

Residents as Teachers

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The Adult learning theory (Malcolm Knowles)

Five assumptions about adult learning:

- Adults are independent and self directing
- They have accumulated a great deal of experience, which is a rich resource for learning
- They value learning that integrates with the demands of their everyday life
- They are more interested in immediate, problem centered approaches than in subject centered ones
- They are more motivated to learn by internal drives than by external ones

The principles of adult learning theory:

- Establish an effective learning climate, where learners feel safe and comfortable expressing themselves
- Involve learners in mutual planning of relevant methods and curricular content
- Involve learners in diagnosing their own needs—this will help to trigger internal motivation
- Encourage learners to formulate their own learning objectives—this gives them more control of their learning
- Encourage learners to identify resources and devise strategies for using the resources to achieve their objectives
- Support learners in carrying out their learning plans
- Involve learners in evaluating their own learning—this can develop their skills of critical reflection.

A Guide to Maximizing Learning in Small Groups

If you give a man a fish, he will eat it and soon be hungry. If you teach a man to fish he will never be hungry (Chinese Proverb)

Fundamentals:

- Introduce yourself to the students and learn each student's name. Use first names when addressing each other.
A man's name is to him the sweetest and most important sound in any language (Dale Carnegie)
- Arrange the seating in a circle so that each student can maintain eye contact with the other students.
Pressed into service means pressed out of shape (Robert Frost)
- Seat the more talkative students opposite the more quiet ones
- Learn the students' concerns about the work of the group. i.e., is attendance required? Exactly what are we responsible for? Exactly how will we be evaluated?
- Disturbances and excitements must take precedence. If they are ignored you will lose the student. She/he will turn off.
 - Find out early what the students' interests are in relation to the subject matter. Ask them to write their interests down. Ask each student to elaborate on their specific interests. Invite the students to enquire about each other's interests.
 - Make the subject relevant to the students' interests. If you don't they will forget it all. Use metaphors and stories whenever it is applicable.
An effective leader establishes objectives that help individuals reach their personal goals (L. Peter)
- Learn how knowledgeable the students are about the subject matter (no matter how many "prerequisites" they may have taken). Bring the less knowledgeable students up to the level of the more knowledgeable ones before proceeding further. Encourage peer teaching at this early stage.
- Be enthusiastic about the teaching session. Enthusiasm is contagious.
Nothing great was ever achieved without enthusiasm (Emerson)
- You may initiate a discussion by setting a problem, by asking an open-ended question, or by beginning with a controversy. Discussion is hindered when you ask questions that have "right" answers. Invite them to speculate. Allow them to play with ideas.
Learning depends on the process of discovery (Ruth C. Cohn).
- To increase participation, talk less and listen more.
- Do not make decisions for the group. Decisions should be made co-operatively through discussion. This increases interest and involvement.
- Assign reading tasks periodically as they become relevant to the topic under discussion. Especially for unanswered questions, ask one of them to search for the answer and present to the group in next meeting.

- Allow the group freedom to progress at a pace comfortable to them and not to you.
He who treads softly goes far (Chinese Proverb)
- Clarify the goals or objectives for each teaching session. Is today's goal subject matter mastery? Or is the goal to solve a problem? Or is the goal to discuss an issue?
He flung himself from the room, flung himself upon his horse and rode madly off in all direction (Stephen Leacock)
- Do not set yourself up as an authority (even though you may be one). This produces anxiety, discourages participation and invites resentment. Be learner centered rather than teacher centered.

The fish has no rights in the Cormorant's beak.

- Listen carefully to each student in order to learn their unique frame of reference. Half the time what you hear is not exactly what the student means. Ask the speaker to elaborate.
There is something that is much more scarce, something far finer, something rarer than ability. it is the ability to recognize ability. (E. Hubbard).
- Don't rush in order to cover all the course content. If you do they will quickly forget it. Don't be concerned if all the content isn't covered. It is more important to be effective than efficient.
That carpenter is not the Best who makes more chips than all the Rest. (A. Gutterman)
- Use praise often. Praise builds confidence and enhances desirable behaviors.
- Never criticize student in front of others. Criticism damages a person's ego but does not stamp out undesirable behavior.
- Regard your students as mature, as individuals, and as experts in areas in which you are not.
Every man I meet is in some way my superior; and in that I can learn of him. (Emerson)
- Allow periods of silence to occur. The students may be thinking!
Deliberating is not delaying (Ecclesiasticus)
- Be careful in addressing negative points or mistakes , try to use " it would be better if you " .

Techniques for effective facilitation in group discussion:

- Ensure that group members have an agreed set of ground rules—for example, not talking at the same time as another group member
- Ensure that the students are clear about the tasks to be carried out
- When you present a question don't answer it yourself or try to reformulate it—count to 10 silently before speaking again

- When you have something you *could* say (which could be most of the time), count to 10 again
- Look round the group both when you are speaking and when a student is speaking. That way the students will quickly recognize that they are addressing the group rather than just you. It will allow you to pick up cues from those who want to speak but are either a bit slow or inhibited

Planning the structure of a small group discussion:

Step 1:

Consider what you want the students to learn or achieve - in other words, what the learning outcomes should be (for example, students will be able to identify and competently use three different general strategies for solving patients' problems).

Step 2:

Choose a suitable set of group tasks to deliver the desired outcomes. For example:

- The group is given a problem to solve
- The students have to monitor the problem solving strategies that they are to use
- They then share their findings and compare them with research evidence
- They draw up a classification of the findings

Step 3:

Decide how to organize the small group. Your tasks are to prepare any materials, explain and check agreement on the tasks, monitor the development of the tasks, and control time boundaries.

QUESTIONING AS A TEACHING TOOL

Tell me, and I'll listen.

Show me, and I'll understand.

Involve me, and I'll Learn (Lakota Indian saying)

1. RECALL QUESTIONS

Recall questions are used when you want the learner to recall facts (scientific, medical, patient information, skills). Students or interns who are just beginning to develop clinical reasoning skills (in a particular field) may initially only be able to answer recall questions.

Although knowing the answers to these types of questions is often critical, we should challenge them to analyze, synthesize and apply as well.

Example: What are the 3 most common causes of cholecystitis?
 Explain the correct way to examine the abdomen?
 What is this patient's bilirubin level?

2. ANALYSIS/SYNTHESIS QUESTIONS

Analysis and synthesis questions require the learner to demonstrate understanding of a topic versus being able to simply present a list of facts. The learner is able create a context into which the individual pieces of data fit. They must apply deductive reasoning and logic to answer these questions.

Example: How can we discriminate between the diagnostic possibilities we just listed?
What factors are influencing your choice of diagnoses?
How do the patient's various symptoms relate to each other?

3. APPLICATION

You are asking the learner to apply what they know (information or understanding) to a specific patient. You can ask them to apply their knowledge, skills, or attitudes to the management plan, diagnosis, procedure, etc. of a particular patient.

Application questions can be recall-application or analysis/synthesis-application questions.

Example: How will you treat this patient's pain?
How will you know when you have confirmed your diagnosis?
Can you show me the techniques you would use to examine this patient for ascites?

4. SELF ASSESSMENT

Self assessment questions require learners to assess themselves at every level: Their basic knowledge, their ability to synthesize data (for diagnosis or plan), their ability to apply knowledge, their technical skills and their attitudes.

Example: Do you think you have enough experience to deal with this patient?
Do you think you understand the pathophysiologic mechanisms of DKA?
How would you handle this same scenario if presented with it again?

All types of questions can assess Knowledge, Skills or Attitudes. All questions can be open or closed ended.

Key point about all types of questions:

1. Remember to wait for the answers to your questions. Try to count till 5.
2. Try not to ask a question that requires a yes or no answer. If you do, you may need to ask some probing questions – How did you come to that conclusion?
3. Encourage resident to resident (or student to student) interaction. What do you think about Dan's idea?
4. Don't overuse any one technique, including questioning.

Bloom's Taxonomy of Questions:

- **KNOWLEDGE:** What are the three causes of...?
- **COMPREHENSION:** Explain the.... What can you conclude....?
- **APPLICATION:** What would happen if...?
- **ANALYSIS:** What are the strengths and weaknesses of...?
How is related to...?
- **SYNTHESIS:** What would be your treatment approach?
What would you do if...?
- **EVALUATION:** For what reason would you favor...?
Do you agree or disagree with this statement?

The Five Microskills for Clinical Teaching

This practical teaching technique, composed of 5 consecutive “microskills” or steps, is based on many of the principles of adult learning. It is a great technique to use when you’re teaching 1 on 1 and when time is limited (it is also called the one minute preceptor).

1. Get a commitment – *What do you think is going on?*
2. Probe for supporting evidence – *What led you to that conclusion?*
3. Teach general rules – *when this happens, do this...*
4. Reinforce what was right – *Specifically, you did an excellent job of...*
5. Correct Mistakes – *Next time this happens, try this...*

Microskill 1: Get A Commitment

This step is necessary when your learner either waits for your response or asks for your guidance.

You want to learn what they are thinking about the case.

Examples of questions likely to get a commitment:

What do you think is going on with this patient?

Why do you think the patient has been non-compliant?

What do you want to do next in the work-up?

What do you want to accomplish during this hospitalization?

Examples of questions not likely to get a commitment:

Sounds like pneumonia, don't you think?

Anything else?

Did you find out which symptoms came first?

Microskill 2: Probe for Supporting Evidence

Once the learner has stated his/her opinion, you want to avoid your instinct to tell them whether you agree or not. Instead, ask questions to find out their reasoning behind their opinion. Their knowledge may not be evident before this step. You are taking the opportunity to evaluate them while allowing them to think through the case.

Helpful Approaches

What are the major findings that led to your conclusions?

What else did you consider?

Why did you rule out that choice?

Non-helpful Approaches

I disagree. Do you have any other ideas?

This seems like a classic case of....

What were her vital signs?

Microskill 3: Teach General Rules

You have evaluated what this learner knows and what he/she needs to learn about. Use this opportunity to provide the learner with some general concepts or principles related to the case.

The learner can then apply these concepts to other patients in the future.

Helpful Approaches

If the patient only has cellulites, incision and drainage are not possible.

You have to wait until the area becomes fluctuant to drain it.

Patients with UTI usually experience pain with urination, increased frequency and urgency, and they may have hematuria. The urinalysis should show bacteria and wbc's and may also have some rbc's.

Non-helpful Approaches

This patient has heart failure and needs diuresis. Don't start the beta blocker now.

I'm convinced that to diagnose cellulites you need an aspiration for culture.

Microskill 4: Reinforce What They Did Right

Your learner may or may not know what aspect of his/her reasoning/management plan/diagnostic strategy/presentation style was effective. Make sure to let the learner know, specifically, what was correct and effective.

Helpful Approaches

You did a very thorough job evaluating the patient's abdominal complaints. Identifying the combination of anemia and blood in the stool was critical in making the diagnosis of colon cancer.

You considered the patient's finances in your selection of drugs. Your sensitivity to cost will likely contribute to his compliance.

Non-helpful Approaches

You are right. That was a good decision.

Nice presentation.

Microskill 5: Correct Mistakes

If the learner has made a mistake or needs improvement, it is crucial to his/her learning that you address it. You might want to let the learner critique him/herself first then offer your specific observations and ideas for improvement.

Helpful Approaches

I agree that the patient is probably drug seeking, but we still need to do a careful history and

physical exam before we make any recommendations.

Non-helpful Approaches

You did what? What were you thinking?

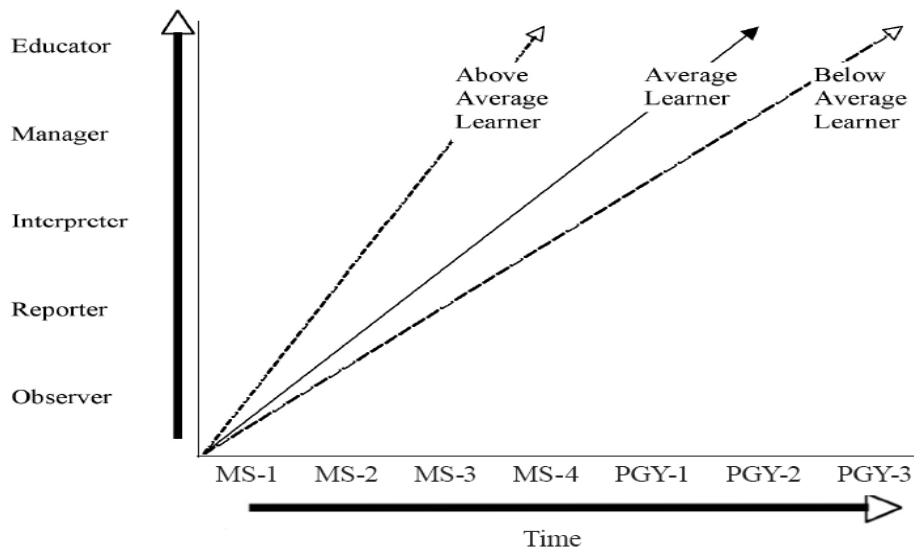
Table 1

Case Example: A Young Woman With a Urinary Tract Infection

RIME Level	Description	Case Presentation by RIME Level	Preceptor Coaching Response
Observer	Bystander	"Ms XX is a 23-year-old female. The nurse reports she is complaining of burning on urination."	"Good. Now, go in and ask the patient herself to describe to you what she is feeling."
Reporter	Understands "what" is wrong	"... and the patient reports dysuria, hematuria, and pyuria for 3 days. She denies nausea/vomiting, fevers/chills, or flank pain. Her vital signs are stable, and her physical exam is normal. She has no abdominal tenderness or flank tenderness. Her urine dip is notable for positive nitrites, blood, and leukocyte esterase."	"Excellent report. Now, "Interpret" these symptoms and signs for me. What do you think could be going on? Let's come up with a differential diagnosis."
Interpreter	Understands "why" it is wrong	"... Based on her symptoms and abnormal urine dip, I believe she has a urinary tract infection. Other possibilities might include bacterial vaginosis, vaginal candidiasis, or an STD."	"Excellent differential diagnosis. Now, how will we proceed to "Manage" the workup?"
Manager	Understands "how" to address the problem	"... I'll complete the workup by sending her urine for microscopic examination and culture. I'll also perform a vaginal exam and obtain specimens for KOH/wet prep, and GC/chlamydia. I plan to treat with drug XX for 3 days."	"That sounds like a first-class workup and an excellent plan. Why would you choose this particular antibiotic instead of drug YY, and why treat for 3 days rather than 5 or 7?"
Educator	Committed to self-learning and education of the team	"This case meets the criteria for a simple UTI, and the latest research indicates that for cases of simple UTI, drug XX is more cost-effective and efficacious than drug YY."	"Good job, you are right on top of the latest literature. Now let's get you a more complicated case"

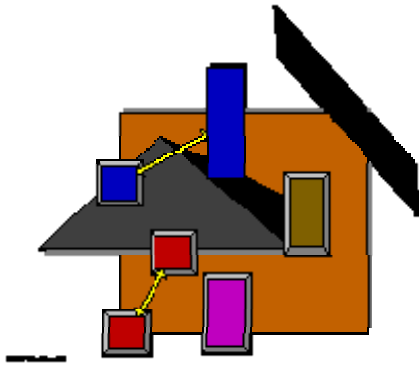
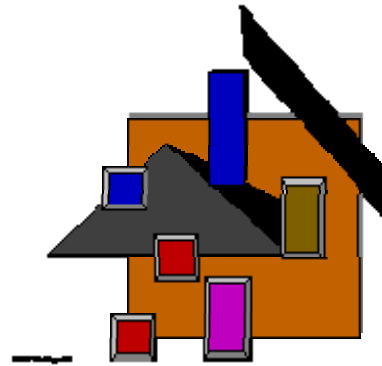
Figure 1

The RIME Developmental Process



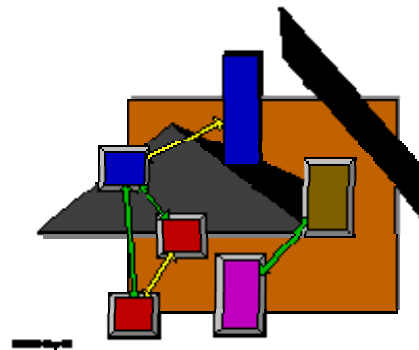
SOLO taxonomy

1 Pre-structural: here students are simply acquiring bits of unconnected information, which have no organisation and make no sense.



2 Unistructural: simple and obvious connections are made, but their significance is not grasped.

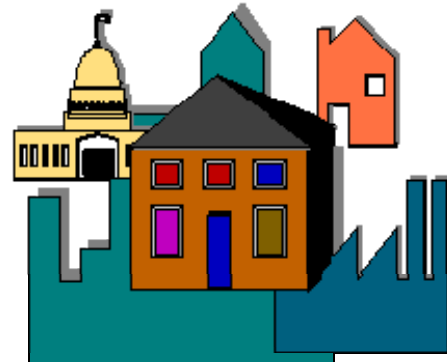
3 Multistructural: a number of connections may be made, but the meta-connections between them are missed, as is their significance for the whole.





4 Relational level: the student is now able to appreciate the significance of the parts in relation to the whole.

5 At the **extended abstract** level, the student is making connections not only within the given subject area, but also beyond it, able to generalize and transfer the principles and ideas underlying the specific instance.



Educational videos:

<http://www.youtube.com/watch?v=PR8Wk1DTvXg&feature=related>

http://www.youtube.com/watch?v=DS_LC39ODLo&feature=related

References:

<http://www.nottingham.ac.uk/pesl/resources/smallgroup/howgroup801/>

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