Measuring Thinking Worldwide

This document is a best practices essay from the international, multidisciplinary collection of teaching and training techniques, “Critical thinking and Clinical Reasoning in the Health Sciences.” Each essay in this set provides an example of training reasoning skills and thinking mindset described by international experts in training clinical reasoning.

Promoting Metacognition by Reflecting with Self Regulated Learning Prompts

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This exercise uses journaling to support self-regulatory learning. Students and clinical interns are practiced in the art of situational analysis and reflective self-evaluation. The goal of the exercise is to develop the habit of meta-cognitively monitoring one’s thinking process, a vital attribute of the accomplished critical thinker. A number of other published papers by Dr Kuiper are mentioned in the reference list.

Clinical instruction session and students

This thinking exercise was developed as a part of a clinical internship for newly graduated registered nurses, and has since been used for new hires in a perioperative orientation program, and with undergraduate junior and senior level nursing students. My application of the technique to medical surgical nursing could easily be adapted to any program or practicing clinician group in the health sciences.

The goal of the clinical instruction session

The complexity of any clinical scenario may overwhelm the student or novice clinician who is learning to practice in the health sciences. This exercise focuses on fostering growth in metacognition, a key critical thinking skill necessary

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for clinical reasoning and practicing the skills of reflection as a learning strategy (Brookfield, 1987; Facione, 1990). In developing this exercise I had several goals in mind. First, I wanted to apply what I knew of self-regulated learning strategies to optimally influence novice clinician’s cognitive processes during a time when they were learning new skills in the clinical setting. Second, I wanted the exercise to promote recall and reflective thinking to maximize learning gained through practice experience. Finally I wanted to promote critical thinking skill acquisition. All of my goals could be met through the use of a structured self-regulated journaling exercise where the prompts serve to create habits of thinking that foster efficient and effective problem solving. These prompts can be used with individuals, or as a guide for focused debriefing with a group of students or clinicians.

**Learning objectives**

Student interns (or novice clinicians) who participate in this reflective journal exercise will meet the following learning objectives:

- By reflectively examining their sense of self-efficacy, goals, knowledge sources and affective reactions, they will be able to self-evaluate, organize, monitor and correct their thinking processes.

- By observing their performance, thoughts and reactions, they will be able to motivate themselves to improve learning and self-efficacy and self-monitor their behaviors toward the attainment of a goal.

- Gain the ability to structure the contextual environment and social interaction as a background for metacognitive reflection and the monitoring of other critical thinking skills.

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**Figure 1: Reflective Self Regulation in Nursing**

- **Environmental Self-regulation of Skills/Activities Physical Context Preceptor/Staff/Patients**

- **Behavioral Self-regulation Self-monitoring**
  - Self-Observation of Performance Knowledge Work Thinking Processes
  - Self-judgment of Improvements Competence
  - Self-reactions

- **Metacognitive Self-regulation Self-evaluation**
  - Self-correction of Goals Self-efficacy Knowledge use Thinking strategies

- **Reflective Self-Regulated Learning in Nursing**

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Journaling Exercise

Optimal benefit from the journal prompts requires an introduction to Self-Regulated Learning Theory and, so I spend a bit of class time discussing this. A full discussion of this model of adult learning is published elsewhere (Kuiper & Hooks, 2004). Figure 1 shows its related concepts and sub-concepts. While one need not necessarily think of the model when writing responses to prompts, understanding the foundation for the prompts assists in attaining more complete responses. It is also crucial to remind the student interns that their responses will not be evaluated for a grade so that they will record thoughts that are spontaneous and uninhibited. I recommend that they do this self-regulated reflection exercise following a clinical experience, recording their responses either in writing or on audio-tape. The focus of the clinical situation can vary, but the reflective journaling should be done as close to the experience as possible to optimize the accuracy of the recall.

In the critical thinking literature, metacognitive reflection involves ‘thinking about your thinking.’ In the middle of the model are the words Interpretation, Analysis, Inference, Explanation and Evaluation. These are the five critical thinking skills identified by the American Philosophical Association’s Delphi Study (Facione, 1990). The descriptions of these skills were derived from the consensus opinion of a multidisciplinary group of scholars. They continue to serve us today as common language for the reasoning skills needed to carry out a reflective self-regulatory exercise to assess progress toward a goal, in this case the progress toward competent clinical practice.

Journaling alone will not necessarily result in forming reasoning habits that involve critical thinking. What is needed are prompts that require the clinician to engage in a thinking process involving interpretation, analysis, inference-making, and self evaluation using the clinical experience as its information base,

How I introduce this exercise

Clinical interns are encouraged to journal after each clinical experience, and at a minimum, one additional time each week, thinking about that week’s clinical experiences. I make the self regulated learning prompts and instructions for carrying out the exercise available in both hard copy and as an electronic e-mail attachment (Figure 2). I also stress that this is an individual metacognitive exercise, not group work and discourage student interns from sharing their work with other interns or with the clinical staff. Sharing thoughts leads to the incorporation of others’ perspectives and negates the purpose of the exercise.

I’ve found that the journaling exercise should continue for a minimum of at least 5 to 6 weeks to develop a consistent behavior of reflective thought and to carry the intern past the period of clinical unit orientation. The work product is a series of journal entries or a “reflective log” of narratives that correspond to the clinical week assignments.
Instructions:

Please respond to each of the prompts as you reflect on your clinical experiences. Reflect on the thinking processes you used in clinical this week. Be sure to fully explain your responses.

1. The problems I encountered in clinical were...
   - I think I solved them by...
   - When I had difficulty I....

2. When I think about my feelings during the clinical experience, I would describe them as...
   - and I handled them by...

3. When I try to remember or understand important facts to solve a problem, I....

4. As I look back, I could have spent:
   - More time on....
   - Less time on....

Reflect on the environmental circumstances you encountered in clinical this week.

5. When I prepare to carry out nursing activities on the clinical unit, I....

6. When I think about particular distractions on the clinical unit, I...

7. When I work with others or need help in the clinical area, I....

Reflect on your behaviors and reactions to the clinical experiences this week. Be sure to give reasons for your self evaluation. Think about examples of your actual thoughts and behaviors and try to write a thoughtful explanation as you do these reflective exercises.

8. My impression my performance in clinical this week was that I....

9. I make sure I complete my clinical assignment by:....
   - and if I need to make changes, I....

10. Reaction to clinical experiences:
    - My reaction to what I liked about the clinical experiences this week was....

11. My reaction to what I did not like about the clinical experiences this week was....

When you have finished journaling, send your journal to your clinical instructor/preceptor for feedback. Don’t forget to put your name on the work. Include a research article that you retrieved and read as a part of better understanding your clinical experience and related best practices. Be sure to discuss how the research article relates to your journal comments.

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**Figure 2: Self-regulation Learning Prompts for Reflection on Clinical Experiences**

**Evaluation and Feedback**

While there is no grade attached to this exercise, faculty are eager for the student to reflect in ways that tap the cognitive and metacognitive thinking skills that will support and strengthen clinical reasoning, build domain specific knowledge stored in long term memory, and create a habitual way of thinking that leads to effective and efficient clinical decision making. Many individuals require a bit of formative feedback and guidance for this to happen. Giving feedback on the specific concepts in the model will reinforce the use of metacognitive thinking and encourage those activities that are missing. This is important since more complete use of the model results in higher-order thinking (causal and comparative statements) and deeper levels of reflection.

The evaluation guide for the self-regulation learning prompts (Figure 3) assists faculty in determining the depth of responses and helps them observe changes in an individual’s journaling over time. Comments show interns the areas where deeper levels of reflection and thought are possible for continued growth. One can also look for evidence of the critical thinking embedded in the narrative responses (analysis, explanation, evaluation, interpretation, inference). Verb tense evaluation gives clues as to whether the student draws on past experiences and/or can plan future activities.

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Script analysis can be used to identify the common/uncommon themes reflected by this group, this student, or in a particular clinical experience.

Table 1 below provides some examples of how I evaluate journal responses. The comments in the column headed ‘Example’ are taken directly from a student’s journal. Common themes of reflective thinking can be extracted and trended over time to show growth and change in student thinking. Critical thinking skills embedded in the responses can also be evaluated and exposed for students to be able to see their proficiency and areas for improvement, Table 2.
**Table 1: Embedded Reflective Thinking Themes**

<table>
<thead>
<tr>
<th>Reflective Thinking Themes</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observations of knowledge work</td>
<td>Next week I will read more in preparation for clinical. I organize in my mind the information I need for the clinical record in order of importance.</td>
</tr>
<tr>
<td>Observations of thinking strategies</td>
<td>I will think of possible solutions and consult with a preceptor or experienced nurse. I focus on what I should be doing.</td>
</tr>
<tr>
<td>Judgments of self-improvement</td>
<td>I am beginning to learn a little regarding diabetes complications. I have been thinking how far I have come.</td>
</tr>
<tr>
<td>Judgments of self-competence</td>
<td>I was disorganized this past week. I feel I need to be more assertive and voice my learning needs to others.</td>
</tr>
<tr>
<td>Judgments of resources</td>
<td>I worked with my preceptor and he was a very good teacher. He was patient and answered all my questions. I have the necessary resources.</td>
</tr>
<tr>
<td>Judgments of social interactions</td>
<td>Working with others is very important, I always try to be a team player. Has been pleasant and helpful, however, I wish I could have been given more independence.</td>
</tr>
<tr>
<td>Self-reactions</td>
<td>I feel slightly more relaxed in the clinical area. I feel a bit overwhelmed.</td>
</tr>
<tr>
<td>Self-correction strategies</td>
<td>Try to have a better attitude. I will try to start fresh. I will try to be more familiar with the types of cases we get on this unit.</td>
</tr>
</tbody>
</table>

**Table 2: Embedded Critical Thinking Skills**

<table>
<thead>
<tr>
<th>Skill</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis</td>
<td>Everyone else was having anxiety as well, and I wasn’t doing any worse than they were. I was able to fill out paper work fairly well.</td>
</tr>
<tr>
<td>Inference</td>
<td>I wish the staff would stop making me feel stupid, with time I will get it. I would like to see them function in other clinical areas. Some staff have not been helpful, they forgot what it is like to start over.</td>
</tr>
<tr>
<td>Evaluation</td>
<td>I felt like I finally took care of a case on my own. I survived five admissions with no problems.</td>
</tr>
<tr>
<td>Explanation</td>
<td>I feel with time I will be able to focus past distractions because…. I am optimistic about my ability to conquer adversity because…..</td>
</tr>
<tr>
<td>Analysis</td>
<td>Read about the medical diagnoses and try to keep an upbeat attitude. I deliberately kept my goals simple and use them as a foundation for improving.</td>
</tr>
</tbody>
</table>
Final comments on this thinking exercise

This self-regulation reflection exercise guides the multidimensional consideration of every aspect of a situation. It trains interns to become more metacognitive in their clinical reasoning in practice on a daily basis. It encourages the monitoring of thinking processes, reactions, and an attention to the environment. Those who practice this exercise become more metacognitive about how they make judgments and revise plans or approaches. By using self-regulated learning strategies, clinicians can reflect on their performance and build on experiences more efficiently, thus promoting competent practice.

References

Although this series focuses on health science content, the techniques are transferrable to all types of training programs and educational projects.

Download other essays in this series for valuable training techniques that focus student learning of reasoning skills and thinking mindset. See Resources on our website.