The Complete Draft Version of the MAS Survey

Cheng Peng and Laura Pyott

Objective 1: Adopting well-established psychometric survey instruments AMAS and self-efficacy instruments to collect math anxiety and self-efficacy data.

Abbreviated Math Anxiety Scale (AMAS)

Please rate your feelings during different activities on a scale from 1 to 5. Try not to spend too much time on any one item. There are no right or wrong answers.

1 = No bad feelings, 2 = Somewhat bad, 3 = nervous, 4 = Very bad feelings, 5 = Worst feelings

Questionnaires

1. Having to use tables in the back of a math book.
2. Thinking about a math test the day before you take it.
3. Watching the teacher work out a math problem on the board.
4. Taking a math test.
5. Being given a homework assignment of many difficult problems that is due the next class meeting.
6. Listening to a lecture in math class. [Listening to the teacher talk for a long time in math]
7. Listening to another student explain how to do a math problem.
8. Being given a quiz on math without knowing in advance.
9. Starting a new chapter in a math book. [Starting a new topic in math]

Math Self-efficacy Scale

Select the response that matches how much you now agree with each statement. Try not to spend too much time on any one item. There are no right or wrong answers.

1 = Strongly disagree 2 = disagree 3 = neutral 4 = agree 5 = Strongly agree

Questionnaires

1. I usually understand a mathematical idea quickly.
2. I have to work very hard to understand mathematics.
3. I can connect mathematical ideas that I have learned.

Objective 2: Include some demographic characteristics such as age and gender to compare the results with that of existing research and use them as a baseline.

1. To which gender identity do you most identify?
    - Female
    - Male
    - Transgender Female
    - Transgender Male
    - Gender Variant/Non-conforming
    - Not Listed (please specify):
    - Prefer Not to Answer

2. Are you currently a
    - Freshman
    - Sophomore
    - Junior
    - Senior
    - Graduate Student

3. Which of the following best describes your major?
    - STEM Majors: *astronomy, chemistry, biochemistry, biology, all engineering majors, computer science, mathematics, physics, psychology, statistics, and other majors in the CSM*
    - Business Majors: *accounting, international business, finance, marketing, project management, economics, and other majors in the CBPM.*
    - Health Science Majors: *communication disorders, kinesiology, nursing, nutrition, public health, sports medicine, etc. in CHS*
    - Other Majors: *all other majors not listed above.*

4. What do you consider yourself to be (Please choose only one)?
    - American Indian or Alaskan Native
    - Asian / Pacific Islander
    - Black or African American
    - Hispanic
    - White / Caucasian
    - Multiple ethnicity/ Other (please specify)

Objective 3: Teaching strategies can reduce math anxiety and improve learning outcomes.

Teaching Strategies Questionnaire

The following statements are the ways your teacher teaches mathematics. Respond to the items listed below:

5 – Always, 4 – Often, 3 – Sometimes, 2 – Seldom, 1 – Never

Cooperative-Approach

1. Teacher encourages students to work with others to generate as many alternatives as they can for the problem discussed.
2. Teacher gives students enough time to think and to investigate with others to achieve desirable.
3. Teacher gives students a chance to generate new concepts.
4. Teacher applies group work in the class to serve desired objectives.
5. Teacher distributes different teaching-learning tasks to students.
6. Teacher lets students have their own conversations positively.

Lecture Type

1. Teacher provides students feedback regarding their answers at all times.
2. Teacher ends the teaching-learning situation by clarifying and discussing diagrams suitable for students.
3. Teacher trains students on generating specific answers for the questions raised to them.
4. Teacher's cognitive teaching strategies harmonize with students' learning strategies.
5. Teacher allows students to have more clarifications and explanations on a certain topic.
6. Teacher trains students to solve their problems in a comfortable way.
7. Teacher makes students take part in different roles.

Deductive Approach

1. Teacher trains students to determine the whole idea of the topic.
2. Teacher provides students with a chance to apply new knowledge in new real-life situations.
3. Teacher trains students on learning the whole concept before the specific idea.
4. Students tend to generate new information by making comparisons between their previous knowledge and new one.
5. Teacher moves from the abstract to the concrete examples.
6. Teacher asks students to do written or verbal summaries of the information they get.
7. Teacher distributes different teaching-learning tasks to students.

Inductive Approach

1. Teacher uses specific questions to discuss the whole topic.
2. Teacher dissembles the teaching-learning material into specific tasks that need specific responses.

3. Teacher trains his students on distinguishing between different characteristics of the same concept.
4. Teacher begins by presenting the main ideas of the topic at the beginning of the class.
5. Teacher uses specific problem-solving strategies in the teaching process.
6. Teacher assigns students a specific task into a general task.
7. Teacher helps students to analyze the main idea to be used in discussing the topic as a whole.

Demonstration

1. Teacher uses direct presentation to provide students with information.
2. Teacher helps his students imitate desired models by showing them.
3. Teacher begins the teaching-learning situation by presenting a problem to students.
4. Teacher trains students to plan, observe, and evaluate their teaching activities.
5. Teacher shows students how to verify information and facts before giving judgments.
6. Teacher begins with examples up to the concept in the teaching-learning situation.
7. Teacher teaches students the way to identify those simple tricks to understand the lesson.

Repetitive Exercises

1. Teacher takes advantage of providing different activities to secure the teaching-learning process.
2. Teacher cares about correcting students by providing many worksheets.
3. Teacher gives similar examples during the discussion to secure the mastery of the topic.
4. Teacher takes part in training students by providing different learning activities.
5. Teacher helps students identify their own mistakes by doing similar worksheets.
6. Teacher gives students the chance to correct their mistakes by answering similar questions.
7. Teacher trains students by providing different sets of worksheets.

Integrative Approach

1. Teacher awards students for their right answer.
2. Teacher depends on criteria in evaluating their students.
3. Teacher neglects undesired behaviors in teaching-learning situations.
4. Teacher makes use of concept maps during the teaching-learning process.
5. Teacher facilitates students to make use of the procedures that organize memory potentials (symbolizing information).
6. Teacher guides students to references such as dictionaries, encyclopedias, internet sites, etc.
7. Teacher supports students in using different learning tools for the purpose of teaching the learning process.

Objective 4: Effectively using the technologies can reduce math anxiety.

1: strongly disagree, 2 – disagree, 3. Neutral, 4 agree, 5. Strongly agree

1. I feel apprehensive about using information technologies (ITs)
2. Technological information sounds like confusing jargon to me
3. I have avoided ITs because it is unfamiliar to me
4. I hesitate to use ITs for fear of making mistakes I cannot correct
5. ITs do not scare me at all
6. Working with ITs would make me very nervous
7. I do not feel threatened when others talk about ITs
8. I feel aggressive and hostile toward ITs
9. ITs make me feel uncomfortable
10. I get a sinking feeling when I think of trying to use ITs
11. ITs make me feel uneasy
12. ITs make me feel confused

Objective 5: Learning modalities and styles are also associated with math anxiety.

1. When I listen to a class lecture…
   a. I listen very closely.
   b. I try to be close to the speaker and watch the speaker.
   c. I take notes during the lecture.
2. I like to solve word problems by…
   a. talking to a friend or to myself.
   b. using an organized approach with lists or charts.
   c. walking, pacing, or doing something active.
3. When someone tells me numbers, but I am unable to write them down, I…
   a. repeat the numbers to myself out loud.
   b. visualize or see the numbers in my mind.
   c. write the numbers in the air or on the table.
4. I learn something new by…
   a. having someone explain it to me while I listen.
   b. having someone do it for me while I watch.
   c. doing it myself.
5. When I watch a movie, I remember…
   a. everything (what was said, music, background noises).
   b. the costumes, environment, and scenery.
   c. how it made me feel.
6. When I am trying to remember something, I…
   a. hear what was said or what sounds were around me.
   b. visualize it happening again in my mind.
   c. feel the way I did when it happened.
7. When I do not know how to spell a word, I…

a. sound it out.
b. see the word in my mind.
c. write the word on paper until it looks right.

8. I enjoy reading when the story has…
   a. a lot of dialogue (characters talking to each other).
   b. a lot of descriptive words.
   c. a lot of action.
9. I remember new people by…
   a. their names.
   b. their faces.
   c. their actions.
10. I have a hard time concentrating when…
    a. there is a lot of noise.
    b. there are a lot of people.
    c. I am uncomfortable (too hot, too cold, uncomfortable chair, etc.).
11. When it comes to clothes, I prefer to dress…
    a. in any way, since clothes are not that important to me.
    b. well – and I have a particular style.
    c. comfortably, so I can move around easily.
12. If I cannot read aloud or get up and move around, I…
    a. talk with a friend.
    b. look out a window.
    c. rock in my chair, tap my foot, drum my fingers, or jiggle my pencil.

Objective 6: Creating and using campus learning resources can reduce math anxiety and improve their academic performance.

Student Engagement in Learning: During the current school year at school, how often have you done the following:

1 - Very often, 2 - Often, 3 - Sometimes, 4 – Never

In class learning

1. Asked questions in class.
2. Answered questions from professors or peers in class.
3. Contributed to class or group discussions.
4. Practice exercises/examples.
5. Took detailed class notes.

After Class learning

General

6. Previewed the content before class.
7. Reviewed class notes and other recommended exercises
8. Worked with other students on the course materials.

Use of Resources

9. Got help from professors via email.
10. Went to the professor's in-person/Zoom office hours.
11. Used free peer tutoring through the Math Learning Center
12. Used private tutoring services.