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## **Inquiry Based Learning: Effects on Student Learning**

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# Inquiry Based Learning: Effects On Student Learning

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## 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, Fuegilestad, & 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) .

**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.

Find each side length.

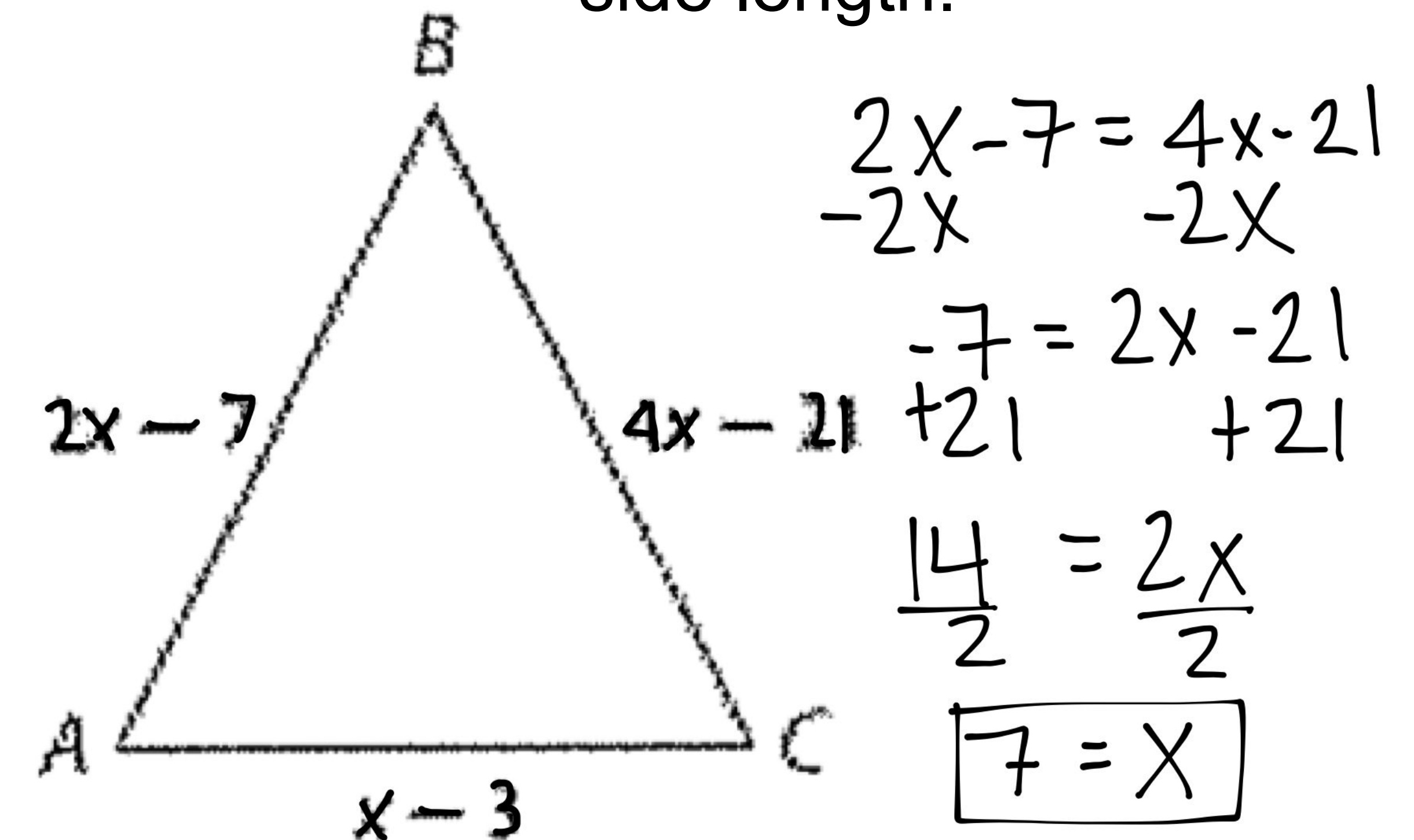


Figure 2: Example of sample student work from the beginning of the semester, in which the student did not complete the problem. The problem was looking for the side lengths.

## 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.