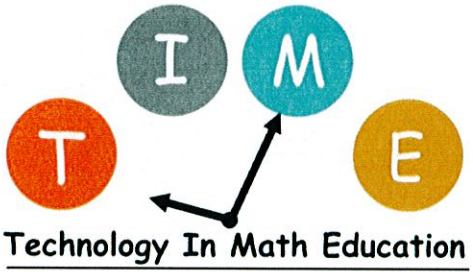

Proposal for Seminar – TAMIU, LCC, and Local School Districts – Rev 7

Focus:

- To be familiar with the research process and actively lead a research project (including treatment / control groups) based on one of two research project models.
- To be familiar with Action Based Research and learn how this research strategy can be implemented by teachers in their classrooms. Teachers will learn how to use findings from Action Based Research, based on student performance, to determine the efficacy of teaching strategies implemented in the lesson plan and give support to refine or maintain the teaching strategy implemented, or to reject the teaching strategy in favor of a more effective one.
- Include Peer Instruction in the design of each group project so that communication between members of peer groups can be recorded during the lesson implementation, to report on the Hispanic cultural impact of language use; i.e., whether groups interact in English, Spanish, or a mixture of English & Spanish and the type of code-switching involved in this mixture.
- Include a technological component to be used with Peer Instruction to study the impact of student understanding in the classroom with this technology. Examples of technology investigated in this study will be the Smart Board, Classroom Response System, Smart Viewcam, and SmartView, with mandatory training in one of three sessions offered in conjunction with this seminar. The implementation of these technologies will be used to study the impact of the familiarity of students in "Generation Y" (students born in the year 2000 or later) with instant communication and digital technologies, a reality of the students we serve in mathematics classes today.

Lesson Plan:

- Each Lesson Plan will include a Pre- and Post- Test – which will consist of ten questions for two objectives; each objective will have 1 content question to test for understanding and 4 computational questions that test the application of content.
- Lesson Plans (2) will be prepared as models for possible use in the classroom by group members, designed to be given in a single fifty (50) minute session.
- Treatment for each group will be the use of Peer Instruction with or without technology; the Control group will not include Peer Instruction.
- Ideally, each participant will deliver the classroom lesson plan to three classes. The control class will be taught with no peer instruction nor technology intervention. The two treatment classes will have peer instruction without technology intervention and peer instruction with technology intervention. In both treatment classes, peer instruction will be the main effect that is being investigated.

Use of Seminar time intermittent to Seminar Saturday Sessions

Fellows Activity following Saturday Sessions:

- Within each group, sub-groups are recommended to be formed to work on homework tasks to split up the work, while making it easier for sub-group members to communicate with each other, the result of fewer conflicting schedules. The break-up of the tasks, if desired, will be decided by the group leader.
- Group Leaders, with the help of the Research Leader Coordinator, will maintain communication by whatever means decided on, with all group members to insure that progress is being made in preparation for the group presentation on the next planned Saturday Session.
- During the Seminar Saturday Session, each group will meet together for the first hour, to make final preparations for the group presentation.

July

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Holidays and Observances:

ew Year's Day	May 30	Memorial Day	Nov 8	Election Day
lartin Luther King Day	Jun 19	Father's Day	Nov 11	Veterans Day
alentine's Day	Jul 4	Independence Day	Nov 24	Thanksgiving Day
residents' Day	Sep 5	Labor Day	Dec 24	Christmas Eve
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Holidays and Observances:

Jan 1	New Year's Day	May 28	Memorial Day
Jan 2	'New Year's Day' observed	Jun 17	Father's Day
Jan 16	Martin Luther King Day	Jul 4	Independence Day
Feb 14	Valentine's Day	Sep 3	Labor Day
Feb 20	Presidents' Day	Oct 8	Columbus Day (Most regions)
Apr 8	Easter Sunday	Oct 31	Halloween
May 13	Mother's Day	Nov 6	Election Day

Timeline: (General Sessions on Saturdays)

Session 1 – October 8, 2011, from 9am to 3pm (1 hour for lunch)

Session 2 – October 29, 2011, from 9am to 3pm (1 hour for lunch)

Mandatory Technology Training (2 hours) – in Use of Classroom Response System and SmartBoard Technology: ((Choose One (1) Session) – Research Leaders will also be)
(attending 1 of the workshops)

November 7th (5:30 – 7:30), **Room BCH 118**

November 8th (5:30 – 7:30) **Room BCH 118**

(Humberto & David presenting at AMATYC Nov 10 – Nov 13 in Austin)

(Treatment / Control Sessions given before end of Fall Semester)

Session 3 – January 14, 2012, from 9am to 3pm (1 hour for lunch)

Session 4 – February 25, 2012, from 9am to 3pm (1 hour for lunch)

Group Project Models – to be made available to all groups

- Solve linear functions;
- Solve linear regression problems.

TimeLine

Session 1: October 8th, 2011: The focus of this first session will be the following:

- Give an overview of the seminar and the desired outcomes for all participants;
    - Use of Action Based Research;
    - Perform a quasi-experiment with students based on pedagogical research;
        - Integrating technology / peer instruction / data-collection thru pre- & post-tests
    - Analyze results of experiment performed – control vs. treatment results;
    - Create a paper towards potential publication in an academic journal;
- Introduce variables to be focused on in the design of the lesson plan;
    - Peer Instruction
    - Use of Technology (Smart Board) and Clickers;
    - Hispanic Cultural Aspects in Math Education; and,
    - Generation "Y" Students;
- Prepare Fellows for homework assignments – research of literature regarding variables to be focused on in the lesson plan.

Materials to be distributed to participants:

- Pre-Test and Post-Test (pre-test to be given within four class days before the actual experiment)
- Selected article(s) on the use of a classroom response system in the classroom – Derek Bruff, Vanderbilt University;
- Selected article(s) on Hispanic cultural aspects of language in the classroom – Judit Moschkovich (including Peer Instruction);
- Selected article(s) on "Generation Y" and the use of technology in the classroom;
- Selected article(s) on the research process and research paper;

Schedule of Events

9:00 – 9:30 Welcome / Overview of Program (Include IRB's) / Welcome by Dr. Lira

9:30 – 10:00 Action Based Research – Power Point Design by Richard Sagor – power point presentation and video by Richard Sagor

10:00 – 10:30 Brainstorming session using Action Based Research Video as a springboard, focusing on relevance of ideas developed in the current classroom. After ideas and categories have been developed, each participant will select four to five elements that have a direct implication in their classroom teaching and develop those points, writing them down on a worksheet that is provided. Discuss these elements within each group and select four points that are common to each group member and share the ideas developed with the whole group.

10:30 – 10:45 15 minute break;

10:45 – 11:15 Presentation / and / each group member to read the article by Judit Moschkovich on cultural aspects of Math Education, and select three to four points that were meaningful with the potential to have implication on the research project in their classroom, aspects to pay attention to while delivering the lesson.

11:15 – 11:45 Brainstorm ideas as a group to develop ideas and categories brought out in article. After ideas and categories have been developed, each participant will select four to five elements that have a direct implication in their classroom teaching and develop those points, writing them down on a worksheet that is provided. Discuss these elements within each group and select four points that are common to each group member and prepare to share the ideas developed with the whole seminar group.

11:45 – 12:45 Lunch

12:45 – 1:15 Presentation on Use of Technology in the Classroom / referencing article from Derek Bruff and video presentation based on Derek Bruff.

1:15 – 1:45 Students will select three to four points that were meaningful with the potential to have implication on the research project in their classroom, aspects to pay attention to while delivering the lesson.

Brainstorm ideas as a group to develop ideas and categories brought out in article. After ideas and categories have been developed, each participant will select four to five elements that have a direct implication in their classroom teaching and develop those points, writing them down on a worksheet that is provided. Discuss these elements within each group and select four points that are common to each group member and prepare to share the ideas developed with the whole seminar group.

1:45 – 2:15 Presentation / or / each group member to read article on Generation "Y" students and select three to four points that were meaningful with the potential to have implication on the research project in their classroom, aspects to pay attention to while delivering the lesson.

2:15 – 2:45 Brainstorm ideas as a group to develop ideas and categories brought out in article. After ideas and categories have been developed, each participant will select four to five elements that have a direct implication in their classroom teaching and develop those points, writing them down on a worksheet that is provided. Discuss these elements within each group and select four points that are common to each group member and prepare to share the ideas developed with the whole seminar group.

2:45 – 3:00 Explanation of Technology Sessions to be attended by Fellows on one of two Saturdays, before implementation of Control/Treatment Sessions to be given to students. Distribute sample IRB's given to participants.

Discuss the homework assignment to be completed by the next Saturday Group Session. Homework assignment will be for the Fellows to conduct a Review of Literature, finding and summarizing articles found regarding the different variables to be focused on in their research paper. The variables are the following: Peer Instruction; Use of Technology; Cultural Aspect of Mathematics; and, Generation "Y" Students.

Session 2: October 29th, 2011: The focus of this second session will be the following:

- Review / Sharing of Findings of the Review of Literature from the Homework Assignments from the previous lesson;
- Familiarity with the different parts of the Research Paper;
- Use of Pre- and Post- tests to report on Quantitative Analysis of the experiment;
- Use of Surveys and Observations recorded to report on Qualitative Analysis of the experiment;
- Two Sample Prepared Lesson Plans will be prepared, complete with pre- and post- tests, Power-Point Presentation, and SmartResponse Questions. An example of one of the model lesson plans will be demonstrated to Fellows;
- Preparation of Lesson Plan by individual groups or sub-groups to be given to students before the Third Session;
- Description of Mandatory Technology Training;
- Scheduling of Lesson Plan Delivery within each group, sharing of limited resources and peer observation by different members within each group.
- Inclusion of the possible recording of each class for qualitative analysis at a later date.

Materials to be distributed to participants:

- Lesson Plan Models;
- Demonstration of how Selected article(s) on the review of literature found by each group, distributed to all participants via Angel, continuing on as research develops, can be found in TIME Resources in Angel;
- Article by StatPac on the Research Process;
- Copy of sample Research Paper on similar topic in linear regression research;
- Copy of Student Survey;
- Copy of Student Consent Form (LCC)

Schedule of Events

9:00 – 9:30 Individual groups will get together to discuss the homework assignment and make final preparations for group presentation, regarding the review of literature for the different variables focused on in the lesson.

9:30 – 10:30 Presentation by each group on review of literature found on each group's teaching strategy (15 minutes per group);

***** Welcoming of Each Group Member *****

10:30 – 10:45 15 minute break;

10:45 – 11:15 Presentation on Data used in Experiment – quantitative and qualitative and variables that enter into the experimental design;
Introduction of Research Design –
Power Point Presentation over research design, including the different elements of the Research Paper in standard format – (Expected Size to be from 7 to 10 pages):

Abstract (50 word summary)

Chapter I - Introduction

Statement of the problem
Purpose
Significance of the Study
Research and Null Hypotheses

Chapter II - Background

Chapter III - Methodology

Population and sampling
Analysis Plan
Assumptions
Chapter IV – Results
Description of the Sample

Chapter V – Conclusions and Recommendations

Discussion
Recommendations
Suggestions

Review **Chapter III – Methodology –** and its implications for the type of data that will be collected, and how it will be used, using the reference of the group project **(Analysis of the use of Peer Instruction in teaching Linear Regression)** as a model to demonstrate the different sections of **Chapter III – Methodology**;

Population and sampling – the population that will be sampled – description of who will be performing the experiment, the different classes, schools, colleges;

Analysis Plan – the different data that will be collected – quantitative by pre/post test & qualitative – by recording of peer interaction during group discussion & surveys; the recognition of the control and treatment group for this experimental group; the type of data to be expected to be found in each;

Assumptions – categorization and recognition of different variables – experimental, confounding, dependent, independent, importance of nullifying unwanted research variables to increase validity and reliability;

Chapter IV – Results – the types of results that expect to be found – recap of purpose; null hypothesis, alternative hypothesis; claim;

11:15 – 11:30 Group Project – Discussion of Research Question – "Statement of the Problem," to cover main points, or what it is that the individual group or subgroups want to research.

11:30 – 12:00 30-Minute Presentation by Graduate Programs of TAMIU
12:00 – 1:00 Lunch
1:00 – 1:15 Angel Website Presentation
1:15 – 1:45 Demonstration, using Classroom Response System and Peer Instruction and TI-SmartView, over how lesson would be implemented, using the sample lesson of linear regression and the prepared Power Point presentation developed for the lesson plan, focusing on how data will be collected, comparing results of pre- and post tests.

1:45 – 2:30 Review the two lesson plan models in each group, and identify strong / weak points for each lesson, with adaptations made, as desired, to the lesson plan models as per group member(s)'s preference. If necessary, make adaptations of the pre- and post- test questions as needed, based on material covered within each instructor's classes following their scope and sequence, with the intervention to be given between the month of November and the end of the Fall Semester. Also, include the surveys that will be given to all students that ask questions of gender, ethnicity, language of origin, and likes and dislikes from the lesson.

2:30 – 3:00 Discussion over the homework assignment until the next session – the organization of data that is collected from each experiment – quantitative and qualitative.

Homework to work on until the next Saturday Session on January 14th, 2012

- Preparation of Final Lesson Plan – (either the same as the model lesson plan or revised)
  - pre- and post- questions (8 to 10) – (either the same as the model questions or revised)
  - copy of survey to be given to all students (the same for all students)
  - Smart Notebook Presentation of Lesson Plan for all students – (either the same as the model lesson or revised)
  - SmartResponse Clicker questions embedded in Lesson Plan in Smart Notebook Software (either the same as the model lesson or revised)
  - Differentiation between Treatment and Control Groups – for those giving the lesson to their students, deciding which of their classes will be the 2 treatment classes and the 1 control class
  - Who's going to be giving Lesson, and who's possibly going to be assisting
    - For those giving the Lesson, how is access to the Smart Response (clickers) and SmartBoard Software going to be worked out. This could also include access to a laptop, computer projector, or a SmartBoard.
  - Collection of Data in Excel Format, according to Survey Format sent as an attachment to all members.
- Preparation for Discussion of how the Lesson went to share with Saturday Group for next session;

Distribute copy of Selected Session for all Fellows as a reminder for technology session,

Mandatory Attendance in one of Two Technology Training Sessions (2 hours) – Room BCH 118

Use of Classroom Response System and SmartBoard Technology:

for one of the following two dates:

November 7th (5:30 – 7:30),
November 8th (5:30 – 7:30)

Delivery of Control/Treatment session to students

There are between 17 and 20 days, depending on when technology training is received, for instructors to give lesson to students. There are four classroom sets of SmartResponse clickers available for use.

Session 3: January 14th, 2012: Main Objective: Analysis of Data given in experiment, both quantitative and qualitative.

Overview: Experiment has been given; talk about anecdotal evidence: dialogues among students; talk about results of pre-post tests and give a possible explanation about the results of the study; talk about overall experience of the lesson given.

Materials to be distributed to participants:

- Selected article(s) on the analysis of data using SPSS;
- Selected article(s) on the analysis of data using ANCOVA on pre- and post- test results;
- Selected article(s) on the analysis of qualitative data from surveys;
- Selected article(s) on the analysis of qualitative data from group discussion and language usage during peer instruction;
- Examples of research paper used in TAMIU 2011

Schedule of Events

9:00 – 9:30 Work in individual groups to discuss the following items, towards the preparation of a presentation to the whole group.

- Rough overview of the focus of the lesson plan and how it was implemented;
- What were the experiences of giving the lesson, both of the teachers (assistants) and the students;
- Identify what worked well in the lesson; Identify memorable moments, both positive and negative; and, Write two or three recommendations to make this process more effective for next year's group;
- What was the response of students to the use of this technology;
- Describe the usage of language interchange between students, observed for anecdotal evidence.

(Main points will be written down from each group presenting so that common themes will stand out, leading towards a list of overall Best Practices.)

9:30 – 10:30 Presentation by each group on data collected – quantitative and qualitative, as well as a general overview of what the experience was like, conducting the experiment – any variations that were different than the lesson plan (10 minutes per group);
10:30 – 11:30 Presentation on the use of SPSS with quantitative results of pre- and post- tests;
11:30 – 12:00 Presentation on how to analyze qualitative data collected from student surveys;
12:00 – 1:00 Lunch
1:00 – 1:10 Meet in Engineering Lab, Room 205. Work on Midway Survey – Reflections on the Seminar to date.
1:10 – 2:00 Break-Out Sessions using SPSS and Excel for analysis of quantitative and qualitative data.
2:00 – 2:30 Brief presentation of findings of quantitative and qualitative analysis from the lesson.

2:30– 3:00 Work on the research paper (roughly 20 pages), including abstract, introduction, background, and methodology, and prepare a fifteen-minute presentation for the next session.

Refer to notes on the parts of the research paper.

Abstract (50 word summary)

Chapter I - Introduction

- **Statement of the problem**
- **Purpose**
- **Significance of the Study**
- **Research and Null Hypotheses**

Chapter II - Background

Chapter III - Methodology

- **Population and sampling**
- **Analysis Plan**
- **Assumptions**
- **Chapter IV – Results**
- **Description of the Sample**

Chapter V – Conclusions and Recommendations

- **Discussion**
- **Recommendations**
- **Suggestions**

Session 4: February 25th, 2012: Report Findings in the form of an actual paper; include review of literature; analysis of anecdotal evidence; also report on findings from survey, with repetition of words found in the data;

Materials to be distributed to participants:

- Certificates of Participation
- Copies of each groups research paper

Schedule of Events

9:00 – 10:00	Discussion over the homework assignment from the previous Saturday Session – the analysis of data collected – quantitative and qualitative; and the writing of the research paper, including abstract, introduction, background, and methodology. Make final preparations for group presentations of research papers.
10:00 – 10:15	Break
10:15 – 11:15	Presentation by each group on their analysis of the data collected – quantitative and qualitative; as well as their final paper (10 minutes per group); Presentation Conclusions, Recommendations, and Suggestions given resulting from the research they conducted;
10:40 – 11:00	20 minute break;
11:00 – 12:00	Distribution of each group's research papers, so that each group can review the work from other groups to give a critique over any points that need revision (Peer Review)
12:00 – 1:00	Lunch
1:00 – 1:40	Break-Out sessions for each group to discuss Conclusions, Recommendations, and Suggestions for their project;
1:40 – 2:40	Presentation by each group on their Conclusions, Recommendations, and Suggestions;
2:40 – 3:00	Closing Ceremonies

Note: The choice of Group Projects was developed from the scope and sequence for Algebra 1 classes, which could be implemented by Middle School and College Algebra students.

Algebra 1 Scope and Sequence:

October – Domain and Range;
November – Writing Linear Equations;
December – Solving Linear Regression Equations;
January – Solving Quadratic Equations;