George Mason University
College of Education and Human Development
[Program Name]

EDCI 702.DL1 – Internship in Mathematics Education
3 Credits, Fall 2017
Mondays/7:20-10:00 p.m. Online/Thompson Hall 2007 (Fairfax Campus)

Faculty

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Prerequisites/Corequisites

This course should be taken within the last two semesters of the MEL program or with special permissions from the instructor.

University Catalog Course Description

Offers practical experiences and professional challenges for mathematics leaders in authentic educational settings. Activities emphasize school-based and classroom based research and leadership. Develops the skills and abilities of the mathematics leaders to analyze classroom practice, investigate teaching and disseminate information about mathematics education in professional development settings for teachers.

Course Overview

Not Applicable.

Course Delivery Method

This course will be delivered online (76% or more) using [select either a synchronous or an asynchronous] format via Blackboard Learning Management system (LMS) housed in the MyMason portal. You will log in to the Blackboard (Bb) course site using your Mason email name (everything before @masonlive.gmu.edu) and email password. The course site will be available on August 21.

Under no circumstances, may candidates/students participate in online class sessions (either by phone or Internet) while operating motor vehicles. Further, as expected in a face-to-face class meeting, such online participation requires undivided attention to course content and communication.

Technical Requirements

To participate in this course, students will need to satisfy the following technical requirements:

- High-speed Internet access with a standard up-to-date browser, either Internet Explorer or Mozilla Firefox is required (note: Opera and Safari are not compatible with Blackboard).
- Students must maintain consistent and reliable access to their GMU email and Blackboard, as these are the official methods of communication for this course.
- Students will need a headset microphone for use with the Blackboard Collaborate web conferencing tool. [Delete this sentence if not applicable.]
- Students may be asked to create logins and passwords on supplemental websites and/or to download trial software to their computer or tablet as part of course requirements.
- The following software plug-ins for PCs and Macs, respectively, are available for free download: [Add or delete options, as desire.]
    - Adobe Acrobat Reader: https://get.adobe.com/reader/
    - Windows Media Player: https://windows.microsoft.com/en-us/windows/downloads/windows-media-player/
    - Apple Quick Time Player: www.apple.com/quicktime/download/

Expectations

- Course Week: [Include only the sentence below that is appropriate for the course. Delete the sentence that is not applicable.]
  Because asynchronous courses do not have a "fixed" meeting day, our week will start on [Day], and finish on [Day].
  Our course week will begin on the day that our synchronous meetings take place as indicated on the Schedule of Classes.
- Log-in Frequency:
  Students must actively check the course Blackboard site and their GMU email for communications from the instructor, class discussions, and/or access to course materials at least [#] times per week. In addition, students must log-in for all scheduled online synchronous meetings. [Include this sentence only if the course is synchronous. Delete the sentence if the course is asynchronous.]

- Participation:
  Students are expected to actively engage in all course activities throughout the semester, which includes viewing all course materials, completing course activities and assignments, and participating in course discussions and group interactions.
- Technical Competence:
  Students are expected to demonstrate competence in the use of all course technology. Students who are struggling with technical components of the course are expected to seek assistance from the instructor and/or College or University technical services.
- Technical Issues:
  Students should anticipate some technical difficulties during the semester and should, therefore, budget their time accordingly. Late work will not be accepted based on individual technical issues.
- Workload:
  Please be aware that this course is **not** self-paced. Students are expected to meet *specific deadlines* and *due dates* listed in the **Class Schedule** section of this syllabus. It is the student's responsibility to keep track of the weekly course schedule of topics, readings, activities and assignments due.
- Instructor Support:
  Students may schedule a one-on-one meeting to discuss course requirements, content or other course-related issues. Those unable to come to a Mason campus can meet with the instructor via telephone or web conference. Students should email the instructor to schedule a one-on-one session, including their preferred meeting method and suggested dates/times.
- Netiquette:
  The course environment is a collaborative space. Experience shows that even an innocent remark typed in the online environment can be misconstrued. Students must always re-read their responses carefully before posting them, so as others do not consider them as personal offenses. *Be positive in your approach with others and diplomatic in selecting your words*. Remember that you are not competing with classmates, but sharing information and learning from others. All faculty are similarly expected to be respectful in all communications.
- Accommodations:
  Online learners who require effective accommodations to insure accessibility must be registered with George Mason University Disability Services.

Learner Outcomes or Objectives

This course is designed to enable students to do the following:
Develop the skills and abilities of the mathematics specialist to analyze classroom practice, investigate teaching and disseminate information about mathematics education in

professional development settings for teachers.

Professional Standards (National Council of Teachers of Mathematics (NCTM))

Upon completion of this course, students will have met the following professional standards:

- **A. Standard 6: Professional Knowledge and Skills**
  - **a.** Take an active role in their professional growth by participating in professional development experiences that directly relate to the learning and teaching of mathematics and to their development as a mathematics instructional leader.
  - **c.** Plan, develop, implement, and evaluate mathematics-focused professional development programs at the school and/or district level; use and assist teachers in using resources from professional mathematics education organizations such as teacher/leader discussion groups, teacher networks, and print, digital, and virtual resources/collections; and support teachers in systematically reflecting on and learning from their mathematical practice.
  - **d.** Demonstrate mathematics-focused instructional leadership through actions such as coaching/mentoring; building and navigating relationships with teachers, administrators, and the community; establishing and maintaining learning communities; analyzing and evaluating educational structures and policies that affect students' equitable access to high quality mathematics instruction; leading efforts to assure that all students have opportunities to learn important mathematics; evaluating the alignment of mathematics curriculum standards, textbooks, and required assessments and making recommendations for addressing learning and achievement gaps; developing appropriate classroom or school level learning environments; and collaborating with school-based professionals to develop evidence-based interventions for high and low-achieving students.
- **B. Standard 7: Elementary Mathematics Specialist Field Experiences and Clinical Practice**
  - **a.** Engage in a sequence of planned field experiences and clinical practice under the supervision of an experienced and highly qualified mathematics educator that involves the development of a broad experiential base of knowledge and skills working with a range of student and adult learners in a variety of school and professional development settings and the development of

interpersonal skills critical for mentoring other teachers and working with school-based personnel, district administrators, and others.

b. Develop and use leadership skills to improve mathematics programs at the school and/or district level, e.g., coaching/mentoring new and experienced teachers to better serve students; sharing critical issues, policy initiatives, and curriculum trends related to mathematics teaching; keeping abreast of local, state, or national policy decisions related to mathematics education; communicating to educational constituents about students, curriculum, instruction, and assessment; collaborating to create a shared vision and to develop an action plan for school improvement; and partnering with school-based professionals to improve each student's achievement.

Required Texts

Samaras, A. P. (2010). *Self-study teacher research: Improving your practice through collaborative inquiry.* Thousand Oaks, CA: Sage.

Recommended Texts

Bay-Williams, J. M., Kobett, B. M., & Wray, J. A. (2014). *Mathematics coaching: Resources and tools for coaches and leaders, K-12.* Boston: Pearson.

National Council of Teachers of Matheamtics. (2014). *Principles to actions:Ensuring mathematical success for all.* Reston: NCTM.

Course Performance Evaluation

Students are expected to submit all assignments on time in the manner outlined by the instructor (e.g., Blackboard, Tk20, hard copy).

- **Assignments and/or Examinations**
  - **Participation (20%)**
    - Attendance: Attendance at all scheduled online meetings, for the entire class period is a course expectation and absence will impact your grade. Successful completion of this course requires attendance at all meeting and active participation in the

discussions. Being on time is also essential and lateness will impact your grade. Please notify instructor ahead of time if you must miss class and work with peers for missed material.

- Assignments: Since this is a professional development course, high quality work (i.e., "A" work) is expected on all assignments and in class participation. All assignments must be completed. Assignment will be assessed using posted criteria known to the student. For full consideration, all assignments are due to professor *electronically* in the digital drop box prior to the beginning of class on the day they are due, unless otherwise announced. All written assignments are to be word-processed using Times Roman 12 pt font, double-spaced, and POSTED electronically on our class Blackboard drop box. Please title each assignment with your last name and the name of the project/assignment, e.g., Smith.ProfessionalDevelopmentPlan.

- Readings, Class Activities, and Online Participation: As a distance learning course, there are a significant number of online discussions and activities you will need to complete independently. You are expected to complete all readings and participate in class and all online discussions with openness, consideration, and effort to "hear for" and "listen to" others as you also seek to be understood. Come to class prepared to contribute your critical reflections on both your own experiences and ideas presented by your critical friends. Demonstration of positive and collaborative professional dispositions towards colleagues during peer review, along with a willingness to accept constructive criticism is a course expectation.

- Critical Friend Work: As part of your course participation, you will have the opportunity to work with a critical friend(s) to catalogue your research. Your work involves sharing weekly updates in class, sending and corresponding to critical friend research memos, brainstorming ideas as a teacher about the classroom dilemma you are researching and ideas for strategies and lessons, sharing how you are integrating standards in meaningful ways, and peer review of your research report. The memos are designed to co-support each other's research and to provide alternative perspectives on interpretation to increase the validity of your research. Critical friends provide support as well as a feedback loop to improve your practice. It is *critical* to have friends in research but critical friends are *not critical* in their approach with each other. Establish ground rules with "critical friends" and visit them often. Use your blackboard space to post and respond to each other's memos in the "Critical Friend." Specific critical friends inquiry (CFI)

assignments are listed in the course schedule.

- Weekly Researcher Log: Post your weekly updates and progress of your teacher research project each week on your personal researcher log. **(See Self-Study Research Project Timeline in Chapter 2. Table 2.2)**. This is your tentative timeline and tool to self-regulate your progress and the research process.

Rubric for Participation				
Category	**Exemplary**	**Accomplished**	**Developing**	**Undeveloped**
	30 Points	27-29 Points	25-26 Points	Below 25 Points
Attendance/ Participation Attendance and participation are critical components of this course. It gives you the opportunity to learn from and contribute to building a positive classroom experience and community. Participants contribute to each others' learning in critical friend work by actively listening, exchanging ideas, sharing learning from reading and websites, and supporting each other's efforts	Outstanding Participation; participates regularly and actively in discussions and activities. Promotes conversation focused on the topic. Comments demonstrate a high level of understanding and contribution from assigned readings. Listens actively to peers. Prompts peer feedback and input.	Participates in discussions and activities on a regular basis; questions and comments reveal thought and reflection and contribution from assigned readings. Frequently involves peers in discussion.	Doesn't contribute to discussions or activities very often, but generally reveals some thought and reflection and some contribution from assigned readings. Follows rather than leads group activities. Solicits some peer discussion. Misses classes. Is late for class.	Few meaningful contributions to class discussions. Little evidence of participation and contribution from assigned reading. Shows little concern for peers' learning or input. Misses classes and is late for class. Does not make up work.

- **Professional Development Design (30%)**
  - This is a Performance Based Assessment. The student will design, develop, implement and refine a professional development

experience (1-2 hours) for teachers. This should include a plan for the session and a written reflection paper about the professional development experience (3-5 pages) For a complete rubric and grading criteria please see the rubric at the end of the syllabus. The final report will be submitted on Blackboard in Tk20.

- **Teacher Research Project Report & Presentation (50%)**
  - This is a Performance Based Assessment. You are required to write a final report that includes the following sections: Rationale/Introduction, Research Question, Review of Related Literature, Method, Context, Participants, Data Collection, Analysis, Findings, Limitations, and Discussion including your reflections of self-study and implications for practice/further research. Your project should be useful to you and your students. A written report that includes the specific headings and subheading are listed in Chapter 12 of the textbook. For a complete rubric and grading criteria please see the rubric at the end of the syllabus. The final report will be submitted on Blackboard in Tk20.

    In addition to the final report, students will submit assignments throughout the semester that will support the development and implementation of their project: a research proposal and a draft literature review. Finally, students will present their findings in the last class session of the semester.

    You are required to present your research project to your peers on the last class. Your presentation must include a one-page handout that includes: your research question, rationale/purpose/data collection/resources and tools, findings, implications for math specialists and your practice. You may use bullets, write sentences, incorporate images or charts, and add additional information as needed. Your handout should be created in a Power Point slide that measures 36 inches wide and 24 inches high. To do this click File, Page Set Up, and enter the dimensions. During our final class you will be sharing a handout with each of your classmates. To print a handout that is reasonably sized click Print and then check the box that says Scale To Fit Paper.

- **Other Requirements**
  All assignments require APA formatting:

American Psychological Association (2010*). Publication Manual of the American Psychological Association.* American Psychological Association: Washington, DC.

- **Course Performance Evaluation Weighting**

  20% Participation
  - Attendance
  - Readings, Class Activities and Online Participation
  - Critical Friend Work
  - Weekly Researcher Log

  30% Professional Development Design

  50% Self-Study Teacher Researcher Project

- **Grading**

The final evaluation criteria utilizes the graduate grading scale and is as follows:

A	93%-100%	B+	87%-89%	C	70%-79%
A-	90%-92%	B	80%-86%	F	Below 70%

Professional Dispositions

Students are expected to exhibit professional behaviors and dispositions at all times.

Class Schedule

	Topic	Self-Study Project Timeline and Assignments Due	Professional Development Project Assignments Due
Week 1 8/28 Interface Online	Introduction To Course Overview of Self-Study Teacher Research Process and Project	Start noticing your classroom. Brainstorm possible research topics.	
Week 2 9/4 Interface DB	Labor Day No Class Meeting	Read: Preface, Chapters 1 & 2 SKIM Chapter 12 CFI BLOG POST CFI 1.1 (p. 5-6) CF Response	

Week 3 9/11 **Interface** Online	**Research Question** **In-Class CFI BLOG POST (Start):** CFI 5.3 (p. 104-105) CF Response	Read: Chapter 5 **CFI BLOG POST:** CFI 5.1 (p. 96-97) CF Response	**BLACKBOARD ASSIGNMENT POST:** Topics and Goals for PD Session
Week 4 9/18 **Interface** DB & Phone Consults	**Research Design** **In-Class CFI BLOG POST:** CFI 4.1 (p. 82) Response to CF	Read: Chapters 6 & 7 **BLACKBOARD ASSIGNMENT POST:** Research Proposal	
Week 5 9/25 **Interface** DB	**Research Ethics** **In-Class CFI BLOG POST:** CFI 7.1 CF Response	Read: Chapters 8 & 9	**BLACKBOARD ASSIGNMENT POST:** Professional Development Session Plan (DRAFT) *Be ready to share with your CF
Week 6 10/2 **Interface** Online	**Educational Databases** **Anne Driscoll** **Professional Development Project Collaboration** **Data Collection**	Read: Chapters 10 & 11 **CFI BLOG POST:** CFI 8.1 **BLACKBOARD DB POST:** Prepare and post questions for Anne Driscoll. Brainstorm your keywords.	
Week 7 **Tuesday 10/10** **Interface** DB	**Data Collection Workshop** **CFI BLOG POST:** Data Collection Reflection CF Response	Begin Data Collection	
Week 8 10/16 **Interface** DB & Phone Consults	**Literature Review Workshop**	Continue Data Collection **BLACKBOARD ASSIGNMENT POST:** Literature Draft Review Identify Specific Questions/Areas (As Needed)	
Week 9 10/23 **Interface** F2F	**Findings Class Workshop** **Class Analysis of Data**	Read Chapter 12 Continue Data Collection & Analysis **BLOG POST:** CFI 11.1 CF Response	**BLACKBOARD POST & BRING:** Update on PD Session Plan *Present PD before Thanksgiving if possible. Consult the instructor if you need to make adjustments.*
Week 10 10/30 **Interface**	**Writing Class Workshop** **In-Class CFI BLOG POST:** CFI 11.2	Read One Sample Paper Continue Data Collection	

DB & Phone Consults	CF Response	Continue Analyzing Data	
Week 11 11/6 **Interface** DB	**Critical Friend Workshop** **In-Class CFI BLOG POST:** CFI 11.3 CF Response	Read One Sample Paper Data Analysis Summarize Findings Dialogue About Findings	
Week 12 11/13 **Interface** Online	**Discuss Paper Drafts**	Research Paper Draft to CF	
Week 13 11/20 **Interface** DB & Phone Consults	**Critical Friend Work** **Check-In On Writing**	Feedback on Research Paper to CF **BLACKBOARD ASSIGNMENT POST:** Research Paper Draft to Instructor Identify Specific Questions/Areas (As Needed)	**BLACKBOARD POST:** PD Plan, Materials & Reflection
Week 14 11/27 **Interface** DB	**Critical Friend Work**	Read Chapter 13	
Week 15 12/4 **Interface** F2F	**Research Presentation** Exit Reflection on Professional Growth and Continued Goals	Bring Copies of Research Flyer **BLACKBOARD ASSIGNMENT POST:** Research Flyer **BLACKBOARD POST:** Final Research Paper	

Note: Faculty reserves the right to alter the schedule as necessary, with notification to students.

Core Values Commitment

The College of Education and Human Development is committed to collaboration, ethical leadership, innovation, research-based practice, and social justice. Students are expected to adhere to these principles: http://cehd.gmu.edu/values/.

GMU Policies and Resources for Students

Policies

- Students must adhere to the guidelines of the Mason Honor Code (see http://oai.gmu.edu/the-mason-honor-code/).

- Students must follow the university policy for Responsible Use of Computing (see http://universitypolicy.gmu.edu/policies/responsible-use-of-computing/).

- Students are responsible for the content of university communications sent to their Mason email account and are required to activate their account and check it regularly. All communication from the university, college, school, and program will be sent to students **solely** through their Mason email account.

- Students with disabilities who seek accommodations in a course must be registered with George Mason University Disability Services. Approved accommodations will begin at the time the written letter from Disability Services is received by the instructor (see http://ods.gmu.edu/).

- Students must follow the university policy stating that all sound emitting devices shall be silenced during class unless otherwise authorized by the instructor.

Campus Resources

- Support for submission of assignments to Tk20 should be directed to tk20help@gmu.edu or https://cehd.gmu.edu/aero/tk20. Questions or concerns regarding use of Blackboard should be directed to http://coursessupport.gmu.edu/.

- The Writing Center provides a variety of resources and services (e.g., tutoring, workshops, writing guides, handbooks) intended to support students as they work to construct and share knowledge through writing (see http://writingcenter.gmu.edu/).

- The Counseling and Psychological Services (CAPS) staff consists of professional counseling and clinical psychologists, social workers, and counselors who offer a wide range of services (e.g., individual and group counseling, workshops and outreach programs) to enhance students' personal experience and academic performance (see http://caps.gmu.edu/).

- The Student Support & Advocacy Center staff helps students develop and maintain healthy lifestyles through confidential one-on-one support as well as through interactive programs and resources. Some of the topics they address are healthy relationships, stress management, nutrition, sexual assault, drug and alcohol use, and sexual health (see http://ssac.gmu.edu/). Students in need of these services may contact the office by phone at 703-993-3686. Concerned students, faculty and staff may also make a referral to express concern for the safety or well-being of a Mason student or the community by going to http://ssac.gmu.edu/make-a-referral/.

For additional information on the College of Education and Human Development, please visit our website https://cehd.gmu.edu/.

Professional Development Project Description

Course Performance Based Assessment

This is a Performance Based Assessment. The student will design, develop, implement and refine a professional development experience (1-2 hours) for teachers. This should include a plan for the session and a written reflection paper about the professional development experience (3-5 pages). The final report will be submitted on Blackboard in Tk20. For a complete rubric and grading criteria please see the rubric at the end of the syllabus.

The candidate will partake in all steps in the following sequence to develop, implement and reflect on their professional development: develop a plan with peer collaboration where feedback is provided; modify the plan to include peer feedback; submit the plan to an experienced and highly qualified mathematics educator in advance of implementation; implement the plan in a school or district setting; and reflect deeply after implementation of the plan.

RATIONAL & PARTICIPANTS

The professional development plan includes a rationale that specifically explains the connection of the professional development to the targeted teachers and instructional personnel at the site. An analysis of the specific environment clearly connects to student learning and will support the school and district and meet their needs.

PLANNING THE PD EXPERIENCE

The plan should be clearly and comprehensively written so that another individual could pick up the plan with all materials and implement the professional development. Additionally, the plan should focus on making a mathematics-focused shift through one of several actions: coaching /mentoring; building and navigating relationships with teachers, administrators, and the community; establishing and maintaining learning communities; analyzing and evaluating educational structures and policies that affect students' equitable access to high quality mathematics instruction; leading efforts to assure that all students have opportunities to learn important mathematics; evaluating the alignment of mathematics curriculum standards, textbooks, and required assessments and making recommendations for addressing learning and achievement gaps; developing appropriate classroom or school-level learning environments; and collaborating with school-based professionals to develop evidence-based interventions for high- and low-achieving students.

The plan should include: a focus on mathematics, objectives, detailed activities, planned opportunities for discussion, anticipated teacher questions with responses, emphasize collaboration and take into consideration the needs of both adult and student learners. An assessment should be included to determine the impact of the professional development and future needs.

REFLECTING ON THE PD EXPERIENCE

The candidate will reflect on the role of learning and teaching of mathematics, the role of mathematics instructional leaders, the improvement of student learning and continuing the implementation.

Professional Development Project Rubric

Course Performance Based Assessment

Level/Criteria	4	3	2	1
	Exceeds Expectations	Meets Expectations	Developing	Does Not Meet Expectations
PROFESSIONAL DEVELOPMENT EXPERIENCE: RATIONALE & PARTICIPANTS				
PROFESSIONAL DEVELOPMENT PLAN RATIONALE NCTM Element 6d.2 Promote and facilitate the improvement of mathematics programs at the school and district levels.	The professional development description includes all of the following elements: • meets the school or district level's needs • promotes the improvement of mathematics within the school or district • explains how the facilitation of the professional development builds upon local/ state/national goals	The description includes two of the following elements: • meets the school or district level's needs • promotes the improvement of mathematics within the school or district • explains how the facilitation of the professional development builds upon local/ state/national goals	The description includes one of the following elements: • meets the school or district level's needs • promotes the improvement of mathematics within the school or district • explains how the facilitation of the professional development builds upon local/ state/national goals	The description does not include any of following elements: • meets the school or district level's needs • promotes the improvement of mathematics within the school or district • explains how the facilitation of the professional development builds upon local/ state/national goals
CONNECTING TO RATIONALE NCTM Element 7a.5 Observe and analyze a variety of	The professional development plan is based on observational data for the school or district.	The professional development plan is based on observational data for the school or district.	The professional development plan is based on observational data for the school or district.	The professional development plan is not based on observational data for the school or district.

diverse instructional settings in order to analyze and assist teachers in analyzing students' mathematical understanding and proficiency.	The plan includes an analysis of the school or district environment AND an explanation of how this professional development experience will impact student learning.	The plan includes an analysis of the school or district environment OR an explanation of how this professional development experience will impact student learning.	The plan does not include an analysis of the school or district environment and does not include an explanation of how this professional development experience will impact student learning.	
PARTICIPANT INVOLVEMENT NCTM Element 7b.2 Participate and encourage teachers to participate in innovative or transformative initiatives, partnerships, or research projects related to the teaching of elementary mathematics.	Teachers and leaders at the school or district level are participants in the professional development experience. Teachers and leaders at the school or district level are encouraged to try a new practice that enhances the current mathematical teaching practices.	Teachers and leaders at the school or district level are participants in the professional development experience. Teachers and leaders at the school or district level are encouraged to try a new mathematical teaching practice.	Teachers and leaders at the school or district level are participants in the professional development experience. Teachers and leaders at the school or district level are not encouraged to try a new mathematical teaching practice.	Teachers and leaders at the school or district level are not involved as participants in the professional development experience.
PROFESSIONAL DEVELOPMENT EXPERIENCE: THE PLAN				
SESSION PLAN NCTM Element 7b.1 Develop and use leadership skills to improve mathematics programs at the school and/or district level, e.g., coaching/mentoring new and experienced teachers to better serve students; sharing critical issues, policy initiatives, and	Plan is written with enough detail that someone else could implement the session. The organization of the plan is both logical and clear.	Plan is written with enough detail that someone else could implement the session. Some components of the plan may be difficult to follow or lack logical and/or clear organization.	Some details necessary for implementation of the plan are missing. Some components may be difficult to follow or lack logical and/or clear organization.	No details are given. It would be very difficult for someone else to implement the session due to a lack of logical and/or clear organization.

curriculum trends related to mathematics teaching; keeping abreast of local, state, or national policy decisions related to mathematics education; communicating to educational constituents about students, curriculum, instruction, and assessment; collaborating to create a shared vision and to develop an action plan for school improvement; and partnering with school-based professionals to improve each student's achievement.				
COACHING ACTIONS NCTM Element 6d.1 Demonstrate mathematics-focused instructional leadership through actions such as coaching /mentoring; building and navigating relationships with teachers, administrators, and the community; establishing and maintaining learning communities; analyzing and evaluating educational structures and	The professional development provides mathematics-focused instructional leadership through one of the following actions: • coaching /mentoring • building and navigating relationships with teachers, administrators, and the community • establishing and maintaining learning communities	The professional development provides mathematics-focused instructional leadership through one of the following actions: • coaching /mentoring • building and navigating relationships with teachers, administrators, and the community • establishing and maintaining learning communities	The professional development provides mathematics-focused instructional leadership through one of the following actions: • coaching /mentoring • building and navigating relationships with teachers, administrators, and the community • establishing and maintaining learning communities	The professional development does not focus on one of the following actions: • coaching /mentoring • building and navigating relationships with teachers, administrators, and the community • establishing and maintaining learning communities • analyzing and evaluating educational structures and

policies that affect students' equitable access to high quality mathematics instruction; leading efforts to assure that all students have opportunities to learn important mathematics; evaluating the alignment of mathematics curriculum standards, textbooks, and required assessments and making recommendations for addressing learning and achievement gaps; developing appropriate classroom or school-level learning environments; and collaborating with school-based professionals to develop evidence-based interventions for high- and low-achieving students.	• analyzing and evaluating educational structures and policies that affect students' equitable access to high quality mathematics instruction • leading efforts to assure that all students have opportunities to learn important mathematics • evaluating the alignment of mathematics curriculum standards, textbooks, and required assessments and making recommendations for addressing learning and achievement gaps • developing appropriate classroom or school-level learning environments • collaborating with school-based professionals to develop evidence-based interventions for high- and low-achieving students The identified action is well-developed AND thoroughly described.	• analyzing and evaluating educational structures and policies that affect students' equitable access to high quality mathematics instruction • leading efforts to assure that all students have opportunities to learn important mathematics • evaluating the alignment of mathematics curriculum standards, textbooks, and required assessments and making recommendations for addressing learning and achievement gaps • developing appropriate classroom or school-level learning environments • collaborating with school-based professionals to develop evidence-based interventions for high- and low-achieving students The identified action is well-developed OR thoroughly described.	• analyzing and evaluating educational structures and policies that affect students' equitable access to high quality mathematics instruction • leading efforts to assure that all students have opportunities to learn important mathematics • evaluating the alignment of mathematics curriculum standards, textbooks, and required assessments and making recommendations for addressing learning and achievement gaps • developing appropriate classroom or school-level learning environments • collaborating with school-based professionals to develop evidence-based interventions for high- and low-achieving students The identified action is not well developed and is not thoroughly described.	policies that affect students' equitable access to high quality mathematics instruction • leading efforts to assure that all students have opportunities to learn important mathematics • evaluating the alignment of mathematics curriculum standards, textbooks, and required assessments and making recommendations for addressing learning and achievement gaps • developing appropriate classroom or school-level learning environments • collaborating with school-based professionals to develop evidence-based interventions for high- and low- achieving students
OBJECTIVES & ACTIVITIES	Professional development is	Professional development is	Professional development is	Professional development is not

NCTM Element 6c.1 Plan, develop, implement, and evaluate mathematics-focused professional development programs at the school and/or district level.	mathematics-focused. The plan clearly outlines objectives for the session AND describes detailed activities the teachers will engage in during the session. The plan provides substantive opportunities for interaction and discussion of the topics.	mathematics-focused. The plan outlines objectives for the session AND lists activities the teachers will engage in during the session. The plan provides opportunities for interaction and discussion of the topics.	mathematics-focused. The plan outlines objectives for the session OR lists activities the teachers will engage in during the session.	mathematics-focused. The objectives for the session and the opportunities for interaction are missing.
RESOURCES & SUPPLEMENTARY MATERIALS NCTM Element 6c.2 Use and assist teachers in using resources from professional mathematics education organizations such as teacher/leader discussion groups, teacher networks, and print, digital, and virtual resources/ collections	Professional development resources for teachers come from professional mathematics education organizations. Professional development handouts and other documents (i.e. articles) meet all of the following requirements: • easy to follow/read • error-free • included or linked within the plan	Professional development resources for teachers come from professional mathematics education organizations. Professional development handouts and other documents (i.e. articles) meet two of the following requirements: • easy to follow/read • error-free • included or linked within the plan	Professional development resources for teachers come from professional mathematics education organizations. Professional development handouts and other documents (i.e. articles) meet one of the following requirements: • easy to follow/read • error-free • included or linked within the plan	Professional development resources for teachers do not come from professional mathematics education organizations. Professional development handouts and other documents (i.e. articles) do not meet the following requirements: • easy to follow/read • error-free • included or linked within the plan
MEETING LEARNERS' NEEDS NCTM Element 7a.2 Demonstrate a broad experiential base of knowledge and skills working with a range of student and adult	The professional development plan takes into consideration adult and student learners. Specific considerations for adult learners are	The professional development plan takes into consideration adult and student learners. Specific considerations for either adult learners	The professional development plan takes into consideration adult and student learners. Specific considerations for adult learners and	The professional development plan does not take into consideration adult and student learners.

learners in varied school and professional development settings.	articulated in the professional development plan. Specific considerations for student learners are clearly articulated in the professional development plan.	OR student learners are clearly articulated in the professional development plan.	student learners are not articulated in the professional development plan.	
QUESTIONS FOR TEACHERS NCTM Element 6c.3 Support teachers in systematically reflecting on and learning from their mathematical practice.	The plan includes questions for teachers with all of the following characteristics: • high cognitive demand (requiring higher-order thinking) • alignment with objectives/plan for the session • conducive to group/partner discussion The plan includes anticipated questions from teachers.	The plan includes questions for teachers with two of the following characteristics: • high cognitive demand (requiring higher-order thinking) • alignment with objectives/plan for the session • conducive to group/partner discussion The plan includes anticipated questions from teachers.	The plan includes questions for teachers with one of the following characteristics: • high cognitive demand (requiring higher-order thinking) • alignment with objectives/plan for the session • conducive to group/partner discussion The plan does not include anticipated questions from teachers.	The plan includes does not include questions for teachers or includes questions without the following characteristics: • high cognitive demand (requiring higher-order thinking) • alignment with objectives/plan for the session • conducive to group/partner discussion The plan does not include anticipated questions from teachers.
COLLABORATION NCTM Element 7a.3 Demonstrate interpersonal skills critical for mentoring other teachers and working with school-based personnel, district administrators, and others.	The professional development plan includes potential responses to the anticipated teacher questions. Potential responses are framed positively and highlight the important mathematical ideas/message of the professional development.	The professional development plan includes potential responses to the anticipated teacher questions. Potential responses are framed positively but do not further discussion of the important mathematical ideas/message of the professional development.	The professional development plan includes potential responses to the anticipated teacher questions. Potential responses are not framed positively and do not include the important mathematical ideas/message of the professional development.	The professional development plan does not include potential responses to the anticipated teacher questions.

ASSESSMENT OF PARTICIPANT KNOWLEDGE AND NEED NCTM Element 6c.4 Assist teachers in the implementation of newly acquired knowledge and professional practices in their mathematics teaching.	The professional development includes an assessment (i.e. exit ticket). The assessment identifies teachers' perceptions of newly acquired knowledge and professional practices in their mathematics teaching AND allows teachers to indicate their needs and support required for implementation.	The professional development includes an assessment (i.e. exit ticket). The assessment identifies teachers' perceptions of newly acquired knowledge and professional practices in their mathematics teaching OR allows teachers to indicate their needs and support required for implementation.	The professional development includes an assessment (i.e. exit ticket). The assessment does not identify teachers' perceptions of newly acquired knowledge and professional practices in their mathematics teaching AND does not allow teachers to indicate their needs and support required for implementation.	The professional development does not include an assessment (i.e. exit ticket).
SEQUENCE OF PLANNED FIELD EXPERIENCE NCTM Element 7a.1 Engage in a sequence of planned field experiences and clinical practice in an elementary setting and are supervised by an experienced and highly qualified mathematics educator.	The candidate uses the all steps in the following sequence to develop/ implement their professional development: 1. Develop a plan with peer collaboration. where feedback is provided 2. Modify the plan to include peer feedback. 3. Submit the plan to an experienced and highly qualified mathematics educator in advance of implementation. 4. Implement the plan in a school or district setting. 5. Reflect deeply after implementation of the plan.	The candidate uses at least four steps in the following sequence to develop/ implement their professional development: 1. Develop a plan with peer collaboration where feedback is provided 2. Modify the plan to include peer feedback 3. Submit the plan to an experienced and highly qualified mathematics educator in advance of implementation 4. Implement the plan in a school or district setting. 5. Reflect deeply after implementation of the plan.	The candidate uses at least fthree steps in the following sequence to develop/ implement their professional development: 1. Develop a plan with peer collaboration where feedback is provided 2. Modify the plan to include peer feedback 3. Submit the plan to an experienced and highly qualified mathematics educator in advance of implementation 4. Implement the plan in a school or district setting. 5. Reflect deeply after implementation of the plan.	Three or more of the following steps in the sequence are missing as the candidate develops/ implements the professional development plan: 1. Develop a plan with peer collaboration where feedback is provided 2. Modify the plan to include peer feedback 3. Submit the plan to an experienced and highly qualified mathematics educator in advance of implementation 4. Implement the plan in a school or district setting. 5. Reflect deeply after

				implementation of the plan.
PROFESSIONAL DEVELOPMENT EXPERIENCE: REFLECTION				
THE ROLE OF LEARNING & TEACHING OF MATHEMATICS NCTM Element 6a.1 Take an active role in their professional growth by participating in professional development experiences that directly relate to the learning and teaching of mathematics	The reflection clearly identifies how the professional development experience directly related to the learning and teaching of mathematics. The reflection clearly describes the impact of the professional development experience on the candidate's personal learning and teaching of mathematics.	The reflection identifies how the professional development experience is directly related to the learning and teaching of mathematics. The reflection clearly describes the impact of the professional development experience on either the candidate's personal learning and or the candidate's personal teaching of mathematics.	The reflection identifies that the professional development experience is directly related to their learning and teaching of mathematics. The explanation of the professional development experience is not connected to the candidate's personal teaching and learning of mathematics.	The reflection does not mention the candidate's personal teaching or learning of mathematics.
THE ROLE OF MATHEMATICS INSTRUCTIONAL LEADER NCTM Element 6a.2 Take an active role in their professional growth by participating in professional development experiences that directly relate to their development as a mathematics instructional leader.	The reflection clearly identifies how the professional development experience directly related to the candidate's development as a mathematics instructional leader. .	The reflection identifies how the professional development experience directly related to the candidate's development as a mathematics instructional leader.	The reflection does not clearly identify how the professional development experience directly related to the candidate's development as a mathematics instructional leader.	The reflection does not mention the candidate's development as a mathematics instructional leader
IMPROVE STUDENT UNDERSTANDING NCTM Element 7a.4 Gain an in-depth understanding of	The reflection identifies two important understandings of elementary student mathematical	The reflection identifies one important understanding of elementary student mathematical	The reflection identifies one understanding of elementary student mathematical development.	The reflection does not identify any important understandings of elementary student mathematical

the mathematical development of students across all of the elementary grades.	development that were highlighted as a result of this professional development experience.	development that was highlighted as a result of this professional development experience.	The understanding was not connected to the professional development experience.	development that were highlighted as a result of this professional development experience.
CONTINUING IMPLEMENTATION NCTM Element 6a.3 Assist their colleagues in developing a plan for implementing new learning from professional development or other experiences in their classrooms.	The reflection describes the next steps that the candidate would take as a mathematics instructional leader implementing the identified action. The next steps of implementation clearly articulate a plan to meet colleagues' needs and a timeline.	The reflection describes the next steps that the candidate would take as a mathematics instructional leader implementing the identified action. The next steps of implementation include either a plan to meet colleagues' needs or a timeline.	The reflection describes the next steps that the candidate would take as a mathematics instructional leader implementing the identified action. The next steps of implementation do not include a plan to meet colleagues' needs and do not include a timeline.	The reflection does not describe the next steps that the candidate would take as a mathematics instructional leader implementing the identified action.

Self-Study Project Description

Course Performance Based Assessment

This is a Performance Based Assessment. The final research report will be submitted on Blackboard in Tk20. In addition to the final report, students will submit assignments throughout the semester that will support the development and implementation of their project including a research proposal and a draft literature review. Finally, students will present their findings in the last class session of the semester.

FIELD EXPERIENCE SEQUENCE

Throughout the semester the students will engage with both their peers and a highly qualified mathematics educator to gain individualized feedback on their projects. Students will use the following sequence to develop, implement and reflect deeply on the self-study project experience: develop planned field experience with peer collaboration where feedback is provided by a critical friend**;** modify planned field experience based upon peer feedback; frequently submit plan to an experienced and highly qualified mathematics educator for individualized feedback; and implement planned field experience in a school or district setting. Specific deadlines will be ongoing and provided by the highly qualified mathematics educator.

RESEARCH REPORT

You are required to write a final report that includes the following sections: Abstract, Rationale, Research Problem and Questions, Review of Related Literature, Method, Conceptual Framework, Context and Participants, Data Collection, Self-Study and Reflection, Findings, Implications on Teaching and Learning, Implications on Educational Field, and Critical Friend Collaboration Reflection. Your project should be useful to you and your students. A written report that includes the specific headings and subheading are listed in Chapter 12 of the textbook. Exemplars are provided on Blackboard.

The paper should be formatted in APA style with references cited appropriately. For a complete rubric and grading criteria please see the rubric at the end of the syllabus.

CLASS PRESENTATION

You are required to present your research project to your peers on the last class. Your presentation must include a one-page handout that includes: your research question, rationale/purpose/data collection/resources and tools, findings, implications for math specialists and your practice. You may use bullets, write sentences, incorporate images or charts, and add additional information as needed. Your handout should be created in a Power Point slide that measures 36 inches wide and 24 inches high. To do this click File, Page Set Up, and enter the dimensions. During our final class you will be sharing a handout with each of your classmates. To print a handout that is reasonably sized click Print and then check the box that says Scale To Fit Paper.

Self Study Project Rubric

Course Performance Based Assessment

Levels/Criteria	4	3	2	1
	Exceeds Expectations	Meets Expectations	Developing	Does Not Meet Expectations
SELF STUDY PROJECT: FIELD EXPERIENCE SEQUENCE				
SEQUENCE OF PLANNED FIELD EXPERIENCE NCTM Element 7a.1 Engage in a sequence of planned field experiences and clinical practice in an elementary setting and are supervised by an experienced and highly qualified mathematics educator.	The candidate uses each of the steps in the following sequence to develop, implement and reflect on the self-study project: 1. Develop planned field experience with peer collaboration where feedback is provided by a critical friend 2. Modify planned field experience based upon peer feedback 3. Frequently submit plan to an experienced and highly qualified mathematics educator for individualized feedback 4. Implement planned field experience in a school or district setting 5. Reflect deeply upon experience during and after implementation	The candidate uses four of the steps in the following sequence to develop, implement and reflect on the self-study project: 1. Develop planned field experience with peer collaboration where feedback is provided by a critical friend 2. Modify planned field experience based upon peer feedback 3. Frequently submit plan to an experienced and highly qualified mathematics educator for individualized feedback 4. Implement planned field experience in a school or district setting 5. Reflect deeply upon experience during and after implementation	The candidate uses three of the steps in the following sequence to develop, implement and reflect on the self-study project: 1. Develop planned field experience with peer collaboration where feedback is provided by a critical friend 2. Modify planned field experience based upon peer feedback 3. Frequently submit plan to an experienced and highly qualified mathematics educator for individualized feedback 4. Implement planned field experience in a school or district setting 5. Reflect deeply upon experience during and after implementation	The candidate uses fewer than three steps in the following sequence to develop, implement and reflect on the self-study project: 1. Develop planned field experience with peer collaboration where feedback is provided by a critical friend 2. Modify planned field experience based upon peer feedback 3. Frequently submit plan to an experienced and highly qualified mathematics educator for individualized feedback 4. Implement planned field experience in a school or district setting 5. Reflect deeply upon experience during and after implementation
SELF STUDY PROJECT: RESEARCH REPORT				
ABSTRACT	The abstract has all of the following characteristics:	The abstract has two of the following characteristics:	The abstract has one of the following characteristics:	No abstract is included or the abstract has none of the following characteristics:

	• One paragraph with no more than 150 words • Clear and concise word choice • A description of the purpose, context, method, key findings, and significance	• One paragraph with no more than 150 words • Clear and concise word choice • A description of the purpose, context, method, key findings, and significance	• One paragraph with no more than 150 words • Clear and concise word choice • A description of the purpose, context, method, key findings, and significance	• One paragraph with no more than 150 words • Clear and concise word choice • A description of the purpose, context, method, key findings, and significance
RATIONALE NCTM Element 7a.2 Demonstrate a broad experiential base of knowledge and skills working with a range of student and adult learners in varied school and professional development settings.	A rationale is included that provides all of the following: • Clearly and concisely explains the personal importance of this research • Clearly and concisely explains the importance of this research to the teachers in the school or district setting. • Clearly and concisely explains the importance of this research to the students in the school or district setting. • Provides perspectives that have shaped the research question • Addresses the broader educational and social significance of the research	A rationale is included that provides four of the following: • Clearly and concisely explains the personal importance of this research • Clearly and concisely explains the importance of this research to the teachers in the school or district setting. • Clearly and concisely explains the importance of this research to the students in the school or district setting. • Provides perspectives that have shaped the research question • Addresses the broader educational and social significance of the research	A rationale is included that provides three of the following: • Clearly and concisely explains the personal importance of this research • Clearly and concisely explains the importance of this research to the teachers in the school or district setting. • Clearly and concisely explains the importance of this research to the students in the school or district setting. • Provides perspectives that have shaped the research question • Addresses the broader educational and social significance of the research	A rationale is included that provides two or fewer of the following: • Clearly and concisely explains the personal importance of this research • Clearly and concisely explains the importance of this research to the teachers in the school or district setting. • Clearly and concisely explains the importance of this research to the students in the school or district setting. • Provides perspectives that have shaped the research question • Addresses the broader educational and social significance of the research
RESEARCH PROBLEM & QUESTIONS	The paper includes all of the following:	The paper includes three of the following:	The paper includes two of the following:	The paper includes fewer than two of the following:

NCTM Element 7b.1 Develop and use leadership skills to improve mathematics programs at the school and/or district level, e.g., coaching/mentoring new and experienced teachers to better serve students; sharing critical issues, policy initiatives, and curriculum trends related to mathematics teaching; keeping abreast of local, state, or national policy decisions related to mathematics education; communicating to educational constituents about students, curriculum, instruction, and assessment; collaborating to create a shared vision and to develop an action plan for school improvement; and partnering with school-based professionals to improve each student's achievement.	• The research problem and questions are connected to improving mathematics programs at the school and/or district level. • The research problem is clearly and concisely stated. • The main research question is clearly and concisely stated. • The sub research questions (if applicable) are clearly and concisely stated.	• The research problem and questions are connected to improving mathematics programs at the school and/or district level. • The research problem is clearly and concisely stated. • The main research question is clearly and concisely stated. • The sub research questions (if applicable) are clearly and concisely stated.	• The research problem and questions are connected to improving mathematics programs at the school and/or district level. • The research problem is clearly and concisely stated. • The main research question is clearly and concisely stated. • The sub research questions (if applicable) are clearly and concisely stated.	• The research problem and questions are connected to improving mathematics programs at the school and/or district level. • The research problem is clearly and concisely stated. • The main research question is clearly and concisely stated. • The sub research questions (if applicable) are clearly and concisely stated.
REVIEW OF THE LITERATURE NCTM Element 7a.2 Demonstrate a broad experiential base of knowledge and skills working with a range of student and adult learners in varied school and professional development settings.	The literature review includes all of the following elements: • It is connected to the research study. • It is adequate, coherent and analytical. • It includes references from a variety of sources.	The literature review includes two of the following elements: • It is connected to the research study. • It is adequate, coherent and analytical. • It includes references from a variety of sources.	The literature review includes one of the following elements: • It is connected to the research study. • It is adequate, coherent and analytical. • It includes references from a variety of sources.	The literature review does not include the following elements: • It is connected to the research study. • It is adequate, coherent and analytical. • It includes references from a variety of sources.

CONCEPTUAL FRAMEWORK NCTM Element 7a.2 Demonstrate a broad experiential base of knowledge and skills working with a range of student and adult learners in varied school and professional development settings.	The candidate connects and explains theories, literature, and phenomena in a way that informs the research study AND integrates the literature review into the conceptual framework.	The candidate connects and explains theories, literature, and phenomena in a way that informs the research study OR integrates the literature review into the conceptual framework.	The candidate does not explains theories, literature, and phenomena in a way that informs the research study and does not integrate the literature review into the conceptual framework.	No conceptual framework is included.
RESEARCH METHOD: CONTEXT & PARTICIPANTS NCTM Element 7b.2 Participate and encourage teachers to participate in innovative or transformative initiatives, partnerships, or research projects related to the teaching of elementary mathematics.	The research method includes all of the following: • A description of the overall research context • A description of the specific community, school, and classroom context • Demographic information for the participants	The research method includes two of the following: • A description of the overall research context. • A description of the specific community, school and classroom context. • Demographic information on the participants.	The research method includes one of the following: • A description of the overall research context. • A description of the specific community, school and classroom context. • Demographic information on the participants.	The research method includes none of the following: • A description of the overall research context. • A description of the specific community, school and classroom context. • Demographic information on the participants.
RESEARCH METHOD: SELF-STUDY & REFLECTION NCTM Element 7b.2 Participate and encourage teachers to participate in innovative or transformative initiatives, partnerships, or research projects related to the teaching of elementary mathematics.	Al of the following are included in the research method: • A reflection on the problem (e.g. observations, possible causes, etc.) • An explanation for the chosen pedagogies based on the noticing of the environment • An explanation for the chosen pedagogies based on the literature reviewed	Two of the following are included in the research method: • A reflection on the problem (e.g. observations, possible causes, etc.) • An explanation for the chosen pedagogies based on the noticing of the environment • An explanation for the chosen pedagogies based on the literature reviewed	One of the following is included in the research method: • A reflection on the problem (e.g. observations, possible causes, etc.) • An explanation for the chosen pedagogies based on the noticing of the environment • An explanation for the chosen pedagogies based on the literature reviewed	None of the following are included in the research method: • A reflection on the problem (e.g. observations, possible causes, etc.) • An explanation for the chosen pedagogies based on the noticing of the environment • An explanation for the chosen pedagogies based on the literature reviewed

DATA COLLECTION NCTM Element 7a.5 Observe and analyze a variety of diverse instructional settings in order to analyze and assist teachers in analyzing students' mathematical understanding and proficiency.	All of the following are included in the data collection: • A detailed description of the data collected, how it was collected, and when it was collected • Data from a variety of sources. • A timeline of the data collection process and planned interventions • A detailed explanation of the data analysis process so that someone else would be able to analyze the data and find similar results • An explanation of the role of the critical friend(s) in data interpretation. • A visual and coherent presentation of the data	At least three of the following are included in the data collection: • A detailed description of the data collected, how it was collected, and when it was collected • Data from a variety of sources. • A timeline of the data collection process and planned interventions • A detailed explanation of the data analysis process so that someone else would be able to analyze the data and find similar results • An explanation of the role of the critical friend(s) in data interpretation. • A visual and coherent presentation of the data	At least two of the following are included in the data collection: • A detailed description of the data collected, how it was collected, and when it was collected • Data from a variety of sources. • A timeline of the data collection process and planned interventions • A detailed explanation of the data analysis process so that someone else would be able to analyze the data and find similar results • An explanation of the role of the critical friend(s) in data interpretation. • A visual and coherent presentation of the data	Less than two of the following are included in the data collection: • A detailed description of the data collected, how it was collected, and when it was collected • Data from a variety of sources. • A timeline of the data collection process and planned interventions • A detailed explanation of the data analysis process so that someone else would be able to analyze the data and find similar results • An explanation of the role of the critical friend(s) in data interpretation. • A visual and coherent presentation of the data
FINDINGS: PRESENTATION NCTM Element 7a.2 Demonstrate a broad experiential base of knowledge and skills working with a range of student and adult learners in varied school and professional development settings.	All of the following are included in the findings: • The findings are clearly and thoroughly and presented. • Themes from the findings are connected and coherently presented.	Three of the following are included in the findings: • The findings are adequately presented. • Themes from the findings are connected and coherently presented.	Two of the following are included in the findings: • The findings are adequately presented. • Themes from the findings are connected and coherently presented.	Three or more of the following are not included in the findings: • The findings are adequately presented. • Themes from the findings are connected and coherently presented.

	• Convincing evidence is provided that supports identified themes. • The research questions and the findings are connected.	• Convincing evidence is provided that supports identified themes. • The research questions and the findings are connected.	• Convincing evidence is provided that supports identified themes. • The research questions and the findings are connected.	• Convincing evidence is provided that supports identified themes. The research questions and the findings are connected.
SELF STUDY PROJECT: IMPLICATIONS & REFLECTION				
IMPLICATIONS: TEACHING & LEARNING NCTM Element 7a.4 Gain an in-depth understanding of the mathematical development of students across all of the elementary grades.	Both of the following Implications for the teaching and learning of students are included: • The reflection identifies the important understandings of student mathematical development and learning that were highlighted as a result of this experience. • The reflection explains the possible implications of student understanding and learning for teaching.	One of the following Implications for the teaching and learning of students are included: • The reflection identifies the important understandings of student mathematical development and learning that were highlighted as a result of this experience. • The reflection explains the possible implications of student understanding and learning for teaching.	Neither of the following Implications for the teaching and learning of students are included: • The reflection identifies the important understandings of student mathematical development and learning that were highlighted as a result of this experience. • The reflection explains the possible implications of student understanding and learning for teaching.	No implications for the teaching and learning of students are included.
IMPLICATIONS: EDUCATIONAL FIELD, STATE & LOCAL NCTM Element 7b.1 Develop and use leadership skills to improve mathematics programs at the school and/or district level.	The reflection includes all the following: • An explanation of the implications of the research and results for the educational field • An explanation of the implications of the research and results on the	The reflection includes two of the following: • An adequate explanation of the implications of the research and results for the educational field • An adequate explanation of the implications of the	The reflection includes one of the following: • An adequate explanation of the implications of the research and results for the educational field • An adequate explanation of the implications of the	No implications for the educational field are included.

	national and state education standards • A discussion of limitations and future research possibilities	research and results on the national and state education standards • A discussion of limitations and future research possibilities	research and results on the national and state education standards • A discussion of limitations and future research possibilities	
COLABORATION: CRITICAL FRIEND COLLABORATION NCTM Element 7a.3 Demonstrate interpersonal skills critical for mentoring other teachers and working with school-based personnel, district administrators, and others.	Reflection on the critical friend collaboration includes all of the following: • A self-assessment of how the self-study methodological components were addressed using the Five Foci chart. • A discussion of how critical friend feedback changed practice using evidence of deep reflection and self-study of teaching • A description of the mentoring and use of inter-personal skills • A discussion of original research questions as a retrospective journey of "self", role, and the conscious (and perhaps at the time unconscious) consequences of actions in the study of teaching practice	Reflection on the critical friend collaboration includes three of the following: • A self-assessment of how the self-study methodological components were addressed using the Five Foci chart. • A discussion of how critical friend feedback changed practice using evidence of deep reflection and self-study of teaching • A description of the mentoring and use of inter-personal skills • A discussion of original research questions as a retrospective journey of "self", role, and the conscious (and perhaps at the time unconscious) consequences of actions in the study of teaching practice	Reflection on the critical friend collaboration includes two of the following: • A self-assessment of how the self-study methodological components were addressed using the Five Foci chart. • A discussion of how critical friend feedback changed practice using evidence of deep reflection and self-study of teaching • A description of the mentoring and use of inter-personal skills • A discussion of original research questions as a retrospective journey of "self", role, and the conscious (and perhaps at the time unconscious) consequences of actions in the study of teaching practice	Reflection on the critical friend collaboration includes less than two of the following: • A self-assessment of how the self-study methodological components were addressed using the Five Foci chart. • A discussion of how critical friend feedback changed practice using evidence of deep reflection and self-study of teaching • A description of the mentoring and use of inter-personal skills • A discussion of original research questions as a retrospective journey of "self", role, and the conscious (and perhaps at the time unconscious) consequences of actions in the study of teaching practice
SELF STUDY PROJECT: FORMATTING				
REFERENCES	The references meet all of the following requirements:	The references meet four of the following requirements:	The references meet three of the following requirements:	The references meet two or fewer of the

	• All print and non-print (internet) references are listed. • References and citations meet APA formatting guidelines. • References are current. • References are from varied high quality sources. • All references cited in the research report are included in the list of references.	• All print and non-print (internet) references are listed. • References and citations meet APA formatting guidelines. • References are current. • References are from varied high quality sources. • All references cited in the research report are included in the list of references.	• All print and non-print (internet) references are listed. • References and citations meet APA formatting guidelines. • References are current. • References are from varied high quality sources. • All references cited in the research report are included in the list of references.	following requirements: • All print and non-print (internet) references are listed. • References and citations meet APA formatting guidelines. • References are current. • References are from varied high quality sources. • All references cited in the research report are included in the list of references.
REPORT ORGANIZATION	The report organization includes all of the following: • A cover page with title, author's name, and professional affiliation. • The report is well-organized, grammatically correct, coherent, and complete. • The report has distinctive focus and voice. • The report uses professional language (i.e., no jargon). • The report is presented in an accessible style.	The report organization includes five of the following: • A cover page with title, author's name, and professional affiliation. • The report is well-organized, grammatically correct, coherent, and complete. • The report has distinctive focus and voice. • The report uses professional language (i.e., no jargon). • The report is presented in an accessible style.	The report organization includes four of the following: • A cover page with title, author's name, and professional affiliation. • The report is well-organized, grammatically correct, coherent, and complete. • The report has distinctive focus and voice. • The report uses professional language (i.e., no jargon). • The report is presented in an accessible style.	The report organization includes three or fewer of the following: • A cover page with title, author's name, and professional affiliation. • The report is well-organized, grammatically correct, coherent, and complete. • The report has distinctive focus and voice. • The report uses professional language (i.e., no jargon). • The report is presented in an accessible style.

	• The report and the appendices meet APA formatting guidelines.	• The report and the appendices meet APA formatting guidelines.	• The report and the appendices meet APA formatting guidelines.	• The report and the appendices meet APA formatting guidelines.