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

EDCI 702 6M6 – Internship in Mathematics Education 3 Credits, Fall 2021 Mondays/7:20-10:00 p.m. Online Synchronous & Asynchronous

Faculty

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COVID 19 Procedures: Fall 2021

Students, please be aware of and follow all policies and procedures for Mason's Safe Return to Campus: <u>https://www2.gmu.edu/Safe-Return-Campus</u>

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 a 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 Monday, August 16, 2021.

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: <u>https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support#supported-browsers</u>

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

- 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 or Zoom 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: <u>https://get.adobe.com/reader/</u>
 - Windows Media Player: https://support.microsoft.com/en-us/help/14209/get-windows-media-player
 - Apple Quick Time Player: <u>www.apple.com/quicktime/download/</u>

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.

• <u>Participation:</u>

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.

Instructor Support:

Students may schedule a one-on-one meeting to discuss course requirements, content or other course-related issues 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.

• <u>Netiquette:</u>

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

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 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.

C. 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 schoolbased professionals to improve each student's achievement.

Required Texts

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

Recommended Texts

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

Course Performance Evaluation

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

• Assignments and/or Examinations

• 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

Assignments

- 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.

	F	Participation Rubri	ic	
Category	Exemplary	Accomplished	Developing	Undeveloped
	30 Points	27-29 Points	25-26 Points	Below 25 Points
Attendance/	Participates regularly	Participates	Participates	Does not participate
Participation	and substantively in	regularly in	occasionally in	in discussions and
	discussions and	discussions and	discussions and	activities
Attendance and	activities	activities	activities	
participation are				Offers little or no
critical components	Promotes	Demonstrates	Reveals some	evidence of
of this course.	conversation focused	purposeful reflection	thoughts on assigned	reflection on
Participation	on the topic	on assigned readings	readings through	assigned readings
creates	D (1 1	through verbal	verbal contributions	01 1.41
opportunities to	Demonstrates a high	contributions		Shows little concern
learn from one	level of understanding	E (1, 1, 1, 1)	Follows rather than	for peers' learning or
another and to build a positive	of assigned readings through verbal	Frequently involves peers in discussion	leads group activities.	input.
classroom	contributions	peers in discussion	activities.	Misses classes and is
experience and	contributions		Solicits some peer	late for class
community.	Prompts peer		discussion	
Participants	feedback and input		discussion	Does not make up
contribute to	reedouek und input		Misses classes or is	work
others' learning in	Listens actively to		late for class	WOIK
critical friend work	peers			
by actively	L			
listening,				
exchanging ideas,				
sharing learning				
from reading and				
websites, and				
supporting each				
other's efforts.				

• Professional Development Design (30%)

(NCTM NCATE 6a, 6c, 6d)

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 Via. No Google links will be accepted.

• Teacher Research Project Report & Presentation (50%)

(*NCTM NCATE* 7a, 7b)

 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 Via. No Google links will be accepted.

In addition to the final report, students will submit assignments throughout the semester that will support the development and implementation of their project. Finally, students will present their findings in the last class session of the semester. Information on presentations will be provided in class and on Blackboard.

• Other Requirements

All assignments require APA formatting:

American Psychological Association (2020). *Publication manual of the American psychological association*. APA.

Specifically, the following aspects of APA formatting should be addressed in any submission:

- 12 point, Times New Roman font
- Double spaced
- Page headers/Running head
- Cover page with title, author's name and professional affiliation
- References
- Headings
- Citations
- Clearly organized, grammatically correct, coherent and complete
- Professional language (i.e., no jargon)

Via/Performance-Based Assessment(s) Submission Requirement:

Every student registered for any Mathematics Education Leadership course with a required Via performance-based assessment (designated as such in the syllabus) must submit these assessments to Via through 'Assessments' in Blackboard. Failure to submit the assessment(s) to Via (through Blackboard) will result in the course instructor reporting the course grade as Incomplete (IN). Unless this grade is changed upon completion of the required Via submission, the IN will convert to an F nine weeks into the following semester.

• 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:

А	93%-100%	\mathbf{B}^+	87%-89%	С	70%-79%
A-	90%-92%	В	80%-86%	F	Below 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/

This course will require students to audiotape, videotape, or use the audio/video conferencing feature. Students should dress professionally, speak professionally, and aware of their recording surroundings and backgrounds. Background noise (such as television, music, conversations, etc.) and inappropriate background video are distracting, unprofessional, and not allowed in this course.

Class Schedule

All readings are from Samaras (2010) unless otherwise noted.

	Торіс	Self-Study Project Timeline and Assignments Due	Professional Development Project Assignments Due
Week 1 8/23 Format Synchronous	Introduction to Course Overview of Self-Study Teacher Research Process and Project Critical Friend Blogs: Access & Expectations	Start noticing your classroom. Brainstorm possible research topics.	
Week 2 8/30 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 9/13 Format Synchronous	Research Question In-Class CFI BLOG POST (Start): CFI 5.3 (p. 104-105) CF Response Educational Databases Anne Driscoll	Read: Chapter 5 Gather Literature BLACKBOARD DB POST: Prepare and post questions for Anne Driscoll. Brainstorm your keywords CFI BLOG POST: CFI 5.1 (p. 96-97) CF Response	BLACKBOARD ASSIGNMENT POST: Topics and Goals for PD Session
Week 4 9/20 Format Synchronous	Research Design 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	
Week 5 9/27 Format Asynchronous	Research Ethics In-Class BLACKBOARD ASSIGNMENT POST: Research Proposal	Read: Chapters 8 & 9 Gather Literature	Be ready to share your Professional Development Session Plan FULL DRAFT with CF in class.

	Professional Development Project Collaboration		
	In-Class CFI BLOG POST: CFI 7.1 CF Response		
Week 6 10/4	Professional Development Project Collaboration	Read: Chapters 10 & 11 Gather Literature	BLACKBOARD ASSIGNMENT POST: Professional Development
Format Synchronous	Data Collection Brainstorm & Identification	CFI BLOG POST: CFI 8.1	Session Plan Due for Instructor Feedback
	Review & Update CFI 8.1		
Week 7 10/11*	Data Collection Workshop	Begin Data Collection	
Format Asynchronous & Virtual Consults	CFI BLOG POST: CF Response	Finalize & Reflect on CFI 8.1	
Week 8 10/18	Literature Review Workshop	Continue Data Collection	
Format Asynchronous & Virtual Consults	BLOG POST: Data Collection Reflection	BLACKBOARD ASSIGNMENT POST: Literature Review Due Identify Specific Questions/Areas (As Needed)	
	Data Collection Workshop	Read Chapter 9	Bring Problem of Practice & Peer Access to Data
Week 9 10/25 Format	Problems of Practice Class Analysis of Data	Continue Data Collection & Analysis BLOG POST: CF Response to Data Collection Reflection	BLACKBOARD POST & BRING: Update on PD Session Plan
Synchronous			Present PD before Week 12 if possible. Consult the instructor if you need to adjust.
	Writing Class Workshop	Read One Sample Paper	
Week 10 11/1	In-Class CFI BLOG POST:	Continue Data Collection	
Format Asynchronous	CF Response 9.1	Continue Analyzing Data	
Week 11 11/8	Data Collection Workshop	Read Chapter 11	Bring Problem of Practice & Peer Access to Data
Format	Problems of Practice	Read One Sample Paper	
L		•	1

Synchronous	Class Analysis of Data	Data Analysis	
	Critical Friend Workshop	Summarize Findings	
	In-Class CFI BLOG POST: CF Response	Dialogue About Findings	
	CFI 11.1		
	Data Collection Workshop	Research Paper Draft to CF	Bring Problem of Practice & Peer Access to Data
Week 12	Problems of Practice	BLACKBOARD ASSIGNMENT POST:	
11/15	Class Analysis of Data	Research Paper Draft to Instructor	
Format Synchronous	Discuss Paper Drafts CFI 11.2	Identify Specific Questions/Areas (As Needed)	
	Virtual Instructor Consults		
Week 13 11/22	Critical Friend Work CFI 11.3	Feedback on Research Paper to CF	BLACKBOARD POST: Final PD Plan, Materials & Reflection Uploaded
Format Asynchronous	Optional Virtual Instructor Consults		
Week 14	Critical Friend Work	Read Chapter 13	
Format Asynchronous	Optional Virtual Instructor Consults		
	Research Presentation	Bring Electronic Copies of Research Flyer to Class	
Week 15	Exit Reflection on		
12/6	Professional Growth and Continued Goals	BLACKBOARD ASSIGNMENT POST:	
Format Synchronous		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: <u>http://cehd.gmu.edu/values/</u>.

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 https://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 Via should be directed to <u>viahelp@gmu.edu</u> or <u>https://cehd.gmu.edu/aero/assessments</u>. Questions or concerns regarding use of Blackboard should be directed to <u>https://its.gmu.edu/knowledge-base/blackboard-instructional-technology-support-for-students/</u>.
- For information on student support resources on campus, see https://ctfe.gmu.edu/teaching/student-support-resources-on-campus

Notice of mandatory reporting of sexual assault, interpersonal violence, and stalking:

As a faculty member, I am designated as a "Responsible Employee," and must report all disclosures of sexual assault, interpersonal violence, and stalking to Mason's Title IX Coordinator per University Policy 1202. If you wish to speak with someone confidentially, please contact one of Mason's confidential resources, such as Student Support and Advocacy Center (SSAC) at 703-380-1434 or Counseling and Psychological Services (CAPS) at 703-993-2380. You may also seek assistance from Mason's Title IX Coordinator by calling 703-993-8730, or emailing titleix@gmu.edu.

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 Via. 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.

Professiona	I Development Proj	ect Rubric (Course F	Performance-Based	Assessment)
Level/Criteria	4	3	2	1
	Exceeds	Meets	Developing	Does Not Meet
	Expectations	Expectations		Expectations
PROFESSIONAL D	EVELOPMENT EXPE	RIENCE: RATIONALE	& PARTICIPANTS	
PROFESSIONAL	The professional	The description	The description	The description
DEVELOPMENT	development	includes two of	includes one of	does not include
PLAN	description	the following	the following	any of following
RATIONALE	includes all of the	elements:	elements:	elements:
	following	 meets the 	 meets the 	 meets the
NCTM Standard	elements:	school or	school or	school or
6c	 meets the 	district level's	district level's	district level's
S	school or	needs	needs	needs
Plan, develop, implement and	district level's	 promotes the 	 promotes the 	 promotes the
evaluate	needs	improvement	improvement	improvement
mathematics-	 promotes the 	of mathematics	of mathematics	of mathematics
focused	improvement of	within the	within the	within the
professional	mathematics	school or	school or	school or
development programs at the	within the	district	district	district
school and/or	school or	 explains how 	 explains how 	 explains how
district levels.	district	the facilitation	the facilitation	the facilitation
	• explains how	of the	of the	of the
	the facilitation	professional	professional	professional
	of the	development	development	development
	professional	builds upon	builds upon	builds upon
	development	local/	local/	local/
	builds upon	state/national	state/national	state/national
	local/	goals	goals	goals
	state/national			
	goals			
CONNECTING	The professional	The professional	The professional	The professional
TO RATIONALE	development	development	development	development
	plan is based on	plan is based on	plan is based on	plan is not based
NCTM Standard	observational	observational	observational	on observational
7a	data for the	data for the	data for the	data for the
Engage in a	school or district.	school or district.	school or district.	school or district.
sequence of				
planned field experiences and	The plan includes	The plan includes	The plan does	
clinical practice	an analysis of the	an analysis of the	not include an	
under the	school or district	school or district		
supervision of an	environment	environment OR	school or district	
-	AND an	an explanation of	environment and	
		how this	does not include	
under the	school or district environment	school or district environment OR an explanation of	analysis of the school or district environment and	

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.	how this professional development experience will impact student learning.	professional development experience will impact student learning.	an explanation of how this professional development experience will impact student learning.	
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 D SESSION PLAN	EVELOPMENT EXPENT The plan includes sufficient detail for someone else	The plan includes sufficient detail for someone else	Some details necessary for implementation	No details for implementation

NCTM Standard	to implement the	to implement the	of the plan are	of the plan are
7b	session.	session.	missing.	given.
Develop and use leadership skills to improve mathematics programs at the school and/or district level, e.g., coaching/mentorin g 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	The organization of the plan is both logical AND clear.	Some components of the plan may be difficult to follow OR lack logical and/or clear organization.	Some components of the plan may be difficult to follow OR lack logical and/or clear organization.	It would be very difficult for someone else to implement the session due to a lack of logical and/or clear organization.
COACHING ACTIONS	The professional development	The professional development	The professional development	The professional development
NCTM Standard 6d	provides mathematics- focused	provides mathematics- focused	provides mathematics- focused	does not focus on one of the following actions:
Demonstrate mathematics- focused	instructional leadership	instructional leadership	instructional leadership	

· · ·				I
instructional	through one of	through one of	through one of	 coaching
leadership through	the following	the following	the following	/mentoring
actions such as	actions:	actions:	actions:	 building and
coaching				navigating
/mentoring;	 coaching 	 coaching 	 coaching 	
building and	/mentoring	/mentoring	/mentoring	relationships
navigating	 building and 	 building and 	 building and 	with teachers,
relationships with	-	navigating	-	administrators,
teachers,	navigating	0 0	navigating	and the
administrators, and	relationships	relationships	relationships	community
the community;	with teachers,	with teachers,	with teachers,	-
establishing and	administrators,	administrators,	administrators,	 establishing
maintaining learning	and the	and the	and the	and
communities;	community	community	community	maintaining
analyzing and				learning
evaluating	 establishing 	 establishing 	 establishing 	communities
educational	and	and	and	 analyzing and
structures and	maintaining	maintaining	maintaining	
policies that affect	learning	learning	learning	evaluating
students' equitable	communities	communities	communities	educational
access to high	 analyzing and 	 analyzing and 	 analyzing and 	structures and
quality				policies that
mathematics	evaluating	evaluating	evaluating	affect students'
instruction; leading	educational	educational	educational	equitable
efforts to assure	structures and	structures and	structures and	•
that all students	policies that	policies that	policies that	access to high
have opportunities	affect students'	affect students'	affect students'	quality
to learn important	equitable	equitable	equitable	mathematics
mathematics;	access to high	access to high	access to high	instruction
evaluating the	-	-	-	 leading efforts
alignment of	quality	quality	quality	to assure that
mathematics	mathematics	mathematics	mathematics	all students
curriculum	instruction	instruction	instruction	
standards,	 leading efforts 	 leading efforts 	 leading efforts 	have
textbooks, and	to assure that	to assure that	to assure that	opportunities
required	all students	all students	all students	to learn
assessments and making		have	have	important
recommendations	have			mathematics
for addressing	opportunities	opportunities	opportunities	 evaluating the
learning and	to learn	to learn	to learn	alignment of
achievement gaps;	important	important	important	U U
developing	mathematics	mathematics	mathematics	mathematics
appropriate	 evaluating the 	 evaluating the 	 evaluating the 	curriculum
classroom or	alignment of	alignment of	alignment of	standards,
school-level	0	-	-	textbooks, and
learning	mathematics	mathematics	mathematics	required
environments; and	curriculum	curriculum	curriculum	assessments
collaborating with	standards,	standards,	standards,	
school-based	textbooks, and	textbooks, and	textbooks, and	and making
professionals to	required	required	required	recommendati
develop evidence-	assessments	assessments	assessments	ons for
based interventions				addressing
	and making	and making	and making	learning and
	L	1	L	

for high- and low-		wa a a wa wa a wala ti	no como no no do ti	achievement
achieving students.	recommendati	recommendati	recommendati	
	ons for	ons for	ons for	gaps
	addressing	addressing	addressing	developing
	learning and	learning and	learning and	appropriate
	achievement	achievement	achievement	classroom or
	gaps	gaps	gaps	school-level
	 developing 	 developing 	 developing 	learning
	appropriate	appropriate	appropriate	environments
	classroom or	classroom or	classroom or	collaborating
	school-level	school-level	school-level	with school-
	learning	learning	learning	based
	environments	environments	environments	professionals to
	 collaborating 	 collaborating 	 collaborating 	•
	with school-	with school-	with school-	develop evidence
	based	based	based	-based
	professionals to	professionals to	professionals to	interventions for
	develop	develop	develop	high- and low-
	evidence -based	evidence -based	evidence -based	achieving
	interventions	interventions	interventions	students
	for high- and	for high- and	for high- and	
	low-achieving	low-achieving	low-achieving	
	-	-	-	
	students	students	students	
	The identified	The identified	The identified	
	action is well-	action is well-	action is not well	
	developed AND	developed OR	developed AND is	
	thoroughly	thoroughly	not thoroughly	
	described.	described.	described.	
OBJECTIVES &	Professional	Professional	Professional	Professional
ACTIVITIES	development is	development is	development is	development is
NCTM Standard	mathematics-	mathematics-	mathematics-	not
	focused.	focused.	focused.	mathematics-
6c				focused.
Plan, develop,	The plan clearly	The plan outlines	The plan outlines	
implement, and	outlines	objectives for the	objectives for the	The objectives
evaluate mathematics-	objectives for the	session AND lists	session OR lists	for the session
focused	session AND	activities the	activities the	and the
professional	describes	teachers will	teachers will	opportunities for
development	detailed activities	engage in during	engage in during	interaction are
programs at the	the teachers will	the session.	the session.	missing.
school and/or	engage in during			низэнг <u>Б</u> .
district level.	the session.			
	110 30331011.	The plan		
	The plan	The plan		
	The plan	provides		
1	provides	opportunities for		

]
	substantive opportunities for interaction and discussion of the topics.	interaction and discussion of the topics.		
RESOURCES & SUPPLEMENTAR Y MATERIALS NCTM Standard 6c Use and assist teachers in using resources from professional mathematics	Professional development resources for teachers come from professional mathematics education organizations.	Professional development resources for teachers come from professional mathematics education organizations.	Professional development resources for teachers come from professional mathematics education organizations.	Professional development resources for teachers do not come from professional mathematics education organizations.
education organizations such as teacher/leader discussion groups, teacher networks, and print, digital, and virtual resources/ collections.	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 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 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 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 Standard 7a Engage in a sequence of	The professional development plan takes into consideration adult and student learners.	The professional development plan takes into consideration adult and student learners.	The professional development plan takes into consideration adult and student learners.	The professional development plan does not take into consideration adult and student learners.
planned field experiences and clinical practice under the supervision of an experienced and highly qualified mathematics educator that	Specific considerations for adult learners AND student learners are articulated in the professional	Specific considerations for either adult learners OR student learners are clearly articulated in the professional	Specific considerations for adult learners and student learners are not articulated in the professional	

in the the				
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.	development plan.	development plan.	development plan.	
QUESTIONS FOR TEACHERS NCTM Standard 6c 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/pla n 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/pla n 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/pla n 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/pla n for the session • conducive to group/partner discussion The plan does not include anticipated

				questions from teachers.
COLLABORATIO N NCTM Standard 7a Engage in a	The professional development plan includes potential responses to the	The professional development plan includes potential responses to the	The professional development plan includes potential responses to the	The professional development plan does not include potential responses to the
sequence of planned field experiences and clinical practice	anticipated teacher questions.	anticipated teacher questions.	anticipated teacher questions.	anticipated teacher questions.
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.	Potential responses are framed positively and highlight the important mathematical ideas/message of the professional development.	Potential responses are framed positively but do highlight the important mathematical ideas/message of the professional development.	Potential responses are not framed positively and do not include the important mathematical ideas/message of the professional development.	
ASSESSMENT OF PARTICIPANT KNOWLEDGE AND NEED	The professional development includes an assessment (i.e. exit ticket).	The professional development includes an assessment (i.e. exit ticket).	The professional development includes an assessment (i.e. exit ticket).	The professional development does not include an assessment (i.e. exit ticket).
NCTM Standard 6b Advance the development in themselves and others as reflective practitioners.	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	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	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	

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	for	for	for	
	implementation.	implementation.	implementation.	
SEQUENCE OF	The candidate	The candidate	The candidate	Three or more of
PLANNED FIELD	uses the all steps	uses at least four	uses at least	the following
EXPERIENCE	in the following	steps in the	three steps in the	steps in the
NCTM Standard	sequence to	following	following	sequence are
	develop/	sequence to	sequence to	missing as the
7a	implement their	develop/	develop/	candidate
Engage in a	professional	implement their	implement their	develops/
sequence of	development:	professional	professional	implements the
planned field		development:	development:	professional
experiences and clinical practice	1. Develop a			development
under the	plan with peer	1. Develop a	1. Develop a	plan:
supervision of an	collaboration.	plan with peer	plan with peer	
experienced and	where feedback	collaboration	collaboration	1. Develop a
highly qualified	is provided	where feedback	where feedback	plan with peer
mathematics	2. Modify	is provided	is provided	collaboration
educator that involves the	the plan to	2. Modify	2. Modify	where feedback
development of a	include peer	the plan to	the plan to	is provided
broad experiential	feedback.	include peer	include peer	2. Modify
base of knowledge	3. Submit	feedback	feedback	the plan to
and skills working	the plan to an	3. Submit	3. Submit	include peer
with a range of	experienced	the plan to an	the plan to an	feedback
student and adult	and highly	experienced	experienced	3. Submit
learners in a variety of school and	qualified	and highly	and highly	the plan to an
professional	mathematics	qualified	qualified	experienced
development	educator in	mathematics	mathematics	and highly
settings and the	advance of	educator in	educator in	qualified
development of	implementation	advance of	advance of	mathematics
interpersonal skills	implementation	implementation	implementation	educator in
critical for mentoring other	4. Implemen	4. Implemen	4. Implemen	advance of
teachers and	t the plan in a	t the plan in a	t the plan in a	implementation
working with	school or	school or	school or	4. Implement
school-based			district setting.	
personnel, district	district setting. 5. Reflect	district setting. 5. Reflect		t the plan in a school or
administrators, and				
others.	deeply after	deeply after	deeply after	district setting.
	implementation	implementation	implementation	5. Reflect
	of the plan.	of the plan.	of the plan.	deeply after
				implementation
				of the plan.
PROFESSIONAL DEVELOPMENT EXPERIENCE: REFLECTION				
THE ROLE OF	The reflection	The reflection	The reflection	The reflection
LEARNING &	clearly identifies	identifies how	identifies that	does not
	how the	the professional	the professional	mention the
	now the	The professional	the professional	mention the

TEACHING OF	professional	dovelopment	dovelopment	candidate's
MATHEMATICS	professional	development	development	
IVIATHEIVIATICS	development	experience is	experience is	personal
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.	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.	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.	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.	teaching or learning of mathematics.
THE ROLE OF MATHEMATICS	The reflection clearly identifies	The reflection identifies how	The reflection does not clearly	The reflection does not
INSTRUCTIONAL	how the	the professional	identify how the	mention the
LEADER	professional	development	professional	candidate's
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.	development experience directly related to the candidate's development as a mathematics instructional leader.	experience directly related to the candidate's development as a mathematics instructional leader.	development experience directly related to the candidate's development as a mathematics instructional leader.	development as a mathematics instructional leader
IMPROVE	The reflection	The reflection	The reflection	The reflection
STUDENT	identifies two	identifies one	identifies one	does not identify
UNDERSTANDIN	important	important	understanding of	any important
G	understandings	understanding of	elementary	understandings
NCTM Standard	of elementary student	elementary	student mathematical	of elementary
NCTM Standard		student		student
7a	mathematical	mathematical	development.	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 IMPLEMENTATIO N NCTM Standard 7b Develop and use leadership skills to improve mathematics programs at the school or district level, e.g. collaborating to create a shared vision and to develop an action plan for school improvement.	The reflection describes the next steps that the candidate would take as a mathematics instructional leader implementing the identified action. The next steps clearly articulate a plan to meet colleagues' needs with a timeline for implementation.	The reflection describes the next steps that the candidate would take as a mathematics instructional leader implementing the identified action. The next steps of include either a plan to meet colleagues' needs or a timeline for implementation.	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 nor a timeline for implementation.	The reflection does not describe the next steps that the candidate would take as a mathematics instructional leader implementing the identified action.

Self-Study Research Project Description

Course Performance Based Assessment

This is a Performance Based Assessment. The final research report will be submitted on Blackboard in Via. 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.

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 Via.

Self-	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	QUENCE			
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	with peer	with peer	field experience	
clinical practice in	collaboration	collaboration	collaboration	with peer	
an elementary	where feedback	where feedback is	where feedback is	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 mathematics	highly qualified	experienced and	
	mathematics		mathematics educator for	highly qualified mathematics	
	educator for individualized	educator for	individualized	educator for	
	feedback	individualized 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	
	Jetting	Jetting	Jetting	setting	
	Reflect deeply upon	Reflect deeply upon	Reflect deeply upon	Secting	
	experience during	experience during	experience during	Reflect deeply upon	
	and after	and after	and after	experience during	
	implementation	implementation	implementation	and after	
				implementation	
SELF-STUDY PROJECT					
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	significance	key findings, and
DATIONAL F				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
	district setting.	district setting.	district setting.	the school or
				district setting.
	Provides	Provides	Provides	0
	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
	Addresses the	Addresses the	Addresses the	
	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
icuacionip skillo tu	IIIIPLOVIIIB			

		1	1	
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		concisely stated.	concisely stated.	concisely stated.
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.	-			
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:
Develop a broad	 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				
range of student	 It is adequate, 			
and adult learners	coherent and	coherent and	coherent and	coherent and
in varied school and				
professional	analytical.	analytical.	analytical.	analytical.

development	• It includes	It includes	It includes	It includes
settings.	references from a	references from a	references from a	references from a
0	variety of sources.	variety of sources.	variety of sources.	variety of sources.
		,	,	,
CONCEPTUAL	The candidate	The candidate	The candidate does	No conceptual
FRAMEWORK	connects and	connects and	not connect and	framework is
	explains theories,	explains theories,	explain theories,	included.
NCTM Standard 7a	literature, and	literature, and	literature, and	
	phenomena in a	phenomena in a	phenomena in a	
Demonstrate a	way that informs	way that informs	way that informs	
broad experiential	the research study	the research study	the research study	
base of knowledge	AND integrates the	OR integrates the	AND does not	
and skills working	literature review	literature review	integrate the	
with a range of	into the conceptual	into the conceptual	literature review	
student and adult	framework.	framework.	into the conceptual	
learners in varied			framework.	
school and				
professional				
development				
settings.				
RESEARCH	The research	The research	The research	The research
METHOD: CONTEXT	method includes all	method includes	method includes	method includes
& PARTICIPANTS	of the following:	two of the	one of the	none of the
		following:	following:	following:
NCTM Standard 7b	 A description of 			
	the overall	 A description of 	 A description of 	 A description of
Participate and	research context	the overall	the overall	the overall
encourage teachers		research context	research context.	research context
to participate in	 A description of 			
innovative or	the specific	 A description of 	•A description of	 A description of
transformative	community,	the specific	the specific	the specific
initiatives,	school, and	community,	community, school	community,
partnerships, or	classroom context	school and	and classroom	school and
research projects related to the		classroom context	context.	classroom
	Demographic			context
teaching of	information for the	Demographic	Demographic	
elementary	participants	information on the	information on the	Demographic
mathematics.		participants.	participants.	information on
				the participants
RESEARCH	The research	The research	The research	The research
METHOD: SELF-	method includes all	method includes	method includes	method includes
STUDY &	of the following:	two of the	one of the	none of the
REFLECTION	or the following.	following:	following:	following:
	 A reflection on 	Tonowing.	TOHOWING.	ionowing.
NCTM Standard 7b	the problem (e.g.	• A reflection on	• A reflection on the	• A reflection on
	observations,	the problem (e.g.	problem (e.g.	the problem (e.g.
Develop and use	possible causes,	observations,	observations,	observations,
leadership skills to	etc.)	possible causes,	possible causes,	possible causes,
improve		etc.)	etc.)	etc.)
mathematics	• An explanation for		<i>c</i> (c, <i>j</i>)	
programs at the	the chosen	• An explanation for	• An explanation for	• An explanation for
school and/or	pedagogies based	• An explanation for the chosen	• An explanation for the chosen	• An explanation for the chosen
district level, e.g.,	on the noticing of	pedagogies based	pedagogies based	pedagogies based
coaching/mentoring	the environment	hengengies nased	hengengies nased	hengengies nased
codening/mentoring	the environment			

new and experienced teachers to better serve students;• An explanation for the chosen pedagogies based on the literature reviewedon the noticing of the environmenton the noticing of the environmenton the noticing of the environmenton the noticing of the environment• An explanation for sharing critical initiatives, and curriculum trends related to mathematics teaching; keeping abreast of local,• An explanation for the chosen pedagogies based on the literature reviewed• An explanation the chosen pedagogies based on the literature reviewed <th>on for ased</th>	on for ased
teachers to better serve students; sharing critical initiatives, and 	on for based
serve students; sharing critical issues, policy initiatives, and 	ased
sharing critical issues, policy initiatives, and curriculum trends related to mathematics teaching; keeping abreast of local,on the literature the chosen pedagogies based on the literature reviewedthe chosen pedagogies based on the literature reviewedthe chosen pedagogies based on the literature reviewedthe chosen pedagogies based on the literature reviewedthe chosen pedagogies based on the literature reviewed	ased
issues, policy reviewed pedagogies based on the literature on the literature reviewed related to mathematics teaching; keeping abreast of local,	
initiatives, and curriculum trends related to mathematics teaching; keeping abreast of local,	
curriculum trendsreviewedreviewedreviewedrelated toreviewedreviewedreviewedmathematicsreviewedreviewedreviewedteaching; keepingreviewedreviewedreviewedabreast of local,reviewedreviewedreviewed	ure
related to mathematics teaching; keeping abreast of local,	
mathematics teaching; keeping abreast of local,	
teaching; keeping abreast of local,	
teaching; keeping abreast of local,	
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:	
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	ofthe
on diagnostic, how it was data collected, data collected, data collected, data collected, data collected,	
formative, and collected, and how it was how it was how it was	<i>_</i> ,
summative when it was collected, and collected, and collected, and collected, and	Ч
assessment collected when it was when it was when it was	u
evidence and collected collected collected collected	
determine the collected collected collected	
extent to which • Data from a • Data from a • Data from a	
students' variety of sources. variety of sources. variety of sources.	urces.
mathematical	
proficiencies have • A timeline of the • A timeline of the • A timeline of the	
data collection data collection data collection data collection	on

increased as a	process and	process and	process and	nrocoss and
result of their	process and planned	process and planned	planned	process and 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:	The findings include	The findings include	The findings include	The finding include
PRESENTATION	all of the following:	three of the	two of the	fewer than two of
	an of the following.	following:	following:	the following:
NCTM Element 7a	• The findings are			
	clearly and	• The findings are	• The findings are	 The findings are
Demonstrate a	thoroughly and	adequately	adequately	adequately
broad experiential	presented.	presented.	presented.	presented.
base of knowledge				
and skills working	• Themes from the			
with a range of	findings are	findings are	findings are	findings are
student and adult	connected and	connected and	connected and	connected and
learners in varied	coherently	coherently	coherently	coherently
school and	presented.	presented.	presented.	presented.
professional development	• Convincinc	• Convincinc	• Convincinc	• Convincing
settings.	Convincing evidence is	Convincing ovidence is	Convincing ovidence is	Convincing avidance is
Settings.		evidence is	evidence is	evidence is provided that
	provided that supports	provided that supports	provided that supports	supports
	identified themes.	identified themes.	identified themes.	identified themes.
	identified themes.	identified themes.	identified themes.	identified themes.
	The research	The research	The research	The research
	questions and the	questions and the	questions and the	questions and the
	findings are	findings are	findings are	findings are not
	connected.	connected.	connected.	connected.
	: IMPLICATIONS & REF		Neither of the	No impliestions fo
	Dath of the			
	Both of the	One of the		No implications for
TEACHING &	following	following	following	the teaching and
				-

NCTM Flows and 7a		looming of students	loove of students	
NCTM Element 7a	learning of students are included:	learning of students are included:	learning of students 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	
0	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 improve	educational field	results for the educational field	results for the	
mathematics	• An explanation of		educational field	
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	
		education	education	
	• A discussion of	standards	standards	
	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
	includes all of the	includes three of	includes two of the	includes less than
NCTM Element 7a	following:	the following:	following:	two of the
				following:

Demonstrate interpersonal skills critical for mentoring other teachers and working with	 A self-assessment of how the self- study methodological components were addressed using 	 A self-assessment of how the self- study methodological components were addressed using 	 A self-assessment of how the self- study methodological components were addressed using 	 A self-assessment of how the self- study methodological components were
school-based personnel, district administrators, and others.	 A discussion of how critical friend feedback changed 	the Five Foci chartA discussion of how critical friend	the Five Foci chartA discussion of how critical friend	 addressed using the Five Foci chart A discussion of how critical friend
	practice using evidence of deep reflection and self-study of teaching	feedback changed practice using evidence of deep reflection and self-study of teaching	feedback changed practice using evidence of deep reflection and self-study of teaching	feedback changed practice using evidence of deep reflection and self-study of teaching
	 A description of			
	the mentoring	the mentoring	the mentoring	the mentoring
	and use of inter-			
	personal skills	personal skills	personal skills	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	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 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 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		1	
REFERENCES	The references	The references	The references	The references
	meet all of the	meet four of the	meet three of the	meet two or fewer
	following	following	following	of the following
	requirements:	requirements:	requirements:	requirements:
	 All print and non-			
	print (internet)	print (internet)	print (internet)	print (internet)
	references are	references are	references are	references are
	listed.	listed.	listed.	listed.
	 References and	 References and	 References and	 References and
	citations meet	citations meet	citations meet	citations meet
	APA formatting	APA formatting	APA formatting	APA formatting
	guidelines.	guidelines.	guidelines.	guidelines.
	 References are	 References are	 References are	 References are
	current.	current.	current.	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.
The report organization includes all of the following:	The report organization includes five of the following:	The report organization includes four of the following:	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 	 A cover page with title, author's name, and professional affiliation The report is well- organized, grammatically 	 A cover page with title, author's name, and professional affiliation The report is well- organized, grammatically 	 A cover page with title, author's name, and professional affiliation The report is well- organized,
correct, coherent, and complete.The report has	correct, coherent, and complete.The report has	correct, coherent, and complete.The report has	grammatically correct, coherent, and complete.
and voice.	and voice.	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.
	from varied high- quality sources. All references cited in the research report are included in the list of references. 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 and the appendices meet APA formatting	from varied high- quality sources.from varied high- quality sources.All references cited in the research report are included in the list of references.All references cited in the research report are included in the list of references.The report organization includes all of the following:The report organization includes five of the following:• A cover page with 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 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 and the appendices meet APA formatting• The report and the appendices meet APA formatting	from varied high- quality sources.from varied high- quality sources.All references cited in the research report are included in the list of references.All references cited in the research report are included in the list of references.All references cited in the research report are included in the list of references.The report organization includes all of the following:The report organization includes five of the following:The report organization includes five of the following:The report organization includes five of the following:• A cover page with title, author's name, and professional affiliation• A cover page with 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 has distinctive focus and voice.• The report has distinctive focus and voice.• The report uses professional language (i.e., no jargon).• The report sis professional language (i.e., no jargon).• The report and the appendices meet APA formatting• The report and the appendices meet APA formatting• The report and the appendices meet APA formatting