

Rationale For MyMathCards

Mathematician Steve Lewis & ecodads.org

Muller & Beatty (2008) indicate that “developing competency as a mathematical thinker requires individuals to develop both a cumulative body of knowledge and a comprehension of how that knowledge is connected and organized, and to understand the kinds of reasoning expert mathematicians use” (Muller & Beatty, 2008).

A major focus in mathematics education across the U.S. is around helping students improve their mathematical thinking. The National Resource Council (2001) identifies the Key Components of Mathematical Thinking as *conceptual understanding*, ***procedural fluency***, *strategic competence*, *adaptive reasoning*, and *productive dispositions*. They define *procedural fluency* as “skill in carrying out procedures flexibly, accurately, efficiently, and appropriately” (National Resource Council, 2001).

Muller & Beatty (2008) go on to say that “students with this foundation, which includes secure competence in the foundations on which algebra is based (e.g. fluency with whole numbers, fractions, and aspects of geometry and measurement), are ready to tackle higher-level mathematics, beginning with algebra” (Muller & Beatty, 2008).

With teachers being urged to facilitate growth in mathematical thinking in their students, it is becoming more and more necessary for teachers to dedicate their valuable instructional time to examining the multitude of the key components of mathematical thinking in their classroom and not exclusively focus on procedural skills. In most mathematics classroom experiences across the United States teachers will commonly focus only on presenting and practicing these skills rather than providing a focus on alternative domains of mathematical thinking such as adaptive reasoning or conceptual understanding. It is critical to the success of mathematics education in the United States to find an alternative to dedicating the vast majority of instructional time to practicing and drilling these all be it necessary facts.

A seemingly alternative to this problem lies in educational technology, specifically in applications (apps) for phones, tablets, or home computers. The vast majority of students in the 21st century are digital learners. They can engage in a technology and uncover its functionality and features. If a teacher could find a way to utilize these apps to not only drill these skills, but also assess the students progress in the learning of the material, this could provide an extremely powerful weapon for allowing them to use their instructional time more constructively.

MyMathCards is an app that provides a means to put 400 flash cards in the palm of a student’s hand. This educational utility is presented in an elegantly simplistic game format where the learner (young or old) can engage in the practicing of these essential skills not only on their own, but outside of the classroom, and at their own pace. MyMathCards enables students to return to school prepared for a teacher to engage them in rich problem solving activities and apply these skills that they have been practicing on their own. MyMathCards also offers an assessment feature which tracks the students progress in the material, and gives an elegantly simplistic report of their progress. It not only identifies the number of answers that the student got correct/incorrect, but also identifies specifically what the student missed AND how they answered. This provides the opportunity for a dialogue between a teacher, parent, and student about what the students missed, and why they missed it.

MyMathCards frees up a teacher to engage, unify and guide their classroom in stimulating and participatory problem-based play which serves to develop the real-world connections of mathematics to their students every day lives.

References

Muller, R., & Beatty, A. (2008). The building blocks of success: Higher-level math for all students. *Achieve Policy Brief*.

National Research Council. (2001). Adding it Up: Helping Children Learn Mathematics. Washington DC: National Academy Press. <http://www.nap.edu/openbook.php?isbn=0309069955>