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Gina Mayer  
*Illinois Wesleyan University*

Leah Nillas, Faculty Advisor  
*Illinois Wesleyan University*

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Inquiry Based Learning: Effects On Student Learning

Gina Mayer and Leah Nillas*
Educational Studies, Illinois Wesleyan University

Research Question
How does an inquiry based learning (IBL) environment affect student learning?

Literature Review
• In a study completed on teachers’ views, Swan (2003) found that teachers’ views changed throughout to prefer more student centered activities.
• Giving students open-ended tasks without strict instructions allows them to be creative and teachers can learn from their responses (Goodchild, Fueglestad, & Jaworski, 2013).
• Senol (2015) discovered that students scored much higher on post-tests after participating in IBL activities combined with cooperative learning.

Methodology
• One class of regular geometry students (13) in a rural high school
• Implemented IBL lessons where students must work together to problem solve, to share ideas with the class.
• Collected sample student work, pre- and post- student surveys, and post teaching reflections.

Results and Data Analysis
• Students views changed during the semester to favor IBL activities, and less preferred direct instruction.
• Students were more engaged during IBL activities at the end of the semester.
• Students had a deeper understanding of the mathematical concepts after IBL activities, and paid more attention to detail as shown in the second quote in figure 1 (below).
• Students were more capable of understanding the questions and completing the entire problem (see figure 2).

Figure 1: Sample student answers from the post-student teaching survey give to students at the end of the semester.

Figure 2: Example of sample student work from the beginning of the semester, in which the student did not complete the problem. The problem was looking for the side lengths.

Conclusion
• Allow students to form their own conclusions to support the development of their mathematical reasoning.
• Teachers must depend less on the textbook.
• Allow students to learn from each other before giving them answers.
• Have students share findings with each other, but allow them to do so at their own pace.
• Future research on student satisfaction with specific types of IBL activities would be beneficial.

Did IBL impact your learning? Do you think this will help you remember the information for a longer period of time? Explain.

“Yes, because I got to learn it myself. Then we all went over it as a class. That helps with understanding because you are somewhat learning it twice.”

“Yes, because we analyzed things in more detail.”

Figure 1: Sample student answers from the post-student teaching survey give to students at the end of the semester.

Figure 2: Example of sample student work from the beginning of the semester, in which the student did not complete the problem. The problem was looking for the side lengths.