Math Wars Peace Treaty

The Toolkit Team

Summary

The *Peace Treaty* is a disarmament tool – a brief statement of common beliefs that the non-specialist public can understand. It is not a compromise, but a response to the legitimate concerns of the public, especially parents. It can be adopted as a policy of the district, circulated to the press, or by any other means of getting it to the public as a representation of what the district math leadership believes about the issues spelled out in the Treaty.

To build such a consensus, it is important also to bring in mathematicians from the local academic community who are interested in mathematics education in schools but have not adopted extreme positions. The *letter* and *meeting agenda* are designed for this purpose, complementing the text of the Peace Treaty.

Purpose

To help change agents, if and when the 'Math Wars' impact their system, to take the heat out of the exchanges by seeking common ground and civilized discussion of areas of disagreement.

Tool Description

The tool is a set of documents that, adapted to local circumstances, can be used to pre-empt ridicule and false accusations from both extremes in the Math Wars. By declaring in favor of the statements in the peace treaty, district math leaders deprive those who would incite local citizens through the inflammatory accusations that often turn worried parents into a cadre that attacks local math leaders. Equally, the letter and agenda can help bring into the discussion a balanced group of local research mathematicians, scientists and engineers – not just those who are activists.

Background

The *Math Wars* are a fact of life for school systems engaged in working to improve the education of their students in mathematics. The ferocity of the exchanges is often remarkable, in no way justified by the limited areas of real disagreement. As usual in such circumstances, myths are generated as to both current reality and planned programs.

REMEMBER: Math Warriors do not attack your ideas; they attack you! You will (or have) been accused of promoting bad classroom practices, *as described by your enemies*. Anything you say to defend ideas will confirm the fears planted by your enemies. Defend yourself by declaring yourself in favor of exactly what the public worries will be neglected. The Peace Treaty is designed to reassure the public that you share their common sense.

Design principles

This tool is designed to find common ground on curriculum and pedagogy where the majority of parents, and local mathematicians and users of mathematics, will feel comfortable. To do so, it isolates those who hold extreme views at either end of the various aspects of controversy.

The materials

Three key documents are offered below:

- **Math Wars Peace Treaty** has been developed to summarize the large area of common ground to which most people will subscribe, and to establish a thorough and respectful process for working on disagreements. It addresses concerns that traditional aspects of learning mathematics might be neglected, as well as the additional needs of contemporary life and work for problem solving and communication
- **Letter to mathematicians** is intended to be sent by a local mathematician (or physicist or engineer or ...) who is involved with the improvement program (it should have at least a few!) to others in the professional and research communities who show interest and good will.
- **Agenda for a meeting of mathematicians** suggests a structure for a meeting of such a group that aims to get their support for the Peace Treaty approach.

Though carefully designed and developed, the drafts below will need some adaptation to local circumstances.

Using the tool

Do not worry about getting people to sign the treaty. You sign it and make it public. Then challenge anyone who attacks you on the grounds they are attacking what you stand for in the treaty. Dare critics to sign on or publicly expose their disagreement with it.

Do not add divisive language, even if it warms your heart. Do not use this tool as a public education tool. It is a public engagement tool. It is already understood by the public. They want to know if YOU understand it. This is not an expression of your philosophy. It is a direct response to issues framed by the public. Don't change the subject.

Evaluative evidence

This approach has been used by various groups in a number of extremely antagonistic situations.

Math Wars Peace Treaty

We are against the math wars. Both sides are right, and wrong. If either side wins, it will be a disaster. Students should learn the basics. They should understand the mathematics they do so they can take advanced courses and go to college if they choose. They should learn how to apply mathematics to common problems. To make water, you do not choose between hydrogen and oxygen; *you need both*.

Are you satisfied with the status quo in mathematics teaching? We are not.

Whose fault is the status quo? How should we improve the status quo? What are the highest priorities for change? What are the best strategies for change? We have among us agreements and disagreements about these things. But about these things we agree:

- The status quo is unacceptable. Its defenders are wrong, mathematics instruction must improve;
- Teachers, especially K–8 teachers, should learn more mathematics throughout their careers;
- No students should be denied a fair chance to learn mathematics because they have been assigned unqualified mathematics teachers;
- All students should have a copy of their mathematics books to take home;
- Research and evidence should be used whenever it is available to inform decisions.

We also agree that students should learn to:

- **add, subtract, and multiply** single digit numbers automatically and accurately.
- **add, subtract, multiply and divide** integers, decimals and fractions accurately, efficiently, and flexibly without calculators.
- understand the mathematics they study and use.
- use the mathematics they know to solve problems with calculators and computers.
- be fluent with the symbolic language of algebra and understand how to use the basic laws of algebra when working mathematics problems.
- explain and justify their reasoning and understand the reasoning of others.
- reason with increasing rigor and mathematical maturity as they advance through the curriculum.
- formulate, represent and solve mathematical problems.
- apply their mathematical knowledge and know-how to analyze and solve unfamiliar problems.
- approach learning and using mathematics with a sense of efficacy: “I can learn it and use it; mathematics makes sense.”

- approach mathematics with diligence **and** curiosity, systematically **and** inventively; with the concentration to execute a procedure accurately **and** the courage to use initiative and imagination.

The above list is not a substitute for grade by grade standards; it is meant to clear up basic questions about who believes what.

We have many different views about how to best teach students mathematics. Some ideas about teaching are shared, some are in contention. We agree, for example, that:

- automaticity (of single digit multiplication, for example) requires practice and exercise;
- only for some important and frequently used mathematical facts and procedures is it worth developing automaticity;
- accuracy counts and students should receive feedback on the correctness of their work;
- all students should develop strategic competence with general principles of problem solving and apply them flexibly to unfamiliar problems.

Finally, for those things about which we disagree, we nonetheless agree to work together in a civil and productive manner that sets an example for teachers and students of good problem solving.

Example
Draft letter: from a mathematician to fellow mathematicians

Dear Mathematician,

We need mathematicians to help us make our K-12 mathematics programs better. Will you help us?

What you can do:

- Come to a meeting on [date and time] at [place] to talk with us and other mathematicians about everything else on this list.
- Have an informed opinion and share it. We live at a rare moment when the public and its policy makers care what mathematicians think. Even if the only fragment of the public you engage is mathematicians, it can make a difference and the difference can multiply.
- Inform yourself about what is happening in our district and national and international developments in mathematics education.
- Know your way around the "math wars". Help establish civility in legitimate debate.
- Advise program designers and leaders on mathematics. What is important, correct, engaging? What is missing? Where can we prune? How can we explain crucial ideas?
- Help teach teachers mathematics.
- Provide online answers to teachers' mathematical questions.
- Provide online answers to students' mathematical questions.
- Teach students.

You are invited to attend the meeting referred to in the first point above. It will be chaired by [name of mathematician] and attended by other mathematicians, [names and ranks of district officials], and mathematics teachers who accept this invitation.

Sincerely,

Mathematician

Example
Draft agenda for a meeting with mathematicians

Agenda: Mathematics in our Schools

[date and place]

3:00	Welcome and Introductions	Chair
3:15	Why are we here?	Chair
3:30	Discussion and Snacks	All
4:15	What is happening in our schools? • The Basics • Programs • The Students • Evidence	District spokesperson, teachers, student
4:45	Discussion and Snacks	All
5:30	What can we do?	All
6:00	Adjourn	Chair