Volume 9 (2025), pp. 21-34
American Journal of STEM Education: Issues and Perspectives

https://doi.org/10.32674/rxaamv34

Leveraging AI, Magic, and Field Trips to Prevent Math Anxiety in Elementary School Pupils

Dipesh Baral
Washington State University, USA

ABSTRACT

Math anxiety is increasingly pervasive among elementary school students. This condition carries profound detrimental effects that conventional teaching methods have consistently struggled to address effectively. Reimagining mathematics as an engaging, relatable, and enjoyable subject through carefully designed, fun activities—such as interactive group outings, collaborative poetry readings, and captivating magic tricks—helps students connect positively and confidently with mathematics, significantly easing their fears. By incorporating recent advancements in generative artificial intelligence, teachers can design innovative, meaningful learning experiences tied to real-world applications, casting mathematical techniques as practical problem-solving tools. This article offers five detailed, practical activities intended to encourage and inspire educators to proactively prevent the development of math anxiety in young learners through creative classroom activities.

Keywords: AI, Elementary School Pupils, Field Trips, Magic, Math Anxiety

INTRODUCTION

About 93% of Americans are reported to experience some level of math anxiety (Blazer, 2011). Such people have mixed feelings of fear and hatred towards

mathematics (Ashcraft & Moore, 2009). It is well established that a certain level of mathematical competency is essential for a successful personal and professional life (Namkung et al., 2019) and that math anxiety negatively affects such mathematical competency (Barroso et al., 2021). Much research has been conducted to understand various factors associated with math anxiety, such as its origin, consequences, predictions from associated factors, and preventative measures (Leppma & Darrah, 2024; Luo et al., 2024; Bista et al., 2025; Baral et al., 2025). Math anxiety is a ubiquitous nuisance that must be reduced.

Among other demographics, the prevalence of math anxiety in elementary school pupils is highly worrisome. The prevalence of math anxiety in pupils of elementary schools is well documented, as studies have found that negative attitudes toward math originate at a young age (Ramirez et al., 2016; Aarnos & Perkkilä, 2012). Kids usually find it difficult to articulate their emotions, but even so, feelings of uneasiness or stress about mathematics have been observed in elementary school pupils (Ganley & McGraw, 2016; Vukovic et al., 2013). Math anxiety in pupils is associated with their diminished scores on: standardized testing batteries (Jameson, 2014; Ramirez et al., 2016; Wu et al., 2012), exercises evaluating skills in whole-number calculations and math concepts (Harari et al., 2013), and the practical use of mathematics (Vukovic, Kieffer, et al., 2013). As such, steps should be taken to effectively and efficiently address the development of math anxiety in elementary school pupils.

LITERATURE REVIEW

The origin of math anxiety at such an early age has been linked to various sources, such as the mathematical anxiety of parents (Maloney et al., 2015), genetic predisposition (Wang et al., 2014), the effect of math anxiety-induced stress on working memory (Sarkar et al., 2014) and neural efficiency (Pletzer et al., 2015), the teaching methodology of teachers (Jackson & Leffingwell, 1999), the mathematical anxiety of elementary school teachers (Gresham, 2017) etc. Similarly, some of the recently suggested measures to reduce math anxiety or even prevent them from developing in the first stage include active breaks in the classroom (Bellacicco et al., 2025), minimization of the math avoidance behavior and maximization of persistent effort by the students (Kilp-Kabel & Mädamürk, 2025), application of storytelling methods (Irmayanti & Chou, 2025), optimistic parental math beliefs on their own and their children's mathematical competence (Yılmaz, 2025), and use of technology in teaching (Ersozlu,2024). Often overlooked preventative measures are modifying the traditional teaching methodology and accommodating activities perceived as fun by kids in classroom teaching.

It has been observed that elementary teachers who emphasize learning mathematics via memorization instead of other curiosity-building activities

(Vinson,2001), present lessons in a more *"dogmatic"* manner (Ball, 1990) and use textbook-based approaches predominantly than trying alternative teaching strategies (Relich, 1996) contribute to math anxiety of elementary students. Mathematics is interesting in its way, but elementary school students may not be able to see that intrinsic motivation right away and may develop hatred towards it. Rather than focusing on memorizing numbers or geometrical shapes and their properties or rules of algebra, etc., which is perceived as tedious by most students, teaching-learning in class can focus on exploring these same concepts through activities that students at the elementary school enjoy, such as going outside of the classroom on a field trip with their friends, doing and seeing magic, reciting poems aloud in class or a story based lesson. This is not an exhaustive list; activities that pupils enjoy can take different forms based on the demographics of the students. This article focuses on incorporating field trips, performing or watching magic tricks, and group activities like reciting poems aloud in mathematical teaching as one way to prevent young minds from being math-anxious from a young age.

Field trips allow students to explore the world outside of the classroom and relate their classroom learning with the real world, enhancing their curiosity about the subject matter (Almqvist, 2025; Onyekpe & Ogbemudiare, 2025; Luah & Widiasih,2025; Arik, 2022). A carefully designed field trip allowing students to analyze and reflect on their learning from the trip falls under Kolb's (1984) experiential learning framework. Additionally, individual and group activities performed by students on such field trips make them active learners and creators of their knowledge, aligning with the framework of the constructivist learning theory of Piaget (1964) and Vygotsky (1978). Regarding magic, it has a universal appeal for children and provides a way to grasp their undivided attention. The concept of "magic" has helped in counseling students (Spruill & Poidevant,1993), "stimulating the senses in special education students (Frith & Walker, 1983)" and teaching mathematics to students (Schott, 2009).

Similarly, play-based pedagogical approaches like role-playing, collaboration with peers, and using props/manipulatives have been considered as a practical mathematics learning mechanism for kids (Bäckman, 2016; Copple & Bredekamp, 2009; Samuelsson & Carlsson, 2008; Henniger, 1987). Such activities—play and interaction—are promoted by major early childhood theorists, including Friedrich Froebel (1782–1852), Maria Montessori (1870–1952), Lev Vygotsky (1896–1934), Jean Piaget (1896–1980), and Erik Erikson (1902–1994).

In an age without technology and AI, finding such activities would be a cumbersome job for teachers, requiring hours and hours of preparatory work. However, with the advancement of technology and generative AI, it is now easy to merge mathematical lessons with field trips, magic, or poems. A simple Google search with the keywords "math poems for kids" or a simple prompt of "Prepare a lesson for me to teach addition to the elementary school pupils that involves story and magic" can give us multiple activities. Those options, combined with the

experience and instinct of teachers, have the potential to create lessons that everyone can enjoy. Here, we present five activities that leverage AI tools, magic, field trips, poems, and story-telling that can be used in an elementary-level math class to introduce mathematical concepts.

ACTIVITIES

1. Shape Hunt Field Trip

This activity is inspired by the *Shape Hunt* (2023) activity. It aims to make the students understand geometrical shapes and properties by identifying and classifying geometric shapes in the real world. Students will be able to distinguish different geometrical shapes and know their properties after completing the activity. Minimal materials like clipboards, paper, and pencils are required.

The original activity includes identifying shapes in the classroom itself, like the shape of doors, windows, and clocks. In this modified activity, the teacher takes students on a short field trip around the school (playground, hallway, or nearby park). Students are asked to find and sketch shapes like roof angles (triangles), shapes of some play area (rectangle, triangle, or circle), etc. Once back in class, students can group their sketches by shape type and count properties like the number of sides in a triangle or a rectangle. This ensures that students learn geometrical shapes and their properties through a field trip. The excitement of going on a trip with friends minimizes the anxiety while learning.

2. Math Poems by AI

This activity is inspired by the popular "Five Green and Speckled Frogs" song by *The Learning Station*. This activity aims to learn and practice addition and subtraction through poems. Many short math poems are available at Poetry4kids.com and mathstory.com. No additional materials than the already available materials in traditional classrooms, like the whiteboard or paper and markers, are needed for this activity. The teacher can use popular poems available on learningstation.com like:

> “Four green and speckled frogs sitting on a hollow log,
> Eating some delicious bugs. Yum, Yum
> One frog jumped in the pool, where it was nice and cool.
> Now, there’s only three speckled frogs. Glub, Glub”

to teach subtraction. While this is an existing activity, we can make it more comprehensive in teaching addition and subtraction by using AI tools to generate new poems. Grok, an artificial intelligence developed by xAI (personal

communication, February 22, 2025), generated a poem to include additions in the scenario as follows:

"Seven little frogs on a lily pad green,
Two hopped off; now, how many are seen?
Three more join, with a splash and a cheer,
Count them up; how many are here?"

This can be an excellent activity to practice with additions and subtractions. The teacher can read the poem aloud with the students and pause at each question to solve the questions. Students solve:

"Seven minus two is five" (7 - 2 = 5).
"Five plus three is eight" (5 + 3 = 8).

Furthermore, to make it more enjoyable, the scenes of frogs hopping off/on can be sketched on the board as the students count. Interested students can even become frogs and hop to and fro in a lily pad-like drawing on the ground. Students can be motivated to write their own stanzas and then solve each other's poems. Involvement of the poem and enactment of the poem ensures that students are not just stuck in the concept of additions and subtractions with numbers but also with frogs, ponds, and jumping on and off. The numbers are associated with frogs, and the mathematical operations are associated with jumping on and off. Students are counting the number of frogs and learning math through poems and acting.

3. Mystery Bag Magic

This activity is adapted from Carpenter et al.'s *Children's Mathematics: Cognitively Guided Instruction* (1999). It aims to help students understand basic equations through problem-solving. After completing the activity, students will be able to solve some basic linear equations. The materials required are small bags, counters (e.g., chips, quarters, dollar bills), paper, and pencils.

We modify the activity by giving it a flavor of magic. The teacher can start the activity by placing a secret number of quarters in a bag and asking students, "There were some quarters in here. I added 5 more, and now there are 7. How many quarters were there at first?" The student will figure out the original number of quarters without looking inside the bag using some magic. Students can use extra quarters to figure out (7 - 5 = 2), then write it as "x + 5 = 7." The students will understand that this magic is just an algebraic equation.

The same task of addition repeated with other numbers or switched with subtraction, such as "I had some quarters in here, I took five away, and now I have two left. How many were there at first?" that the students complete by using

quarters can help them understand abstract algebraic concepts using physical objects and do some magic in the way. Students can be motivated to create their own mystery bag problems for their peers to solve. This allows them to be creative and helps them bond with their peers as they create and solve problems with others. All in all, they understand mathematical concepts while using magic to solve a mystery.

4. The Disappearing Number Trick

This activity was suggested by Grok, an artificial intelligence developed by xAI (personal communication, February 22, 2025), and it is inspired by Activity 3. This activity aims to introduce algebraic thinking while reinforcing addition and subtraction. Materials needed are just pen, paper, and board. Once students master Activity 3, the teacher asks them to "Pick a number from 1 to 10, add 5, subtract 2, then subtract your original number." Once the students arrive at their final answer, the teacher can say the answer is three, no matter what number they picked in the beginning. The fact that everyone ended up with the same answer, irrespective of the number they started with, will surprise the students, and this can be called magic until they discover the logical reasoning behind it. They can be asked to determine why the answer is always three and understand that 'x+5-2-x=5-2=3.' Students learn math while doing magic. The sheer joy of doing magic can prevent them from developing math anxiety.

5. The Greedy Triangle Scavenger Hunt.

This activity is based on the book *The Greedy Triangle* by Marilyn Burns. It is a story about a triangle that becomes bored with its life and visits a shapeshifter to gain more sides and angles, turning into other geometrical shapes like the quadrilateral and pentagon. While the book has the story only, Grok has modified it into a scavenger hunt activity for students. This activity aims to make pupils identify geometrical shapes and their properties. After completing this activity, pupils can recognize geometrical shapes and link them with everyday objects. The materials needed are the usual pen and paper. It can be done in one class period.

To create the clues, the teacher will first read the book and familiarize themselves with the triangle's transformations (e.g., quadrilateral as a book page, pentagon as a starfish holder). Then, the teacher will create shape cards and clue cards. Shape cards will be the different polygons like the triangle, quadrilateral, and pentagon, while the clue card will have story-driven hints for each shape, such as

Triangle: "I escaped first with three sides—find me where you would slice a pizza!"

Quadrilateral: “I turned into four sides to be a page—look where books live!”
Pentagon: “With five sides, I held a starfish—check near something starry!”
Hexagon: “I rolled into six sides for a soccer ball—search where we play!”
Octagon: “I grew to eight sides for a stop sign—hide me near a rule!”

Finally, before the scavenger hunt begins, the teacher will place the shape cards around the classroom or school (e.g., a triangle near a snack area, quadrilateral on a bookshelf). The students will be divided into groups, ensuring enough shape cards for each group, and then they will be released for the hunt. For each find, students will count sides and angles (e.g., “This has four sides and angles. So, it is a quadrilateral!”), match it to the clue (e.g., “Found near books, ‘page’ clue fits!’”) and record it on their chart. The activity can continue until each group finds all the shape cards or for a fixed amount of time. Once the hunt is complete, each group can share their story of the hunt, how they found each shape, how they identified the shapes, and so on. The feeling of participating in a game, the thrill of discovery, and the connection to the story’s quirky transformations, all while learning a math lesson, can help prevent any anxiety towards math during the activity.

DISCUSSION

The five activities presented above each describe a non-traditional way to make students understand mathematical concepts, thereby circumventing the use of traditional methods that have been shown to induce math anxiety. Additionally, each activity is associated with things that kids enjoy. Moreover, the activities align with established education frameworks such as the constructivist learning framework, the experiential education framework, and the play-based education pedagogies like the Montessori method. These activities have a strong potential to prevent the development of math anxiety in young learners and increase their curiosity about mathematical topics and enjoyability of math classes.

In Activity 1, students see the shapes in the real world and, hence, see mathematics applied in their physical world. It connects abstract concepts to everyday objects, and sketching reinforces the observation. Understanding these mathematical concepts is combined with a field trip. A field visit allows math to be an outgoing class like other subjects. This helps students feel that math is also like other subjects and might prevent the development of aversion towards math.

In Activity 2, a poem and enactment of the poem are used to understand additions and subtractions. Students experience poems in math classes where they would usually see numbers, variables, and calculations. The rhyming and singing

aloud are expected to keep it fun, and the calculation within the poem reinforces the arithmetic fluency of students. Here, the expected result is a lack of stress in students and the prevention of math anxiety.

Activity 3 and 4 teach algebraic equations and expressions with magic. Kids are unequivocally interested in magic, and when kids learn magic in school, they try to show it to their parents and relatives at home. In order to replicate the magic, they will have to understand the mathematical idea behind the trick. Successful magic execution indicates that the child has mastered the mathematical ideas involved. Students think they are doing magic, but they are actually doing algebraic manipulations. This helps the pupils learn mathematical concepts without feeling like they are learning math. Instead, they feel like they are learning a magic trick, which they usually enjoy. This, in turn, should help prevent math anxiety.

The last activity includes a story and a scavenger hunt to teach geometrical shape and their properties. It is similar to Activity 1 in purpose but has more context and background in it. There is a story about how triangles can be changed into quadrilaterals and other polygons and information about which everyday objects look like those polygons. During the scavenger hunt, students will feel that they are searching for the story's characters using their specific number of sides and angles. They are learning about geometrical shapes and their properties. This should allow students to learn math through games, an activity they usually enjoy, and prevent the development of math anxiety.

Challenges and Limitations

Possible challenges that educators might face while developing and implementing such activities include time constraints, resource availability, or technological access. Creating these activities often demands hours of planning, testing, and refinement time that teachers juggling multiple classes and administrative duties may not have. Additionally, resource availability adds another layer of difficulty; schools with limited budgets might lack manipulatives, software, or even basic materials like graph paper, pushing educators toward familiar textbook-based approaches. Moreover, implementing such non-traditional activities often requires non-traditional assessment methods, which can further demand time and effort from teachers.

The recent exponential advancement in generative AI, tools like ChatGPT and Grok xAI can be capitalized on to overcome the barriers. The poem in Activity 2 and the whole of Activity 4 and Activity 5 were suggested by Grok with just simple prompting of a few sentences. These tools act as creative assistants, quickly generating ideas tailored to specific learning goals—like a rhyming poem to teach additions and subtractions (Activity 2) or a problem-solving scenario tied to real-world applications or magic (Activity 3 and 4)—saving teachers hours of

brainstorming. Beyond speed, AI can adapt content to different grade levels or student needs, such as simplifying language for younger learners or adding complexity for advanced classes. This flexibility makes crafting engaging, student-centered lessons easier without starting from scratch.

This leads to another challenge of technological access for using such generative AI tools. However, these tools do not require specialized equipment. They work on nearly any smartphone or computer, meaning even teachers in under-resourced schools can access them via a personal device or a shared school computer. Moreover, teachers do not need to know any advanced programming languages like Python or C++ to use them. These large language models operate like conversing with another person, making navigating them simple. For example, a teacher could type, "Suggest a 20-minute activity for teaching additions and subtractions to 5th graders, which can be taught as a magic trick," and receive a clear, ready-to-use response in seconds like Activity 4 with no coding or tech expertise required. Furthermore, many of these tools are free or low-cost in their basic versions, and they often include tutorials or community forums online, providing additional support for first-time users.

Still, teachers must be cautious when prompting these tools to create activities. They should carefully choose activities that require minimal extra resources and have articulable assessment methods. This helps them avoid placing a financial burden on themselves and from the effort of creating non-traditional assessment methods, which can be time-consuming. For instance, an AI might suggest a hands-on activity using 3D-printed shapes. However, if a teacher's school lacks a 3D printer, this becomes impractical; instead, they could prompt for alternatives using paper cutouts. Similarly, while AI can generate creative tasks—like a storytelling scavenger hunt for geometry (Activity 5)—teachers need to ensure the output includes clear success criteria, such as a rubric or checklist, to evaluate student understanding efficiently. Without this, grading could become subjective or overly complex, adding to their workload. To mitigate these risks, educators could refine their prompts with phrases like "low-cost" or "easy to assess," training the AI to align with their practical needs. All the activities presented here require minimal resources and have clear assessment criteria. Teachers can harness AI's potential by being selective while keeping implementation manageable and cost-effective.

One of the limitations of these activities is that they lack empirical evidence of their effectiveness in the form they are currently presented. However, each activity is designed to incorporate elements that appeal to children's interests and are aligned with established pedagogical frameworks, including the constructivist learning theory, the experiential education paradigm, and play-centered instructional approaches such as the Montessori methodology. As such, they are expected to be effective in meeting their objective. As a future extension of this study, these activities will be implemented in a class, and the results will be

communicated. Practitioners can feel free to use the presented activities in their class as they see fit. However, they are strongly advised to develop the habit of creating their activities based on their needs and circumstances with the help of AI tools. It is doubtful that AI will replace human educators, but human educators who use AI to enhance their work will likely replace educators who do not.

IMPLICATIONS AND CONCLUSION

The article encourages a shift from traditional, rigid teaching methods to dynamic, student-centered strategies, using playful, collaborative activities like group outings and magic tricks to create a positive classroom environment, potentially improving students' long-term attitudes toward math. By emphasizing generative artificial intelligence, it advocates for greater integration of AI tools in curriculum design, prompting schools to invest in technology that links lessons to real-world applications. This could lead to reduced math anxiety, boosting students' confidence and performance, with broader impacts on STEM education. It also motivates discussions on policy and curriculum design, encouraging a blend of experiential learning and emotional well-being with academic objectives. This, in turn, can influence how math is approached at the elementary level, supporting a more balanced foundation for students' ongoing learning. All in all, the study offers educators practical tools to address math anxiety among young learners by inviting the application of generative AI tools to develop innovative teaching practices.

REFERENCES

Aarnos, E., & Perkkilä, P. (2012). Early signs of mathematics anxiety? *Procedia—Social and Behavioral Sciences*, *46*, 1495–1499. doi:10.1016/j.sbspro.2012.05.328

Almqvist Nielsen, L. (2025). Prehistoric history in Swedish primary school education: pupils' expression of empathy after visiting a cultural heritage site. *Education 3-13*, *53*(3), 378-392.

Arik, S. (2022). Anxiety levels of science teachers about organizing trips to out-of-school learning environments. *International Journal of Curriculum and Instruction, 14*(3), 2887–29143. ERIC Number: EJ1364643.

Ashcraft, M. H., & Moore, A. M. (2009). Mathematics anxiety and the affective drop in performance. *Journal of Psychoeducational assessment*, *27*(3), 197-205.

Bäckman, K. (2016). Children's play as a starting point for teaching shapes and patterns in the preschool. In *Mathematics Education in the Early Years: Results from the POEM2 Conference, 2014* (pp. 223-234). Springer International Publishing.

Ball, D. L. (1990). Breaking with experience in learning to teach mathematics: The role of a preservice methods course. *Learning of Mathematics*, *10*(2), 10–16. Retrieved from https://eric.ed.gov/?id = EJ418975

Baral, D., Dasgupta, N., McLeman, L., Bista, R., Jones, J., & Biswakarma, M. (2025). Exploring the predictive relationship between students' math anxiety and their mathematical performance. *American Journal of STEM Education*, *3*, 1-15.

Barroso, C., Ganley, C. M., McGraw, A. L., Geer, E. A., Hart, S. A., & Daucourt, M. C. (2021). A meta-analysis of the relation between math anxiety and math achievement. *Psychological bulletin*, *147*(2), 134.

Bellacicco, R., Capone, F., Sorrentino, C., & Di Martino, V. (2025). The Role of Active Breaks and Curriculum-Based Active Breaks in Enhancing Executive Functions and Math Performance, and in Reducing Math Anxiety in Primary School Children: A Systematic Review. *Education Sciences*, *15*(1), 47. https://doi.org/10.3390/educsci15010047

Bista, R., Poudel, P., & Baral, D. (2025). Examining the influence of demographic variables on mathematics test anxiety. *American Journal of STEM Education*, *3*, 105-119.

Blazer, C. (2011). Strategies for Reducing Math Anxiety. Information Capsule. Volume 1102. *Research Services, Miami-Dade County Public Schools*.

Carpenter, T. P., Fennema, E., Franke, M. L., Levi, L., & Empson, S. B. (1999). *Children's mathematics: Cognitively guided instruction* (Vol. 1). Portsmouth, NH: Heinemann.

Carpenter, T. P., Fennema, E., Franke, M. L., Levi, L., & Empson, S. B. (1999). *Children's mathematics: Cognitively guided instruction* (Vol. 1). Portsmouth, NH: Heinemann.

Copple, C., & Bredekamp, S. (2009). *Developmentally appropriate practice in early childhood programs serving children from birth through age 8*. National Association for the Education of Young Children. 1313 L Street NW Suite 500, Washington, DC 22205-4101.

Cornell, C. (1999). I hate math! I couldn't learn it, and I can't teach it!. *Childhood education*, *75*(4), 225.

Ersozlu, Z. (2024). The Role of Technology in Reducing Mathematics Anxiety in Primary School Students. *Contemporary Educational Technology*, *16*(3).

Exceptional Children, 15, 108-110

Frith, G. H., & Walker, J. C. (1983). Magic is a motivation for handicapped students. *Teaching*

Ganley, C. M., & McGraw, A. L. (2016). The development and validation of a revised version of the math anxiety scale for young children. *Frontiers in Psychology*, *7*, 1181. doi:10.3389/fpsyg.2016.01181

Gresham, G. (2017). Preservice to inservice: Does mathematics anxiety change with teaching experience? *Journal of Teacher Education*, 69, 1–18.
Harari, R. R., Vukovic, R. K., & Bailey, S. P. (2013). Mathematics anxiety in young children: An exploratory study. *The Journal of Experimental Education*, *81*, 538–555. doi:10.1080/00220973.2012.727888
Henniger, M. L. (1987). Learning mathematics and science through play. *Childhood education*, *63*(3), 167-171.
Irmayanti, M., & Chou, L. F. (2025). Storytelling and math anxiety: a review of storytelling methods in mathematics learning in Asian countries. *European Journal of Psychology of Education*, *40*(1), 1-26.
Jackson, C. D., & Leffingwell, R. J. (1999). The role of instructors in creating math anxiety in students from kindergarten through college. *Mathematics Teacher*, *92*(7), 583-586.
Jameson, M. M. (2014). Contextual factors related to math anxiety in second-grade children. *Journal of Experimental*, *82*, 518–536.
Kilp-Kabel, T., & Mädamürk, K. (2025). Expectancies, values, and task persistence can alleviate the negative effects of math anxiety on math performance. *European Journal of Psychology of Education*, *40*(1), 17.
Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development.* Prentice Hall. http://www.learningfromexperience.com/images/uploads/process-of-experiential-learning.pdf
Leppma, M., & Darrah, M. (2024). Self-efficacy, mindfulness, and self-compassion as predictors of math anxiety in undergraduate students. *International Journal of Mathematical Education in Science and Technology*, *55*(4), 883-898.
Luah, S., Parmin, P., & Widiasih, W. (2025). Development of Thematic Learning Using the Field-Trip Method Assisted by the Surrounding Environment to Improve Students' Scientific Literacy Abilities. *Jurnal Penelitian Pendidikan IPA*, *11*(1), 432-445.
Luo, R., Zhang, A., Wang, Y., Li, H., Xu, Y., Guo, K., & Si, J. (2024). Math attitudes and math anxiety predict students' perception of teacher support in primary school, but not vice versa. *British Journal of Educational Psychology*, *94*(1), 6-21.
Maloney, E. A., Ramirez, G., Gunderson, E. A., Levine, S. C., & Beilock, S. L. (2015). Intergenerational Effects of Parents' Math Anxiety on Children's Math Achievement and Anxiety. *Psychological Science*, *26*(9), 1480-1488. https://doi.org/10.1177/0956797615592630
Music & Movement for Children. The Learning Station. (n.d.). https://www.learningstationmusic.com/

Namkung, J. M., Peng, P., & Lin, X. (2019). The relation between mathematics anxiety and mathematics performance among school-aged students: A meta-analysis. *Review of Educational Research*, *89*(3), 459-496.

Onyekpe, S. J., & Ogbemudiare, B. (2025). Effectiveness of Field Trip Learning Instructional Strategy on Achievement in Social Studies among Primary School Pupils in Delta State. *Kontagora International Journal of Educational Research*, *2*(1), 308-323.

Piaget, J. (1964). Part I: Cognitive development in children: Piaget development and learning. *Journal of Research in Science Teaching, 2*(3), 176–186. https://doi.org/10.1002/tea.3660020306

Pletzer, B., Kronbichler, M., Nuerk, H.-C., & Kerschbaum, H. H. (2015). Mathematics anxiety reduces default mode network deactivation in response to numerical tasks. *Frontiers in Human Neuroscience*, *9*, 202. doi:10.3389/fnhum.2015.00202

Ramirez, G., Chang, H., Maloney, E. A., Levine, S. C., & Beilock, S. L. (2016). On the relationship between math anxiety and math achievement in early elementary school: The role of problem solving strategies. *Journal of Experimental Child Psychology*, *141*, 83–100. doi:10.1016/j.jecp.2015.07.014

Relich, J. (1996). Gender, self-concept and teachers of mathematics: Effects on attitudes to teaching and learning. *Educational Studies in Mathematics*, *30*, 179–195. doi:10.1007/BF00302629

Samuelsson, I. P., & Carlsson, M. A. (2008). The playing learning child: Towards a pedagogy of early childhood. *Scandinavian journal of educational research*, *52*(6), 623-641.

Sarkar, A., Dowker, A., & Cohen, K. R. (2014). Cognitive enhancement or cognitive cost: Trait-specific outcomes of brain stimulation in the case of mathematics anxiety. *The Journal of Neuroscience*, *34*, 16605–16610. doi:10.1523/jneurosci.3129-14.2014

Schott, P. (2009). The use of magic in mathematics: From primary school to higher education. *ICERI2009 Proceedings: 2nd International Conference of Education, Research and Innovation*, 58–70. IATED.

Shape hunt. TeachHUB. (2023, January 27). https://www.teachhub.com/in-the-classroom/lesson-plans/2020/08/shape-hunt/

Spruill, D. A., & Poidevant, J. M. (1993). magic and the school counselor. *Elementary School Guidance & Counseling*, *27*(3), 228–233. http://www.jstor.org/stable/42869072

Vinson, B. M. (2001). A comparison of preservice teachers' mathematics anxiety before and after a methods class emphasizing manipulatives. *Early Childhood Education Journal*, *29*, 89–94. doi:10.1023/A:1012568711257

Vukovic, R. K., Kieffer, M. J., Bailey, S. P., & Harari, R. R. (2013). Mathematics anxiety in young children: Concurrent and longitudinal associations with mathematical performance. *Contemporary Educational Psychology*, *38*(1), 1–10. doi:10.1016/j.cedpsych.2012.09.001

Vygotsky, L. S. (1978). *Mind in Society: Development of Higher Psychological Processes* (M. Cole, V. Jolm-Steiner, S. Scribner, & E. Souberman, Eds.). Harvard University Press. https://doi.org/10.2307/j.ctvjf9vz4

Wang, Z., Hart, S. A., Kovas, Y., Lukowski, S., Soden, B., Thompson, L. A., … & Petrill, S. A. (2014). Who is afraid of math? Two sources of genetic variance for mathematical anxiety. *Journal of Child Psychology and Psychiatry*, *55*, 1056–1064. doi:10.1111/jcpp.12224

Wu, S. S., Barth, M., Amin, H., Malcarne, V., & Menon, V. (2012). Math anxiety in second and third graders and its relation to mathematics achievement. *Frontiers in Psychology*, *3*, 162.

Yılmaz, B., Doğan, I., Karadöller, D. Z., Demir-Lira, Ö. E., & Göksun, T. (2025). Parental attitudes and beliefs about mathematics and the use of gestures in children's math development. *Cognitive Development*, *73*, 101531.

NOTE: The author acknowledges the use of AI tools such as Grammarly and ChatGPT to check grammar, punctuation, and sentence structures. Another AI tool Grok xAI was used to generate ideas for some of the activities presented. The author developed the original concept and draft of the manuscript, while the contributions made by the generative AI tools were helpful in enhancing the overall quality of this work. Specifically, the use of Grok xAI also validates the idea presented in the article by showing that generative AIs can indeed be used for the intended purpose.

DIPESH BARAL is a doctoral student in the Department of Mathematics and Statistics at Washington State University, USA. His research interests include data analytics, mathematics education, and stochastic processes.
Email: dipesh.baral@wsu.edu