*Learning Innovations – A Division of WestEd* 91 montvale Avenue Stoneham, MA 02180

 **The Teacher Center of Broome County**



##### Teacher Study Group Grant Award

**2014-15**

#  **FINAL REPORT DUE BY APRIL 13, 2015**

**DOCUMENT PROCESSES AND OUTCOMES**

**STUDY GROUP TOPIC: Geogebra**

**List of group members: Allison Weisel, Kim Schofield, Steven Rieben, Eric Bill**

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**The final report must be word-processed and submitted both in print and through e-mail using this form. Send print copy Teacher Center @ WSKG, BOCES Mail Drop #22 and e-mail file to** **bctc@btboces.org****. This report will be posted on the Teacher Center web page at http://teachercenter.info.**

## Describe the initial goal of the group noting any adjustments that had to be made as time passed.

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| This group had four planned outcomes; complete the online training guide for Geogebra, develop a rubric for rating activities, create an exemplar activity, and develop a plan for integration. We accomplished three of these four outcomes, not having enough time to develop an integration plan. We decided, as we worked through the training, that we would first create an exemplar lesson in both Algebra 1 and Geometry before creating a rubric. We decided to do this because it was easier to identify what qualities made for a well-designed activity while one was being created, rather than calling up that knowledge somewhat out of context. |

## Describe the ACTION PLAN that the group followed.

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| We spent two sessions going through the Introduction to Geogebra User Guide, one session developing an exemplar activity, and two sessions developing a rubric and additional exemplar activity. |

## Describe how the action plan was implemented.

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| During our first two sessions, we explored the functionality and capabilities of the Geogebra software. We divided into two groups, one focusing on Algebra and one on Geometry. The Algebra group studying the software’s capability with linear and quadratic functions, systems of equations, and integer addition on a number line. The Geometry group focused on demonstrating transformations in the plane and vertex form of conic sections, both conceptually and in R2. To do this we started by using the User Guide provided on the Geogebra website, but some members of our group found it more helpful to watch YouTube videos that walked the user through creating an activity step-by-step. Using the videos we also watched how teachers use Geogebra during their own lessons (rather than in student-centered activities), which was a use we had not considered. During the third session we began the exemplar activity for Algebra, and this is where we experienced the most setbacks in terms of time. We had a productive and illuminating discussion about wording questions to help students discover relationships without handing them the answer. We created a worksheet for students to guide them through the activity which encouraged them to notice patterns and make generalizations about what they were observing.During the fourth and fifth sessions we worked on the rubric to evaluate activities using this technology (specifically how the activity addressed CCSS for math and 21st Century Skills) and an exemplar activity for Geometry. The Geometry teachers in the group were excited by the functionality of the program because the activity developed would provide a clear demonstration of the underlying concept without setbacks that occur in a more traditional presentation format (specifically, students who struggle with using a compass to perform transformations). The rubric came together after a discussion of what it was about the two activities that we valued as teachers, and also after looking at several activities developed with the program that are available for use through the website. |

## Evaluate the impact of the study group effort on teacher/student performance.

## How has this study group changed you as a teacher? Do you anticipate that any of your teaching practices will have changed?

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| We felt that this study group had two benefits; the first was increasing the number of tools we can use to teach the standards conceptually, and the second was to have a more enriched understanding of conceptual, student-centered learning. With this program we have the ability to create activities in which students are using 21st Century Skills (specifically, communication, collaboration, and creative problem-solving) in a self-directed discovery lesson. This will enable us to teach more lessons in an open-ended format, with more emphasis on making observations and drawing conclusions. |

## What evidence do you expect to see of student achievement improving as a result of your participating in this study group?

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| In the classroom, we hope to see more students taking risks and solving more complex problems. Students are often stymied when encountering a multi-step problem, and will say they do not even know where to begin. We feel that if we make more of our teaching open-ended, students will have more practice in considering problems deeply and carefully, and trying to solve them in a risk-free environment. We also hope that students will develop better metacognitive skills to evaluate their problem-solving processes. Ultimately (and I almost don’t want to write this) we hope to see improved student achievement on the Common Core state exams, where more of our students are reaching the College and Career Ready levels set by the state. |

What evidence is there that the goals of the study group has/has not been met?

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| The rubric and the two exemplar activities are included with this report. The completed activities are evidence of having completed the training. |

## Comment on the value of the study group process? Did it work for you?

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| The group was unanimous in their praise of the study group process. It allowed us highly applicable professional development with a group of our peers, something that is often difficult to do during the school year. We had sufficient time to find the answers to our questions and problem-shoot when necessary. |

## How can we make this study group program better?

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| We have no recommendations at this time. |

A final report is due two weeks after the last meeting or by April 13, 2015, whichever date is first. The report must be typed and double-spaced using the provided form. One copy must be submitted in print and the file must be submitted through e-mail to bctc@btboces.org. Return to the Teacher Center (Mail Drop #22), 601 Gates Rd., Vestal, NY