

Using the Health Science Reasoning Test to Assess Entry-Level Occupational Therapy Doctorate Students Critical Thinking Skills: An Exploratory Study

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Background

Due to the complexity of healthcare system and patients' multifaceted problems in today's healthcare environment, healthcare professionals' critical thinking and reasoning skills deem to be very important when addressing challenges encountered in daily practice. As such, educators in occupational therapy (OT), one of the healthcare professions, strive to develop and facilitate OT students' critical thinking and reasoning skills in their curricula, such as via analyzing complex information with different ways of thinking and allowing for different solutions to problems. However, there is only a paucity of studies that have explored whether OT curricula can potentially and effectively impact students' critical thinking skills.

Purpose

The purpose of this paper was to explore whether the class of 2014 occupational therapy doctoral (OTD) students' critical thinking skills have changed after they completed the entry-level OTD curriculum at Creighton University.

Methods

Fifty-three OTD students completed the Health Science Reasoning Test (HSRT) at the first semester and last semester respectively during their study of the OTD curriculum. The HSRT is an objective, norm-referenced measure designed to assess critical thinking skills applicable to health science education and professional workplace contexts. It includes five scale score (Analysis & Interpretation, Evaluation & Explanation, Inference, Deductive Reasoning, and Inductive Reasoning) as well as total critical thinking score. Paired-samples *t*-test was conducted to determine any significant change in these scores based on $p < .05$



Creighton OTD students practicing clinical reasoning skills in simulation lab.

HSRT Scales

There are six scores reported on all forms of the HSRT:

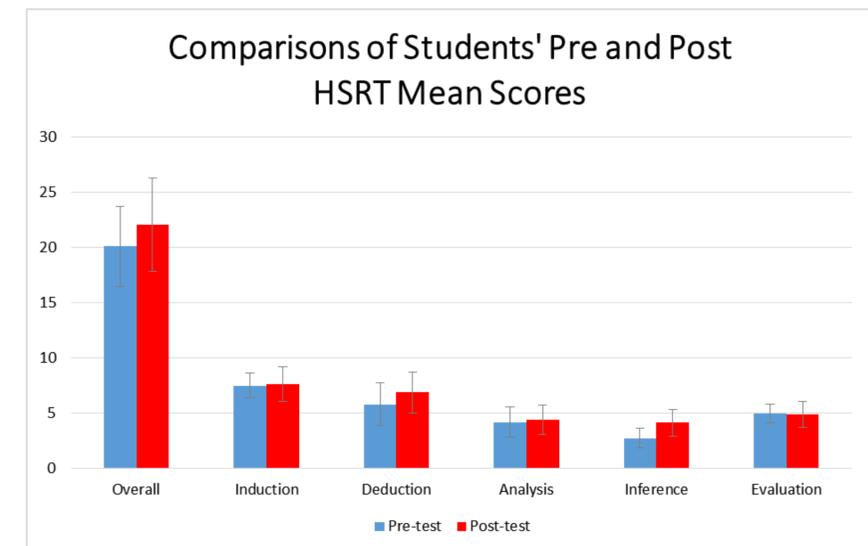
Overall	The Overall score predicts the capacity for success in educational or workplace settings which demand reasoned decision making and thoughtful problem solving. The Overall score predicts the capacity for success in educational or workplace settings which demand reasoned decision making and thoughtful problem solving.
Analysis	Analytical reasoning skills enable people to identify assumptions, reasons and claims, and to examine how they interact in the formation of arguments.
Inference	Inference skills enable us to draw conclusions from reasons and evidence. We use inference when we offer thoughtful suggestions and hypotheses. We use analysis to gather information from charts, graphs, diagrams, spoken language and documents.
Evaluation	Evaluative reasoning skills enable us to assess the credibility of sources of information and the claims they make. We use these skills to determine the strength or weakness of arguments.
Deduction	Decision making in precisely defined contexts where rules, operating conditions, core beliefs, values, policies, principles, procedures and terminology completely determine the outcome depends on strong deductive reasoning skills. Deductive reasoning moves with exacting precision from the assumed truth of a set of beliefs to a conclusion which cannot be false if those beliefs are true.
Induction	Decision making in contexts of uncertainty relies on inductive reasoning. We use inductive reasoning skills when we draw inferences about what we think is probably true based on analogies, case studies, prior experience, statistical analyses, simulations, hypotheticals, and patterns recognized in familiar objects, events, experiences and behaviors. As long as there is the possibility, however remote, that a highly probable conclusion might be mistaken even though the evidence at hand is unchanged, the reasoning is inductive.

Results

There were significant differences between the first semester and last semester in Deductive Reasoning (M difference = 1.06, $t(52) = 3.995$, $p < .001$), Inference (M difference = 1.42, $t(52) = 8.161$, $p < .001$), and total critical thinking (M difference = 1.96, $t(52) = 3.67$, $p = .001$). These results suggest that the entry-level doctorate occupational therapy curriculum may impact student's critical thinking skills positively.

Conclusions

The results show that after the completion of the OTD curriculum, OT students' critical thinking skills enhanced in Deductive Reasoning, Inference, and overall critical thinking skills. This finding suggests that the entry-level OTD curriculum at Creighton University might potentially address and impact students' critical thinking skills.



Future Directions

The committee will continue to gather data on the pre and post tests for entry-level doctorate students in the occupational therapy program. Would like to analyze section scores on the HSRT to advise decisions regarding the curriculum on areas of strength and weakness of students entering the program to determine better ways to address these skills throughout the program curriculum.