Improving Students' Patient Care Management Using the Thinker's Guide to Clinical Reasoning

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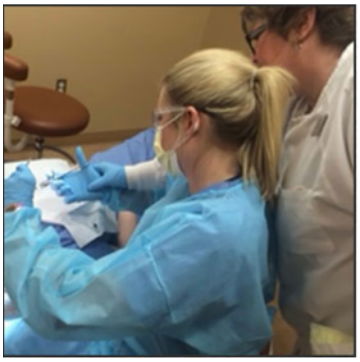

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- The authors report no conflicts of interest associated with this course.

Introduction – Improving Students' Patient Care Management

The Improving Students' Patient Care Management Using the Thinker's Guide to Clinical Reasoning course introduces participants to the basics of the Paul-Elder framework to improve students' patient care management and encourages faculty members to model critical thinking behavior within dentistry.

Course Contents

Overview

The Improving Students' Patient Care Management Using the Thinker's Guide to Clinical Reasoning course helps dental and dental hygiene educators work with students to plan and individualize patient care and communicate more effectively with their patients. Patients have different needs yet often students provide the same oral hygiene instructions to every patient. The provided guide encourages students to think through clinical issues regarding diagnosis, prevention, and treatment of clinical problems. This course introduces participants to the Thinker's Guide to Clinical Reasoning based on the Paul-Elder Critical Thinking Framework. Meaningful case studies provide opportunities for participants to apply the guide's standards and elements of clinical reasoning to improve students' management of patient care.

Learning Objectives

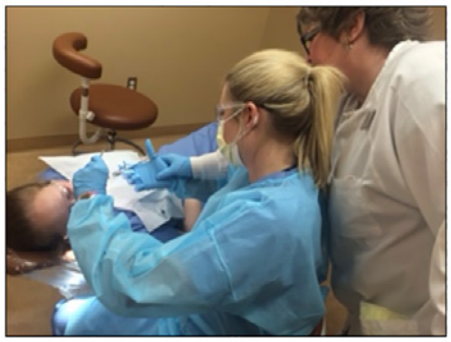
Upon completion of this course, the dental professional should be able to:

- Discuss the Paul-Elder Critical Thinking Framework.
- Identify the different components of the Paul-Elder Critical Thinking Framework.
- Discuss a common language to use during clinical experiences that encourage students to think critically.
- Apply the elements of clinical reasoning, intellectual standards, and traits of the Paul-Elder Critical Thinking Framework to examples that foster optimal patient care.
- Perform a self-assessment using the Paul-Elder Critical Thinking Framework.

Introduction

Dental and dental hygiene students need clinical reasoning skills to plan and individualize patient care and communicate effectively with their patients. As health professionals, we have the responsibility to apply problem-solving processes in decision-making and to evaluate these processes.[1,2] Often, educators are not sure of how to help students improve their clinical reasoning and problem-solving skills. The Paul-Elder Critical Thinking Framework is a helpful model educators can use to guide students through an analysis and evaluation of their thinking and reasoning processes. Applying intellectual standards to the elements of reasoning from the framework allows students to think through the data acquired from clinical assessments and correctly diagnose the patient's unmet needs and subsequently plan the patient's care. When using these components of the model, students begin to develop stronger critical thinking and make reasonable decisions.[2-7]

Some believe critical thinking is inherent in healthcare, and healthcare professionals already do this on a daily basis. Others have questioned the purpose behind the need for detail in modeling and teaching critical thinking to students. The notion that students have "it" or they don't as it pertains to critical thinking is false; it does not come naturally for anyone. Faculty members can be role models to students.[8-9] If students see educators engaging in the critical thinking process, then they are more likely to perceive its value, practice



and develop their skills.[8-9] It is important to emphasize to students that developing and continually enhancing critical thinking abilities will help them in all aspects of life, such as in interactions with future dental patients and dental colleagues. Helping students practice these critical thinking skills is an expectation for all courses and is an essential tool to use to help students become exceptional healthcare providers.[2-11]

Dental professionals see numerous patients each day and every patient has a different clinical presentation. A patient's health, including dental health, is generally never a black and white situation. Students must learn to identify important aspects of the patient's health and combine them with concepts learned from didactic classes. To do this, students must evaluate all clinical assessments to determine the most beneficial care plans. Sometimes in healthcare, this process could result in the life or death of a patient. Hawkins, Paul and Elder state, "It isn't enough to have a strong background in the biomedical sciences or to possess excellent clinical knowledge, nor to know how to conduct a history and physical exam on a patient or even to know how to formulate a differential diagnosis given the signs, symptoms, and test results of a patient. There is still a need to think critically about all the important information pertaining to a particular case and to formulate or synthesize a rational plan of action. Clinical reasoning requires critical thinking skills, abilities and traits which are often not taught in schools and colleges for the health professions."[2] Based on these ideas, the Paul-Elder framework was developed.

Dentistry provides a unifying and unique "language" shared by providers. Using the Paul-Elder critical thinking framework can lend additional terminology to use with common dental terminology and language to enhance critical thinking for students. This specifically designed course introduces or re-familiarizes educators to the Paul-Elder Critical Thinking framework language as well as gives them a few practical teaching strategies that foster critical thinking for students. This course provides a way to incorporate the Paul-Elder framework into didactic and clinical courses to produce the best future dental professionals.

Critical Thinking and Reasoning in Dentistry

Critical thinking is reflecting on thought processes to improve them.[5] Dental and dental hygiene students can benefit from reflective thinking to make reasonable decisions about their patients' care.[1] Along with critical thinking skills, students need to develop clinical reasoning skills. Clinical reasoning skills are important during each step of the process of care. Students use clinical reasoning skills in gathering data for their patient assessments. They are also used to identify the patient's priority from the data. These skills continue through developing and implementing a care plan. They continue through evaluating the effectiveness of the plan and correctly documenting patient care. If educators can help students develop clinical reasoning skills, students should improve their management of patient care.[2]

The Paul-Elder Critical Thinking Framework

One of the goals of dental education is to encourage, develop, and foster the critical thinking abilities of students.[1] The framework can be incorporated into didactic courses and in the clinical setting to foster critical thinking in students. If a student understands how to learn, there is no limit to the amount and type of knowledge the student can obtain throughout their lifetime. Rote memorization of information will only get a student through the first level of Bloom's taxonomy. If a student can only recall information, they will not only fail to grow as a person or a thinker but it will also limit them in their interactions with future patients.[2,8] Critical thinking gives those who use it the tools to make inquiries and to learn in any situation with patients, thereby allowing the practice of patient-centered care.[2]

Critical thinking is a disciplined and intentional process of thinking. It incorporates conceptualizing, applying, analyzing, synthesizing and/or evaluating information that a person acquires from various sources.[5] Sources can include things that a person observes, things that a person experiences daily, things a person

reflects upon, or information that a person gets from conversations that they have had throughout the day. By applying the "higher order" of thinking when evaluating the information, a person becomes more adept at solving problems and coming to conclusions or solutions that are well-reasoned.[5] Ultimately, a dental professional practiced and competent in critical thinking is better able to communicate effectively without judging others while determining solutions to complex problems, such as an oral health problem. Students can practice these skills to prepare for their future in dentistry.

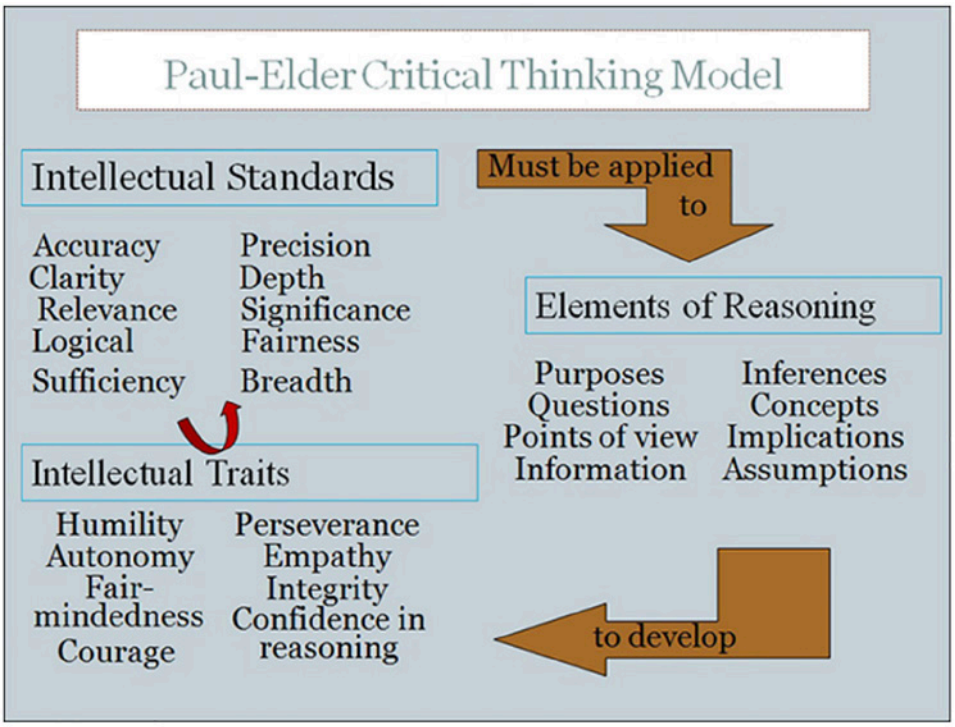
The Components of the Paul-Elder Framework

This course will describe the Paul-Elder framework of critical thinking, although there are others. The Paul-Elder framework is a comprehensive model that offers high quality resources such as online courses and guides. It defines specific cognitive skills including metacognition. It can be used across various disciplines and departments, allowing students to utilize the framework in all of their classes, extracurricular activities and outside the dental hygiene school environment. The Facione and Facione Model is also a comprehensive model and offers many resources. However, the Paul-Elder framework utilizes an everyday language. Models such as Toulnin, Bloom's Taxonomy, and Brookfield Five Phase Model are not as comprehensive and do not offer as many high-quality resources.

There are three parts to the Paul-Elder framework. First, the "Elements of Reasoning" (also known as "Elements of Thought") focus on the building blocks of thinking. This is where the parts of thinking or reasoning are deconstructed. The Elements of Reasoning provide the basis of analyzing the structures present in thought. The second part of the framework is the "Universal Intellectual Standards," which give you the tools to evaluate the quality of the thinking process. Finally, the "Intellectual Traits" are habits of the mind. Intellectual Traits develop as a result of consistently applying the intellectual standards to the elements of reasoning.[2-6]

The model below is a visual depiction of how these three components of the Paul-Elder framework interact (Table 1).[12]

Table 1. Paul-Elder Critical Thinking Model.



The next sections describe the components of the Paul-Elder Critical Thinking framework.[2-6]

The Elements of Reasoning

The main difference between "thinking" and "critical thinking" is that critical thinking must meet a set of standards or criteria as opposed to random thoughts or "thinking" alone. The first step to critical thinking is to identify the "parts" within thought, which will allow identification of the problems within your thinking process.[5] If you can do this, you will be able to solve the problems and progress into higher order thinking, like a critical thinker. This is done by employing the Elements of Reasoning (Table 2).[2]

This interactive tool from the criticalthinking.org website describes the *Elements of Reasoning*.[6]

The following case provides an example in how educators can use the Elements of Clinical Reasoning to help students analyze their thinking process. Interacting with the Elements of Clinical Reasoning diagram and considering the eight different structures in thinking helps the educator develop questions to ask the student to encourage the student to think through the case and arrive at a reasonable decision regarding a clinical problem. This also promotes effective communication between the educator and student and between the student and the patient.

Case scenario: An educator is frustrated because a student failed to show a patient how to use a floss threader under a fixed bridge. No one had ever shown the patient how to clean under the bridge.

Table 2. The Essential Dimensions of Critical Thinking.

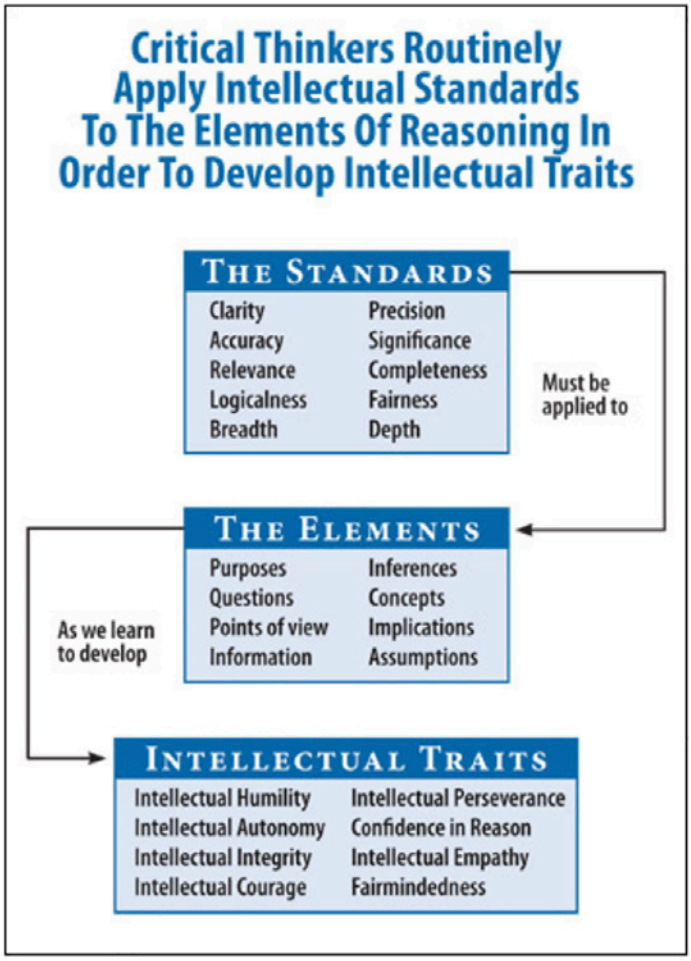
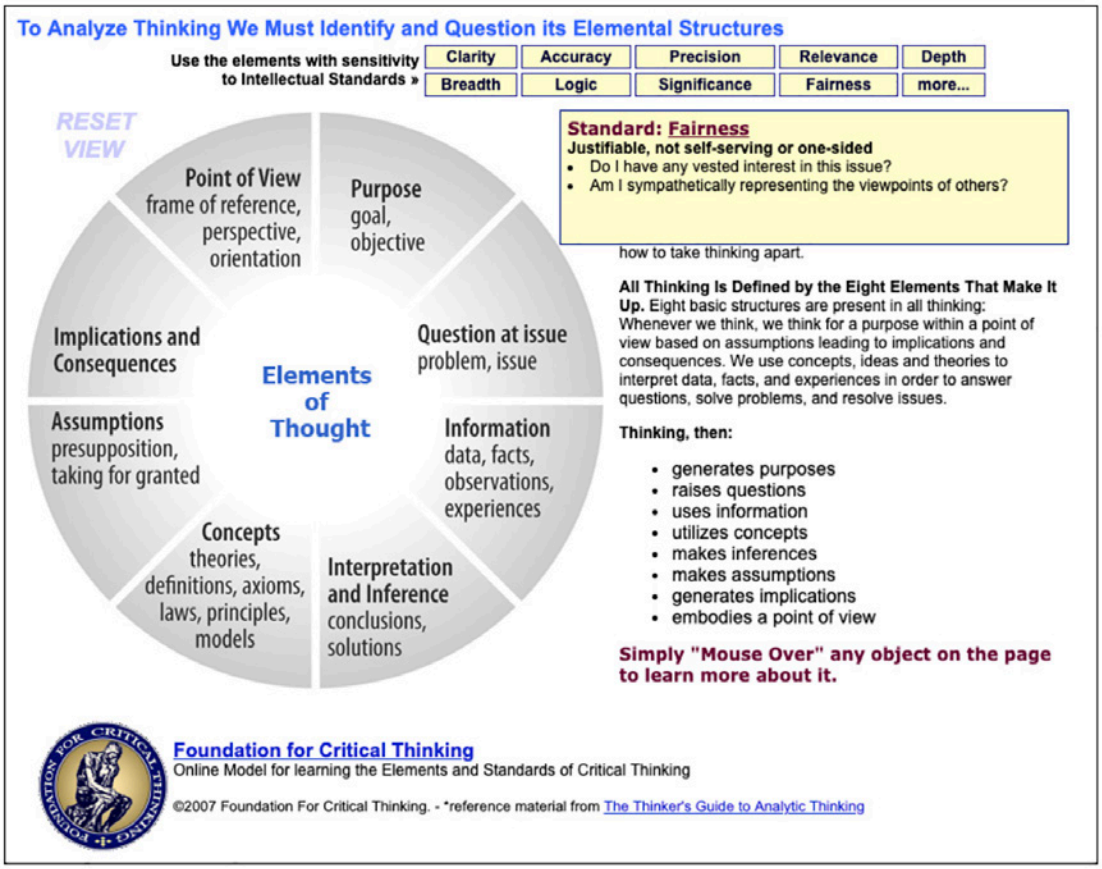


Table 3. Elements of Reasoning.[12]



View Interactive Tool

One approach to clinical teaching is for the educator to ask the student to show the patient how to use the floss threader under the bridge. Using the Elements of Reasoning of the Paul-Elder Framework, the educator would determine that the student lacked the clinical information to address the patient's problem of cleaning the bridge. The educator can encourage a deeper level of thinking by asking the student the following questions from the Elements of Reasoning:

- What key concepts will help you adequately explain or demonstrate how to take care of a bridge to the patient?
- What are the implications and consequences of not adequately explaining or demonstrating the concepts of how to take care of a bridge to the patient?

These questions are helpful in getting the student to think critically about all the information pertaining to the case and planning appropriate patient education.

The Intellectual Standards

Another challenge to overcome in analyzing self-thought is to hold it against the intellectual standards. The Paul-Elder model has nine standards to use to judge reasoning abilities and apply to the Elements of Thought. Explicit use of these standards will render thinking that is clearer, more accurate, on a deeper level and more relevant. These intellectual standards include clarity, accuracy, precision, relevance, depth, breadth, logic, significance and fairness.[2-6] The interactive tool on the previous page introduces the Intellectual Standards. A description of each Intellectual Standard provides a more in-depth look at the standards.

Clarity prompts identification and resolution of any type of confusion that an individual may have, thus enabling communication reflecting

that they truly understand the nuances of the concept or central question at hand. For example, students want their professors to be explicit and very clear in the directions they give for assignments. If the assignment is ambiguous and leaves the students with many questions, the student needs to seek clarity and check their assumptions.

Accuracy is concerned with the truth or correctness of what is said, read or learned. It eliminates any distortion there may be regarding the truth. As dental professionals, we must convey accurate information to our patients so the patients can decide the treatment option that is best for them.

Relevance is about whether something relates directly to the problem at hand or any questions to be answered. If issues or information are not directly related to the central question, the original purpose or objective can be lost. For example, there is no reason to talk about the possibility of getting pregnancy gingivitis if your patient is male. This information is irrelevant to the oral health of a male patient.

Logic asks us to ensure everything fits together, or makes sense, to allow the bigger picture to materialize. If there seems to be a missing part of the whole and conclusions do not flow "logically," then an individual probably needs to gather more information and other points of view to allow a full picture of the concept or central question they are pursuing. For example, dental professionals gain information about a patient's oral health through various assessments completed during the appointment. All of this information should add up to give you a complete picture of the patient's oral health status.

Precision goes hand in hand with logic. All of the pieces of the puzzle and the necessary details are needed to solve the problem or answer the central question. Oral health instructions need to be precise and not generic. The dental professional should tailor the message to the level of detail needed for the patient based on the information gathered throughout the appointment.

Fairness is associated with considering alternative points of view regarding the issue at hand. Considering only one point of view is self-serving or one sided. For oral health education efforts to be effective, a dental professional needs to consider the patient's perspective in addition to their own viewpoint and best practices.

Depth and Breadth are two standards that are commonly confused and used interchangeably. Depth of thought considers all of the complexities and difficulties of an issue whereas breadth incorporates thinking about all of the necessary contexts of the issue at hand. Depth is "deepness" of thought whereas breadth is "width" of thought.

Significance, or importance, is the last intellectual standard. A dental professional needs to strive for non-trivial thinking in their interactions. Healthcare providers need to determine what information is and is not significant. Once they determine what is significant, they can prioritize the significant pieces of information to provide the best, individualized treatment for their patients.[2-6]

The poster below, developed by the University of Louisville's Ideas to Action team, provides pertinent questions that correspond with the intellectual standards (Table 4).[13]

These nine intellectual standards are tools that dental professionals can use in their interactions with patients, students, and colleagues.[2] Using these intellectual standards allows dental professionals and educators to check the quality of their thinking and allows them to be the best they can be.

The Intellectual Traits

If standards of thought are applied, a student has potential for grow into an individual who exhibits the intellectual character described by the Paul- Elder Intellectual Traits. These intellectual traits include intellectual integrity, independence, perseverance, empathy, humility, courage, confidence in reason and fair-mindedness (Figure 1).[2-6]

Table 4. Intellectual Standards.

INTELLECTUAL STANDARDS:

THINKING ABOUT MY THINKING

Clarity	To what extent is my point easily understood by myself and others?
Accuracy	To what extent is my information at hand true or correct without distortion?
Precision	To what extent is my information exact and specific to the necessary level of detail?
Relevance	To what extent does my information and input relate to the issue at hand?
Depth	To what extent am I engaging with the complexities of the issue?
Breadth	To what extent am I considering the issue at hand within the necessary contexts and relationships?
Logic	To what extent do my conclusions follow from the evidence?
Significance	To what extent can I identify and focus on the most important aspects of the issue at hand?
Fairness	To what extent am I able to avoid privileging my own biases?

Poster brought to you by i2a louisville.edu/ideastoaction

Adapted with permission from *The Miniature Guide to Critical Thinking Concepts and Tools* by Richard Paul and Linda Elder, 2012, Tomales, CA: Foundation for Critical Thinking Press. www.criticalthinking.org

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Figure 1. Intellectual Traits.

Intellectual integrity – This trait requires that the standards that guide actions and thoughts need to be the same standards by which others are evaluated. An individual exhibiting this trait treats others with kindness while avoiding harm and outwardly projects this trait. This trait eliminates double standards and hypocrisy.

Intellectual autonomy – This trait requires an individual to use critical thinking tools, such as the Paul-Elder model, and to trust their own ability to reason critically. For example, a dental professional exhibiting intellectual autonomy will ask questions about new products and will critically think through all aspects of the products to determine their implications of use. These individuals do not have to rely on others to do their thinking.

Intellectual perseverance – The tag phase for this trait is "never give up" and encourages individuals to work through any difficulties. A clinician exhibiting intellectual perseverance has to depend on their critical thinking toolkit to keep working through challenging patient issues or unfamiliar situations.

Intellectual empathy – An individual achieves intellectual empathy when they actively put themselves in someone else's shoes in terms of how they think and feel. For instance, a dental clinician may encounter a patient who has a different viewpoint about certain dental preventive agents such as fluoride. A clinician exhibiting intellectual empathy strives to understand the patient's point of view in order to think fully about the situation before responding to it. While the clinician does not have to agree with your patient's point of view, intellectual empathy demands that they accurately represent the thinking of a different view despite what they believe.

Intellectual humility – Individuals exhibiting intellectual humility accept they are human and that they do not know everything. They continue to learn and grow as they age. They acknowledge their limitations. Dental professionals exhibiting intellectual humility are okay to tell patients they are not familiar with a certain product, technique, condition or research behind the product or technique, and acknowledge that they are an ongoing learner in the profession.

Intellectual courage – Individuals with intellectual courage stand up for their beliefs and the conclusions they have fully thought through, especially when it is difficult to do so. Sometimes it will not be a popular or common thought, but if they stand up for their beliefs, change can occur.

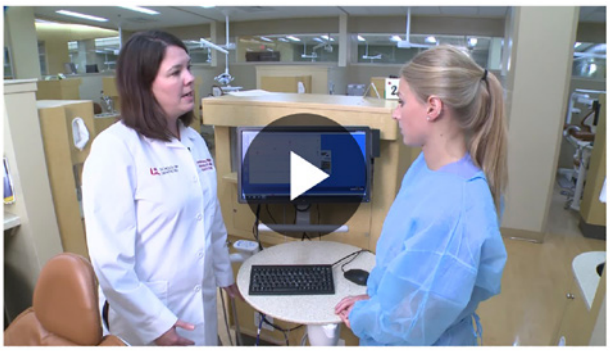
Confidence in reason and fair-mindedness - Utilizing the elements of thought and the standards will lead to confidence in reason and fair-mindedness and requires individuals to look at all of the evidence and relevant points of views and arrive at conclusions that embodies the intellectual traits. This allows dental professionals with confidence in reason and fair-mindedness to trust, as thinkers, to come to sound conclusions for patient care simply by applying the framework to their thought process.

Practical Application

Viewing the clinical situations in the videos allows the participant to observe educators using the components of the Paul-Elder Critical Thinking Framework to improve students' management of patient care.

Planning Treatment

This first video is an example of how to model a conversation with a student using some of the terminology from the Paul-Elder model. The scenario is that the student is having difficulty with planning treatment. As the participant watches the scenario, they should think about how they would have a similar conversation. What keywords from the framework are used? How did the questioning probe the student's thinking process? What are the advantages and disadvantages of using the framework in the clinical setting? How can they incorporate the use of the framework into their clinical teaching?



Video 1. Planning Treatment.
Click on image to view video online.

Discussion questions:

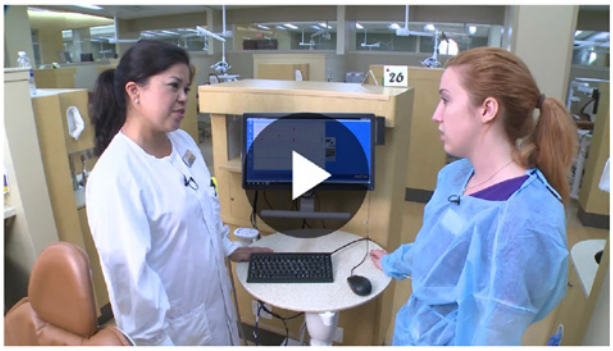
- What keywords from the framework did the educator use?
- How did the questioning probe the students' thinking process?
- What are the advantages and disadvantages of using the framework in the clinical setting?
- How can you incorporate the technique into your clinical teaching?

Similar open-ended questions utilizing the Paul-Elder model in the clinic or in discussion boards help students focus on clinical issues. For instance, educators can ask students what questions they had about their patients before seeing them. They can ask what information will help answer their questions, if the information is relevant in making treatment decisions, and what assumptions are they making about the patient.

While an educator helps a student plan care, they can ask the student what implications a certain treatment has versus another type. What type of information will the student need to be able to propose an appropriate treatment procedure? What points of view did the student consider and what points of view did they not consider? After treatment, an educator can ask if those assumptions were erroneous or true. How did their assumptions impact patient and dental professional interactions? These types of questions will stretch the student to start thinking about their appointments in depth and holistically as opposed to seeing their patient as "just another scaling and root planning case (SRP), another geriatric case, or another pediatric case."

Lack of Motivation

This second video is a demonstration of a clinical conversation with a student frustrated with the patient's lack of motivation to improve their oral health. As the participant watches this video, they should think about the following questions. Which specific elements of thought did the educator use in the interaction? What assumptions did the student make that may have affected their interaction with the patient?



Video 2. Lack of Motivation.
Click on image to view video online.

Discussion questions:

- What specific elements of thought did the educator use in the example?
- What assumptions did the student make that may have affected their interaction with the patient?

When the patient's point of view is considered, communication between the dental professional and patient will improve and the patient is more willing to accept treatment and set goals to improve their oral health. Learning to apply the standards to the elements of thought helps the student check the quality of their interaction with patients.

Medically Compromised

The third video is a demonstration of a clinical conversation with a student planning treatment for a medically compromised patient. As the participant watches the video, they should think about the following questions. What key elements of thought emerged during the example? How were they effective?

Video 3. Medically Compromised Patient.
Click on image to view video online.

Discussion questions:

- What key elements of thought emerged in the example?
- How were they effective?
- What assumption did the student make about the patient's knowledge of monitoring their HbA1c?

Key elements of thought that emerged in the example are elements of purpose, clinical information, concepts, assumptions and implications. These elements of reasoning may lead to changing the patient's therapy based on the patient's risk indicators and the stability of the patient's periodontium. The increasing probe depths may be significant enough to change the therapy from an adult prophylaxis to a scale and root planning. The student also took for granted the patient's knowledge of monitoring their HbA1c level. They assumed the patient understood the meaning of an HbA1c level and the need to monitor it. Asking the student to identify the problem and important information and concepts needed to care for the patient helps them to focus on the important issues to address during the appointment. Questioning the student helps them to reason through the clinical situation and arrive at an appropriate conclusion.

Clinical Scenario

The following clinical scenario allows practice in applying the intellectual standards and the elements of clinical reasoning into student training to improve patient care.

- Patient education clinical scenario with discussion questions:

Patient Education: A female client/patient aged 50 years, presented with a moderate caries risk, xerostomia due to medications, and one cavity. During patient education, the student provided brushing and flossing instructions but did not discuss the role of bacteria in the development of the cavity, the moderate risk for decay, and did not work with the patient to set goals of using fluoride to reduce caries risk. The student did include in the treatment notes that the patient used the modified bass technique when brushing twice a day and did not floss regularly. The student encouraged the patient to floss every day. The dental hygiene diagnosis was sound and functional dentition due to lack of flossing and medications as evidenced by the patient's plaque index of 68% and the patient's report that her mouth was dry throughout the day and night.

  - What is the problem? (Write out the problem clearly and precisely, with details.)
  - The problem is…
  - Using the Paul-Elder Framework, what questions will you ask the student to encourage clinical reasoning?
    - Purpose:
    - Question:
    - Information:
    - Interpretation and Inference:
    - Concepts:
    - Assumptions:
    - Implications and Consequences:
    - Points of View:
- What are the challenges in using the framework and how can an educator overcome them?

  Answers: The problem is the student failed to educate the patient about their risks for caries and periodontal disease and did not collaborate with the patient to set goals to reduce the risks. Using the Thinker's Guide to Clinical Reasoning, the educator can consider asking the student the following questions to address the problem:

  What are you trying to accomplish? What is the central question you are trying to think through to address the problem? What facts, data, or evidence do you need to address the problem? What concepts influenced your thinking? What are you taking for

granted that forms your thinking? What are the connections and conclusion you are making? What are the consequences of not educating the patient of their risks and not helping the patient set goals? What are the relevant perspectives to consider in addressing the problem?

Conclusion

Educators and students need time to practice the use of the Thinker's Guide to Clinical Reasoning to improve students' management of care. Critical thinking is implied within healthcare professions yet must be fostered and practiced continuously to become second-nature.[2] This course provides dental and dental hygiene educators with the basics of the Paul-Elder framework to improve students' patient care management and encourages faculty members to model critical thinking behavior within dentistry.

Course Test Preview

1. What is the rationale for implementing The Thinker's Guide to Clinical Reasoning?
A. Serves as a guide to improve students' critical thinking and reasoning skills
B. Serves as a guide to help students analyze their thinking process
C. Provides a guide to educators to help students to think things through
D. All of the above.

2. Critical thinking and reasoning skills are inherent in all dental professionals. Teaching these skills are not necessary in the clinical teaching.
A. Both statements are TRUE.
B. Both statements are FALSE.
C. The first statement is TRUE; the second statement is FALSE.
D. The first statement is FALSE; the second statement is TRUE.

3. If students see educators modeling and engaging in the critical thinking process, they are more likely to develop their skills.
A. True
B. False

4. What is clinical reasoning?
A. Considering the patient before yourself
B. Thinking about each individual patient
C. Thinking through various aspects of patient care to arrive at a reasonable decision
D. Thinking about the patient needs before providing treatment

5. What characterizes effective faculty instruction in critical thinking?
A. Effective communication with students and patients
B. Well-reasoned conclusions and solutions to problems
C. Vital questions and problems that are formulated clearly and precisely
D. Relevant information about problems and issues are gathered and assessed
E. All of the above.

6. What are the components of the Paul-Elder Critical Thinking Framework?
A. Purpose, Question at Issue, Concepts
B. Intellectual Standards, Elements of Reasoning, and Intellectual Traits
C. Clarity, Accuracy, Precision, and Fairness
D. Assessment, Analysis, and Reflection

7. What is the purpose of the framework's elements of reasoning?
A. To analyze the structures present in thinking
B. To evaluate the quality of clinical reasoning
C. To measure intellectual reasoning
D. To measure critical thinking

8. What is the purpose of applying the intellectual standards to the framework's elements of reasoning?
A. To analyze the structures present in thinking
B. To measure intellectual reasoning
C. To measure critical thinking
D. To evaluate the quality of clinical reasoning

9. If we consistently apply the intellectual standards to the elements of reasoning, we

develop intellectual traits.
A. True
B. False

10. What structure of the framework's elements of reasoning can an educator use to help a student determine the consequences of their thought process?
A. Assumptions
B. Interpretation and Inference
C. Point of View
D. Implications

11. What structure of the framework's elements of reasoning can an educator use to help the student consider other relevant perspectives?
A. Point of View
B. Assumptions
C. Interpretation and Inference
D. Purpose

12. Which question from the Elements of Reasoning can an educator use to help a student determine their assumptions?
A. What conclusions am I coming to?
B. What question am I trying to answer?
C. What am I taking for granted?
D. What information do I need to answer this question?

13. A student expressed to the educator that the patient was not motivated to take care of their teeth due to the patient's high plaque index. Which of the following questions could the educator ask to increase the student's clinical reasoning skills?
A. What assumptions are you making about the patient?
B. How are your assumptions shaping your view point?
C. What brushing and flossing technique will you demonstrate to the patient?
D. A and B

14. A student does not consider previous periodontal measurements when arriving at the patient's periodontal diagnosis. Which of the following questions could the educator ask to increase the student's clinical reasoning skills?
A. What is your patient's periodontal diagnosis?
B. What are the patient's probe depths and clinical attachment levels?
C. Have you gathered sufficient data to reach a reasonable periodontal diagnosis for the patient?
D. Did you conduct a comprehensive periodontal charting?

15. A patient is confused after the student presents their treatment plan. Which intellectual standard, when applied to the elements of reasoning, will help the student identify and resolve any type of confusion that they may have in explaining the treatment plan to the patient?
A. Clarity
B. Accuracy
C. Precision
D. Relevance

16. A student gathered information about the patient's periodontal status during an

appointment but failed to address the patient's periodontal issues correctly. Which intellectual standard, when applied to the elements of reasoning, will help the student with the correctness of what they say or learn?

A. Clarity
B. Accuracy
C. Precision
D. Significance

17. **Which intellectual standard, when applied to the elements of reasoning, will help the student in question #16 determine what is and what is not important?**

A. Clarity
B. Accuracy
C. Precision
D. Significance

18. **A student prepared in advance to discuss a clinical case with an instructor. The student thoroughly reviewed the patient's electronic health record prior to the discussion. Which intellectual trait did the student exhibit?**

A. Intellectual autonomy
B. Intellectual integrity
C. Intellectual empathy
D. Intellectual perseverance

19. **A patient was disappointed in failing to quit tobacco use after the student provided tobacco cessation counseling at the previous appointment. The student let the patient know that for many patients it takes multiple attempts in quitting tobacco use to stop the addiction. Which intellectual trait did the student exhibit during the interaction?**

A. Intellectual autonomy
B. Intellectual integrity
C. Intellectual empathy
D. Intellectual perseverance

20. **A student apologized to a patient for not knowing about a new toothpaste on the market but let the patient know she would research its effectiveness. Which intellectual trait did the student exhibit during the interaction?**

A. Intellectual courage
B. Intellectual empathy
C. Intellectual humility
D. Intellectual perseverance

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Additional Resources

- No Additional Resources Available

About the Authors

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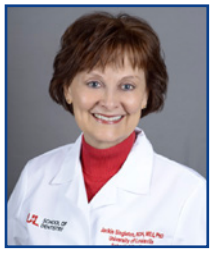

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THANK YOU to all of our actors in these videos!