USING MANIPULATIVES, CHILDREN'S LITERATURE, AND GEOGEBRA TO CREATE MATH CONFIDENT STUDENTS FOR A STEM WORLD

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Abstract:
Mathematics teachers can best reach their students and show them how math surrounds us by using manipulatives, children's literature, and GeoGebra while teaching mathematics. In today's high-tech world, students need to be proficient in Science, Technology, Engineering, and Mathematics (STEM) fields. As endorsed by the National Council of Teachers of Mathematics (NCTM, 2000) and stressed in the Common Core State Standards (CCSS) in Mathematics, it is critical that we teach using technology, address attitudes and anxiety toward math, and make the math that students are learning relevant and meaningful. Frequently, it may be best to start teaching young people geometry first as opposed to numbers, which are considered more abstract and difficult to learn. Geometry is one of the most concrete branches of mathematics and focusing on this first can benefit students' whole view of mathematics and their attitudes towards learning it. Today teachers also need to be cognizant and checking for attitudes and dispositions toward learning mathematics, as math anxiety is an issue in today's classrooms. This paper will demonstrate the use of math manipulatives, children's books, and GeoGebra to help teachers create mathematically confident young people with many concrete examples, of manipulatives, books, and GeoGebra activities.

Keywords:
Math Anxiety, GeoGebra, Manipulatives, Picture Books, Real-world Connections, STEM

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Introduction

> *Tell me mathematics, and I will forget; show me mathematics and I may remember; involve me...and I will understand mathematics. If I understand mathematics, I will be less likely to have math anxiety. And if I become a*

teacher of mathematics, I can thus begin a cycle that will produce less math-anxious students for generations to come. (W.V. Williams, 1988)

Today math anxiety is a real phenomenon and many young people are confronted with this when learning math at many grade levels Kindergarten through College. Individuals can then often go through such anxiety throughout their entire life and it can often affect many decisions in life as well as the career choices they make. It is important that all students feel confident in their ability to do mathematics in an age that relies so heavily on problem solving, technology, science, and mathematics. It really is a school's obligation to see that their students' value and feel confident in their ability to do math and use technology to learn because ultimately, all decisions individuals make and choices of careers may be determined in part by their attitudes toward mathematics. Math anxiety is a real phenomenon that has been researched for many years now (Alday and Panaligan,2013; Beilock and Willingham, 2014; Boaler,2008; Quander, 2013; Richardson and Suinn, 1972; Scieszka and Smith, 1995; Williams, 1988). Mathematics educators need to take it seriously and use research to address the problem in an age of STEM. Resources and websites for addressing math anxiety and improving attitudes as well as incorporating technology like GeoGebra, math manipulatives, photography, and children's literature books will all be shared and included in the paper. Today it is critical we help to create mathematically confident young people in the STEM world we now live in.

Math Anxiety Exists and is a Real Phenomenon

Math anxiety continues to devastate our society and distresses our young peoples' success and achievement within this subject area (Finlayson, 2014; Quander, 2013). Quander (2013) found elementary teachers need to help make students to be lifetime learners and advance a productive mathematical temperament so that they are prepared for advanced schooling and eventual careers, many which may be STEM related. Math anxiety can impede not only mathematical performance but also interest and then career choice and many decisions in life. The awareness as educators to exam math anxiety levels, enthusiasm to learn mathematics, and using advanced technologies like GeoGebra to instruct and motivate learners is critical today in a global society of STEM and also can impact achievement areas of learners (Furner, 2019; Gonzalez-DeHass et al., 2017; Furner & Marinas, 2016; Furner & Marinas, 2020).

The National Council of Teachers of Mathematics (NCTM, 1989) believe that mathematics teachers need to assess students' mathematical disposition regularly regarding: checking for confidence in using math to solve math problems, communicate thoughts, and reason; being adaptable in exploring mathematical concepts and employing a variety of approaches when solving problems; preparedness to persist in mathematical problems; interests, inquisitiveness, and ingenuity in doing math; student ability to reflect and monitor their own thinking and performance while doing math; and value and appreciate math for its real-life application, connections to other disciplines and cultures and as a tool and language.

Schoolkids often say: "I like the class because of the teacher" since the math teacher knows how to present developmentally the subject matter, creates a learning atmosphere advantageous to learning with empathy, has high expectations for all students without regard to gender, race, or language barriers, and uses a variety of assessment methods and teaching styles to better reach all students to address math anxiety (Chernoff & Stone, 2014; Dowker et al., 2016).

There are two distinctions to math anxiety handlings: prevention and reduction and there are distinct strategies and methods to address each is different ways. It has been found that there are three ways to prevent math anxiety: 1). Employing "Best Practice" in teaching math like using: math manipulatives, cooperative learning, dialogue of math, enquiring and conjecturing, justifying one's thinking, math journaling, using a problem-solving approach to teaching, interdisciplinary instruction of content, emerging technology, assessment as an integral part of instruction, etc.; 2). Incorporating the NCTM and State/Common Core Math Standards into the curriculum and/or instruction; and lastly, the importance of discussing feelings, attitudes, and appreciation of mathematics with students. This same research found that there are three methods to reduce math anxiety: 1). Psychological procedures such as math anxiety managing, desensitization, therapy, group support, bibliotherapy, and deliberations/conversations about experiences; 2). As a math anxious learner feels less fear and dread toward math, he/she might begin to build their self-confidence by taking more math classes and exposure to higher level math concepts; and 3). Most research on math anxiety reduction has shown that until a person with math anxiety has confronted this math anxiety by some form of discussion/counseling no "best practices" for teaching mathematics will help to overcome this fear of the subject.

Math Teachers during the school year while teaching mathematics should use some advantageous instructional methods which are advocated now for teaching mathematics using the Concrete-Representational-Abstract (CRA) Model for teaching mathematics as follows: First educators need to tart with the Concrete using hands-on manipulatives like Geoboards, then secondly, they must move to Representational models in diagrams (or use Virtual Manipulatives like NLVM at: http://nlvm.usu.edu/), and lastly, connect to the Abstract symbolism where student understand and function at an abstract level completely (GeoGebra software works well at: http://www.geogebra.org/cms/en/). The CRA Model is really the bases for the best practices pedagogy for teaching mathematics starting with young people, but should also be used at all levels of math instruction. See Figure 1.

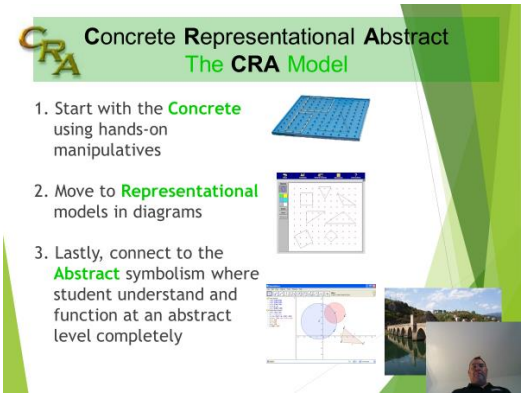

Figure 1. The CRA Model for Teaching Mathematics

Jones (2012) found as discussed in her book, *Visualizing Mathematics*, that it is essential that math teachers help students envision and create images of their mathematics comprehension so learners see math all around them and as a big part of their lives. Beilock & Willingham (2014) in their research have found that math teachers can help to address and reduce math anxiety. The author believes by using technology like GeoGebra along with the photography and children's books, teachers can make better connections and students are going to be more highly motivated to learn math (Furner & Marinas, 2014; Marinas et al., 2016).

Math Anxiety Defined

Math anxiety can be defined as a dread of math which interferes with working with numbers and solving math problems or daily life experiences that involve numbers or mathematics. The NCTM recognizes math anxiety as a problem and specifically included in its assessment practices. Standard #10 from the NCTM prompts teachers to assess their students' mathematical dispositions; such as: confidence in using math to solve problems, communicate ideas, and reason mathematically. Math anxiety is often caused by a combination of external and internal factors; however, we cannot change internal factors within the student, so as teachers it makes more sense to focus on what we can control (Chernoff & Stone, 2014). Math anxiety has been researched for almost fifty years and is a universal phenomenon, unfortunately not enough is being done today in schools to address it in how we approach teaching mathematics (Beilock & Willingham, 2014; Dowker et. al, 2016; Geist, 2010). Poor dispositions toward math and carrying math anxiety around with you in life are grave impediments for students at all levels of schooling nowadays (Geist, 2010). Beilock and Willingham (2014) cite in their research "Because math anxiety is widespread and tied to poor math skills, we must understand what we can do to alleviate it" (p. 29). Ineffective teaching practices are not the only cause of math anxiety. Because math anxiety can be seen in daily living activities as well as in class work or assignments, the need to have a multi-pronged approach is crucial to addressing it. Applying anxiety-lessening techniques in a variety of activities and frequently throughout instructional activities helps to address a variety of student needs. This is like the idea of applying different management and organizations skills suited the situation. As Skagerlund et al. (2019) found that math anxiety can impair math ability, they suggest students need to learn strategies to manage this so that it is not affecting their working

memory and number processing when they do math. Applying different techniques before teaching a math activity allows the teacher to set a more focused and less anxious tone for a math activity. Again, applying techniques that lessen anxiety and provide support just prior to beginning the math activity, as well as during the activity help cue the anxious students to a more positive approach to math school work.

Preventing Math Anxiety in Students

There are several approaches schools can follow to help thwart math apprehension. Both teachers and parents play a critical role in helping to develop positive dispositions toward math. As with most intervention programs, early assessment, and action help to develop positive math attitudes. The field of math education has recently made the push to increase and encourage math literacy, and along with that push has developed some useful materials to encourage math competence. Mammarella et al. (2018) found in their research that it is important as educators to separate the math from the anxiety and in their research results they found that children with severe math anxiety, but with no developmental dyscalculia were specifically impaired in the proactive interference task, while children with developmental dyscalculia (with or without math anxiety) failed in the working memory tasks. Their findings argue for the importance of distinguishing the cognitive processes underlying the profiles of a child, which may have factors as educators address preventative and reduction tactics as it relates to math anxiety. One program developed by the Southeastern Consortium for Minorities in Engineering (SECME) is used in schools with high minority populations to motivate and get students interested in math, science, and engineering. SECME was originally an acronym for *Southeastern Consortium for Minorities in Engineering.* The organization is based out of Atlanta, Georgia at the Georgia Institute of Technology. SECME is a deliberate coalition to recommence and fortify the professional expertise of K-12 educators, to motivate and counsel students, and invest parents so that all their children can learn and achieve at higher echelons. (SECME, n.d.) Many teachers find this program very useful to turn young people on to math and motivate them to like the subject more. The grades K-8 school years are critical to instilling confidence and powerful attitudes toward math in young people. Prevention of math anxiety is all about teacher planning and using the best possible practices in math instruction (dos Santos Carmo et al. (2019). The way math anxiety is fixed in our schools, too put it simply, is better teaching. Finlayson suggests the constructivist style of teaching which emphasizes these ideas:

- Start with the whole – expanding of parts
- Quest for student queries and interests
- Key resources should be manipulative materials
- Learning should be interactive constructing and building on what learners already know
- Instructor interacts/negotiates with students
- Assessment via student works observations, points of view, and tests. Process is as important as product
- Knowledge is dynamic/change with experiences
- Students work in groups" (Finlayson, 2014)

Reducing/Overcoming Math Anxiety and Building Confidence

Lowering math anxiety is much different from the prevention of math anxiety. While every educator would like to prevent a student from experiencing math anxiety, some come to school afraid and worried about learning math. Many math educators contends that a person who suffers from math anxiety needs to first lay the groundwork by coming to terms with their feelings and challenge their current beliefs and realize they are not alone; second, one must change their thoughts and negative thinking and use intervention strategies to improve one's thinking that they can be successful at math; third, one needs to know thyself, it is important that one knows his/her learning style/mode and that he/she apply approaches to doing math by successful people; and lastly fourth, when a student has increased confidence and approaches for undertaking math then they must apply what they learned and how they actually go about doing the mathematics. Additionally, the problem for those who suffer from math anxiety is the condition of anxiety itself. According to Rubinstein et al. (2015), anxious individuals tend to focus on negative stimuli more than positive stimuli, essentially making themselves more anxious. The same thing is true of individuals with math anxiety; the only difference is that for people with math anxiety, math is the negative stimuli (Rubinstein et al., 2015). This suggests that math anxiety could be handled through therapies designed to lessen anxiety, such as cognitive behavioral therapy and exposure therapy (exposing a person little by little to that which they are afraid) (Rubinstein et al., 2015).

It is important to use support techniques in a counseling setting when working with the math anxious. For example, some researchers (Ramirez et al., 2018) propose systematic desensitization as an effective approach for helping people reduce their math anxiety. Systematic desensitization in the framework of math anxiety which can be a distinct and measured gradual exposure to math ideas that are producing students to develop anxiety and teaching learners how to manage such distress. Through systematic desensitization, a common practice in counseling, students come to understand that their anxiety is a learned behavior, one they were not born with, and they can be taught to overcome it by consistently implementing their self-monitoring strategies to become less anxious. Some researchers advocate the use of relaxation in conjunction with repeated positive messages and visualizations to reduce math anxiety.

Working from the academic perspective, Zemelman et al. (2012) summarizes much evidence-based practices for teaching math which include: (a) use of manipulatives (make learning math concrete); (b) use cooperative group work; (c) use discussion when teaching math; (d) make questioning and making conjectures a part of math; (e) use justification of thinking; (f) use writing in math for: thinking, feelings, and prob. Solving; (g) use problem-solving approach to instruction; make content integration a part of instruction; (h) use of calculators, computers, and all technology; (i) being a facilitator of learning; and (j) assess learning as a part of instruction.

Math Manipulatives and Connecting to Children's Books and GeoGebra

"I think that children's literature offers a wonderful vehicle for helping teachers teach math well." -Marilyn Burns

"If you want your children to be intelligent, read them fairy tales. If you want them to be more intelligent, read them more fairy tales."

-Albert Einstein

As stated above it is important that math teachers read the children's book and fairy tales like *Sir Cumference and the Dragon of Pi, a Math Adventure* by Neuschwander-See Figure 2), the son Radius (the name is referred to but not described in math terms) saves his father's life, Sir Cumference, after accidentally turning him into a fire breathing dragon. Of course, a math formula is the reason for the solution. Did you know Sir Cumference named Pi in this story? Did you know this story tells how the math formula for ∏ was discovered? This is a fictional story but the author's purpose is achieved when children remember this math lesson and what Pi really means.

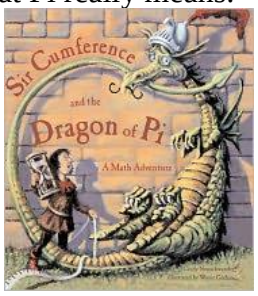

Figure 2. Book Cover Image

Building Math Confidence for a STEM World

Today we live in an age of advancing technologies that are constantly changing. Children need to be literate as well as be very good at mathematics and problem solving in order to compete in a global society. A youngster's lack of confidence and ability to do mathematics may impact his/her entire life forever both in all decisions they make on a daily basis as well as future career choices. Educators in an age of STEM should be prepared to reach all learners and develop their confidence and ability to do mathematics so they can compete globally. Teachers today should check to see that all their students have positive attitudes and dispositions toward math (NCTM, 1989). It is critical to ensure our young people are confident and well prepared in mathematics if they are going to compete for such high-tech jobs today and in the future. Today, the United States and other countries are working to lead more young people into the fields of Science, Technology, Engineering, and Mathematics (STEM) so as countries all can better compete globally. If we are to build math confidence in our students, math teachers need to address head on the issue of math anxiety which often manifests itself as hesitancy or learned helplessness in observed math achievement. Many adults do not like mathematics. Sparks (2011) contends that as the STEM fields become more significant for our young people to study, our schools and teachers need to do more to address math anxiety levels in learners so our young people are confident in their ability to study fields associated to STEM areas.

The picture book, *Math Curse*, by Scieszka and Smith addresses the issue of math anxiety. It is an excellent example of how educators have come to terms with the fact that not all people feel confident in their ability to do math. The story in the book begins as Mrs. Fibonacci, the school teacher, says to her students that they can think of almost everything as a problem in mathematics, one student then starts thinking and worries and becomes overcome by the breath of math. His math anxiety then becomes a real curse, hence the title of the book, *Math Curse*. Nevertheless, the character in the book ultimately comprehends that math is all around us and there is no way of avoiding it in daily life; therefore, the math anxious youngster in the story recognizes math as a means of making one's life easier. *Math Curse* may be used as a form of bibliotherapy to prompt discussion on the topic of math anxiety and allow other students to discuss their feelings on the topic to compare to the character in the book. Isdell (2017) wrote another great book, *A Gebra named Al*, about a young girl who struggles with her feelings toward math at the middle school level. This is also a wonderful book to incorporate in a bibliotherapy lesson to address math anxiety with students. Hebert and Furner (1997) feel that teachers need to take the time in their math instruction to address such affective aspects of learning mathematics so that students can come to terms with their feelings toward mathematics.

Math Standards Today as they Relate to using GeoGebra

Most schools and states today are adhering to the new Common Core Math Standards (National Governors Association Center for Best Practices (NGA Center) and the Council of Chief State School Officers which can be found at: http://www.corestandards.org/ When math teachers relate real-world problems through the use of dynamic technology like GeoGebra and connecting them to photography to make significant correlations in mathematics, students can recognize that geometry/shapes and mathematics surround us. GeoGebra is an ideal piece of math software to use to teach many of the Common Core or State Standards today. Furner and Marinas (2016) offer many premade GeoGebra activities that match up with the Common Core Math Standards and with many more resources at www.matharoundus.com and there are also many GeoGebra resources for teachers at: geogebra.org. GeoGebra is great software that can even involve programming and as a technology on the computer like gaming can be a powerful aid to motivate learners.

Using technological tools is critical in today's world of STEM. Young people need to learn to succeed in math at much higher levels of generality, represent and solve multifaceted problems, and emphasize decision-making and reasoning more (National Council of Teachers of Mathematics. NCTM believes that mathematical power can arise from technology, which includes increased opportunity for learning, increased opportunities for real-life social contexts, and orientation to the future, this also connects with gamification aspects by employing technologies to motivate learners. The President's Council of Advisors on Science and Technology (PCAST) (Holdren et al., 2010) issued a policymaking report with explicit commendations to government leaders given to safeguard that the United States is a frontrunner in Science, Technology, Engineering, and Mathematics (STEM) education in the upcoming decades. One major recommendation is to recruit and train upwards of 100,000 new STEM middle and high school mathematics

teachers over the next decade that are able to prepare and inspire students to have strong majors in STEM fields and strong STEM content-specific pedagogical preparation for such fields. PCAST believes that teachers are the most important factor to address in ensuring excellence in STEM education of future young people for our nation. Despite the ongoing efforts to promote the use of technology in education (e.g., National Council of Teachers of Mathematics [NCTM], National Educational Technology Standards for Teachers [NETS*T], teachers' ineffective use of technology has been reported in the literature.

GeoGebra, is a multi-platform dynamic mathematics software for all levels of education from elementary through university that joins dynamically geometry, algebra, tables, graphing, spreadsheets, statistics and calculus into a streamlined and integrated software package. This free dynamic mathematics software that can be downloaded free and accessed immediately at: http://www.geogebra.org. GeoGebra allows students and teachers the freedom to use it both within the classroom and while at home or on the go. GeoGebra has a large international user and developer community with users from 190+ countries it has currently been translated into 55 different languages.

GeoGebra may be used to show how mathematical equations can be applied to everyday objects. Research by Aydin & Monaghan (2011) uncovered that math teachers must explore the potential for learners to view mathematics in the real world through coding mathematical features of digital pictures using a dynamic geometry program like GeoGebra software. Mathematics teachers may find the following videos (Mathematics and Multimedia, n.d.) of basic training for GeoGebra at: http://mathandmultimedia.com/2011/01/01/geogebra-essentials-series/ useful as they provide great resources for how to quickly use GeoGebra in their math classrooms.

Reasons Math Teachers should use Manipulatives, Children's Books, and GeoGebra

Math manipulatives are common in most math lessons today in schools. Concrete manipulatives are critical for students to developing understanding of math concepts (Furner & Worrell, 2017). Moore and Rimbey (2021) found that math manipulatives help better connect the math ideas for better understanding. Iqbal et al. (2021) found that using math manipulatives had a positive impact on student achievement in learning mathematics. Larson and Rumsey (2018) contend that children's literature in mathematics brings stories to life when teachers integrate literature and math manipulatives to make math lessons meaningful as shown in Figures, 6, 7, and 10. Furner (2018) found that using children's literature to teach mathematics was an effective vehicle in better reaching all students.

Math educators may ask why it is important to make connections and excite students about learning math while using GeoGebra? To answer this educators will find that when using GeoGebra, educators will be able to: show a purpose for math; develop relationships between math concepts and shapes and ideas; the software will show practical applications to math in life; it employs innovative teaching in the classroom; it stimulates through photography/modeling; it employs emerging technologies in math with the real world application; and it can address math anxiety so students feel confident for any STEM field when they graduate from school.

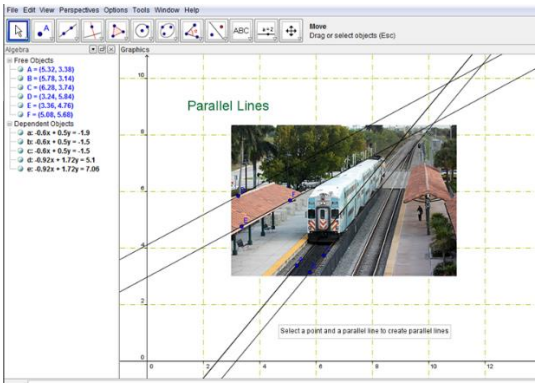

Figure 3. Examples of Parallel Lines in a Photo with GeoGebra

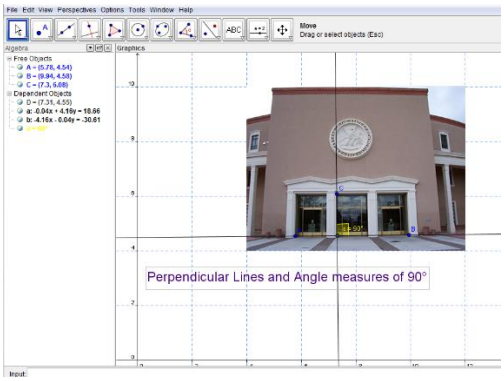

Figure 4. GeoGebra file showing Photo of Perpendicular Lines

Perpendicular lines create **right angles**, **90-degree angles**, and like in the GeoGebra file photo above [See Figure 4] right angles and perpendicular lines are drawn on the photo with the GeoGebra software all allowing students to identify vocabulary and math ideas (Furner and Yahya, 2020).

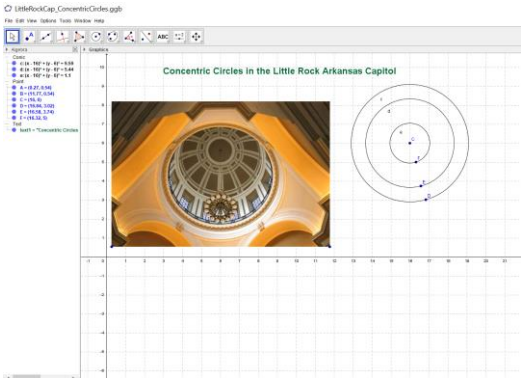

Figure 5. Circles and Concentric Circles in GeoGebra

The photo in Figure 5 was imported into GeoGebra and then students were asked to draw **circles** and **concentric circles** like seen in the photo of the Little Rock Capitol building.

Figure 6.Tangrams in GeoGebra, Children's Book, and Manipulative Lesson

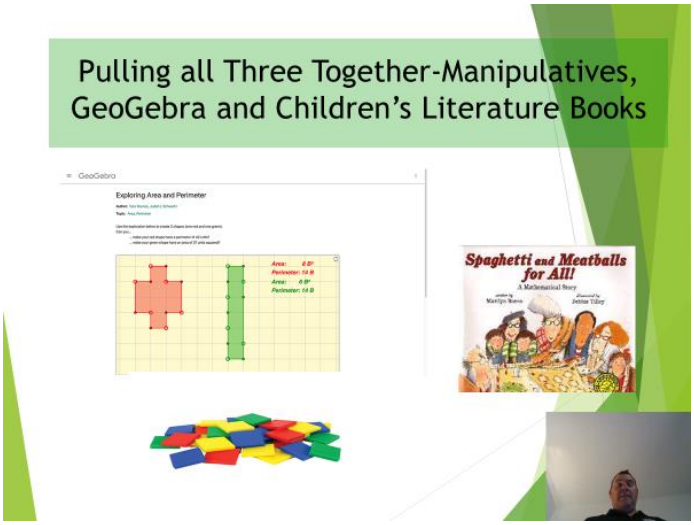

Figure 7. Using Color Tiles in a Story and on GeoGebra to Model Math

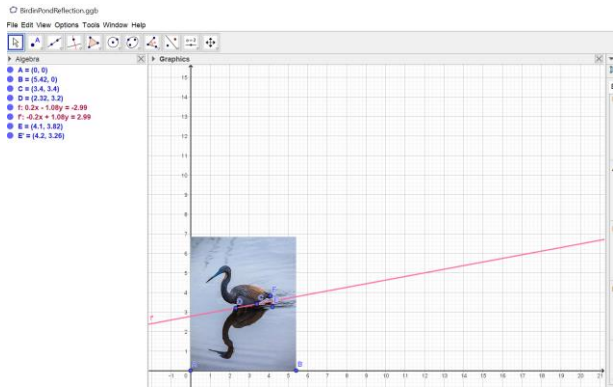

Figure 8. GeoGebra File Showing Photo and Line of Reflection

Reflections can often show up when taking photos of water, glass, or any other type of reflective surface. The photo above in Figure 8 shows a photo of a **reflection** of a bird in water with a **line of reflection** draw in GeoGebra.

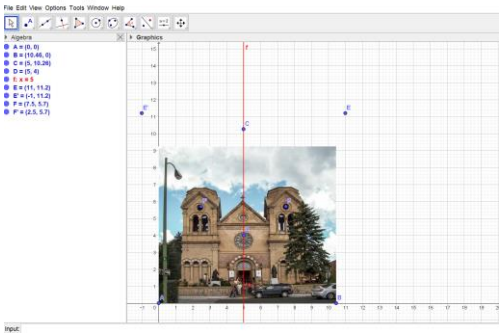

Figure 9. GeoGebra File of Symmetry of Photo of a Building with Symmetry

Figure 9 shows a photo inserted into the GeoGebra software, a line was drawn through the center of the photo and then a **point** was selected and **reflected along the line** to show them as **symmetrical** to each other.

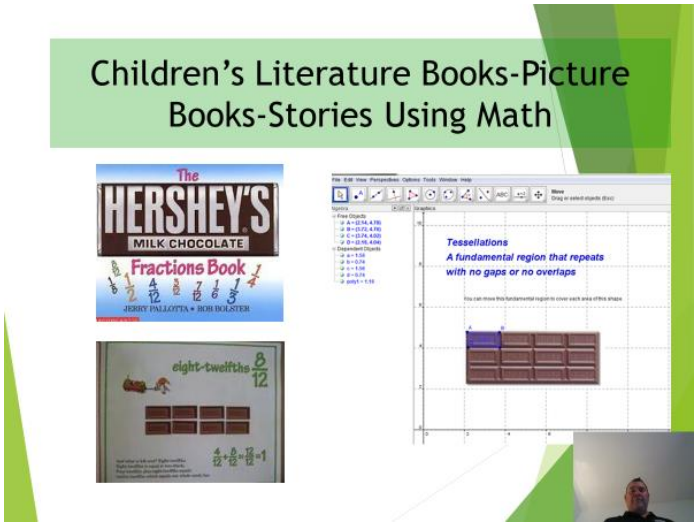

Figure10.Photos of Tessellations-Using Chocolate Bar, Book, and GeoGebra

Tessellating patterns are patterns that repeat with the same **fundamental region** covering a space, with no **gaps** and no **overlaps** like seen in the chocolate bar rectangular pieces seen in Figure 10. Students can use the GeoGebra and move the pieces to test their hypothesis of the same shape repeating. By using GeoGebra and inserting photos into the software, students can then use the tools in GeoGebra to do the math, learn the vocabulary, and start better understanding mathematics concepts better.

Daniel Mentrard has published some very creative GeoGebra creations on YouTube, (See Figures 11 and 12), these are also wonderful examples of how by using this free software, people can be very creative in creating interactive and artistic and appealing images and designs creating while applying imagination and creativity to their work and investigations. While GeoGebra is a wonderful piece of software to use to teach mathematics, help to ease

math anxiety, it can also be used to promote creativity in the classroom and beyond as students can use it to create, design, and even makes games and it can lead to assisting with gamification for young people as they learn math in our STEM world. This also relates to aspects of gamification, where students are learning and employing math software as well as also encouraging more creativity as they learn and create games and designs like shown here. See other creative endeavors for using GeoGebra in Figures 13 and 14.

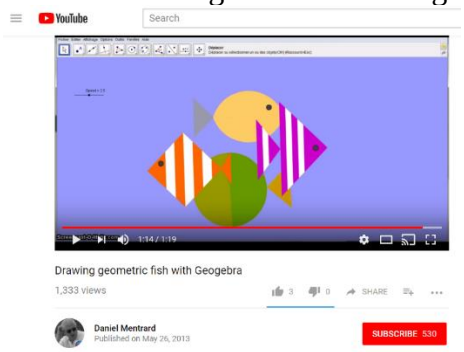

Figure 11. Daniel Mentrard's GeoGebra Designs Employing Creativity at: https://www.youtube.com/watch?v=dioctXkvBrs

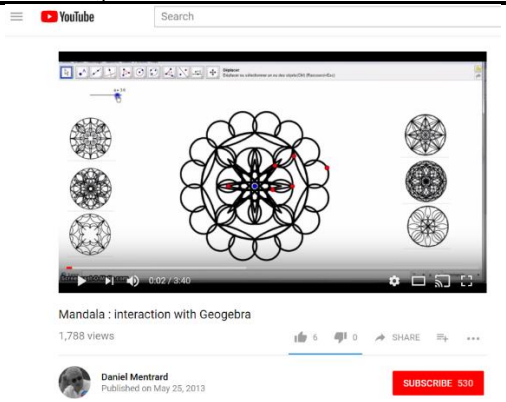

Figure 12. Daniel Mentrard's Shows Creative Designs with GeoGebra at: https://www.youtube.com/watch?v=g5-L_J9lK3o

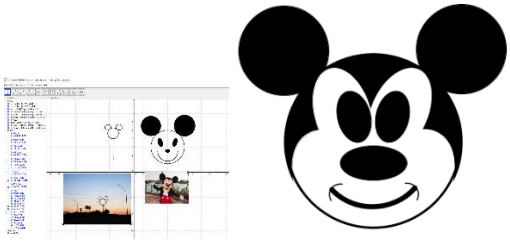

Figure 13. GeoGebra Copies from Photos Drawn in GeoGebra

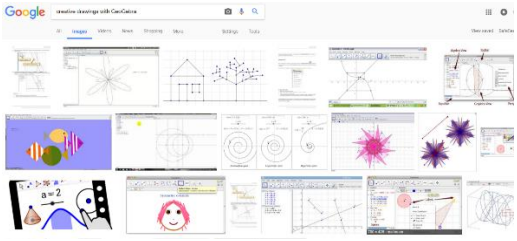

Figure 14. Creative Drawings with GeoGebra Found on Google Images

Summary

Teachers of mathematics need to look deeper at their students' needs and address the math anxious students they have in their classrooms today to better prepare them for our high-tech world we now live in. As educators, we need to better prepare our young people for STEM, using technology, and having a strong and curious interest in mathematics. Math is best learned especially in the elementary levels when teachers use the CRA model starting with concrete and manipulatives first. They need to make the connections to the representational through computer and GeoGebra with representational models and then getting to the abstract. Student enjoy using technology today while learning mathematics. Reading children's literature books to students helps them see value and understanding of many math concepts in the real world with real world application. Math manipulatives, children's literature, and technology like GeoGebra are the keys to success for students when learning mathematics and it also better prepares them for a STEM world where they are confident in their ability to do mathematics. It is indeed an educators' responsibility to see that their students feel confident in their ability to do math and see a purpose for it in life, as ultimately a child's life: and all life decisions they will make and vocations may be determined based on their temperament toward mathematics. As math teachers we must make the difference in our children's' feelings toward math while preparing them for a future with a greater STEM emphasis. It would be nice to hear more young people and adults when asked how they feel about math say, "Math is my favorite subject" or "I am great at stats!" or "I can solve any word problem!" By teaching using all the "best practices" and through math confidence building in our classrooms, teachers and schools can produce more mathematically confident young people for the 21st Century. Manipulatives, children's literature, and GeoGebra are a large part of learning today and used to help cover content as well to be a motivating factor in learning preparing our young people for a STEM world.

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For more resources from my research and GeoGebra files visit:

http://www.coe.fau.edu/centersandprograms/mathitudes/

http://matharoundus.com/

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