CONASTA 63, Conference Report by Nagalakshmi Vydyam Narayana

What an amazing experience! Teachers really get excited about science, engineering, technology and maths. At this annual conference teachers participated in hands on scientific workshops, listened to a variety of professionals speak about a typical day on their job. The conference was really inspirational, fun and engaging, informational, motivational...

The program consisted of 6 keynote plenary sessions, which promoted the excellence of Australian and international scientific and educational research. The on-site workshops presented by teachers, researchers and science professionals covered a broad range of subject areas including Primary Science Education, Secondary Science Education, laboratory technical skills and practices, curriculum implementation, teaching resources and innovations.

The conference provided a wonderful opportunity for science teachers like me to exchange ideas about science teaching and learning and to develop and maintain national and international networks.

Scientific teaching is a way of thinking about teaching and learning that promotes investigation of teaching with the kind of rigor associated with traditional research in science. This also promotes use of pedagogical methods that have been systematically tested and shown to enhance student learning. All of these techniques use interactive engagement methods; that is students are not viewed as passive recipients of knowledge handed down from authority, but are actually engaged in developing their own mental models of the material at a deep conceptual level as well as integrating that knowledge into a larger frame work for solving problems.

After attending the conference, I thought some principles of smart teaching could be incorporated as; how students’ prior knowledge can help or hinder learning, how students organise knowledge influences how they learn and apply what they learn, students’ motivation determines, directs and sustains what they do to learn and goal directed practice coupled with targeted feedback enhances the quality of students’ learning.

One of the workshops which presented risk assessments was very interesting and very fact oriented. The presenters opened my eyes about the law, the logic and the Australian Curriculum. The advantages of risk assessments, risk assessments done by year 11 and 12 students, hierarchy of options, risk matrix and identification of risk were all covered. Student risk assessment is a fun, interesting, instructive way to meet the safety requirements of the Australian Curriculum.

In one of the keynotes, Professor Roy Tasker spoke about Vischem project; visualising the molecular world of chemistry. His presentation about molecular chemistry was overwhelming and very interesting.

Science inquiry skills workshop was presented by Geoff Quinton. He quoted, “illiterate of 21st century – is the one who cannot learn, relearn and unlearn” – Alvin Toffler. He clearly mentioned
what an inquiry involves - identifying and posing questions, planning, conducting and reflecting on investigations, processing, analysing and interpreting evidence and communicating findings. This is also concerned with evaluating claims, investigating ideas and solving problems.

In another keynote by Dr. Tara Pukarla, she gave away information about infiltrating the cell, cells as factories, cellular environment, cellular machinery, biological process and the function of DNA.

There were several science snap shots: Professor Barry Brook on Planet Earth - feedback and tipping points on Planet Earth and how small change can make a big difference, Dr Sara Catalano, research scientist, University of Adelaide and South Australian Museum - the secret lives of parasites and parasitism – association between organisms of different species where one depends on the other, Dr Steven Polyak, research fellow, school of discovering new antibiotics – how drugs are losing their efficacy, research on new antibiotics upcoming and how x-ray – crystallography works and how it allows us to understand the architecture of molecules.

I have so many and too many things to share with my fellow science teachers and my colleagues at my school. I will definitely take up risk assessment very seriously as it has many benefits such as safer laboratories, better communication, meets legal/curriculum requirements, reduces costs, increases student engagement, uses newest digital technologies, life skills training for students, incorporates Aboriginal perspectives across the Australian Curriculum and investigates using ICT (Australian Curriculum – general capabilities).

There are few websites which I would like to share with other science teachers:

adelaide.edu.au

www.escience.com

www.voki.com

bubbl.us

www.asta.edu.au

www.intel.com.au

www.wehi.edu.au (you tube video of the cellular machine)

Vischem.com.au (animation website – visualising the molecular world of chemistry)

Emudreaming.com

The conference by far has shown me a pathway for many students who want to pursue higher studies in the field of science. All the keynote speakers were very inspiring and motivating.

Every science teacher needs to attend these conferences every year to be filled with new energy and new information given out by the participants and their fellow science colleagues.