

THE IMPORTANCE OF MATH FACT AUTOMATICITY

By

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Throughout my teaching career, I have had hundreds of students in my classroom for math instruction. I have taught extremely gifted students and students who were striving to meet grade level standards. No matter the level of math at which they performed, there was always a common denominator: Students who were able to recall their math facts efficiently and correctly soared greatly when it came to their math journey. Unfortunately, the opposite was found with students who were unable to automatically compute their basic facts.

As a teacher, this was challenging to witness year after year. I noticed holes in the curriculum I taught. Multiplication was taught in two separate units throughout the year. There was little done with moving basic facts from an understanding to memory. This caused roadblocks with future math topics and was frustrating for everyone. These observations are what fueled my passion for my Capstone Project on the automaticity of math facts. My research question is: *What methods are most effective for teachers to implement with their striving learners to allow them the opportunity to retain their basic math facts?*

A wide variety of research and case studies have been conducted on this fascinating topic of math fact retention. Generally speaking, students who know their facts well do better with more advanced topics (Baker & Cuevas, 2018). This automaticity relieves a lot of math fatigue when solving a basic math fact to then figure out the answer to a more complicated problem. An emphasis on math fact understanding and eventually automaticity is so crucial for the development in a child's math career.

The purpose of my project is to give strategies to teachers, parents and students to assist in the math fact learning process. This learning takes place on a spectrum,

beginning with a basic understanding and growing into automaticity. Each phase needs to be understood by all three parties for students to be truly successful. The website I created accomplished this goal by presenting information, games and strategies for all groups to utilize. As an elementary school teacher I have seen the positive and negative effects of fact retention in my classroom. It can be a very empowering subject, or completely deflating. Through grappling with my created project, I hope more students feel empowerment in their math careers.

As discussed above, my website is aimed towards three different groups of participants. This includes teachers, parents and students. There is a need for all three to understand the complexity of learning math facts in their respective capacity. When it comes to the setting, I hope to use my website with my fourth grade students for years to come. My team of fellow teachers will hopefully also utilize it with their classes. The resource will also be sent to other teachers in my school in varying grade levels and their students' parents. We often are asked by parents how they can work on math facts at home with their children, and this website will hopefully become a great resource. I believe the avenue of making a website will be really accessible for parents and they will truly utilize it.

At the beginning, I stated how in my experience students excel or struggle based on their ability to solve multiplication facts. After immersing myself in research and also creating a project, my ability to teach students, teachers and parents about this topic has increased exponentially. I now have the research to back up what I have seen in my own students. I also have the tools to overcome negative feelings about math that stem from

fact knowledge. I want to foster empowered students who can solve any math problem, both in school and real life. My capstone process has helped me to achieve this goal.

A resource for students, teachers & parents to encourage math fact retention

Created by Jessica Olson

<https://jolson06.wixsite.com/website>

Students



Research:

- Topics that require multiplication
- Memorization in the brain
- How to improve fact retention

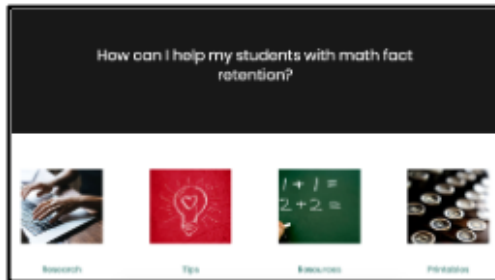
Tips:

- Effective strategies
- Order to learn facts in

Resources:

- Virtual games
- Partner/group games
- Hands on activities

Teachers



Research:

- Fact learning phases
- Memorization in the brain
- Correlation between facts & standardized test scores

Tips:

- Curriculum ideas
- Mnemonic devices
- Strategies to avoid
- Students with difficulties memorizing

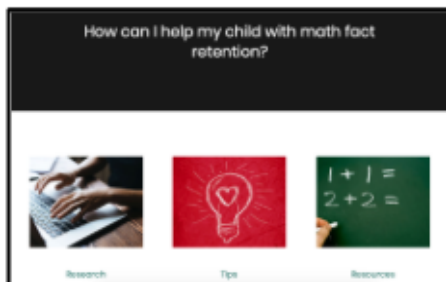
Resources:

- Virtual games
- Partner/group games
- Hands on activities

Printables:

- Lessons, games & activities

Parents



Research:

- What to do & avoid
- Correlation between facts & standardized test scores

Tips:

- Three stages of fact retention

Resources:

- Manipulatives
- Games
- Order to learn facts in

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