

Fluid Math

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Rationale

National Report Card data shows that Mathematics scores are declining (NAEP, 2015). Having students connect with content in a meaningful way is a goal in education. Many educators seek out ways to make content come alive. Teachers strive to provide useful, engaging resources to hook the students' interest while making sure they fit in with the current curriculum. Web applications provide teachers with this opportunity. The use of a web application paired with tablets and other devices will help facilitate student learning. Web applications supplement traditional instruction in various ways. Students can work collaboratively in small groups to solve the problems while enriching their math vocabulary. Students get the practice they need to become successful, feedback in most cases is immediate, and students have access to real-time data that they can use to self-assess. Teachers benefit by spending less time grading papers, which reduces gaps in teaching and learning. Valuable time saved helps to support further learning. Teachers can quickly assess their student's progress toward learning goals. Thus learning targets become real. Teachers can complete standard analysis by a student or as the class. Dashboards help to confirm that students are meeting their personal goals. Monitoring student learning can be done from a bird's eye view, which puts the focus on the learner. If used appropriately, growth should be seen in various assessments.

Background Research

The adoption of the Common Core has shifted the focus of mathematics to problem solving and collaboration. This has led to districts to respond by purchasing the newest programs and resources in order to remain competitive in the testing world. The proper implementation of technology positively influences student engagement (Gunuc & Kuzu, 2014). Today's learner must be able to apply concepts and be proficient in the use of technology. Technology allows students to discover and produce new information that can be used immediately or stored in their memory for future application (Isman & Yaratana, 2005). It is equally important that educators and instructional leaders create these opportunities for students to learn.

Increasing fluency in addition and subtraction significantly increases student achievement (Carr, Taasobshirazi, Stroud, & Royer, 2011). Fluid Math at the elementary level gives students the opportunity to practice and develop their arithmetic fluency. It is these skills that will be transferred later as they move into pre-algebra/algebra. This web-based application will eliminate the redundancy of drawing graphs on paper and focus on providing students with practice manipulating online tools, so they feel comfortable using these tools on standardized tests. Fluid Math at the algebra level brings math alive by combining hand gestures and graphing. Whereas students would populate a graph in a static format, they are now able to graph in a dynamic way. This changes learning because within seconds students and teachers can change the direction of a graph.

Student engagement remains a vital element in teaching and learning (Carnahan, Zieger, & Crowley, 2016). Technology and the use of web applications afford students the ability to be engaged, build retention, and comprehension. Teachers can provide exciting, engaging activities by integrating web-based applications in their lessons. This will improve student performance.

Policy Consideration

District administrators, building administrators and teachers must work collaboratively with technology creators to ensure the efficacy of the web app. Open dialogue amongst teachers should be encouraged, and feedback must be shared with technology developers. Opportunities for professional development are in place to enhance the users experience. This app coincides with the district's equity policy, providing a service to all students, whether it is for remediation or enrichment. This web app supports the District's Algebra Initiative.

Current State of Web Applications

There are over 80,000 educational apps available in The App Store (Gillette, 2015). In a tech filled society, one can become overwhelmed by what is available. It is important to note the research behind a company's claim and any awards that the program has received. There are several points to consider. Programs should be aligned to the Common Core State Standards. Professional development opportunities should be offered. Administrators and educators should identify goals and objectives before implementation or program selection. Identifying the programs use regarding developing fluency, remediation, enrichment or all is very beneficial. Feedback is necessary for any program used. Hints or clues should be used and prove to be useful. Built into the program should be meaningful data that the teacher can use to spot trends, set goals, and improve teaching and learning.

Description

Fluid Math is a web application that focuses on improving the fluency of math facts in grades k-9. Fluid Math will develop a multistep implementation plan in conjunction with district leadership. Fluid Math will facilitate Professional Development sessions for building administrators to cover program highlights. District administrators will review expectations for student usage. Fluid Math will work with district tech coordinator to ensure the correct file upload for user credentials is created. Professional Development sessions will be held for k-5 and grades 8-9 teachers. During that time program overview, class set-up, expectations, program usage, and student monitoring will be discussed. Scheduled Professional Development sessions will be ongoing.

Assessment Plan

Fluid Math will be assessed based on Key Performance Indicators. Teachers will use ongoing assessments to monitor student learning. Student performance in the fall and spring assessments will be utilized. Teachers will use their dashboard to monitor student learning. Teachers will ensure that students are spending the appropriate amount of time weekly, review wrong/missed problems, and make adjustments in learning based on learning and based on student performance.

District administrators will have access to a data dashboard that provides multiple types of analysis including demographic, classroom, grade level, and standard. District administrators will monitor building usage. Each building principal in collaboration with their direct administrator will develop measurable and attainable quarterly goals. Teachers will use common planning time for reflections, best practices, and program development.

References

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