What Works Clearinghouse™

ies INSTITUTE OF EDUCATION SCIENCES

Elementary School Mathematics March 2013

Vmath®

No studies of *Vmath*® that fall within the scope of the Elementary School Mathematics review protocol meet What Works Clearinghouse (WWC) evidence standards. The lack of studies meeting WWC evidence standards means that, at this time, the WWC is unable to draw any conclusions based on research about the effectiveness or ineffectiveness of *Vmath*® on elementary school students. Additional research is needed to determine the effectiveness or ineffectiveness of this intervention.

Program Description[1]

Vmath®, distributed by Voyager Learning, is a supplemental mathematics curriculum for students in grades 2–8 who are struggling with math. The program aims to improve understanding of math concepts and performance on high-stakes assessments. A distinguishing feature of *Vmath*® is that it provides teachers with a specific, detailed script for each lesson. In-class instruction is supplemented with *VmathLive*®, a web-based program that allows students to practice their math skills outside of school.

Vmath® sessions take place daily for 30–45 minutes, and each session begins with the teacher reviewing relevant skills. The teacher then models the new skill using *Vmath*® dialogue. Next, the teacher practices the skill interactively with students until the students can apply the skill independently. The students then practice the skill while the teacher monitors their work. The intervention includes regular assessments that mimic the format of standardized assessments and are intended to help teachers monitor student progress, identify student instructional needs, and provide corrective feedback. The curriculum also summarizes alternative instructional methods that can be used for students with special needs or English language learners.

Research[2]

The WWC identified eight studies of *Vmath*® for elementary school students that were published or released between 2008 and 2009.

One study is within the scope of the Elementary School Mathematics review protocol but does not meet WWC evidence standards. This study used an eligible quasi-experimental design but did not establish that the comparison group was comparable to the intervention group prior to the start of the intervention.

Seven studies are out of the scope of the Elementary School Mathematics review protocol because they have an ineligible study design.

References

Study that does not meet WWC evidence standards

Voyager Expanded Learning, Inc. (2009). *A summary of the effectiveness of Vmath®*. Dallas, TX: Author. The study does not meet WWC evidence standards because it uses a quasi-experimental design in which the analytic intervention and comparison groups are not shown to be equivalent.

Studies that are ineligible for review using the Elementary School Mathematics Evidence Review Protocol

Peyton, J. A., & Macpherson, J. R. (2008). *Students receiving special education services succeed on OCCT after using Vmath® math intervention*. Dallas, TX: Voyager Expanded Learning, Inc. The study is ineligible for review because it does not use a comparison group or a single-case design.

Voyager Expanded Learning, Inc. (n.d.). *100% of Olympia Elementary (TX) fifth grade Vmath® students pass TAKS*. Dallas, TX: Author. The study is ineligible for review because it does not use a comparison group or a single-case design.

Voyager Expanded Learning, Inc. (n.d.). *Poteau public schools 2006-2007 Voyager results*. Dallas, TX: Author. The study is ineligible for review because it does not use a comparison group or a single-case design.

Voyager Expanded Learning, Inc. (n.d.). *System wide math gains: Vmath®*. Dallas, TX: Author. The study is ineligible for review because it does not use a comparison group or a single-case design.

Voyager Expanded Learning, Inc. (n.d.). *Vmath® national data, 2006-2007*. Dallas, TX: Author. The study is ineligible for review because it does not use a comparison group or a single-case design.

Voyager Expanded Learning, Inc. (n.d.). *VmathLive® student improvement study*. Dallas, TX: Author. The study is ineligible for review because it does not use a comparison group or a single-case design.

Voyager Expanded Learning, Inc. (2008). *A summary of the effectiveness of Voyager programs in Texas*. Dallas, TX: Author. The study is ineligible for review because it does not use a comparison group or a single-case design.

Endnotes

[1] The descriptive information for this program was obtained from a publicly available source: Voyager Expanded Learning, Inc. (2009). The WWC requests distributors to review the program description sections for accuracy from their perspective. The program description was provided to the distributor in December 2012; however, the WWC received no response. Further verification of the accuracy of the descriptive information for this program is beyond the scope of this review. The literature search reflects documents publicly available by October 2012.

[2] The studies in this report were reviewed using the Evidence Standards from the WWC Procedures and Standards Handbook (version 2.1), along with those described in the Elementary School Mathematics review protocol (version 2.0). The evidence presented in this report is based on available research. Findings and conclusions may change as new research becomes available.

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Glossary of Terms

Attrition Attrition occurs when an outcome variable is not available for all participants initially assigned to the intervention and comparison groups. The WWC considers the total attrition rate and the difference in attrition rates across groups within a study.

Clustering adjustment If intervention assignment is made at a cluster level and the analysis is conducted at the student level, the WWC will adjust the statistical significance to account for this mismatch, if necessary.

Confounding factor A confounding factor is a component of a study that is completely aligned with one of the study conditions, making it impossible to separate how much of the observed effect was due to the intervention and how much was due to the factor.

Design The design of a study is the method by which intervention and comparison groups were assigned.

Domain A domain is a group of closely related outcomes.

Effect size The effect size is a measure of the magnitude of an effect. The WWC uses a standardized measure to facilitate comparisons across studies and outcomes.

Eligibility A study is eligible for review and inclusion in this report if it falls within the scope of the review protocol and uses either an experimental or matched comparison group design.

Equivalence A demonstration that the analysis sample groups are similar on observed characteristics defined in the review area protocol.

Extent of evidence An indication of how much evidence supports the findings. The criteria for the extent of evidence levels are given in the WWC Procedures and Standards Handbook (version 2.1).

Improvement index Along a percentile distribution of students, the improvement index represents the gain or loss of the average student due to the intervention. As the average student starts at the 50th percentile, the measure ranges from –50 to +50.

Multiple comparison adjustment When a study includes multiple outcomes or comparison groups, the WWC will adjust the statistical significance to account for the multiple comparisons, if necessary.

Quasi-experimental design (QED) A quasi-experimental design (QED) is a research design in which subjects are assigned to intervention and comparison groups through a process that is not random.

Randomized controlled trial (RCT) A randomized controlled trial (RCT) is an experiment in which investigators randomly assign eligible participants into intervention and comparison groups.

Rating of effectiveness The WWC rates the effects of an intervention in each domain based on the quality of the research design and the magnitude, statistical significance, and consistency in findings. The criteria for the ratings of effectiveness are given in the WWC Procedures and Standards Handbook (version 2.1).

Single-case design A research approach in which an outcome variable is measured repeatedly within and across different conditions that are defined by the presence or absence of an intervention.

Standard deviation The standard deviation of a measure shows how much variation exists across observations in the sample. A low standard deviation indicates that the observations in the sample tend to be very close to the mean; a high standard deviation indicates that the observations in the sample tend to be spread out over a large range of values.

Statistical significance Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups. The WWC labels a finding statistically significant if the likelihood that the difference is due to chance is less than 5% ($p < 0.05$).

Substantively important A substantively important finding is one that has an effect size of 0.25 or greater, regardless of statistical significance.

Please see the WWC Procedures and Standards Handbook (version 2.1) for additional details.