

Assessing Critical Thinking Using ‘*FRACTA*’

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Abstract

Purpose – The aim of this paper is to study the use of FIS Response Analysis for Critical Thinking Assessment (FRACTA) method to assess critical thinking in STEM problem solving. The use of FIS (facts, ideas and solutions) chart as a tool to elicit student critical thinking responses and the method of scoring the responses are investigated.

Method – FRACTA was tested on students from different STEM disciplines. Four groups of students were used, with an average of 20 students in each group. One group was used for critical thinking in mathematics problem solving and similarly one group for physics, chemistry and biology respectively. Facilitators were assigned to the groups to administer the processes in the method. The appointed facilitators were briefed on the details of FRACTA procedures. This method uses three instruments to assess critical thinking: problem items, FIS chart and scoring form. A facilitator feed-back survey form was also used to obtain feed-back on the strengths and weaknesses of the method.

Findings – The study showed that FRACTA has high credibility and potential with recommended amendments and improvements.

Significance – This method is characterized by its formative nature as it helps in the development of critical thinking in students. FRACTA is also a versatile method as it can be adapted and used for students from intermediate to tertiary levels.

Keywords: Assessment, Critical thinking, FIS chart, FRACTA.