

Requirements for all Research Projects

1. **General background information** (Names of researcher(s), teaching experience, grade level of students, # of students in class with special needs (Second language learners, special education))
2. **'Math Student History Survey'** (Likert Scale; **to be administered prior to and upon completion of your research project**)
3. **Mathematics Student Interest Inventory** (general summary)
4. **Class Mathematics Student Interest Inventory** (copy of completed inventory)
5. **Math Dynamics Assessment** (CRA assessment, error pattern analysis, flexible math interviews (flexible math interviews as deemed necessary by researcher)) (general findings/results of CRA assessment)
6. **Instructional Objective and Instructional Hypothesis**
7. **Lesson design/components** (see options below)
8. **Pre/Post assessment data** (see options below for means of collecting data)
9. **Teacher Reflection:** Two (2) page, double spaced, including pre and post test data, positive aspects of your experience, difficulties, what you learned, what you might do differently next time, student reactions, etc.

Design new lesson ('Ground Up')

Select and modify a previous lesson from your classroom

Select one of the lessons in the Allsopp text and adapt for your situation

Design Instructional Sequence

Include Explicit Concrete Representational Abstract Instruction (CRA) (**Required**)

Collect pre-test data

Teach lesson/concept

Collect post-test data

Analyze lesson for strengths and weaknesses; augment/alter lesson as needed

Include Explicit Concrete Representational Abstract (CRA) Instruction (**Required**)

Collect pre-test data

Teach lesson/concept

Collect post-test data

Adapt for your own needs and specific student population

Include Explicit Concrete Representational Abstract (CRA) Instruction (**Required**)

Collect pre-test data

Teach lesson/concept

Collect post-test data

Data Collection/Reporting

- Completed/analyzed 'student reaction survey' results (pre and post assessment (**required for all research projects**))
- Complete/analyze instructional assessment data including both receptive and expressive components using one of the four options for pre and post instructional assessment listed below (**required for all research projects**)
 1. Pre and post test (Teacher designed or unit test (if appropriate))
 2. Pilot an RTI measure developed by a conference researcher (If an RTI is available that meets your needs)
 3. District RTI measure (if appropriate)
 4. Teacher developed RTI measure

Benefits to the Researcher

Upon successful completion and evaluation of submitted research project:

- CCLD will reimburse research participants for the purchase of “Teaching Mathematics Meaningfully”
- CCLD will waive the registration fee for Math on the Planes the following year
- Summary/abstract of study will be published in the CCLD newsletter and participants will have the opportunity to informally share research results with colleagues
- Research Stipend

Helpful hints for your research project:

1. Regarding your instruction objective, start with something small...a discrete but critical component (a ‘big idea’ or ‘central concept’) of your math instruction (examples might be comparing fractions with unlike denominators, ordering decimals, borrowing with regrouping, division with remainders, solving one step algebraic equations, or determining and comparing the areas of various rectangles).
2. Pick an instructional objective that is important to *you* in your math instruction. It may be an objective that you have already taught successfully to most students and are interested in broadening its’ efficacy and impact on struggling learners. On the other hand, it may be a lesson you have questioned (regarding efficacy and impact) and thus one you would like to approach in a different manner.
3. Should you need assistance or further direction, contact your research liaison at the Colorado Council for Learning Disabilities. We are here to help you and our goal is for you to learn and grow as a result of your having participated in this research project.

Particularly helpful resources/guidelines from the Allsopp text:

1. **Chapter 9** (Teaching for initial understanding) is very helpful for overall lesson design and a thorough introduction to the concept of concrete/representational/abstract assessment and instruction.
2. **Chapter 11** (Putting it all together) has a very thorough and completed example of a Responsive Instructional Planning Framework Form that may prove very useful in helping you gather your thoughts and information and plan your lesson.
3. **Chapter 10** (Building Proficiency) contains excellent suggestions to help students build proficiency once successful initial instruction has been achieved. This chapter also includes good information regarding various formats for ‘response to intervention’ (RTI) data collection.
4. Page 147 includes a concise and helpful review of receptive and expressive assessment concepts.
5. Pages 186 and 187 list excellent questions that may also prove helpful in helping you gather your thoughts and plan your lesson and assessments.
6. Page 187, again from chapter 11 (Putting it all together) includes a helpful chart regarding possible mathematics ‘learning barriers’ for struggling students.
7. The appendix includes numerous blank templates that may prove extremely helpful in planning your lesson and assessing the outcomes.