

Metropolitan State University of Denver
Teacher Work Sample (TWS) Secondary Mathematics

Introduction

The MSU Denver School of Education's Teacher Work Sample (TWS) has three sections: Part A: Context, Part B: Planning, and Part C: Reflection.

TWS Part A: Context

Due date for part A: September 4 (email to University Supervisor)

Part A consists of:

Description of Context, This is a detailed, descriptive narrative in which you demonstrate your familiarity with your teaching context.

Significance and Implications of the Context of your teaching situation.
Demonstrate your higher level thinking in regard to how you will proactively design your Research Lessons in response to context.

Description of Context: Describe the unique context in which you are teaching. Integrate specific details and data into your descriptive narrative as a means of demonstrating your familiarity with your school and classroom context. Integrate data-based information as a table(s) or narrative. Include:

- Description of *school and community* (i.e., free & reduced lunch, overall school performance patterns, SES, diversity, etc.)
- Description of *students* for the Research Lessons (i.e., grade level, diversity, special needs, gifted and talented, ELA, etc. **Do not** list student's names.)
- Adaptations and modifications needed
- *Achievement/grouping patterns* (i.e., reading levels/groupings, math performance, etc.)
- *Behavior management plan* that you will use with the research lessons
- *Resource assistance* (i.e., co-teaching, specialists, volunteers, etc.)
- ***Other classroom and school conditions influencing instruction and relevant to your particular teaching context and position.***

Significance and Implications for Teaching: **Demonstrate your higher level thinking in regard to how you will proactively design your Research Lessons in response to context.** For example, How will the contextual information influence your instruction, building on students' strengths while meeting the instructional needs of students? Be specific in connecting particular contextual information to specific modifications in your lessons and application of learning and instructional principles and practices. **Include citations to professional literature in your bibliography.**

Part B: TWS Research Lesson Plan

Design two Research Lessons that build significant student learning.

- Create a detailed lesson plan for your Research Lesson (include questions you will be asking students and expected responses, misconceptions, and the written solution to all problems).
- Email the team your detailed Research Lesson Plan at least the day before the team planning meeting.
- Team planning meeting: hand out a hard copy of the lesson plan, discuss your teacher learning goal, share all solutions (not just answers) to problems you will be using as well as anticipated misconceptions. The team will discuss and help revise the lesson.
- Research Lesson (approximately one week after the team plan): hand a hard copy of the revised lesson plan to each team member. The ST delivers the lesson as the team observes. This will be followed by a team debrief.
- Following the debrief, revise the lesson plan once more for a reteach the following day as a result of the input.
- Reteach the revised Research Lesson to a different class the following day. Compare differences in student learning after revisions.
- Email TWS to university supervisor within 2 weeks of each Research Lesson. Deadlines must be met. Proofread all work for correct spelling and grammar. You must have others proofread your work so it is professional. For help contact the MSU Writing Center at 303 556-6070 or at www.msudenver.edu/writectr/

Research Lesson Template: (Use this template to write your TWS. Please delete all directions)

1. Research Lesson Overview

(Provide a short narrative in which you offer a rationale for the Research Lesson. Explain how the research lesson builds upon previous instruction and the ways in which each Research Lesson builds towards long-term student learnings.)

2. Teacher Learning Goal

(Determine the Teacher Learning Goal you would like to explore. Why did you choose this goal? Examples are: selecting and orchestrating rich tasks, eliciting and using student thinking, establishing safe and productive classroom norms, meeting individual students' needs, classroom management, asking probing questions, cooperative learning, mathematical discourse, or identify a problem that is of particular interest to you.)

3. Research Lesson Planning Meeting

(Who made up your research planning team (use titles, not names)? What issues were discussed in the Research Lesson Planning Meeting? What changes did you make to the original lesson based on the planning meeting? What suggestions did you decide it was best not to use?)

4. Insert Lesson Plan. Include:

- a) Teacher Learning Goal
- b) Student learning objectives
- c) State standards for mathematics
- d) Differentiation/modifications (Describe instructional adaptations in the accommodation of student learning differences.)
- e) Detailed steps of the lesson including questions you may ask students as you circulate, anticipated solutions and solution paths you may see, correct and incorrect, and misconceptions. Be sure to have every problem you will use with students worked out in detail.
- f) Resources needed that requires prior planning, such as computer lab, media, manipulatives, graphing calculators, reference books, special tools. At least one of the Research Lessons must involve student use of technology to enhance mathematical understanding.
- g) Assessment **(describe all assessments you will use for your lesson including informal and formal, formative and summative. You also need a formal measurable pre/post and rubric.)**

5. Integration of Literacy and Technology

(Include reading, writing, and communicating standards you will address <http://www.cde.state.co.us/coreadingwriting/statestandards>

Specifically address ideas for integrating literacy skill development and integrating technology to develop math objectives into your research lesson. Evidence of literacy and technology are required.)

6. Integration of Theory and Research

(List **2 or 3 research citations** that influence your instructional **planning** for this Research Lesson. Refer to your books, articles, class notes, and web-based searches. The examples provided below should be deleted after being used to guide your response.)

Major Instructional Strategies and Procedures	Research or Reference Support
EXAMPLES Growth mindset	Boaler, J. (2013). <i>Ability and Mathematics: the mindset revolution that is reshaping mathematics education. Forum, 55, 1, 143-152</i> Students who actively engage in their math learning, rather than simply practicing procedures, achieve at higher levels.
	Arbaugh, Fran. (2010) "Secondary School Mathematics

Supporting productive discourse	Teachers' Classroom Practices." <i>Teaching and Learning Mathematics: Translating Research for Secondary School Teachers.</i> (NCTM: Frank Lester). Productive classroom discourse: students present problem solutions, make conjectures about mathematical relationships, prove why mathematical processes work, and challenge others to think explicitly about the mathematics they are learning.'

7. Debrief Meeting and Revisions

(Reflect on the lesson and the debrief: How well did students understand the mathematical objectives of the lesson? What evidence did you gather to support this? What issues were discussed at the debrief meeting? Based on the debrief meeting, what revisions did you make to the lesson plan? Include a **revised lesson plan** here. Teach the revised lesson. Discuss the benefits to student learning that occurred because of the revisions.)

8. Assessment Plan

(Describe how you will assess student knowledge prior to and after the TWS research lesson. How will you know if the objectives have been met? How will you judge whether this lesson was successful? It is extremely important to use the same assessment tool, including rubric, for the pre and post assessment. The pre assessment informs your instructional decisions and establishes a base line of student performance prior to instruction. The post assessment is used to help measure student growth and lesson impact on student learning. Paste pre/post assessments, including rubric, here. **Throughout the lesson you will be assessing informally. Please include a formal pre and post assessment and rubric.**)

TWS Part C: Teacher Reflection

Demonstrate your habits of mind as a reflective practitioner. Demonstrate your ability to reflect on your teaching and students' learning. Include analysis of students' demonstrated conceptual understandings based upon formative and summative assessments. Document your professional thinking around how and why you adjusted your instruction to improve your teaching practices and increase student learning. Reflect on the impact of your instructional choices, including ways to adjust your delivery based upon these professional insights, integrate specific connections to professional knowledge, principles, and practices that demonstrate your higher-level thinking. Include any sources cited in your bibliography.

Reflections

(Include steps 1-3 after each Research Lesson, step 4 when both Research Lessons have been taught):

1. Analysis of the pre-assessment results.
2. Analysis of post-assessment (what skills and concepts have students learned and what evidence do you have of growth or lack of growth?)

3. Include one reflective entry upon completion of the final summative assessment. Include an analysis of implications for future instructional needs. Were the lesson's objectives met? What adjustments, if any, were made during the lesson? What adjustments should be incorporated for future lessons? What impact has this research lesson had on your teaching practice? What have you learned about your original teacher learning goal?)
4. Include a comprehensive reflection at the conclusion of the two Research Lessons. What did you learn from this research lesson process?

Bibliography

Include one bibliography that integrates all resources cited across the three sections in your TWS. Use a consistent style guide.