me some suggestions about what I should tell the patient next time?”

Preceptor: “First, why don’t we start by having you explain how ACEIs, ARBs, and MR antagonists affect plasma potassium and what is the final common mechanism of this effect?”

What role do you think the preceptor is demonstrating?
A. Expert
B. Role-Model
C. Facilitator
D. Coach

The preceptor is asking the student questions to begin the process of assessing the learner’s prerequisite knowledge

Small Group (5) Activity
#1. When would you, as a clinical preceptor, take the role of an expert to facilitate your student's learning?

#2. When is it important for you to take the role of a role-model when teaching in the clinic?

#3. Which of the teaching roles (expert, role-model, facilitator, coach) do you gravitate towards? Why?

#4. What do you feel is the most challenging teaching role you face as a clinical preceptor?
LO2: List the five systematic steps of clinical teaching (“microskills”) using the “One Minute Preceptor” model, explain their rationale, and provide some examples

LO3: Apply the five steps to your teaching encounters
What is supposed to be the outcome of effective teaching?

- Long-term mastery of the learning objectives

1. Testing (test-enhanced learning)
2. Spacing
3. Provide learning guidance (conceptual frameworks)

Larson DP, Butler AC, Roediger HL. (2009). Repeated testing improves long-term retention relative to repeated study: a randomised controlled trial. Medical Education; 43: 1174-1181


Roediger, HL, Karpine J D. The power of testing memory: Basic research and implications for educational practice. (2006b). Perspectives on Psychological Practice. 1; 181-210

Testing Slows Forgetting

Diagnosis of the Learner
Step 1: Ask question back to student
Step 2: Ask student to justify their answer

Teaching
Step 3: Provide positive feedback
Step 4: Correct mistakes (constructive feedback)
Step 5: Teach general rules

Step 1: Ask Question Back

**Cue:**
stops to wait for your response or asks for your guidance on how to proceed.

**Preceptor:** You ask the learner to state what s/he thinks about the issue presented by the data.

**Rationale:** Asking the learner how they interpret the data is the first step in diagnosing their learning needs. Without adequate information on the learner's knowledge, teaching might be misdirected and unhelpful.

**Examples:**
"What drug do you think is causing this adverse reaction?"
"What do you think are some good baseline tests to run before starting this medication?"

Step 2: Ask for Justification

**Cue:** When discussing a case, the learner gives their answer to the question and looks to you to either confirm their answer is correct.

**Preceptor:** Before offering your opinion, ask the learner for the evidence that s/he feels supports her/his answer. A corollary approach is to ask what other choices were considered and what evidence supported or refuted those alternatives.

**Rationale:** Asking them to reveal their thought processes allows you both to find out what they know and to identify where there are gaps.

**Examples:**
"What were the major findings that led to your conclusion?"
"What else did you consider? What kept you from another choice?"

Step 3: Provide Positive Feedback

**Cue:** The learner has handled a situation in a very effective manner.

**Preceptor:** Take the first chance you find to comment on: the specific good work and the effect it had.

**Rationale:** Learner skills that are not well established need to be reinforced.

**Example:**
"You are right to think that patient needs to be careful with what kind of food they eat with their Sinemet.

Step 4: Correct Mistakes

**Cue:** The learner's work has demonstrated mistakes (omissions, distortions or misunderstandings).

**Preceptor:** As soon after the mistake as possible, find an appropriate time and place to discuss what was wrong and how to avoid or correct the error in the future.

**Rationale:** Mistakes left unattended have a good chance of being repeated.

**Example:**
"You are right to think that patient needs to be careful with what kind of food they eat with their Sinemet. I find it helpful to think about the mechanism of how L-Dopa crosses the blood-brain barrier to remember that protein-rich meals, not carbs, are what can decrease efficacy."
General Feedback Suggestions

1. Descriptive NOT Evaluative
2. Specific
3. Honest and Sincere
4. Relevant
5. Timely
6. Desired by Receiver
7. Based on first-hand observations
8.


Feedback Enhances Learning


Step 5: Teach General Rules

**Cue:** You have determined that you know something about the case which the learner needs or wants to know.

**Preceptor:** Provide general rules, concepts or considerations, and target them to the learner's level of understanding. A generalizable teaching point can be phrased as: "When this happens, do this..."

**Rationale:** Instruction is both more memorable and more transferable if it is offered as a general rule, guiding principle or a metaphor.

**Example:**
“Transporters often can play an important role in how drugs move from one compartment to another. Competition for transporters with dietary products can affect absorption as well as entry into the target organ, reducing efficacy. Let’s draw a quick schematic”
Provide Guidance for Learning

- Helps learner transform the new capability into a code for later recall
- When teaching about processes try to include pictures, figures, charts, mnemonics, video clips, and demonstrations
- Sometimes abstract or schematic representations are more effective
- Example:
  - boxes and arrows to help understand negative feedback loops (e.g., endocrinology)


Large Group Activity

Video A

Video provided by Arienne Teherani, UCSF School of Medicine

Preceptor Rating

One Minute Preceptor Precepting (Pneumothorax clinical scenario)

- OMP: Ascertain the student’s diagnosis
- OMP: Assesses student’s underlying clinical reasoning
- OMP: Assess student’s fund of knowledge
- OMP: Teach the student a few key points for use in future patient care
- OMP: Provide positive feedback to reinforce what was done well
- OMP: Provide constructive feedback with recommendations for improvement
- OMP: Involve student in the decision-making process
- OMP: The efficiency of this teaching encounter
- OMP: The overall effectiveness of this teaching encounter
- OMP: Overall satisfaction with the teaching encounter

Teherani A et al. Student perceptions of the one minute preceptor and traditional preceptor models. (2007). Medical Teacher. 29 (4): 323-7

Video B

Video provided by Arienne Teherani, UCSF School of Medicine
Preceptor Rating

One Minute Preceptor Precepting (Pneumothorax clinical scenario)

LO4: Explain why asking questions as opposed to presenting content should be the dominant preceptor teaching activity
LO5: Contrast the following question categories: “low level” versus “high level”; cognitive versus affective; closed versus open
LO6: Describe the types of questions that should be avoided
LO7: Describe guidelines for asking questions effectively
LO8: Develop questions that can help students understand common clinical problems.
LO9: Recognize effective and ineffective types and methods of questioning

Teherani A et al. Student perceptions of the one minute preceptor and traditional preceptor models. (2007). Medical Teacher. 29 (4): 323-7

III. Asking Effective Questions

- Teaching is often thought of as the activity of telling students something, or giving them information.

- Asking good questions --not telling--should be the dominant activity of clinical instruction.

- to:
  determine learning needs
  stimulate thinking
  transfer responsibility for learning to the learner
  model essential professional behavior
  enhance long-term retention?
Cognitive Questions Categories

Low-level questions:
Recall of facts, concepts, principles, or definitions.
Example: "What is the MOA of lisinopril?"

While this type of question can be useful to help you assess a student's understanding of basic facts, health professions educators often focus too much on lower-level cognitive performance.

Higher-level questions:
Analyze, synthesize or evaluate information and to form judgments.
Example: "What would you recommend with regard to LABA use as monotherapy in this patient?"

Such questions enable the preceptor to see how learners use their knowledge to make decisions.

Affective Questions

Helps students identify their own attitudes and feelings and conveys the preceptor's attitude that affective issues are important in clinical work.

For example:
"How did you react when this patient became sad and tearful?"
"What do you think are the reasons for your anger toward Mr. Smith?"

Questions Categories

Closed questions
• Tend to be narrow in scope, have one correct answer, and often elicit short, concrete responses
• Can be used to prompt students to:

1. Recall facts: "What is the relationship between thyroid hormone and TSH?"
2. Prioritize: "What is the most important issue for this patient?"
3. Converge information: "Why is influenza more common in winter than in summer?"
4. Challenge their ideas: "What data support your conclusion?"

Questions Categories

Open questions
• Allow a range of possible answers, invite reflection and speculation, and stimulate problem solving.
• Require higher-level cognitive performance and elicit longer answers.
• Expose student's thinking processes and level of expertise.
• Allow students to display what they know and don't know.
• Should be used as often as possible, and in a sequence that helps students build their understanding.
• Open questions can be used to prompt students to:

1. Diagnose: "What is your interpretation of the elevated CPK?"
2. Decide: "What interventions do you suggest?"
3. Hypothesize: "Would you change your therapeutic recommendation if this patient were taking a bile acid sequestrant rather than a statin?"
4. Challenge: "What leads you to that conclusion?"
4. Summarize: "What are the important issues that emerged today?"
Questions to Avoid

Leading questions:
Suggests the particular answer the preceptor is looking to have confirmed
"You understand why this drug is inappropriate, don't you?"

"The patient’s sexual dysfunction is obviously from the fluoxetine, wouldn't you agree?"

Questions that humiliate or put students on the spot:
“Wow, how did you pass therapeutics not knowing that ACEIs and ARBs can increase plasma K+?”

Guidelines for Asking Questions Effectively

1. Allow sufficient "wait time."
Wait at least 3 seconds (1) after asking the question and (2) after the student stops speaking.

2. Ask one question at a time
A barrage of questions is confusing.

3. Ask questions that will help the learner take better care of patients
Think about the questions you pose to yourself as you care for your patients.

4. Maintain a noncommittal stance
Avoid unintentionally conveying your desired or expected response, which can reduce intellectual risk-taking.

Small Group Activity

- One of you will play the role of an average student
Remember that students make mistakes and modify your responses accordingly! Don't offer correct answers too freely, or the preceptor will be left with nothing to do.

- One of you will play the role of preceptor
Use as many of the microskills as you can - try for at least the first two (getting a commitment and probing for evidence). Remember that these skills are counter-intuitive and may not be part of your regular teaching style. Thus, you will need to be purposefully aware of the microskills as you practice them.

- Three or more of you will observe the preceptor
Take brief notes on the dialogue, cues and responses. What microskills are being used? What suggestions can you make for improvement?

Student Case Presentation to Preceptor:

B.K. presented to the outpatient clinic with an annoying productive cough after five weeks of lisinopril therapy. He does report an improvement in symptoms. His examination reveals no evidence of wheezing, with only a few crackles, his neck veins are only minimally elevated over normal, his ankle edema is 1+, and his weight is stable. All lab values are normal.
Activity Logistics

1. Choose roles.
2. Role play for 3 to 5 minutes
3. Begin with the “learner” presenting the case to the preceptor
4. The "preceptor" should then try to use the five steps of the One Minute Preceptor model to assess, instruct and provide feedback.
5. After completing the simulation activity, allow the "preceptor" to critique the role play first, then the "learner," then the “observers”.

One-Minute Preceptor (OMP)

Diagnosis of the Learner
Step 1: Ask question back to student
Step 2: Ask student to justify their answer

Teaching
Step 3: Provide positive feedback
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Step 5: Teach general rules


Effective Questioning Self-Evaluation

- Set aside consistent time to do this exercise.
- Complete it as soon as possible after a teaching encounter with a student.
- Using the checklist as a guide, reflect on how you used questioning.
Effective Questioning: Example

Student's presentation: "I have a 57-year-old man with a history of schizophrenia and hypertension. He is taking olanzapine and HCTZ. His plasma glucose and lipids are abnormal. This is something we see with diuretic drugs so we should probably switch to a different antihypertensive.

Preceptor question: “No, this is obviously from the olanzapine, wouldn't you agree?”

Is there anything wrong with this question?
Rephrase the ineffective question below:

The question, “No, this is obviously from the olanzapine, wouldn't you agree?” is ineffective because the preceptor is telling, not asking. The student is told the correct answer, but doesn't learn why it is the correct answer.

Also, the preceptor does not learn anything about the student's reasoning regarding this patient.

A more effective question would be:
“In our patients taking second-generation antipsychotics, list some important monitoring parameters and their rationale”
LO10: Describe the four components to a teaching script

LO11: Develop a teaching script

IV. Developing Teaching Scripts

• A *script* is an example of one tool some preceptors use to organize their knowledge about certain teaching topics.

• Made up of 4 major parts

IV. Developing Teaching Scripts

1. **Goal:**
   Statement of the preceptor's teaching goals for a particular case.

2. **Teaching Points:**
   A short list of the **most relevant issues** for a particular drug’s indication, AEs, drug-drug interaction, therapeutic approach to a disease state, etc...

3. **Teaching Strategy:**
   The **preferred method of teaching** a particular case.

4. **Common Learner Problems:**
   Statements of the problems students generally encounter in a case.

Teaching Script Example

**Goal:** Recall the drugs that can be used to slow the progression of systolic heart failure

**Teaching Points:**
Cardiac remodeling and drug targets
Clinical studies

**Teaching Strategy:** Interactive chalk talk using Socratic method

**Common learner problems:** Students forget MR antagonists and include digoxin
LO12: Use strategies to promote self-directed learning.

V. Promoting Self-Directed Learning

Definition:

Students assume responsibility for their own learning (including assessment of their learning needs, development of personal learning plans, self-assessment of the level of their knowledge, skills, attitudes, and values, and their achievement of desired competencies and outcomes).

Self-Directed Learning in ACPE

Standard No. 11: The college or school, throughout the curriculum and in all program pathways, must use and integrate teaching and learning methods that…and enabling students to transition from dependent to active, self-directed, lifelong learners.

Standard No. 12: Professional pharmacist competencies that must be achieved by graduates through the professional degree program curriculum…. outcome statements must incorporate the development of the skills necessary to become self-directed lifelong learners.

Guideline 17.3
Admissions criteria, policies, and procedures should take into account ….that support the student's potential to become a self-directed lifelong learner.

Activities to Promote Self-Directed Learning

• Model the attitudes and habits of life-long learning, e.g., talk to students about current problems in your own practice and demonstrate the methods you use to solve them.

• Ask students to prepare written learning plans or contracts, specifying learning objectives, resources and strategies, evidence of accomplishment, and criteria for evaluation.

• Assign projects that require students to set their own direction.
• Identify and organize available learning resources to help students choose appropriately from the vast array of potential sources of information.

• Emphasize and demonstrate critical appraisal of the literature.

• Encourage peer teaching when you have more than one student at a time.

• Establish learning networks or study groups, e.g., journal clubs, and encourage students to attend with you.

• Meet with students individually to provide guidance and feedback.

• Ask students to assess their own performance.

At the end of the workshop, participants should be able to:
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Final Thoughts

Effect of Faculty Development Workshops

Table 2. Ratings of 57 Residents by 120 Interns and Medical Students at the University of Michigan Comparing Pre- and Postintervention Ratings in Intervention and Control Groups

<table>
<thead>
<tr>
<th>Domain</th>
<th>Item</th>
<th>Control Group</th>
<th>Intervention Group</th>
<th>Mean Difference in Change Between Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commit</td>
<td>Ask for diagnosis</td>
<td>3.94</td>
<td>3.83</td>
<td>0.11*</td>
</tr>
<tr>
<td>Commit</td>
<td>Involves in decision making</td>
<td>4.18</td>
<td>4.21</td>
<td>0.20</td>
</tr>
<tr>
<td>Prove</td>
<td>Assessed for my reasoning</td>
<td>4.18</td>
<td>4.06</td>
<td>0.12</td>
</tr>
<tr>
<td>Prove</td>
<td>Evaluated my knowledge</td>
<td>3.89</td>
<td>3.70</td>
<td>0.19</td>
</tr>
<tr>
<td>Rules</td>
<td>Taught general rules or praise</td>
<td>4.14</td>
<td>4.09</td>
<td>0.05</td>
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<tr>
<td>Feedback</td>
<td>Gave positive feedback</td>
<td>4.12</td>
<td>4.03</td>
<td>0.24</td>
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<tr>
<td>Feedback</td>
<td>Gave negative feedback</td>
<td>4.12</td>
<td>4.03</td>
<td>0.24</td>
</tr>
<tr>
<td>Feedback</td>
<td>Explained why I was correct/incorrect</td>
<td>4.18</td>
<td>4.06</td>
<td>0.20</td>
</tr>
<tr>
<td>Feedback</td>
<td>Offered suggestions for improvement</td>
<td>3.77</td>
<td>3.64</td>
<td>0.13</td>
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<tr>
<td>Feedback</td>
<td>Gave feedback frequently</td>
<td>3.84</td>
<td>3.44</td>
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<tr>
<td>Overall</td>
<td>Physical-motor skills</td>
<td>3.01</td>
<td>3.08</td>
<td>0.07</td>
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<tr>
<td>Overall</td>
<td>Work rounds organization</td>
<td>3.96</td>
<td>3.94</td>
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<tr>
<td>Overall</td>
<td>Work rounds efficiency</td>
<td>4.12</td>
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<tr>
<td>Overall</td>
<td>Motivate you to do reading</td>
<td>3.86</td>
<td>3.98</td>
<td>0.12</td>
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<tr>
<td>Overall</td>
<td>Overall teaching effectiveness</td>
<td>4.10</td>
<td>4.00</td>
<td>0.10</td>
</tr>
</tbody>
</table>

* Significant at P < .05 using t-tests for mean change in teaching ratings.

Contact me if you have any questions

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