



Math Education Program

Signature Assignment for EDME 520 Case Study on Math Student Thinking

Student Learning Outcome(s) Assessed:

SLO #5: Integrate pre-algebra and algebra content and pedagogy in mathematics teaching.

Description of the Signature Assignment

Candidates design probing questions to assess and develop students' algebra thinking. The purposes of this case study are to understand challenges in children's algebra learning and to develop developmentally appropriate probing questions in an algebra lesson to support struggling students.

Directions for Students

Design a teaching session to explore and develop student algebra thinking by asking a series of developmentally appropriate probing questions. Videotape and transcribe your video session, analyze your probing questions and student responses, describe how student algebra thinking is developed and progressed, and address student cognitive levels and your teaching in-depth.

1. Ideas of Design:
 - a. Objective(s)
 - b. Rational of topic
 - c. Key points and difficult points
 - d. Probing questions
2. Transcript of the session

Describe your teaching session in a sequential order; address the probing questions you have asked and describe what and how the student has respond to your questions.
3. Analysis of the session:
 - a. Analyze how each your probing question has promoted student thinking on the concept or skill of your teaching topic.
 - b. Describe how the student algebra thinking has developed and progressed as your heuristic questions guided student thinking.
 - c. Address student cognitive levels and your teaching strategies in-depth.
4. Your reflection on teaching and learning from this session:
 - a. Strengths and weakness of the session
 - b. Learning from designing the lesson and probing questions
 - c. Learning from analyzing student thinking
 - d. Overall learning from doing this case study

Scoring Rubric:

Criteria	4 = Exceeds expectations	3 = Meets expectations	2 = Meets some expectations	1 = Does not meet expectations	0 = Unable to score; incomplete or missing work
Ideas of Design	Objective and rational are clear; key points and difficult points are appropriate; probing questions are clear, connected, and focused	Objective and rational are clear; includes some appropriate key points and difficult points; probing questions are clear	Objective, rational, key points and difficult points are vague; probing questions are not clear	Objective, rational, key points and difficult points, and probing questions are not appropriate	Objective, rational, key points and difficult points, and probing questions are incomplete / missing
Transcript of the session	Thoroughly describes the teaching session in a sequential order with detailed examples; clearly addresses probing questions and student responses	Clearly describes the teaching session in a sequential order with some examples; addresses probing questions and student responses	Describes the teaching session briefly with few examples; addresses some probing questions and some student responses	Insufficiently describes the teaching session without examples; addresses few probing questions and few student responses	Teaching session, probing questions, and student responses are incomplete / missing
Analysis of the session:	Thoroughly analyzes how student algebra thinking has developed and progressed	Clearly analyzes how student algebra thinking has developed and progressed	Describes student algebra thinking without analyzing how it has progressed	Analysis of the session is not clear and appropriate	Analysis of the session is incomplete / missing
Reflection on teaching and learning	Reflection on teaching and learning from the case study is clear and adequate	Reflection on teaching and learning from the case study is clear	Reflection on teaching and learning from the case study is brief	Reflection on teaching and learning from the case study is minimal	Reflection on teaching and learning from the case study is incomplete / missing
Total					

Evaluation of EDME 520 Signature Assignment

Candidate Name _____

Criteria	Score				
Ideas of Design	0	1	2	3	4
Transcript of the session	0	1	2	3	4
Analysis of the session	0	1	2	3	4
Reflection on teaching and learning	0	1	2	3	4

Legend

Total Points	College of Education Assessment Scale Equivalent
14-16	4 (Exceeds Expectations)
12-13	3 (Meets Expectations)
9-11	2 (Meets Some Expectations)
5-8	1 (Does Not Meet Expectations)
0-4	0 (Can't Score)