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Utilization of Critical Thinking Skills Assessment Tools

Presented by: Vikram Pagpatan M.S, OTR/L, ATP

1

Learning Outcomes

After this course, participants will be able to:

1. Identify components of a critical thinking skill assessment tool that can supplement a programs admissions processes.
2. Identify components of a critical thinking skill assessment tool that can improve team building skills.
3. Identify components of a critical thinking skill assessment tool that can serve as tool to measure pre-clinical readiness for students.

2

CONTINUED

Section I: General Overview of Critical Thinking Skills

- Definitions
- Assumptions
- Everyday Applications
- Cognitive Processes & Occupational Demands

3

CONTINUED

Critical Thinking (CT)- Definition

- There are multiple trains of thought in regards to what constitutes the term of critical thinking. Let's briefly discuss two major evidenced supported perspectives on the concept.

4

Critical Thinking by Edward Glaser

- In a seminal study on critical thinking and education in 1941, Edward Glaser defines critical thinking as follows "The ability to think critically, as conceived in this volume, involves three things:
  1. an attitude of being disposed to consider in a thoughtful way the problems and subjects that come within the range of one's experiences
  2. knowledge of the methods of logical inquiry and reasoning, and
  3. some skill in applying those methods."

(Edward M. Glaser, An Experiment in the Development of Critical Thinking, Teacher's College, Columbia University, 1941)

5

Critical Thinking by Edward Glaser

- Requires the ability to recognize problems
- To find workable means for meeting those problems
- To gather and marshal pertinent information
- To recognize unstated assumptions and values
- To appraise evidence and evaluate arguments and to draw warranted generalizations

6

Critical Thinking- National Council for Excellence in Critical Thinking, 1987

- The intellectual disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from or generated by
  - Observation
  - Experience
  - Reflection
  - Reasoning
  - Communication

https://www.criticalthinking.org/pages/defining-critical-thinking/766

7

CT Skills & Cognitive Processes

- In regards to cognitive skills, experts believe the following skills are at the core of all CT processes:
  - Interpretation
  - Analysis
  - Inference
  - Explanation
  - Self regulation

Do these skill sets look familiar in regards to OT/PT clinical reasoning skills?

Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction. Peter A. Facione, principle investigator, The California Academic Press, Millbrae, CA, 1990

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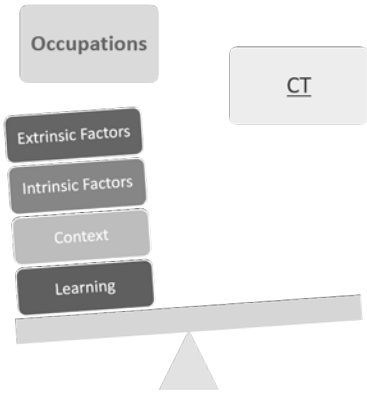
CONTINUED

CT and Occupational Demands



https://www.insightassessment.com/product/health-science-reasoning-package

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CONTINUED

Defining Our Outcomes Through Our Processes

https://www.insightassessment.com/product/health-science-reasoning-package

10

CONTINUED

Overall Conclusion as to What CT Can Be

- Researchers debate whether critical thinking can be learned or if it's a developmental process regulated by motivations, dispositions, and personality traits. Despite differences of opinion, many researchers agree that critical thinking is "Purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as, explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which judgment is based.

https://www.criticalthinking.org/pages/defining-critical-thinking/766

11

Section II: Common Forms of CT Assessments

- Assessments
- Applicable populations
- Factors of validity & reliability
- Outcomes

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CONTINUED

Assessment Tools (An Example of the Most Common)

- Watson-Glaser Critical Thinking Appraisal (WGCTA)
- Cornell Critical Thinking Test
- California Critical Thinking Disposition Inventory (CCTDI)
- California Critical Thinking Skills Test (CCTST)
- Health Science Reasoning Test (HSRT)
- Professional Judgment Rating Form (PJRF)
- Teaching for Thinking Student Course Evaluation Form
- Holistic Critical Thinking Scoring Rubric
- Peer Evaluation of Group Presentation Form

https://www.adea.org/adeacci/Resources/Critical-Thinking-Skills-Toolkit/Pages/CTS-Tools-for-Assessment.aspx

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CONTINUED

Reliability & Validity Properties

- Reliability means that individual scores from an instrument should be the same or nearly the same from one administration of the instrument to another.
- Validity means that individual scores from a particular instrument are meaningful, make sense, and allow researchers to draw conclusions from the sample to the population that is being studied. Researchers often refer to "content" or "face" validity. Content validity or face validity is the extent to which questions on an instrument are representative of the possible questions that a researcher could ask about that particular content or skills.
- Each form of CT assessment has varying degrees of psychometric prosperities in correlation to content validity (face) and reliability.
- Scores of .70 or higher indicate that the instrument has high reliability when the stakes are moderate. Scores of .80 and higher are appropriate when the stakes are high.

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CONTINUED

Applicable Populations

- Health science educational programs
- Graduate & undergraduate students
- Pre-clinical-pre-fieldwork students

- Medicine
- Social work
- Pharmacy
- Physical Therapy
- Occupational Therapy (OT)
- Speech Language Pathology
- Dentistry
- Nursing
- Respiratory care
- Psychology

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CONTINUED

General Outcomes

- Measurement of learning outcomes (curriculum design)
- Admissions, retention, and licensure (program accreditation standards)
- Performance ratings (clinical readiness)
- Leadership attributes, communication styles, and mindsets
- Evaluating training techniques (quality assurance measures)

16

Defining Terms: Analysis

- To identify the intended and actual inferential relationships among statements, questions, concepts, descriptions, or other forms of representation intended to express belief, judgment, experiences, reasons, information, or opinions.

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Defining Terms: Explanation

- Being able to present in a cogent and coherent way the results of one's reasoning. This means to be able to give someone a full look at the big picture: both to state and to justify that reasoning in terms of the evidential, conceptual, methodological, criteriological, and contextual considerations upon which one's results were based.

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CONTINUED

Defining Terms: Inference

- To identify and secure elements needed to draw reasonable conclusions; to form conjectures and hypotheses; to consider relevant information and to educe the consequences flowing from data, statements, principles, evidence, judgments, beliefs, opinions, concepts, descriptions, questions, or other forms of representation

- Generalization of data to a larger population based on an available pool of data

Q1

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CONTINUED

What is the HSRT?

- The HSRT is designed to provide both an overall score for critical thinking and a selection of scale scores to assist the trainer or instructor to focus curricula and training opportunities to address particular weaknesses in both individuals and groups. The HSRT Overall Reasoning Skills score targets the strength or weakness of one's skill in making reflective, reasoned judgments about what to believe or what to do. Scores are also reported for: Analysis, Interpretation, Inference, Evaluation, Explanation, Induction, Deduction, and Numeracy

20

What is the CCTDI?

- The CCTDI measures the "willing" dimension in the expression "willing and able" to think critically. High scores on the California Critical Thinking Disposition Inventory are positively correlated with a strong desire to apply one's critical thinking skills in decision making and problem solving, with leadership, with ego resilience, and with the capacity to benefit from educational training and psychological counseling.

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What is the CCTST

- The CCTST is designed to permit test-takers to demonstrate the critical thinking skills required to succeed in settings where solving problems and making decisions by forming reasoned judgments are important. Used throughout the United States and in many countries and languages around the world, the CCTST has been proven to predict strength in critical thinking in authentic problem situations and success on professional licensure examinations.
- In educational settings the CCTST is recommended for evaluating program applicants, advising individual students, learning outcomes assessment, program evaluation, accreditation, and research

https://www.insightassessment.com/article/california-critical-thinking-skills-test-cctst-2

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Section III: Supplementing Program Admissions Processes

- Grade point averages (GPA)
- Assessment of disposition skills
- Assessment of critical thinking capacities
- Leadership & interpersonal attributes
- Holistic outlook
- Self regulation skills

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Support for OT Admissions Processes

- Holistic interpretation of the client as compared to merit based or academic aptitude
- Provides applicants with a sense of individualization and an opportunity to exhibit or demonstrate their stronger qualities for admissions considerations
- Deters the notion that all undergraduate/graduate admissions processes are based on academic achievement alone as opposed to a broader analysis of the candidates qualifications

Supplements existing data in order objectify the admissions process

Q6, Q7

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CONTINUED

General Admissions Factors (Common Examples-MSOT)

- GPA
- Interview(s)
- Standardized Assessments (GRE)
- On Site Evaluations (Essays, simulations)
- Timeliness/application

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CONTINUED

Measuring Skills of the Healthcare Practitioner at the Admissions Level

Assessment of Critical Thinking as a Predictor of Success in Completion of an Associate Degree Respiratory Care Program. Campbell FP. (2017) Northeastern University

Critical Thinking Disposition and Skills in Dental Students: Development and Relationship to Academic Outcomes. Whitney EM, Aleksejuniene J, Walton JN. (2016) Journal of Dental Education

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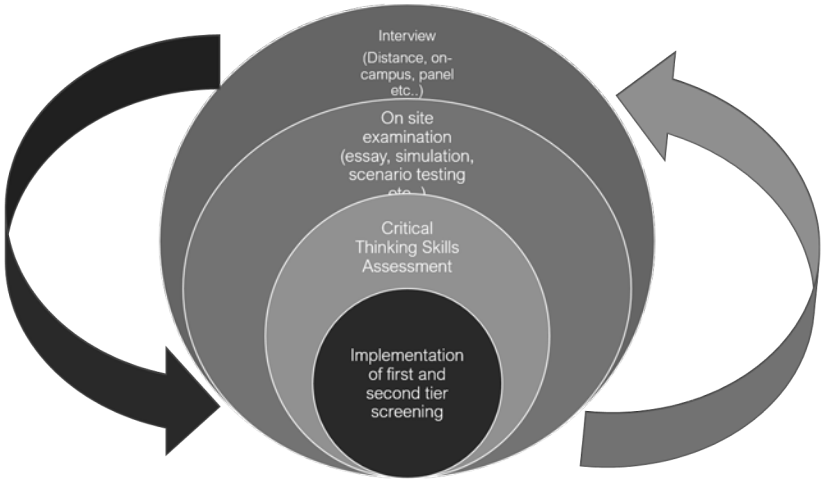
CONTINUED

Example of A Pilot Implementation (Admissions)



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CONTINUED

A Supplement, Not a Sole Indicator of Qualification

- Critical thinking skills are primarily used to supplement an evaluator's objective and supported conclusion in regards to a candidate's qualifications for program admissions. They should not be used as a sole determinant for admissions.

- Should not be used as a sole determinant

Q10

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Section IV: Team Building Skills

- Learning styles
- Communication styles
- Evaluating expertise
- Measuring anxiety
- Time management skills

29

CT Assessments for Team Building can…

- Foster a greater degree of insight and awareness into one's own **interpersonal skills and communication styles**
- Can dwell into how an individual communicates their intelligence and reasoning as well as their own capacity to receive critical feedback
- Facilitates the awareness of learning styles and the most effective techniques to generalize information

Q3, Q8

30

CONTINUED

Measuring Anxiety Levels and Coping Skills

- Critical Thinking Skills are common place in workplace platforms such as
  - Conflict resolution
  - Time management skills
  - Verbal/non-verbal forms of communication
  - Digital communication
  - Emotional intelligence-Social emotional intelligence
  - Workplace etiquette

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CONTINUED

Research Supported Applicability

- *Critical thinking disposition and transformational leadership behaviors* (Godzyk, 2008).
- *Health Policy and Systems: Critical Thinking of Nurse Managers Related to Staff RNs' Perceptions of the Practice Environment* (Zori et al., 2010).
- *Critical Thinking in Dental Students and Experienced Practitioners Assessed by the Health Sciences Reasoning Test* (Hanlon, 2018)

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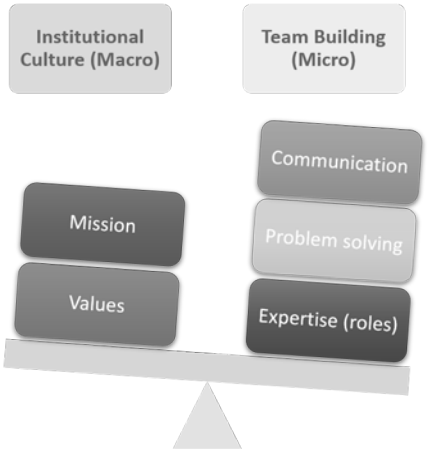
Example of Pilot Implementation (Team Building)



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Section V: Pre-Clinical Readiness

- Fieldwork I and II readiness measurements
- Presence of flexible clinical reasoning skills
- Student's levels of insight and awareness on critical thinking in correlation to fieldwork demands
- Opportunities for reflection and remediation
- Pre and post assessments

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Managing The Demands of Clinical Rotations - Are They Ready?

Time management skills
Communication styles
Clinical competency
Critical feedback appraisal
Documentation demands
Safety
Evaluative skills
Intervention categories
Activity analysis
Etc.…

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Benefits of Measuring CT Skills Prior to Clinicals (FW I & FW II)

- Can increase student insight into their own critical thinking readiness
- Can assist in identifying areas of weakness in correlation to reasoning skills such as analysis, evaluation, interpretation etc..
- Can serve as a predictive factor in supported learning contexts and matching students capacities
- Disadvantage: cost

Q4

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CONTINUED

Role of the Evaluator-CT For Clinical Readiness

- Analyzing data to asses clinical readiness
- Identifying areas of weakness and providing opportunities for remediation
- Engaging the student in self reflection and fostering insight
- Re-evaluating capacities post remediation
- Facilitate learning through technology enriched contexts

Q2, Q5

37

CONTINUED

Disadvantages on the use of CT Tests for Clinical Readiness

- Should not be utilized as a means of supporting the student's own validation of their critical thinking skills

Q9

38

Research Supported Inclusion

- *Association of Health Sciences Reasoning Test scores with academic and experiential performance*. Cox WC, et al. School of Pharmacy, University of North Carolina at Chapel Hill. Am J Pharm Educ. (2014).
- *Examining Critical Thinking Skills in Family Medicine Residents.*Ross D and colleagues. (2016) Family Medicine.

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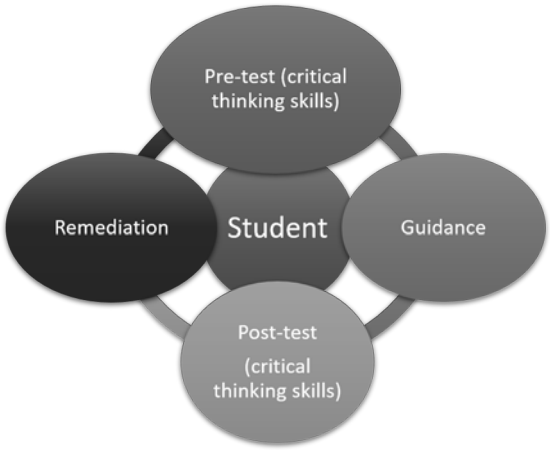
Example of Pilot Implementation (Clinical Readiness)



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Health Sciences Reasoning Test (HSRT) Example Item

- On a damp March afternoon, a woman has a cold and stops at the pharmacy to buy some medicine for herself. She sees dextromethorphan to suppress a cough, pseudoephedrine for nasal congestion, and acetaminophen for fever and discomfort. She also sees a well known and widely advertised combination preparation that mixes all three of these drugs. She has no fever and no cough. Her only symptom is nasal congestion.
- Probably the best choice of medication for her would be?
  A. Dextromethorphan in case she does get a cough
  B. The combination preparation because the box says it is for colds
  C. No medication because it is always better to not take any medications
  D. Pseudoephedrine to ease her nasal congestion

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CONTINUED

California Critical Thinking Disposition Inventory (CCTDI) Example Item

- Three graduate school friends, Anna, Barbara, and Carol, graduated successfully. Being in the same program, the three often worked as a team on group assignments. Anna earned the special recognition of "pass with distinction" when she graduated. Carol and Barbara, although receiving their degrees, did not earn this special honor. A fourth student in the same graduate program, Deirdre, often said that the graduate program was poorly designed and not difficult at all. Deirdre did not graduate and instead was advised by the faculty to withdraw from the program because her work was below acceptable standards. Given this information only, it follows that:

A. Carol and Barbara deserved to receive "pass with distinction" like Anna.
B. Barbara's work in the program was superior to Carol's.
C. Barbara was jealous of the academic success her friend, Anna, enjoyed.
D. Deirdre's work in the program was below the quality of Carol's work.
E. Anna, being successful, will decide to enroll in another advanced graduate program

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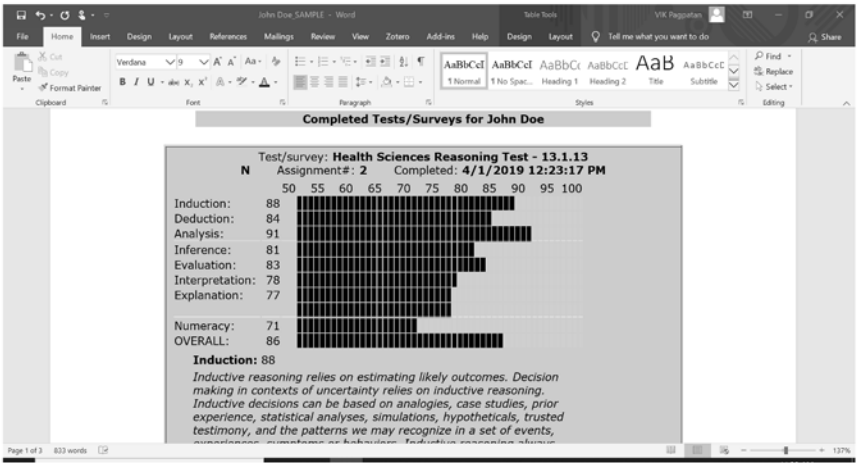
Example of Analytics



Completed Tests/Surveys for John Doe

Test/survey: **Health Sciences Reasoning Test - 13.1.13**
N Assignment#: **2** Completed: **4/1/2019 12:23:17 PM**

50 55 60 65 70 75 80 85 90 95 100

Induction:	88
Deduction:	84
Analysis:	91
Inference:	81
Evaluation:	83
Interpretation:	78
Explanation:	77
Numeracy:	71
OVERALL:	86

Induction: 88

Inductive reasoning relies on estimating likely outcomes. Decision making in contexts of uncertainty relies on inductive reasoning. Inductive decisions can be based on analogies, case studies, prior experience, statistical analyses, simulations, hypotheticals, trusted testimony, and the patterns we may recognize in a set of events,

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CONTINUED

Helpful Online Resources

- https://www.insightassessment.com/wp-content/uploads/ia/pdf/whatwhy.pdf
- https://www.criticalthinking.org/pages/defining-critical-thinking/766
- https://www.adea.org/adeacci/Resources/Critical-Thinking-Skills-Toolkit/Pages/Bibliography.aspx

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Questions

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