## 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: <u>https://support.microsoft.com/en-us/help/14209/get-windows-media-player</u>
  - 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%)

## <u>Attendance</u>

- 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.

Participation Rubric					
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		through verbal	verbal contributions	~	
opportunities to	Demonstrates a high	contributions		Shows little concern	
learn from one	level of understanding	<b>5 1 1 1</b>	Follows rather than	for peers' learning or	
another and to	of assigned readings	Frequently involves	leads group	input.	
build a positive	through verbal	peers in discussion	activities.		
classroom	contributions			Misses classes and is	
experience and	Dromata apor		diaguagian	late for class	
Community.	foodbook and input		discussion	Doos not make un	
Participants	reedback and input		Misson alassas artis	Does not make up	
others' learning in	Listons activaly to		Inter for class	WOLK	
oritical friend work	Listens actively to		Tate for class		
by actively	peers				
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	<b>In-Class CFI BLOG POST</b> (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 <b>BLACKBOARD DB POST:</b> Prepare and post questions for Anne Driscoll. Brainstorm your keywords <b>CFI BLOG POST:</b> 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 <b>CFI BLOG POST:</b> CFI 5.3 CF Response	
Week 5 9/27 Format	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 Format Synchronous	Professional Development Project Collaboration Data Collection Brainstorm & Identification	Read: Chapters 10 & 11 Gather Literature CFI BLOG POST: CFI 8.1	BLACKBOARD ASSIGNMENT POST: Professional Development Session Plan Due for Instructor Feedback
Week 7 10/11* Format Asynchronous & Virtual Consults	<b>Data Collection Workshop</b> <b>CFI BLOG POST:</b> CF Response	Begin Data Collection Finalize & Reflect on CFI 8.1	
Week 8 10/18 Format Asynchronous & Virtual Consults	Literature Review Workshop BLOG POST: Data Collection Reflection	Continue Data Collection BLACKBOARD ASSIGNMENT POST: Literature Review Due Identify Specific Questions/Areas (As Needed)	
Week 9 10/25 Format Synchronous	Data Collection Workshop Problems of Practice Class Analysis of Data	Read Chapter 9 Continue Data Collection & Analysis <b>BLOG POST:</b> CF Response to Data Collection Reflection	Bring Problem of Practice & Peer Access to Data BLACKBOARD POST & BRING: Update on PD Session Plan Present PD before Week 12 if possible. Consult the instructor if you need to adjust.
Week 10 11/1 Format Asynchronous Week 11	Writing Class Workshop In-Class CFI BLOG POST: CF Response 9.1 Data Collection Workshop	Read One Sample Paper Continue Data Collection Continue Analyzing Data Read Chapter 11	Bring Problem of Practice &
11/8 Format	Problems of Practice	Read One Sample Paper	Peer Access to Data

Synchronous	<b>Class Analysis of Data</b>	Data Analysis	
	Critical Friend Workshop	Summarize Findings	
	In-Class CFI BLOG POST: CF Response CFI 11.1	Dialogue About Findings	
	Data Collection Workshop	Research Paper Draft to CF	Bring Problem of Practice & Peer Access to Data
Week 12	Problems of Practice	BLACKBOARD ASSIGNMENT POST:	
11/13	Class Analysis of Data	Research Paper Draft to Instructor	
Format Synchronous	<b>Discuss Paper Drafts</b> CFI 11.2	Needed)	
	Virtual Instructor Consults		
Week 13 11/22	<b>Critical Friend Work</b> CFI 11.3	Feedback on Research Paper to CF	<b>BLACKBOARD POST:</b> Final PD Plan, Materials & Reflection Uploaded
Format Asynchronous	Optional Virtual Instructor Consults		
Week 14	Critical Friend Work	Read Chapter 13	
<b>Format</b> Asynchronous	Optional Virtual Instructor Consults		
	<b>Research Presentation</b>	Bring Electronic Copies of Research Elver to Class	
Week 15	Exit Reflection on		
12/6	Professional Growth and Continued Goals	BLACKBOARD ASSIGNMENT	
Format	Commune Cours	Research Flyer	
Synchronous		<b>BLACKBOARD POST:</b> 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 <a href="https://catalog.gmu.edu/policies/honor-code-system/">https://catalog.gmu.edu/policies/honor-code-system/</a> ).
- Students must follow the university policy for Responsible Use of Computing (see <a href="https://universitypolicy.gmu.edu/policies/responsible-use-of-computing/">https://universitypolicy.gmu.edu/policies/responsible-use-of-computing/</a>).
- 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 <a href="https://ds.gmu.edu/">https://ds.gmu.edu/</a>).
- 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 <a href="https://ctfe.gmu.edu/teaching/student-support-resources-on-campus">https://ctfe.gmu.edu/teaching/student-support-resources-on-campus</a>

## 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 <a href="https://cehd.gmu.edu/students/">https://cehd.gmu.edu/students/</a>.

## **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.

Professional Development Project Rubric (Course Performance-Based Assessment)				
Level/Criteria	4	3	2	1
	Exceeds	Meets	Developing	Does Not Meet
	Expectations	Expectations		Expectations
<b>PROFESSIONAL D</b>	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	<ul> <li>meets the</li> </ul>	<ul> <li>meets the</li> </ul>	<ul> <li>meets the</li> </ul>
NCTM Standard	elements:	school or	school or	school or
6c	<ul> <li>meets the</li> </ul>	district level's	district level's	district level's
s	school or	needs	needs	needs
Plan, develop,	district level's	<ul> <li>promotes the</li> </ul>	<ul> <li>promotes the</li> </ul>	<ul> <li>promotes the</li> </ul>
implement and	needs	improvement	improvement	improvement
mathematics-	<ul> <li>promotes the</li> </ul>	of mathematics	of mathematics	of mathematics
focused	improvement of	within the	within the	within the
professional	mathematics	school or	school or	school or
development	within the	district	district	district
programs at the school and/or	school or	<ul> <li>explains how</li> </ul>	<ul> <li>explains how</li> </ul>	<ul> <li>explains how</li> </ul>
district levels.	district	the facilitation	the facilitation	the facilitation
	<ul> <li>explains how</li> </ul>	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
NCTM Standard	plan is based on	plan is based on	plan is based on	plan is not based
7a	observational	observational	observational	on observational
Engage in a	data for the	data for the	data for the	data for the
sequence of	school or district.	school or district.	school or district.	school or district.
planned field				
experiences and	i ne pian includes	ine plan includes	i ne plan does	
clinical practice	an analysis of the	an analysis of the	not include an	
supervision of an	school or district	school or district	analysis of the	
experienced and	environment	environment OK	school or district	
highly qualified	AND an	an explanation of	environment and	
mathematics	explanation of	now this	does not include	

educator that involves the development of a	how this professional	professional development	an explanation of how this	
broad experiential	development	experience will	professional	
base of knowledge	experience will	impact student	development	
and skills working	impact student	learning.	experience will	
with a range of	learning.		impact student	
student and adult	5		learning.	
learners in a variety				
of school and				
professional				
development				
the development of				
interpersonal skills				
critical for				
mentoring other				
teachers and				
working				
with school-based				
personnel, district				
administrators, and				
others.	Taaabaraard	Taaabaraarad	Taaabaraarad	Taaabaraard
	Teachers and	reachers and	reachers and	reachers and
INVOLVEMENT	leaders at the	leaders at the	leaders at the	leaders at the
NCTM Standard	school or district	school or district	school or district	school or district
7b	level are	level are	level are	level are not
	participants in	participants in	participants in	involved as
Develop and use	the professional	the professional	the professional	participants in
ieadership skills to	development	development	development	the professional
mathematics	experience.	experience.	experience.	development
programs at the	•	•	•	experience.
school and/or	Teachers and	Teachers and	Teachers and	
district level, e.g.,	leaders at the	leaders at the	leaders at the	
collaborating to	school or district	school or district	school or district	
create a shared				
vision and to	level are	level are	level are not	
develop an action	encouraged to	encouraged to	encouraged to	
plan for school	try a new	try a new	try a new	
improvement; and	practice that	mathematical	mathematical	
school-based	enhances the	teaching	teaching	
professionals to	current	practice.	practice.	
improve each	mathematical			
student's	teaching			
achievement.	practices.			
PROFESSIONAL D	EVELOPMENT EXPER	RIENCE: THE PLAN		
SESSION PLAN	The plan includes	The plan includes	Some details	No details for
	sufficient detail	sufficient detail	necessary for	implementation
	for someone else	for someone else	implementation	

NCTM Standard	to implement the	to implement the	of the plan are	of the plan are
70	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 improve each atudents/	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.
achievement.				
COACHING	The professional	The professional	The professional	The professional
ACTIONS	development	development	development	development
NICTM Standard	provides	provides	provides	does not focus
iver ivi Standard	mathematics-	mathematics-	mathematics-	on one of the
6 <b>d</b>	focused	focused	focused	following actions:
Demonstrate	instructional	instructional	instructional	
mathematics-				
focused	leadership	leadership	leadership	

instructional	through one of	through one of	through one of	<ul> <li>coaching</li> </ul>
leadership through	the following	the following	the following	/mentoring
actions such as	actions:	actions:	actions:	<ul> <li>building and</li> </ul>
coaching				navigating
/mentoring;	<ul> <li>coaching</li> </ul>	<ul> <li>coaching</li> </ul>	<ul> <li>coaching</li> </ul>	rolotionshins
	/mentoring	/mentoring	/mentoring	ille Lee ale and
relationships with	<ul> <li>building and</li> </ul>	<ul> <li>building and</li> </ul>	<ul> <li>building and</li> </ul>	with teachers,
teachers.	navigating	navigating	navigating	administrators,
administrators, and	relationships	relationships	relationships	and the
the community;	with teachers	with teachers	with teachers	community
establishing and	administrators	administrators	administrators	<ul> <li>establishing</li> </ul>
maintaining	autilitistiators,	autilitistiators,	autilitistiators,	and
learning	and the	and the	and the	maintaining
communities;	community	community	community	learning
analyzing and	<ul> <li>establishing</li> </ul>	<ul> <li>establishing</li> </ul>	<ul> <li>establishing</li> </ul>	communities
evaluating	and	and	and	
structures and	maintaining	maintaining	maintaining	• analyzing and
policies that affect	learning	learning	learning	evaluating
students' equitable	communities	communities	communities	educational
access to high	<ul> <li>analyzing and</li> </ul>	<ul> <li>analyzing and</li> </ul>	<ul> <li>analyzing and</li> </ul>	structures and
quality	evaluating	evaluating	evaluating	policies that
mathematics	educational	educational	educational	affect students'
instruction; leading	structures and	structures and	structures and	equitable
efforts to assure	nolicios that	nolicios that	policios that	access to high
have opportunities	offoct students'	offoct students'	offoct students'	quality
to learn important				mathematics
mathematics;	equitable	equitable	equitable	instruction
evaluating the	access to high	access to high	access to high	<ul> <li>leading efforts</li> </ul>
alignment of	quality	quality	quality	to assure that
mathematics	mathematics	mathematics	mathematics	all students
curriculum	instruction	instruction	instruction	have
standards,	<ul> <li>leading efforts</li> </ul>	<ul> <li>leading efforts</li> </ul>	<ul> <li>leading efforts</li> </ul>	nave
required	to assure that	to assure that	to assure that	opportunities
assessments and	all students	all students	all students	to learn
making	have	have	have	important
recommendations	opportunities	opportunities	opportunities	mathematics
for addressing	to learn	to learn	to learn	<ul> <li>evaluating the</li> </ul>
learning and	important	imnortant	imnortant	alignment of
achievement gaps;	mathematics	mathematics	mathematics	mathematics
developing				curriculum
classroom or	• evaluating the	• evaluating the	• evaluating the	standards.
school-level	alignment of	alignment of	alignment of	textbooks. and
learning	mathematics	mathematics	mathematics	required
environments; and	curriculum	curriculum	curriculum	assessments
collaborating with	standards,	standards,	standards,	and making
school-based	textbooks, and	textbooks, and	textbooks, and	recommondati
protessionals to	required	required	required	ons for
hased interventions	assessments	assessments	assessments	
	and making	and making	and making	addressing
				learning and

for high- and low-	recommendati	recommendati	recommendati	achievement
achieving students.	ons for	ons for	ons for	gaps
	addressing	addressing	addressing	<ul> <li>developing</li> </ul>
	learning and	learning and	learning and	appropriate
	achievement	achievement	achievement	classroom or
	gaps	gaps	gaps	school-level
	<ul> <li>developing</li> </ul>	<ul> <li>developing</li> </ul>	<ul> <li>developing</li> </ul>	learning
	appropriate	appropriate	appropriate	environments
	classroom or	classroom or	classroom or	collaborating
	school-level	school-level	school-level	with school-
	learning	learning	learning	hased
	environments	environments	environments	professionals to
	<ul> <li>collaborating</li> </ul>	<ul> <li>collaborating</li> </ul>	<ul> <li>collaborating</li> </ul>	develop evidence
	with school-	with school-	with school-	-hased
	based	based	based	interventions for
	professionals to	professionals to	professionals to	high- and low-
	develop	develop	develop	achieving
	evidence -based	evidence -based	evidence -based	students
	interventions	interventions	interventions	
	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.	
<b>OBJECTIVES &amp;</b>	Professional	Professional	Professional	Professional
ACTIVITIES	development is	development is	development is	development is
NCTM Standard	mathematics-	mathematics-	mathematics-	not
fc	focused.	focused.	focused.	mathematics-
				focused.
Plan, develop,	The plan clearly	The plan outlines	The plan outlines	
evaluate	outlines	objectives for the	objectives for the	The objectives
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
programs at the	detailed activities	engage in during	engage in during	interaction are
school and/or	the teachers will	the session.	the session.	missing.
district level.	engage in during			
	the session.			
		The plan		
	The plan	provides		
	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 education organizations such as teacher/leader discussion groups, teacher networks, and print, digital, and virtual resources/ collections.	Professional development resources for teachers come from professional mathematics education organizations. Professional development handouts and other documents (i.e. articles) meet all of the following requirements: • easy to follow/read • error-free • included or linked within the plan	Professional development resources for teachers come from professional mathematics education organizations. Professional development handouts and other documents (i.e. articles) meet two of the following requirements: • easy to follow/read • error-free • included or linked within the plan	Professional development resources for teachers come from professional mathematics education organizations. Professional development handouts and other documents (i.e. articles) meet one of the following requirements: • easy to follow/read • error-free • included or linked within the plan	Professional development resources for teachers do not come from professional mathematics education organizations. Professional development handouts and other documents (i.e. articles) do not meet the following requirements: • easy to follow/read • error-free • included or linked within the plan
MEETING LEARNERS' NEEDS NCTM 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	The professional development plan takes into consideration adult and student learners. Specific considerations for adult learners AND student learners are articulated in the professional	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	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	The professional development plan does not take into consideration adult and student learners.

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.	<ul> <li>The plan includes questions for teachers with all of the following characteristics:</li> <li>high cognitive demand (requiring higher-order thinking)</li> <li>alignment with objectives/pla n for the session</li> <li>conducive to group/partner discussion</li> <li>The plan includes anticipated questions from teachers.</li> </ul>	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

				questions from teachers.
COLLABORATIO	The professional	The professional	The professional	The professional
N	development	development	development	development
NCTM Standard	plan includes	plan includes	plan includes	include potential
7a	responses to the	responses to the	responses to the	responses to the
Engage in a	anticipated	anticipated	anticipated	anticipated
sequence of	teacher	teacher	teacher	teacher
planned field	questions.	questions.	questions.	questions.
clinical practice				
under the	Potential	Potential	Potential	
supervision of an	responses are	responses are	responses are	
experienced and highly qualified	framed positively	framed positively	not framed	
mathematics	and highlight the	but do highlight	positively and do	
educator involve	important	the important	not include the	
the development of	mathematical	mathematical	important	
critical for	ideas/message of	ideas/message of	mathematical	
mentoring other	the professional	the professional	ideas/message of	
teachers and	development.	development.	the professional	
working with			development.	
personnel, district				
administrators, and				
others.				
ASSESSMENT	The professional	The professional	The professional	The professional
OF	development	development	development	development
PARTICIPANT	includes an	includes an	includes an	does not include
	assessment (I.e.	assessment (I.e.	assessment (I.e.	an assessment
AND NEED	exit ticket).	exit ticket).	exit ticket).	(I.e. exit ticket).
NCTM Standard	The assessment	The assessment	The assessment	
6b	identifies	identifies	does not identify	
	teachers'	teachers'	teachers'	
development in	perceptions of	perceptions of	perceptions of	
themselves and	newly acquired	newly acquired	newly acquired	
others as reflective	knowledge and	knowledge and	knowledge and	
practitioners.	professional	professional	professional	
	practices in their	practices in their	practices in their	
	mathematics	mathematics	mathematics	
	teaching AND	teaching OR	teaching AND	
	allows teachers	allows teachers	does not allow	
	to indicate their	to indicate their	teachers to	
	needs and	needs and	indicate their	
	support required	support required	needs and	
			support required	

	for implementation.	for implementation.	for implementation.	
SEQUENCE OF PLANNED FIELD EXPERIENCE 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	for implementation. The candidate uses the all steps in the following sequence to develop/ implement their professional development: 1. Develop a plan with peer collaboration. where feedback is provided 2. Modify the plan to include peer	for implementation. The candidate uses at least four steps in the following sequence to develop/ implement their professional development: 1. Develop a plan with peer collaboration where feedback is provided 2. Modify the plan to	for implementation. The candidate uses 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	Three or more of the following steps in the sequence are missing as the candidate develops/ implements the professional development plan: 1. Develop a plan with peer collaboration where feedback is provided
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.	<ul> <li>include peer feedback.</li> <li>3. Submit the plan to an experienced and highly qualified mathematics educator in advance of implementation</li> <li>. Implement t the plan in a school or district setting.</li> <li>5. Reflect deeply after implementation of the plan.</li> </ul>	<ul> <li>the plan to</li> <li>include peer</li> <li>feedback</li> <li>3. Submit</li> <li>the plan to an</li> <li>experienced</li> <li>and highly</li> <li>qualified</li> <li>mathematics</li> <li>educator in</li> <li>advance of</li> <li>implementation</li> <li>Implement</li> <li>the plan in a</li> <li>school or</li> <li>district setting.</li> <li>Reflect</li> <li>deeply after</li> <li>implementation</li> <li>of the plan.</li> </ul>	<ul> <li>the plan to include peer feedback</li> <li>3. Submit the plan to an experienced and highly qualified mathematics educator in advance of implementation</li> <li>4. Implemen t the plan in a school or district setting.</li> <li>5. Reflect deeply after implementation of the plan.</li> </ul>	<ul> <li>is provided</li> <li>Modify the plan to include peer feedback</li> <li>Submit the plan to an experienced and highly qualified mathematics educator in advance of implementation</li> <li>Implement t the plan in a school or district setting.</li> <li>Reflect deeply after implementation of the plan.</li> </ul>
PROFESSIONAL D	EVELOPMENT EXPE	RIENCE: REFLECTION	J	
THE ROLE OF LEARNING &	The reflection clearly identifies how the	The reflection identifies how the professional	The reflection identifies that the professional	The reflection does not mention the

TEACHING OF	professional	development	development	candidate's
MATHEMATICS	development	experience is	experience is	personal
NCTNA Standard	experience	directly related	directly related	teaching or
NCTIVI Stanuaru	directly related	to the learning	to their learning	learning of
0d	to the learning	and teaching of	and teaching of	mathematics.
Take an active role	and teaching of	mathematics.	mathematics.	
in their professional	mathematics.			
participating in		The reflection	The explanation	
professional	The reflection	clearly describes	of the	
development	clearly describes	the impact of the	professional	
experiences that	the impact of the	professional	development	
directly relate to	professional	development	experience is not	
teaching of	development	experience on	connected to the	
mathematics.	experience on	either the	candidate's	
	the candidate's	candidate's	personal	
	personal learning	personal learning	teaching and	
	and teaching of	and or the	learning of	
	mathematics.	candidate's	mathematics.	
		personal		
		teaching of		
		mathematics.		
	The reflection	The reflection	The reflection	The reflection
	clearly identifies	identifies how	does not clearly	does not
	how the	the professional	identify how the	mention the
IFADER	nrofessional	development	nrofessional	candidate's
	development	experience	development	development as
NCTM Standard	experience	directly related	experience	a mathematics
6a	directly related	to the	directly related	instructional
Take an active role	to the	candidate's	to the	leader
in their professional	candidate's	development as	candidate's	
growth by	development as	a mathematics	development as	
participating in	a mathematics	instructional	a mathematics	
development	instructional	leader	instructional	
experiences that	leader		leader	
directly relate to				
their development				
instructional leader.				
	ine reflection	ine reflection	ine reflection	ine reflection
	identifies two	identifies one	identifies one	does not identify
	important	important	understanding of	any important
0	understandings	understanding of	elementary	understandings
	of elementary	elementary	student	of elementary
NCTIVI Standard	student	student	mathematical	student
	mathamatical	mathematical	anvolonmont	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	The reflection	The reflection	The reflection	The reflection
IMPLEMENTATIO	describes the	describes the	describes the	does not
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.	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.	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.	hext 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.	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-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 SEC	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 triend	Critical friend	Critical friend	is provided by a
experienced and	2. Woully planned	2. Would planned	2. Woully planned	2 Madify planned
mgniy quained	here experience	heid experience	here experience	z. wouly planned
aducator	foodback	foodback	foodback	hasod upon poor
euucator.	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 gualified
	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
				setting
	Reflect deeply upon	Reflect deeply upon	Reflect deeply upon	
	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	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
				150 words

	• Clear and concise word choice	Clear and concise     word choice	• Clear and concise word choice	Clear and concise     word choice
	• A description of the purpose, context, method, key findings, and significance	• A description of the purpose, context, method, key findings, and significance	• A description of the purpose, context, method, key findings, and significance	<ul> <li>A description of the purpose, context, method, key findings, and significance</li> </ul>
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	<ul> <li>Clearly and</li> </ul>	<ul> <li>Clearly and</li> </ul>	<ul> <li>Clearly and</li> </ul>	
base of knowledge	concisely explains	concisely explains	concisely explains	<ul> <li>Clearly and</li> </ul>
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	<ul> <li>Clearly and</li> </ul>	<ul> <li>Clearly and</li> </ul>	<ul> <li>Clearly and</li> </ul>	
professional	concisely explains	concisely explains	concisely explains	<ul> <li>Clearly and</li> </ul>
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.
	<ul> <li>Clearly and</li> </ul>	<ul> <li>Clearly and</li> </ul>	<ul> <li>Clearly and</li> </ul>	
	concisely explains	concisely explains	concisely explains	<ul> <li>Clearly and</li> </ul>
	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	<ul> <li>Provides</li> </ul>	<ul> <li>Provides</li> </ul>	
	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	Tewer than two of
QUESTIONS	- ·	tollowing:	tollowing:	the following:
NOTA Charada ad 7	Ihe research			
INCTIVI Standard /b	problem and	Ine research	Ine research	Ine research
Dovolon and was	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

improve	mathematics	improving	improving	improving
mathematics	nrograms 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	district level.	district level.	district level.
new and	nrohlem is clearly	• The research	• The research	• The research
experienced	and concisely	nrohlem is clearly	nrohlem is clearly	nrohlem is clearly
teachers to hetter	stated	and concisely	and concisely	and concisely
serve students.	Stateu.	stated	stated	stated
sharing critical	• The main recearch	Stateu.	Stateu.	stateu.
		• The main recearch	• The main recearch	• The main recearch
initiatives and				
curriculum trends	and concisely	question is clearly	and consistery	question is clearly
related to	Stateu.	and concisely	and concisely	and concisely
mathematics	. The sub research	Stateu.	Stateu.	Stateu.
tooching: kooping	• The sub research	-		<b>T</b> I I I
abroast of local	questions (if	<ul> <li>The sub research</li> </ul>	<ul> <li>The sub research</li> </ul>	<ul> <li>The sub research</li> </ul>
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.
ndurematics				
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.	<b>T</b> I I'I I		<b>T</b> I I'I I	<b>T</b> I I'I I
	review includes all	review includes the	review includes are	review deceret
LIIEKAIUKE	of the following	of the following	of the following	review does not
	of the following	of the following	of the following	following classes
NCTIVI Standard 7a	elements:	elements:	elements:	following elements:
Douolon a bread				
Develop a proad	<ul> <li>It is connected to</li> </ul>			
experiential base of	the research	the research	the research	the research
knowledge and	stuay.	stuay.	stuay.	stuay.
SKIIIS WORKING WITH a	11 T T			
range of student	• It is adequate,	• It is adequate,	• It is adequate,	<ul> <li>It is adequate,</li> </ul>
and adult learners	conerent and	conerent and	conerent and	conerent and
in varied school and	analytical.	analytical.	analytical.	analytical.
protessional				

development	<ul> <li>It includes</li> <li>references from a</li> </ul>	It includes	It includes	It includes
Settings.	variety of sources.	variety of sources.	variety of sources.	variety of sources.
CONCEPTUAL FRAMEWORK	The candidate connects and	The candidate connects and	The candidate does not connect and	No conceptual framework is
NCTM Standard 7a	explains theories, literature, and phenomena in a	explains theories, literature, and phenomena in a	explain theories, literature, and phenomena in a	included.
Demonstrate a broad experiential	way that informs	way that informs	way that informs	
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
NCTM Chandand 7h	. A description of	tollowing:	following:	following:
NCTIVI Standard 70	A description of	• A description of	• A decorintion of	• A decarintion of
Participate and	the overall	• A description of	•A description of	<ul> <li>A description of the overall</li> </ul>
encourage teachers	research context	research context	research context	research context
to participate in	• A description of	research context	research context.	research context
innovative or	the specific	• A description of	• A description of	<ul> <li>A description of</li> </ul>
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		classroom context	context.	classroom
related to the	Demographic			context
teaching of	information for the	Demographic	Demographic	
elementary	participants	information on the	information on the	<ul> <li>Demographic</li> </ul>
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	_	following:	following:	following:
	<ul> <li>A reflection on</li> </ul>			
NCTM Standard 7b	the problem (e.g.	<ul> <li>A reflection on</li> </ul>	<ul> <li>A reflection on the</li> </ul>	<ul> <li>A reflection on</li> </ul>
	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			
programs at the	the chosen	• An explanation for	An explanation for	An explanation for
school and/or	pedagogies based	the chosen	the chosen	the chosen
aistrict level, e.g.,	on the noticing of	pedagogies based	pedagogies based	pedagogies based
coaching/mentoring	the 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:	nedagogies 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	rememed	on the literature	on the literature	on the literature
curriculum trends		reviewed	reviewed	reviewed
related to		reviewed	reviewed	reviewed
mathematics				
teaching: keening				
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				
nlan for school				
improvement: and				
narthering with				
school-based				
professionals to				
improve each				
student's				
achievement				
achievennent.				
<b>ΔΑΤΑ COLLECTION</b>	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
50		collection:	collection:	collection:
	• A detailed	concetion		
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		Concelled		Concelled
extent to which	• Data from a	• Data from a	• Data from a	• Data from a
students'	variety of sources	variety of sources	variety of sources	variety of sources
mathematical	variety of sources.	variety of sources.	variety of sources.	valiety of sources.
proficiencies have	• A timeline of the	• A timeline of the	• A timeline of the	• A timeline of the
	data collection	data collection	- A unterine Of the	- A unterine of the

increased as a result of their instruction or their	process and planned interventions	process and planned interventions	process and planned interventions	process and planned interventions
efforts in coaching/mentoring teachers.	<ul> <li>A detailed explanation of the data analysis process so that someone else would be able to analyze the data and find similar results</li> </ul>	<ul> <li>A detailed explanation of the data analysis process so that someone else would be able to analyze the data and find similar results</li> </ul>	<ul> <li>A detailed explanation of the data analysis process so that someone else would be able to analyze the data and find similar results</li> </ul>	<ul> <li>A detailed explanation of the data analysis process so that someone else would be able to analyze the data and find similar results</li> </ul>
	• 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.	<ul> <li>An explanation of the role of the critical friend(s) in data interpretation.</li> </ul>
	<ul> <li>A visual and coherent presentation of the data</li> </ul>			
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 Demonstrate a broad experiential base of knowledge	<ul> <li>The findings are clearly and thoroughly and presented.</li> </ul>	<ul> <li>The findings are adequately presented.</li> </ul>	<ul> <li>The findings are adequately presented.</li> </ul>	<ul> <li>The findings are adequately presented.</li> </ul>
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.	<ul> <li>Convincing evidence is provided that supports identified themes.</li> </ul>	• Convincing evidence is provided that supports identified themes.	<ul> <li>Convincing evidence is provided that supports identified themes.</li> </ul>
	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.
SELF-STUDY PROJECT	: IMPLICATIONS & REFI	LECTION		
IMPLICATIONS: TEACHING & LEARNING	Both of the following implications for the teaching and	One of the following implications for the teaching and	Neither of the following implications for the teaching and	No implications for the teaching and learning of students are included.

NCTM Element 7a	learning of students	learning of students	learning of students	
Cain an in donth	are included:	are included:	are included:	
understanding of	• The reflection	• The reflection	• The reflection	
the mathematical	• The reflection	• The reflection	• The reflection	
development of	important	important	important	
students across all	understandings of	understandings of	understandings of	
of the elementary	ctudent	ctudent	ctudent	
grades	mathematical	mathematical	mathematical	
grades.	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	
	nossible	possible	nossible	
	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	
NCTIVI Element 7b	the implications of	explanation of the	explanation of the	
Dovelop and use	the research and	implications of the	implications of the	
leadershin skills to	educational field	results for the	results for the	
improve	educational neiu	educational field	educational field	
mathematics	• An explanation of	educational field	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	
	<ul> <li>A discussion of</li> </ul>	standards	standards	
	limitations and			
	future research	<ul> <li>A discussion of</li> </ul>	<ul> <li>A discussion of</li> </ul>	
	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 school-based personnel, district administrators, and others.	<ul> <li>A self-assessment of how the self- study methodological components were addressed using the Five Foci chart</li> <li>A discussion of how critical friend feedback changed practice using evidence of deep reflection and self-study of teaching</li> <li>A description of the mentoring and use of inter- personal skills</li> <li>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</li> </ul>	<ul> <li>A self-assessment of how the self- study methodological components were addressed using the Five Foci chart</li> <li>A discussion of how critical friend feedback changed practice using evidence of deep reflection and self-study of teaching</li> <li>A description of the mentoring and use of inter- personal skills</li> <li>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</li> </ul>	<ul> <li>A self-assessment of how the self- study methodological components were addressed using the Five Foci chart</li> <li>A discussion of how critical friend feedback changed practice using evidence of deep reflection and self-study of teaching</li> <li>A description of the mentoring and use of inter- personal skills</li> <li>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</li> </ul>	<ul> <li>A self-assessment of how the self- study methodological components were addressed using the Five Foci chart</li> <li>A discussion of how critical friend feedback changed practice using evidence of deep reflection and self-study of teaching</li> <li>A description of the mentoring and use of inter- personal skills</li> <li>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</li> </ul>
SELF-STUDY PROJECT	: FORMATTING			
REFERENCES	<ul> <li>The references meet all of the following requirements:</li> <li>All print and non- print (internet) references are listed.</li> <li>References and citations meet APA formatting guidelines.</li> <li>References are</li> </ul>	<ul> <li>The references meet four of the following requirements:</li> <li>All print and non- print (internet) references are listed.</li> <li>References and citations meet APA formatting guidelines.</li> <li>References are</li> </ul>	<ul> <li>The references meet three of the following requirements:</li> <li>All print and non- print (internet) references are listed.</li> <li>References and citations meet APA formatting guidelines.</li> <li>References are</li> </ul>	<ul> <li>The references meet two or fewer of the following requirements:</li> <li>All print and non- print (internet) references are listed.</li> <li>References and citations meet APA formatting guidelines.</li> <li>References are</li> </ul>
	current.	current.	current.	current.

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