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## Effective Methods for Teaching Vocabulary in Geometry

Christy Engel  
*Illinois Wesleyan University*

Leah Nillas, Faculty Advisor  
*Illinois Wesleyan University*

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# EFFECTIVE METHODS FOR TEACHING VOCABULARY IN GEOMETRY

Christy Engel and Leah Nillas\*

*Educational Studies Department, Illinois Wesleyan University*

## Findings

### Research Questions

- What are the effective techniques for teaching vocabulary in both a general environment and in a mathematical classroom?
- Why do students struggle with the process of learning vocabulary?

### Methodology

- Participants were nine female and twelve male Geometry students (no IEPs)
- Taught various lessons using different methods for teaching vocabulary (see table)
- Analyzed student work that used the vocabulary
- Administered direct and indirect formal assessments to gauge understanding

### Conclusion

- Best strategies were those that required a deep level of understanding of the definitions.
- Applications of definitions helped develop understanding and retention.
- Students struggled when they did not fully understand the definitions before applying them.
- Students did not retain vocabulary as much when a basic understanding of the definition was required.

Lesson	Vocabulary Words	Activity	Assessment	Results
Segments, Rays, Parallel Lines & Planes	<ul style="list-style-type: none"><li>• Opposite ray</li><li>• Parallel planes/lines</li><li>• Ray</li><li>• Segment</li><li>• Skew lines</li></ul>	<ul style="list-style-type: none"><li>• Charades</li><li>• GSP exploration</li></ul>	<ul style="list-style-type: none"><li>• Vocabulary test</li><li>• Sketchpad activity</li><li>• Warm-up activity</li></ul>	<ul style="list-style-type: none"><li>• Effective and engaging</li><li>• Exploration lead to a deeper understanding of the vocabulary</li><li>• Forgot more detailed part of definitions</li><li>• Some definitions are difficult to portray by acting</li><li>• Need to review definitions after the activity</li></ul>
Angles	<ul style="list-style-type: none"><li>• Angle</li><li>• Acute/ Obtuse/ Right/ Straight angles</li><li>• Congruent angles</li><li>• Side</li><li>• Vertex</li></ul>	<ul style="list-style-type: none"><li>• Real life examples</li></ul>	<ul style="list-style-type: none"><li>• Practice problems</li><li>• Worksheet</li><li>• Vocabulary test</li></ul>	<ul style="list-style-type: none"><li>• Effective for learning the vocabulary</li><li>• Connection helped understanding</li><li>• Same effectiveness as the charades</li><li>• Able to use the vocabulary immediately</li><li>• Able to retain for a later assessment</li></ul>
Reasoning	<ul style="list-style-type: none"><li>• Deductive reasoning</li><li>• Law of Detachment/ Syllogism</li></ul>	<ul style="list-style-type: none"><li>• English to symbolic</li><li>• Prior knowledge</li><li>• Real life examples</li></ul>	<ul style="list-style-type: none"><li>• Exit slips</li><li>• Practice problems</li><li>• Quiz</li><li>• Chapter test</li></ul>	<ul style="list-style-type: none"><li>• One of the least effective strategies</li><li>• Understood the vocabulary on a basic level but struggled with application</li><li>• Poor retention</li></ul>
Properties of Equality & Congruence	<ul style="list-style-type: none"><li>• Add/ Sub/ Mult/ Div/ Dist/ Sub/ Refl/ Symm/ Trans Properties of Equality</li><li>• Refl/ Symm/ Trans Properties of Congruence</li></ul>	<ul style="list-style-type: none"><li>• If - then definitions</li><li>• Guided notes</li></ul>	<ul style="list-style-type: none"><li>• Game</li><li>• Practice problems</li><li>• Chapter test</li></ul>	<ul style="list-style-type: none"><li>• Mixed results in terms of comprehension</li><li>• Able to understand/utilize some vocabulary words, struggled with others</li><li>• Game required a deeper understanding of the definition because it required application</li><li>• Not comfortable with properties</li></ul>
Properties of Parallel Lines	<ul style="list-style-type: none"><li>• Alt/ S-S int/ ext angles</li><li>• Alt/ S-S int/ ext angles</li><li>• Corr angles &amp; postulate</li><li>• Parallel lines</li><li>• Same-side int angles theorem</li><li>• Transversal</li></ul>	<ul style="list-style-type: none"><li>• Break up words</li><li>• Definition to diagram/ symbols</li></ul>	<ul style="list-style-type: none"><li>• Practice problems</li><li>• Chapter Test</li></ul>	<ul style="list-style-type: none"><li>• Forced to make connections between the word definition and the symbols and diagrams</li><li>• Broke up the words to understand all parts of the vocabulary word</li><li>• Required a deeper level of understanding</li><li>• Better retention</li></ul>