George Mason University College of Education and Human Development Mathematics Education Leadership

EDCI 702.DL1– Internship in Mathematics Education 3 Credits, Spring 2019 Mondays/7:20-10:00 p.m. Online Synchronous & Asynchronous

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 synchronous and 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 January 28, 2019.

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 standard up-to-date browsers. To get a list of Blackboard's supported browsers see:

https://help.blackboard.com/Learn/Student/Getting Started/Browser Support#supported-browsers

To get a list of supported operation systems on different devices see: https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support#tested-devices-and-operating-systems

- 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.
- 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:
 - Adobe Acrobat Reader: https://get.adobe.com/reader/
 - Windows Media Player:
 https://support.microsoft.com/en-us/help/14209/get-windows-media-player
 - o Apple Quick Time Player: www.apple.com/quicktime/download/

Expectations

- <u>Course Week:</u> 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 3 times per week. In addition, students must log-in for all scheduled online synchronous meetings.
- 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.

• <u>Technical Competence:</u>

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.

• <u>Technical Issues:</u>

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.

• <u>Instructor Support:</u>

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.

National Council of Teachers of Mathematics. (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

o Participation (20%)

Attendance

- Attend all scheduled online meetings for the entire class period is a course expectation and absence will impact your grade
- Arrive to all scheduled meetings on time
- Notify your instructor in advance if you will miss class and work with peers for missed material

<u>Assignments</u>

- Complete all assignments on time
- All assignments 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. Professional Development Plan.

Readings, Class Activities, and Online Participation

- Complete all readings prior to class
- 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.
- Demonstrate positive and collaborative professional dispositions towards colleagues during peer review along with a willingness to accept constructive criticism.

Critical Friend Work

- Work with a critical friend(s) to catalogue your research.
- Share weekly updates in class, send and respond to critical friend research

memos. These 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 our practice. It is *critical* to have friends in research but critical friends are *not critical* in their approach with each other.

- Brainstorm ideas as a teacher about the classroom dilemma you are researching and ideas for strategies and lessons
- Share how you are integrating standards in meaningful ways
- Share peer review of your research report.
- 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." Critical friend 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.

Participation Rubric				
Exemplary	Accomplished	Developing	Undeveloped	
30 Points	27-29 Points	25-26 Points	Below 25 Points	
Participates	Participates	Participates	Does not	
regularly and	regularly in	occasionally in	participate in	
substantively in	discussions and	discussions and	discussions and	
discussions and	activities	activities	activities	
activities				
	Demonstrates	Reveals some	Offers little or no	
Promotes	' '	•	evidence of	
			reflection on	
		•	assigned readings	
topic	•	contributions		
	contributions		Shows little	
			concern for peers'	
•	' '	• •	learning or input.	
•	•	activities.		
-	discussion	0.11.11	Misses classes and	
•			is late for class	
contributions		discussion	D	
Durantana		NA:	Does not make up	
			work	
reedback and input		is late for class		
Listans activoly to				
•				
heers				
	30 Points Participates regularly and substantively in discussions and activities	Exemplary 30 Points Participates regularly and substantively in discussions and activities Promotes conversation focused on the topic Demonstrates a high level of understanding of assigned readings through verbal contributions Prompts peer feedback and input Exemplary Accomplished 27-29 Points Participates regularly in discussions and activities Demonstrates purposeful reflection on assigned readings through verbal contributions Frequently involves peers in discussion	Exemplary Accomplished 25-26 Points Participates regularly and substantively in discussions and activities Promotes purposeful reflection on assigned readings through level of understanding of assigned readings through verbal contributions Prompts peer feedback and input Exemplary Accomplished Developing 25-26 Points Participates regularly in occasionally in discussions and discussions and activities Participates Participates regularly in occasionally in discussions and activities Participates Participates regularly in occasionally in discussions and activities Participates Participates regularly in occasionally in discussions and activities Participates Participates regularly in occasionally in discussions and activities Promotes purposeful thoughts on assigned readings through verbal contributions Follows rather than leads group activities. Solicits some peer discussion Misses classes or is late for class	

from reading and		
websites, and		
supporting each		
other's efforts.		

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 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 virtual handout (Google Slide) 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. During our final class you will be sharing this slide with each of your classmates.

• Other Requirements

All assignments require APA formatting:

American Psychological Association (2010). Publication Manual of the American

Psychological Association. American Psychological Association: Washington, DC.

• Attendance

It is your responsibility to attend all class sessions. You are held accountable for all information from each class session whether you are present or not. Reasons for any absence must be reported to the instructor in writing.

Tardiness

It is your responsibility to be on time for each class session. Reasons for any absence must be reported to the instructor in writing.

• 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

All assignments are to be turned in to your instructor on time. Late work will not be accepted for full credit. Assignments turned in late will receive a 10% deduction from the grade per late day or any fraction thereof (including weekends and holidays).

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

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

• For Master's Degrees:

Candidates must have a minimum GPA of 3.00 in coursework presented on the degree application, which may include no more than 6 credits of C. (Grades of C+, C-, or D do not apply to graduate courses. The GPA calculation excludes all transfer courses and Mason non-degree studies credits not formally approved for the degree).

• For Endorsement Requirements

Candidates must have a grade of B or higher for all licensure coursework (endorsement coursework).

Professional Dispositions

Students are expected to exhibit professional behaviors and dispositions at all times. Education professionals are held to high standards, both inside and outside of the classroom. Educators are

evaluated on their behaviors and interactions with students, parents, other professionals, and the community at large. At the College of Education and Human Development, dispositions may play a part in the discussions and assignments of any/all courses in a student's program (and thus, as part or all of the grade for those assignments). For additional information visit: https://cehd.gmu.edu/students/polices-procedures/

Class Schedule

	Topic	Self-Study Project Timeline and Assignments Due	Professional Development Project Assignments Due
Week 1 1/28 Format Synchronous	Overview of Self-Study Teacher Research Process and Project Critical Friend Blogs: Access & Expectations	Start noticing your classroom. Brainstorm possible research topics.	
Week 2 2/4 Format Synchronous	In-Class CFI BLOG POST (Start) CFI 1.1 (p. 5-6) CF Response	Read: Preface, Chapters 1 & 2 SKIM Chapter 12 Gather Literature	
Week 3 2/11 Format Synchronous	Research Question In-Class CFI BLOG POST (Start): CFI 5.3 (p. 104-105) CF Response	Read: Chapter 5 Gather Literature CFI BLOG POST: CFI 5.1 (p. 96-97) CF Response	BLACKBOARD ASSIGNMENT POST: Topics and Goals for PD Session
Week 4 2/18 Format Synchronous	Research Design Educational Databases Anne Driscoll In-Class CFI BLOG POST: CFI 4.1 (p. 82) Response to CF	Read: Chapters 6 & 7 Gather Literature CFI BLOG POST: CFI 5.3 CF Response BLACKBOARD DB POST: Prepare and post questions for Anne Driscoll. Brainstorm your keywords	
Week 5 2/25 Format Asynchronous	Research Ethics In-Class BLACKBOARD ASSIGNMENT POST: Research Proposal In-Class CFI BLOG POST: CFI 7.1 CF Response	Read: Chapters 8 & 9 Gather Literature	BLACKBOARD ASSIGNMENT POST: Professional Development Session Plan DRAFT *Be ready to share with your CF

Week 6 3/4	Professional Development Project Collaboration	Read: Chapters 10 & 11	
Format Synchronous	Data Collection Brainstorm & Identification	Gather Literature CFI BLOG POST: CFI 8.1	
	Review & Update CFI 8.1		
Week 7 3/11	Data Collection Workshop	Begin Data Collection	
GMU Spring Break Format	CFI BLOG POST: CF Response	Finalize & Reflect on CFI 8.1	
Synchronous			
Week 8 3/18	Literature Review Workshop	Continue Data Collection	
_	BLOG POST:	BLACKBOARD ASSIGNMENT POST:	
Format	Data Collection Reflection	Literature Review Due	
Asynchronous & Phone Consults		Identify Specific Questions/Areas (As Needed)	
	Data Collection Workshop	Read Chapter 9	Bring Problem of Practice & Peer Access to Data
Week 9	Problems of Practice	Continue Data Collection & Analysis	Teer Access to Data
3/25			BLACKBOARD POST & BRING:
3/23	Class Analysis of Data	BLOG POST:	Update on PD Session Plan
Format	,	CF Response to Data Collection Reflection	·
Synchronous			Present PD before Week 12 if possible. Consult the instructor if you need to
	Maritim of Class Maritim of	Dood One Compile Dance	make adjustments.
Week 10	Writing Class Workshop	Read One Sample Paper	
4/1	In-Class CFI BLOG POST: CF Response	Continue Data Collection	
Format Asynchronous	9.1	Continue Analyzing Data	
	Data Collection Workshop	Read Chapter 11	Bring Problem of Practice & Peer Access to Data
Week 11	Problems of Practice	Read One Sample Paper	
4/8	Class Analysis of Data	Data Analysis	
Format Synchronous	Critical Friend Workshop	Summarize Findings	
	In-Class CFI BLOG POST: CF Response CFI 11.1	Dialogue About Findings	
4/15	No Class Meeting		

	Data Collection Workshop	Research Paper Draft to CF	Bring Problem of Practice & Peer Access to Data
Week 12 4/22	Problems of Practice Class Analysis of Data	BLACKBOARD ASSIGNMENT POST: Research Paper Draft to Instructor Identify Specific Questions/Areas (As Needed)	Teer needs to butt
Format Synchronous	Discuss Paper Drafts CFI 11.2 Collaborate Instructor Consults	Needed)	
Week 13 4/29 Format Asynchronous	Critical Friend Work CFI 11.3	Feedback on Research Paper to CF	BLACKBOARD POST: PD Plan, Materials & Reflection
Week 14 5/6 Format Asynchronous	Critical Friend Work	Read Chapter 13	
Week 15 5/13 Format Synchronous	Research Presentation Exit Reflection on Professional Growth and Continued Goals	Prepare Electronic Copies of Research Flyer in Class 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 https://catalog.gmu.edu/policies/honor-code-system/).

- 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 https://ds.gmu.edu/).
- Students must silence all sound emitting devices 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/.
- For information on student support resources on campus, see
 https://ctfe.gmu.edu/teaching/student-support-resources-on-campus

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

Professional Development Project Description

Course Performance Based Assessment

This is a Performance Based Assessment. The student will design, develop, refine, implement and reflect on a professional development experience (approximately 60 minutes) for teachers, administrators or other educational professionals. The final product should include the following: 1) topic identification and rationale; 2) an implementation plan; 3) all materials used or accessed; and 4) a written reflection paper about the professional development experience. 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.

TOPIC IDENTIFICATION & RATIONALE

Professional development should be centered on relevant and specific mathematics topics. In this project, a rationale is provided that specifically explains the connection of the professional development to the following: the school or district's needs, the promotion of mathematics instruction within the targeted audience, local, state and/or national goals for mathematics instruction. Things to consider are:

- A Clearly Defined Focus and Purpose: What is the topic you will base your professional development on?
- A Rationale for Why This Topic Matters: What is going on in your classroom which brings your attention to this topic? Why are you interested in this topic and why does it matter to you, other teachers/administrators, your district, and the field?

IMPLEMENTATION PLAN

The implementation plan should be clearly and comprehensively written so that another individual could pick up the plan with all materials and implement the professional development. This includes:

- Timing
- Materials
- Electronic downloads of materials (not weblinks)
- Anticipated responses of participants
- A focus on mathematics
- Objectives
- Detailed activities and actions
- Planned opportunities for discussion
- Questions to ask the audience
- Anticipated teacher questions
- Anticipated responses to teacher questions,

The professional development implementation plan should 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 of the stakeholders.

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.

REFLECTION

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	Meets	Developing	Does Not Meet
	Expectations	Expectations		Expectations
PROFESSIONAL DEV	VELOPMENT EXPERIEN	NCE: RATIONALE & PA	RTICIPANTS	
PROFESSIONAL	The professional	The description	The description	The description
DEVELOPMENT	development	includes two of the	includes one of the	does not include
PLAN RATIONALE	description	following	following	any of following
	includes all of the	elements:	elements:	elements:
NCTM Standard	following	 meets the school 	 meets the school 	 meets the school
6c	elements:	or district level's	or district level's	or district level's
S	• meets the school	needs	needs	needs
Plan, develop, implement and	or district level's	• promotes the	• promotes the	• promotes the
evaluate	needs	improvement of	improvement of	improvement of
mathematics-	• promotes the	mathematics	mathematics	mathematics
focused	improvement of	within the school	within the school	within the school
professional	mathematics	or district	or district	or district
development	within the school or district	 explains how the facilitation of the 	 explains how the facilitation of the 	 explains how the facilitation of the
programs at the	• explains how the	professional	professional	professional
school and/or district levels.	facilitation of the	development	development	development
district levels.	professional	builds upon	builds upon	builds upon
	development	local/	local/	local/
	builds upon local/	state/national	state/national	state/national
	state/national	goals	goals	goals
	goals	8	ge and	g
	ge sinc			
CONNECTING TO	The professional	The professional	The professional	The professional
RATIONALE	development plan	development plan	development plan	development plan
NCTM Standard	is based on	is based on	is based on	is not based on
_	observational data	observational data	observational data	observational data
7a	for the school or	for the school or	for the school or	for the school or
Engage in a	district.	district.	district.	district.
sequence of planned field				
experiences and	The plan includes	The plan includes	The plan does not	
clinical practice	an analysis of the	an analysis of the	include an analysis	
under the	school or district	school or district	of the school or	
supervision of an	environment AND	environment OR	district	
experienced and	an explanation of	an explanation of	environment and	
highly qualified	how this	how this	does not include	
mathematics educator that	professional	professional	an explanation of	
involves the	development	development	how this	
development of a	experience will	experience will	professional	
broad experiential	impact student	impact student	development	
base of knowledge	learning.	learning.	experience will impact student	
and skills working			learning.	
with a range of			icariiiig.	
man a range of				

	T			T
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. PARTICIPANT INVOLVEMENT NCTM Standard 7b Develop and use leadership skills to improve mathematics programs at the school and/or district level, e.g., 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.	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 DEV	VELOPMENT EXPERIE	NCE: THE PLAN		
SESSION PLAN	The plan includes sufficient detail for	The plan includes sufficient detail for	Some details	No details for
NCTM Standard 7b Develop and use leadership skills to	someone else to implement the session.	someone else to implement the session.	necessary for implementation of the plan are missing.	implementation of the plan are given. It would be very difficult for
improve mathematics programs at the school and/or district level, e.g.,	The organization of the plan is both logical AND clear.	Some components of the plan may be difficult to follow OR lack logical	Some components of the plan may be difficult to follow OR lack logical	someone else to implement the session due to a lack of logical

1. /	I	., .	., .	., .
coaching/mentorin		and/or clear	and/or clear	and/or clear
g new and		organization.	organization.	organization.
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 professional	The professional	The professional	The professional
COACHING	The professional	The professional	The professional	The professional
ACTIONS	development	development	development	development does
NCTM Standard	provides	provides	provides	not focus on one
6d	mathematics-	mathematics-	mathematics-	of the following
Ju	focused	focused	focused	actions:
Demonstrate	instructional	instructional	instructional	
mathematics-	leadership through	leadership through	leadership through	coaching
focused	one of the	one of the	one of the	/mentoring
instructional				 building and
leadership through	following actions:	following actions:	following actions:	navigating
actions such as	coaching	coaching	coaching	relationships
coaching	_	-	_	•
/mentoring;	/mentoring	/mentoring	/mentoring	with teachers,
building and	 building and 	building and	building and	administrators,
navigating	navigating	navigating	navigating	and the
	relationships	relationships	relationships	community
relationships with	with teachers,	with teachers,	with teachers,	 establishing and
teachers,	administrators,	administrators,	administrators,	maintaining
administrators, and	danning ators,	aammistrators,	danning ators,	manitaning

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 evidencebased interventions for high- and lowachieving students.

- 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
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collaborating with school-based professionals to develop evidence based interventions for high- and lowachieving students

	achieving students The identified action is well- developed AND thoroughly described.	achieving students The identified action is well-developed OR thoroughly described.	achieving students The identified action is not well developed AND is not thoroughly described.	
OBJECTIVES & ACTIVITIES NCTM Standard 6c	Professional development is mathematics-focused.	Professional development is mathematics-focused.	Professional development is mathematics-focused.	Professional development is not mathematics-focused.
Plan, develop, implement, and evaluate mathematics-focused professional development programs at the school and/or district level.	The plan clearly outlines objectives for the session AND describes detailed activities the teachers will engage in during the session.	The plan outlines objectives for the session AND lists activities the teachers will engage in during the session.	The plan outlines objectives for the session OR lists activities the teachers will engage in during the session.	The objectives for the session and the opportunities for interaction are missing.
	The plan provides substantive opportunities for interaction and discussion of the topics.	The plan provides opportunities for interaction and discussion of the topics.		
RESOURCES & SUPPLEMENTARY MATERIALS NCTM Standard 6c	Professional development resources for teachers come from professional mathematics	Professional development resources for teachers come from professional mathematics	Professional development resources for teachers come from professional mathematics	Professional development resources for teachers do not come from professional
Use and assist teachers in using resources from professional	education organizations.	education organizations.	education organizations.	mathematics education organizations.
mathematics education organizations such as teacher/leader discussion groups, teacher networks, and print, digital, and virtual resources/	Professional development handouts and other documents (i.e. articles) meet all of the following requirements:	Professional development handouts and other documents (i.e. articles) meet two of the following	Professional development handouts and other documents (i.e. articles) meet one of the following	Professional development handouts and other documents (i.e. articles) do not meet the following
collections.	easy to follow/readerror-free	requirements: • easy to follow/read	requirements: • easy to follow/read	requirements: • easy to follow/read

	 included or linked within the plan 	error-freeincluded or linked within the plan	error-freeincluded or linked within the plan	error-freeincluded or linked within the plan
MEETING LEARNERS' NEEDS NCTM Standard 7a 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	The professional development plan takes into consideration adult and student learners. Specific considerations for adult learners AND student learners are articulated in the professional development plan.	The professional development plan takes into consideration adult and student learners. Specific considerations for either adult learners OR student learners are clearly articulated in the professional development plan.	The professional development plan takes into consideration adult and student learners. Specific considerations for adult learners and student learners are not articulated in the professional development plan.	The professional development plan does not take into consideration adult and student learners.
school-based personnel, district administrators, and others.				
QUESTIONS FOR TEACHERS NCTM Standard 6c Support teachers in systematically reflecting on and learning from their	The plan includes questions for teachers with all of the following characteristics: • high cognitive demand (requiring	The plan includes questions for teachers with two of the following characteristics: • high cognitive demand (requiring	The plan includes questions for teachers with one of the following characteristics: • high cognitive demand (requiring	The plan includes does not include questions for teachers or includes questions without the following characteristics:

mathematical practice.	higher-order thinking) • alignment with objectives/plan for the session • conducive to group/partner discussion The plan includes anticipated questions from teachers.	higher-order thinking) alignment with objectives/plan for the session conducive to group/partner discussion The plan includes anticipated questions from teachers.	higher-order thinking) alignment with objectives/plan for the session conducive to group/partner discussion The plan does not include anticipated questions from teachers.	 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 Standard 7a Engage in a sequence of planned field experiences and clinical practice under the supervision of an experienced and highly qualified mathematics educator involve the development of 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 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 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 Standard 6b Advance the development in themselves and	The professional development includes an assessment (i.e. exit ticket). The assessment identifies teachers' perceptions of newly acquired	The professional development includes an assessment (i.e. exit ticket). The assessment identifies teachers' perceptions of newly acquired	The professional development includes an assessment (i.e. exit ticket). The assessment does not identify teachers' perceptions of	The professional development does not include an assessment (i.e. exit ticket).

knowledge and professional practices in their mathematics teaching AND allows teachers to indicate their needs and support required for implementation. SEQUENCE OF PLANNED FIELD EXPERIENCE NCTM Standard 7a Engage in a sequence of planned field experiences and clinical practice in their mathematics to the all steps in the following sequence of planned field experiences and clinical practice. Include peer collaboration. Develop a plan with peer collaboration where feedback is provided and highly qualified mathematics educator that involves the development of a broad experienced and highly qualified mathematics educator that involves the development of student and adult learners in a variety of school and professional development of interpersonal skills critical for mentoring other teachers and working with school-based personnel, district administrators, and others. PROFFESSIONAL DEVELOPMENT EXPERIENCE: REFLECTION Knowledge and professional practices in their mathematics teaching AND allows teachers to indicate their mathematics teaching AND allow teachers to indicate their mathematics teaching AND does not allow teachers to indicate their mathematics teaching AND does not allow teachers to findicate their mathematics at least three 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 an experienced and highly qualified mathematics educator in advance of implementation of the plan. 2. Modify the plan to an experienced and highly qualified mathematics educator in advance of implementation of the plan. 3. Submit the plan to an experienced and highly qualified mathematics educator in advance of implementation of the plan. 4. Implement their professional development: of implementation of the plan. 5. Reflect deeply after implementation of the plan. 5. Reflect deeply after implementation of the plan.					
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interpersonal skills critical for implementation of the plan. 5. Reflect deeply after implementation of the plan. 6. Reflect deeply after implementation of the plan.	_	_	•	•	•
critical for mentoring other teachers and working with school-based personnel, district administrators, and others. implementation of the plan. after implementation of the plan. after implementation of the plan. 5.Reflect deeply after implementation of the plan. of the plan.					
mentoring other teachers and working with school-based personnel, district administrators, and others. implementation of the plan. implementation of the plan. implementation of the plan. of the plan. implementation of the plan. of the plan.	•				_
teachers and working with school-based personnel, district administrators, and others. of the plan. of the plan. implementation of the plan. of the plan.		•			
working with school-based personnel, district administrators, and others.	_	,	•	•	
school-based personnel, district administrators, and others.			3. te p.o	3 р.ш	•
administrators, and others.	_				o. c piani
others.	personnel, district				
PROFESSIONAL DEVELOPMENT EXPERIENCE: REFLECTION					
	PROFESSIONAL DE	VELOPMENT EXPERIE	NCE: REFLECTION		

THE ROLE OF LEARNING & TEACHING OF MATHEMATICS NCTM Standard 6a 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 Standard 6a 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 UNDERSTANDIN G NCTM Standard 7a	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

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.	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	The reflection describes the next	The reflection describes the next	The reflection describes the next	The reflection does not describe the
NCTM Standard 7b Develop and use leadership skills to improve mathematics programs at the school or district level, e.g.	steps that the candidate would take as a mathematics instructional leader implementing the identified action.	steps that the candidate would take as a mathematics instructional leader implementing the identified action.	steps that the candidate would take as a mathematics instructional leader implementing the identified action.	next steps that the candidate would take as a mathematics instructional leader implementing the identified action.
collaborating to create a shared vision and to develop an action plan for school improvement.	clearly articulate a plan to meet colleagues' needs with a timeline for implementation.	include either a plan to meet colleagues' needs or a timeline for implementation.	implementation do not include a plan to meet colleagues' needs nor a timeline for implementation.	

Self-Study Research Project Description

Course Performance Based Assessment

This is a Performance Based Assessment. The student will design, develop, refine, implement and reflect on a professional development experience (approximately 60 minutes) for teachers, administrators or other educational professionals. The final product should include the following: 1) topic identification and rationale; 2) an implementation plan; 3) all materials used or accessed; and 4) a written reflection paper about the professional development experience. 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.

SELF-STUDY PROJECT FINAL REPORT

Write a final report that is useful to you and your context. Include the following sections:

- Rationale Introduction
- Research Question
- Review of Related Literature
- Method
- Context
- Participants
- Data Collection
- Analysis
- Findings
- Limitations
- Discussion
- Implications & Reflection
- Role of Critical Friend

Additionally, the project 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.

Include specific headings and subheadings in your report listed in Chapter 12 of the textbook. The final report should be well organized, and follow APA formatting. Submit the final report on Blackboard in Tk20.

Self-Study Project Rubric (Course Performance-Based Assessment)				
Level/Criteria	4	3	2	1
	Exceeds	Meets	Developing	Does Not Meet
	Expectations	Expectations		Expectations
SELF-STUDY PROJECT	: FIELD EXPERIENCE SE			
SEQUENCE OF	The candidate uses	The candidate uses	The candidate uses	The candidate uses
PLANNED FIELD	each of the steps in	four of the steps in	three of the steps in	fewer than three
EXPERIENCE	the following	the following	the following	steps in the
	sequence to	sequence to	sequence to	following sequence
NCTM Standard 7a	develop, implement	develop, implement	develop, implement	to develop,
	and reflect on the	and reflect on the	and reflect on the	implement and
Engage in a	self-study project:	self-study project:	self-study project:	reflect on the self-
sequence of	1. Develop planned	1. Develop planned	1.Develop planned	study project:
planned field	field experience	field experience	field experience	1. Develop planned
experiences and	with peer collaboration	with peer collaboration	with peer collaboration	field experience
clinical practice in an elementary	where feedback	where feedback is	where feedback is	with peer collaboration
setting and are	is provided by a	provided by a	provided by a	where feedback
supervised by an	critical friend	critical friend	critical friend	is provided by a
experienced and	2. Modify planned	2. Modify planned	2. Modify planned	critical friend
highly qualified	field experience	field experience	field experience	2. Modify planned
mathematics	based upon peer	based upon peer	based upon peer	field experience
educator.	feedback	feedback	feedback	based upon peer
	3. Frequently	3. Frequently	3. Frequently	feedback
	submit plan to an	submit plan to an	submit plan to an	3. Frequently
	experienced and	experienced and	experienced and	submit plan to an
	highly qualified	highly qualified	highly qualified	experienced and
	mathematics	mathematics	mathematics	highly qualified
	educator for	educator for	educator for	mathematics
	individualized	individualized	individualized	educator for
	feedback	feedback	feedback	individualized
	4. Implement	4. Implement	4. Implement	feedback
	planned field	planned field	planned field	4. Implement
	experience in a	experience in a	experience in a	planned field
	school or district	school or district	school or district	experience in a
	setting	setting	setting	school or district
	Reflect deeply upon	Reflect deeply upon	Reflect deeply upon	setting
	experience during	experience during	experience during	Reflect deeply upon
	and after	and after	and after	experience during
	implementation	implementation	implementation	and after
	mplementation	mplementation	Implementation	implementation
SELF-STUDY PROJECT	: RESEARCH REPORT			
ABSTRACT	The abstract has all	The abstract has	The abstract has	No abstract is
	of the following	two of the following	one of the following	included or the
	characteristics:	characteristics:	characteristics:	abstract has none of
				the following
	One paragraph	One paragraph	One paragraph	characteristics:
	with no more than	with no more than	with no more than	_
	150 words	150 words	150 words	One paragraph
				with no more than
				150 words

	Clear and concise	Clear and concise	Clear and concise	
	word choice	word choice	word choice	Clear and concise
				word choice
	• A description of	• A description of	A description of	
	the purpose,	the purpose,	the purpose,	• A description of
	context, method,	context, method,	context, method,	the purpose,
	key findings, and	key findings, and	key findings, and	context, method,
	significance	significance	significance	key findings, and
				significance
RATIONALE	A rationale is	A rationale is	A rationale is	A rationale is
	included that	included that	included that	included that
NCTM Element 7a	provides all of the	provides four of the	provides three of	provides two or
	following:	following:	the following:	fewer of the
Demonstrate a				following:
broad experiential	Clearly and	Clearly and	Clearly and	
base of knowledge	concisely explains	concisely explains	concisely explains	Clearly and
and skills working	the personal	the personal	the personal	concisely explains
with a range of	importance of this	importance of this	importance of this	the personal
student and adult	research	research	research	importance of this
learners in varied				research
school and	 Clearly and 	 Clearly and 	Clearly and	
professional	concisely explains	concisely explains	concisely explains	 Clearly and
development	the importance of	the importance of	the importance of	concisely explains
settings.	this research to	this research to	this research to	the importance of
	the teachers in	the teachers in	the teachers in	this research to
	the school or	the school or	the school or	the teachers in
	district setting.	district setting.	district setting.	the school or
				district setting.
	Clearly and	Clearly and	Clearly and	
	concisely explains	concisely explains	concisely explains	Clearly and
	the importance of	the importance of	the importance of	concisely explains
	this research to	this research to	this research to	the importance of
	the students in	the students in	the students in	this research to
	the school or	the school or	the school or	the students in the school or
	district setting.	district setting.	district setting.	
	Provides	Provides	Provides	district setting.
	perspectives that	perspectives that	perspectives that	Provides
	have shaped the	have shaped the	have shaped the	perspectives that
	research question	research question	research question	have shaped the
	research question	research question	research question	research question
	Addresses the	Addresses the	Addresses the	. 23221011 442301011
	broader educational	broader educational	broader educational	Addresses the
	and social	and social	and social	broader educational
	significance of the	significance of the	significance of the	and social
	research	research	research	significance of the
				research
RESEARCH	The paper includes	The paper includes	The paper includes	The paper includes
PROBLEM &	all of the following:	three of the	two of the	fewer than two of
QUESTIONS		following:	following:	the following:
	• The research			
NCTM Standard 7b	problem and	The research	The research	The research
	questions are	problem and	problem and	problem and
Develop and use	connected to	questions are	questions are	questions are
leadership skills to	improving	connected to	connected to	connected to

	Τ	T		T
improve	mathematics	improving	improving	improving
mathematics	programs at the	mathematics	mathematics	mathematics
programs at the	school and/or	programs at the	programs at the	programs at the
school and/or	district level.	school and/or	school and/or	school and/or
district level, e.g.,		district level.	district level.	district level.
coaching/mentoring	 The research 			
new and	problem is clearly	The research	The research	 The research
experienced	and concisely	problem is clearly	problem is clearly	problem is clearly
teachers to better	stated.	and concisely	and concisely	and concisely
serve students;		stated.	stated.	stated.
sharing critical	The main research			
issues, policy	question is clearly	The main research	The main research	The main research
initiatives, and	and concisely	question is clearly	question is clearly	question is clearly
curriculum trends	stated.	and concisely	and concisely	and concisely
related to		stated.	stated.	stated.
mathematics	The sub research			
teaching; keeping	questions (if	The sub research	The sub research	The sub research
abreast of local,	applicable) are	questions (if	questions (if	questions (if
state, or national	clearly and	applicable) are	applicable) are	applicable) are
policy decisions	concisely stated.	clearly and	clearly and	clearly and
related to	control stated.	concisely stated.	concisely stated.	concisely stated.
mathematics		conciscity stated.	conciscity stated.	concisely stated.
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.				
REVIEW OF THE	The literature	The literature	The literature	The literature
LITERATURE	review includes all	review includes two	review includes one	review does not
	of the following	of the following	of the following	include the
NCTM Standard 7a	elements:	elements:	elements:	following elements:
	2.2	2.0	2.55	. sog cicinicito.
Develop a broad	• It is connected to	• It is connected to	It is connected to	It is connected to
experiential base of	the research	the research	the research	the research
knowledge and	study.	study.	study.	study.
skills working with a	study.	study.	study.	Juay.
range of student	• It is adequate,	• It is adequate,	• It is adequate,	• It is adequate,
and adult learners	coherent and	coherent and	coherent and	coherent and
in varied school and	analytical.	analytical.	analytical.	analytical.
professional	anarytical.	anaiyudi.	anaiyucai.	anaiyucai.
professional				

	tincludes	It includes	It includes	It includes
	eferences from a	references from a	references from a	references from a
		variety of sources.	variety of sources.	variety of sources.
Va	ariety of sources.	variety of sources.	variety of sources.	variety of sources.
CONCEPTUAL The	e candidate	The candidate	The candidate does	No conceptual
	nnects and	connects and	not connect and	framework is
	olains theories,	explains theories,	explain theories,	included.
1 -	erature, and	literature, and	literature, and	mora de da
	enomena in a	phenomena in a	phenomena in a	
	y that informs	way that informs	way that informs	
l ·	e research study	the research study	the research study	
· · · · · · · · · · · · · · · · · · ·	ID integrates the	OR integrates the	AND does not	
	erature review	literature review	integrate the	
	o the conceptual	into the conceptual	literature review	
· · · · · · · · · · · · · · · · · · ·	mework.	framework.	into the conceptual	
learners in varied	mework.	namework.	framework.	
school and			Hamework.	
professional				
development				
settings.				
	e research	The research	The research	The research
	ethod includes all	method includes	method includes	method includes
	the following:	two of the	one of the	none of the
	J	following:	following:	following:
NCTM Standard 7b • A	description of	· ·	J	J
	he overall	 A description of 	 A description of 	 A description of
	esearch context	the overall	the overall	the overall
encourage teachers		research context	research context.	research context
to participate in • A	description of			
	he specific	 A description of 	 A description of 	 A description of
	ommunity,	the specific	the specific	the specific
	chool, and	community,	community, school	community,
partnerships, or cl	lassroom context	school and	and classroom	school and
research projects		classroom context	context.	classroom
related to the Der	mographic			context
teaching of info	ormation for the	Demographic	Demographic	
elementary par	rticipants	information on the	information on the	 Demographic
mathematics.		participants.	participants.	information on
				the participants
	e research	The research	The research	The research
	ethod includes all	method includes	method includes	method includes
	the following:	two of the	one of the	none of the
REFLECTION		following:	following:	following:
	reflection on			
	he problem (e.g.	A reflection on	A reflection on the	 A reflection on
	bservations,	the problem (e.g.	problem (e.g.	the problem (e.g.
1	ossible causes,	observations,	observations,	observations,
1	etc.)	possible causes,	possible causes,	possible causes,
improve		etc.)	etc.)	etc.)
	n explanation for			
_	he chosen	 An explanation for 	 An explanation for 	An explanation for
1 1 1	edagogies based	the chosen	the chosen	the chosen
	on the noticing of	pedagogies based	pedagogies based	pedagogies based
coaching/mentoring th	he environment			

new and		on the noticing of	on the noticing of	on the noticing of
experienced	An explanation for	the environment	the environment	the environment
teachers to better	the chosen			
serve students;	pedagogies based	An explanation for	An explanation for	An explanation for
sharing critical	on the literature	the chosen	the chosen	the chosen
issues, policy	reviewed	pedagogies based	pedagogies based	pedagogies based
initiatives, and curriculum trends		on the literature	on the literature	on the literature
		reviewed	reviewed	reviewed
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.				
DATA COLLECTION	All of the following	At least three of the	At least two of the	Less than two of the
	are included in the	following are	following are	following are
NCTM Standard	data collection:	included in the data	included in the data	included in the data
5c		collection:	collection:	collection:
	A detailed			
Collect, organize,	description of the	A detailed	A detailed	A detailed
analyze, and reflect	data collected,	description of the	description of the	description of the
on diagnostic,	how it was	data collected,	data collected,	data collected,
formative, and	collected, and	how it was	how it was	how it was
summative	when it was	collected, and	collected, and	collected, and
assessment	collected	when it was	when it was	when it was
evidence and		collected	collected	collected
determine the extent to which	- Data form	a Data former	- Data form	. Data from
students'	Data from a	Data from a	Data from a	Data from a
mathematical	variety of sources.	variety of sources.	variety of sources.	variety of sources.
proficiencies have	a A sima aliza a af sia	. A Airea alire £ 41-	. A simo aliza a af sia	. A +i
proficiencies flave	A timeline of the	A timeline of the	A timeline of the	A timeline of the
	data collection	data collection	data collection	data collection

increased as a	process and	process and	process and	process and
result of their	planned	planned	planned	planned
instruction or their	interventions	interventions	interventions	interventions
efforts in coaching/mentoring teachers.	A detailed explanation of the data analysis process so that someone else would be able to analyze the data and find similar results	A detailed explanation of the data analysis process so that someone else would be able to analyze the data and find similar results	A detailed explanation of the data analysis process so that someone else would be able to analyze the data and find similar results	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.	An explanation of the role of the critical friend(s) in data interpretation.	An explanation of the role of the critical friend(s) in data interpretation.	An explanation of the role of the critical friend(s) in data interpretation.
	A visual and coherent presentation of the data			
FINDINGS: PRESENTATION	The findings include all of the following:	The findings include three of the following:	The findings include two of the following:	The finding include fewer than two of the following:
NCTM Element 7a	The findings are clearly and	• The findings are	• The findings are	• The findings are
Demonstrate a broad experiential base of knowledge	thoroughly and presented.	adequately presented.	adequately presented.	adequately presented.
and skills working with a range of student and adult learners in varied school and professional	 Themes from the findings are connected and coherently presented. 	Themes from the findings are connected and coherently presented.	 Themes from the findings are connected and coherently presented. 	 Themes from the findings are connected and coherently presented.
development settings.	 Convincing evidence is provided that supports identified themes. 			
	The research questions and the findings are connected.	The research questions and the findings are connected.	The research questions and the findings are connected.	The research questions and the findings are not connected.
	: IMPLICATIONS & REF			
IMPLICATIONS:	Both of the	One of the	Neither of the	No implications for
TEACHING & LEARNING	following implications for the teaching and	following implications for the teaching and	following implications for the teaching and	the teaching and learning of students are included.

NOTE A EL			1	1
NCTM Element 7a	learning of students	learning of students	learning of students	
	are included:	are included:	are included:	
Gain an in-depth				
understanding of	The reflection	The reflection	The reflection	
the mathematical	identifies the	identifies the	identifies the	
development of	important	important	important	
students across all	understandings of	understandings of	understandings of	
of the elementary	student	student	student	
grades.	mathematical	mathematical	mathematical	
	development and	development and	development and	
	learning that	learning that	learning that	
	were highlighted	were highlighted	were highlighted	
	as a result of this	as a result of this	as a result of this	
	experience.	experience.	experience.	
	The reflection	The reflection	The reflection	
		explains the		
	explains the	•	explains the	
	possible	possible	possible	
	implications of	implications of	implications of	
	student	student	student	
	understanding	understanding and	understanding	
	and learning for	learning for	and learning for	
	teaching.	teaching.	teaching.	
IMPLICATIONS:	The reflection	The reflection	The reflection	No implications for
EDUCATIONAL	includes all the	includes two of the	includes one of the	the educational
FIELD, STATE &	following:	following:	following:	field are included.
LOCAL				
	 An explanation of 	 An adequate 	 An adequate 	
NCTM Element 7b	the implications of	explanation of the	explanation of the	
	the research and	implications of the	implications of the	
Develop and use	results for the	research and	research and	
leadership skills to	educational field	results for the	results for the	
improve		educational field	educational field	
mathematics	 An explanation of 			
programs at the	the implications of	An adequate	An adequate	
school and/or	the research and	explanation of the	explanation of the	
district level.	results on the	implications of the	implications of the	
	national and state	research and	research and	
	education	results on the	results on the	
	standards	national and state	national and state	
	Stanuarus	education	education	
	• A discussion of	standards	standards	
	A discussion of limitations and	Statiudius	Statiualus	
	limitations and			
	future research	A discussion of	A discussion of	
	possibilities	limitations and	limitations and	
		future research	future research	
		possibilities	possibilities	
COLABORATION:	Reflection on the	Reflection on the	Reflection on the	Reflection on the
CRITICAL FRIEND	critical friend	critical friend	critical friend	critical friend
COLLABORATION	collaboration	collaboration	collaboration	collaboration
3012.0010.11014	includes all of the	includes three of	includes two of the	includes less than
NCTM Element 7a	following:	the following:	following:	two of the
INCTIVI LICITICIIL /d	Tollowing.	the following.	TOHOWING.	following:
	1		<u> </u>	TOTIOWING.

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

- A self-assessment of how the selfstudy 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 interpersonal 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

- A self-assessment of how the selfstudy 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 interpersonal 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

- A self-assessment of how the selfstudy 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 interpersonal 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

- A self-assessment of how the selfstudy 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 interpersonal 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:

- All print and nonprint (internet) references are listed.
- References and citations meet APA formatting guidelines.
- References are current.

The references meet four of the following requirements:

- All print and nonprint (internet) references are listed.
- References and citations meet APA formatting guidelines.
- References are current.

The references meet three of the following requirements:

- All print and nonprint (internet) references are listed.
- References and citations meet APA formatting guidelines.
- References are current.

The references meet two or fewer of the following requirements:

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