Observation Protocols

Dynamic Geometry in Classrooms (DRL-0918744)
CAREER: Mathematics Instruction for English Language Learners (DRL-1055067)
NSF PI Meeting, June 13-15 2012

Dynamic Geometry Project

The project is conducting repeated randomized control trials of an approach to high school geometry that utilizes Dynamic Geometry (DG) software to supplement ordinary instructional practices. It compares effects of that intervention with standard instruction that does not make use of computer investigation/drawing tools.

Fidelity of Implementation

Fidelity of implementation for the experimental treatment is monitored carefully.

- Geometry Teaching Observation Protocol (GTOP)
- DG Implementation Questionnaire

Data for answering the research questions are analyzed by appropriate HLM and qualitative methods.

Geometry Teaching Observation Protocol (GTOP)

❖ Goal of the instrument is to measure the *intensity of implementation* of the Dynamic Geometry approach.

❖ Adapt the existing Reform Teaching Observation Protocol (RTOP) which measure "reformed" teaching:

– Kept the same structure of items organized in sub-sections, each rated on a scale from 0 (not observed) to 4 (very descriptive).

– Sub-sections and items were modified to reflect the features of the Dynamic Geometry approach.

Structure of GTOP

I.   *Background information*

II. *Contextual background and activities*

III. *Intended Dynamic Geometry lesson*

IV. *Implemented Dynamic Geometry lesson*

V.   *Quality of the implementation*

VI. *Implementation with the use of computers*

Reliability for each version was calculated with Cronbach's Alphas of 0.957 and 0.952 for the DG and control group respectively.

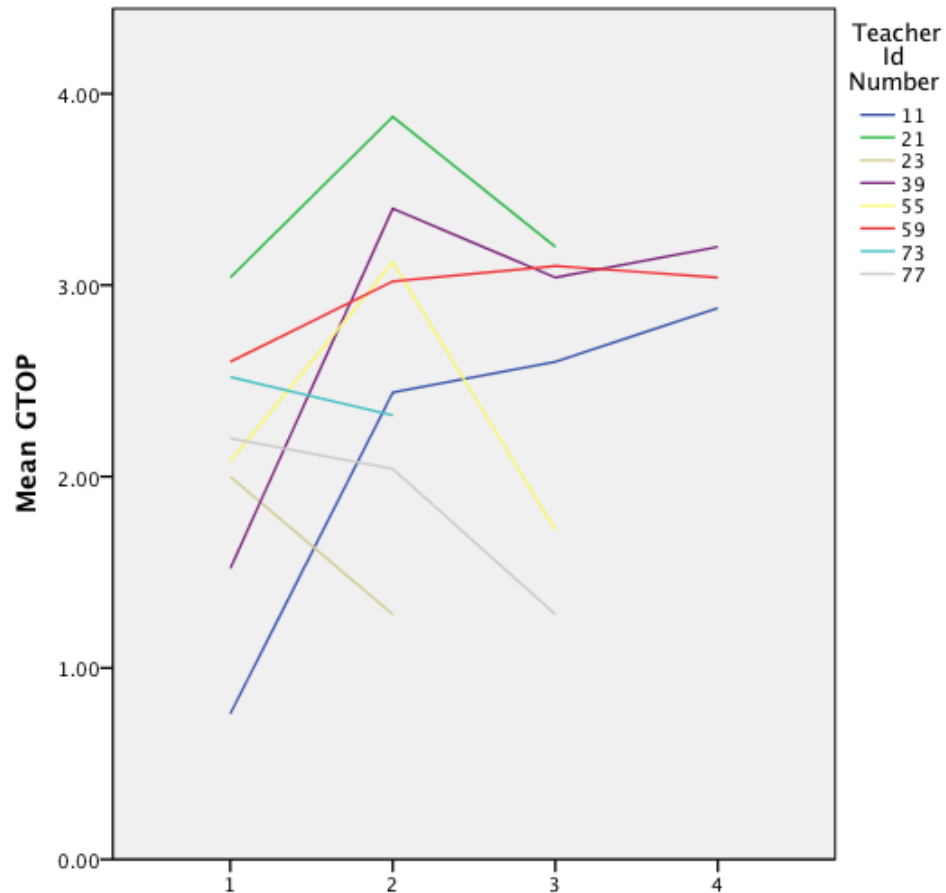Teachers were observed, on average, 4 times.

Results Year 1– Overall implementation trends for the DG group
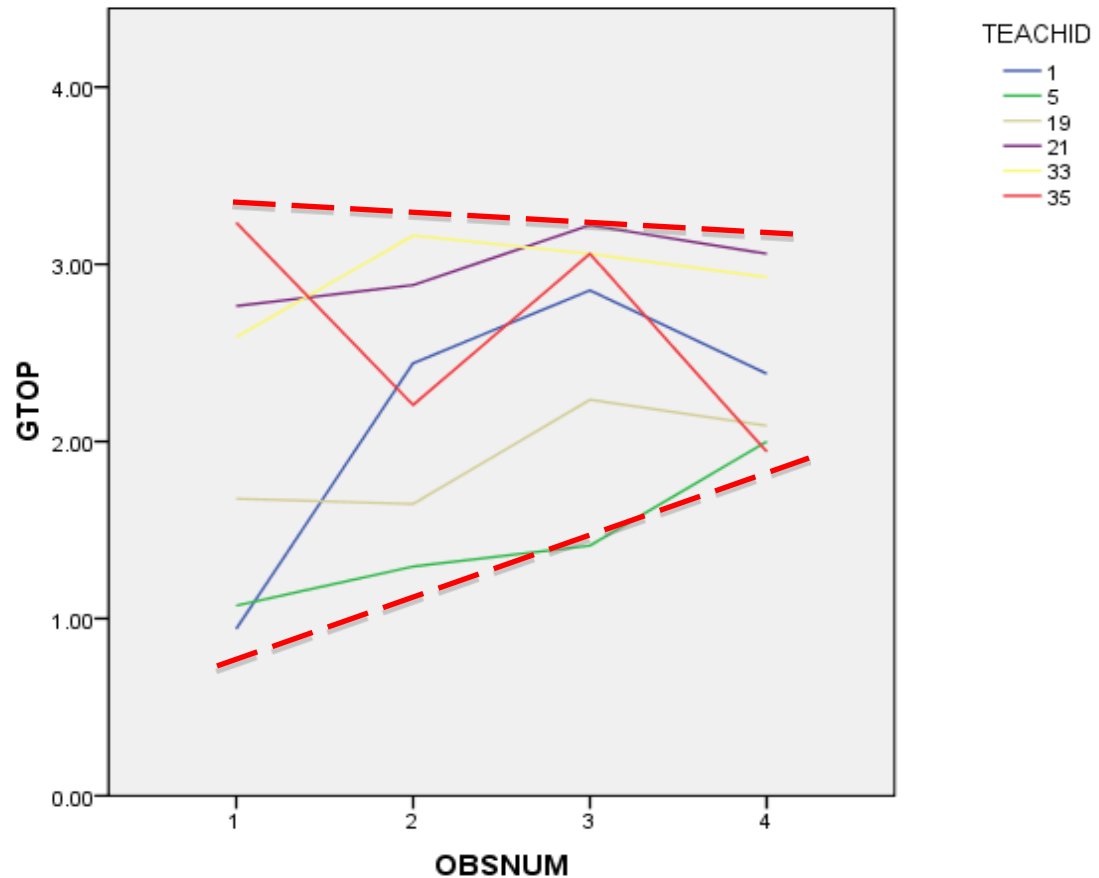
Results Year 2 – Overall implementation trends for the DG group

CAREER: Mathematics Instruction for ELLs

The main goal of this project is to empirically estimate whether and which classroom factors contribute to mathematics gains of English Language Learners in Texas schools.

Quality of Instruction

Teachers' Knowledge

↓

Quality of Instruction

↓

Students' learning gains

Quality of Instruction is one of the factors being considered as the product of teachers' knowledge and as a predictor of student learning gains.

Data for answering the research questions are analyzed by appropriate Multilevel HLM.

Mathematical Quality of Instruction (MQI) for ELLs

❖ Goal of the instrument is to measure the *quality of instruction* in mathematics classrooms with high percent of ELLs

❖ The instrument is an augmentation of the MQIPlus instrument developed by Heather Hill and colleagues：

  – Keep the same structure of items organized in sub-sections, each rated on a scale low, medium, and high.
  – Sub-sections will be added to reflect important aspects of learning and teaching ELLs

Structure of MQI-ELL

I. Background information

II. Contextual background and activities

III. Richness of the mathematics

IV. Working with students and mathematics

> *Mathematics language (English/ Spanish)*

V. Errors and Imprecisions

> *Imprecisión en el uso del español*

VI. ELL Mathematical Proficiency

Teachers will be videotaped three times.

Seeking Feedback related to…

❖ How to treat the aspects that are part of the protocols but they were not observed in a particular lesson?

❖ How do we better ensure our protocols are capturing what we want to measure?

❖ Specific item revisions.

THANK YOU!

❖ Zhonghong Jiang – zj10@txstate.edu

❖ M. Alejandra Sorto – sorto@txstate.edu