



Dedication to advocating and promoting quality science education for all, at all levels of instruction.

#### **WSTA JOURNAL PURPOSE:**

To provide timely and relevant information about Science Education, Professional Development and WSTA news and services to members of the Washington Science Teachers Association and partners.

The journal is a Quarterly Publication (ISSN 0164-7369), electronic only, linked to the Washington Science Teachers Association Website at [www.wsta.net](http://www.wsta.net). It is readable and downloadable to

WSTA members and specific partner organizations and libraries.

The Journal solicits articles on science education topics, relevant to science teachers and educators in K-12 and higher education, from anyone, whether they are members of WSTA or not. Research articles are accepted but the publication is primarily for information and professional development to the readers. Publication is free to the author(s), and the article is peer-reviewed prior to publication and is a citable source.

#### **Publication Dates**

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#### **Material Deadline, New material for peer review Deadline**

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Articles should be in Word format, 12 point type, Times New Roman, with 1 inch margins, NO line justification, NO line or numbers. Formatting should be minimal, but titles, subtitles, headlines, bullets, outline formats should be included or indicated. Tables should be set up using Microsoft Word Table, and Figures using Microsoft Word or Excel. Figures should be set up and formatted to be printed in 3 ½ in wide column, or ½ page format and this should be indicated. Approximate placement of Tables and Figures in the articles should be indicated.

All articles and materials for publication should be sent electronically to the Editor at [mcnamjpt205@frontier.com](mailto:mcnamjpt205@frontier.com) by the deadline date. Material will be checked and edited and minor formatting conducted. All copy will be bundled and emailed to Kelly Lavelle within 1 month of publication date.

Publication will be electronic only, on the WSTA website and accessible to WSTA members.

# LETTER

— FROM THE —

# EDITOR

John P McNamara

October 2016

Dear Colleagues and Friends,

Thank you so much for providing high quality education, including science education, to our children and society. As a parent of three successful products of public education, a lifelong educator and an (almost) 25-year member of the Washington Science Teachers Association, I thank you all for your dedication to and expertise for our children and our future.

When I sat down at my first WSTA Conference Dinner, as a college professor, I was (selfishly) looking for high school teachers to sit with so that I might 'connect' with them and their students. Well, the one teacher was filling me in all the things that they were doing in their biology courses at this high school, and I'm thinking "wow, that is impressive, we actually don't even do some of that in our college labs." Well, not surprisingly in retrospect, that person became recognized as a WSTA High School Science teacher of the Year and went on to continue a long and extremely effective and important career in science education in our state. And, I was 'hooked.'

I have now been a member for almost 25 years, many of those as a member of the Board, as a Regional Representative from Region 1 (ESD 101), the Higher Education Representative, and now, as your Membership Services Coordinator.

This means I will be helping to recruit new members, and retain YOU as a member; coordinate the WSTA Annual Conference to provide you with professional development to help you improve your teaching; and edit the WSTA Journal.

We hope you enjoy this 'rebirth' issue of the Journal... totally on line, of and for our members, bringing you the latest news from Olympia on standards and assessment; great in-class and curriculum help with all aspects of science education, deep background science knowledge to build your own knowledge base, and news on professional development and conferences.

We want to hear from you, if you have a topic or idea for the Journal, please let us know. Contact your regional representative and/or other board member (see the back of the Journal) to get help or advise, schedule a visit, or suggest or enroll for our professional development programs.

Just like the energy from many waves, the new Journal is excited and ready to help you with healthy science knowledge...

Hope to see you in Portland on November 10<sup>th</sup> through the 12<sup>th</sup> for the NSTA Regional and mark your calendars for the WSTA 2017 Annual Conference at Chiawana HS in Pasco October 20<sup>th</sup> through the 22<sup>nd</sup>!



# Next Generation Science Standards: the Next Really Big Thing!

*written by Lois Sherwood*

NGSS are the best thing to happen to science education since, well, Sputnik! My love for science was sparked in elementary school with the influx of funding for science education that came with the challenge that the United States faced to catch up with the Soviet Union's superiority in space exploration back in 1957. Later my science education at Washington State University was funded by the 'National Defense Fund', that was committed to train the next generation of scientists and science teachers.

I started my science teaching career in a time of a standards void. Teachers had academic freedom to teach what and how they thought was best. In some places this was great, and in others, pretty mediocre. Washington State was nationally proactive in addressing this by adopting the EALR's (Essential Academic Learning Requirements). While these standards contained sound science, they did not fully integrate science content with the process of learning science, or with the engineering design processes that both scientists and engineers use.

This changed in 2013 with our state adoption of Next Generation Science Standards. They are grounded on the solid base of the National Research Council's Framework for K-12 Science Education. This has been called three-dimensional learning. Each standard weaves together:

**Disciplinary Core Idea** – the content that students need to know,  
**Science and Engineering Practice** - what they do to learn and  
**Crosscutting Concept** - how they think about connections to other knowledge.



NGSS opens up new doors for reaching ALL students. Three-dimensional learning engages students with real life phenomenon providing equitable opportunity for all to learn, regardless of language, cultural and economic background. For me this is the single most compelling aspect of NGSS.

Just like our students, we learn best by doing, so WSTA developed a workshop, Performance Expectation Progression for Waves, where participants experience NGSS learning around a single physical science standard, and gain tools to expand their own practice.

In the workshop, teachers explore the progression of PS4 Waves and Their Applications in Technologies for Information Transfer from first grade through high school. What becomes strikingly apparent, is that the conceptual foundation for understanding standards at the high school level must be developed in elementary grades. The workshop development team worked made sure to help

show that the elementary standards are necessary for high school teachers to understand and that the high school standards are accessible to elementary teachers. We felt this was important, as providing equity in learning opportunity is a key tenet of NGSS, and a major challenge for teachers.

Over 70 teachers in our state participated in this workshop last year. Based on their feedback, we are currently fine tuning the workshop and will soon be setting dates in both Eastern and Western Washington. We plan to add time to allow teachers to access resources and develop collegial networks on our WSTA Learning site. We are also working on a four-year plan to expand the workshop model to earth science and life science standards. For more information, stop by our booth at the upcoming NSTA Regional Conference in Portland, and check our website ([WSTA.net](http://WSTA.net)) as dates and locations will be posted as soon as available.



## WSTA 2017 in Pasco

WSTA is very excited to announce that the administration and staff at Chiawana High School, in Pasco, WA, will be hosting the 2017 WSTA Conference. A special thank you to Assistant Principal, Bryan Meredith on taking the lead to make this commitment and partnership happen.

Our conference will be over the weekend of October 20 - 22, 2017.

Stay tuned for more information about the 2017 WSTA conference in Pasco, WA and we look forward to seeing all of you in Portland, OR for the NSTA regional conference November 10-12, 2016.