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Effective Methods for Teaching Vocabulary in Geometry

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EFFECTIVE METHODS FOR TEACHING VOCABULARY IN GEOMETRY

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