

Kate O'Driscoll Aspiring Leader Scholarship

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Thank you for the privilege of being awarded a 2017 Kate O'Driscoll - Aspiring Leader Scholarship.

As a result of being awarded a Scholarship. I had the opportunity to attend: **The 4th Annual STEM Education Conference** in Sydney. The Conference attracting highly credible leaders and thinkers - such as:

- Dr Ellen Jorgensen - USA
- Maarooof Fakhri - Denmark
- Dr Bernado Leon de La Barra (University of Tasmania)

It was truly inspirational to be connected to a National Community of learners and thinkers.

It is my desire, in being awarded this Scholarship, to continue to inspire and engage the hearts and minds of our students within their learning - and to continue to support and lead our teachers in their learning and teaching.

I share with you, a snapshot of my learnings from the Conference.

I INVITE YOU TO REFLECT ON THIS:

- **How does** one inspire and prepare a young student for a career in;
 - Nanotechnology,
 - Aerospace Engineering, or
 - Microbiology, for example?
- **How can we** create STEM innovators through high quality educational programs?
- **And how can we encourage** females to pursue careers in these male-dominated industries (currently just 20% of STEM leadership positions are fulfilled by women).

These questions excited me and created an even stronger desire to better understand STEM - and the power that it can enthuse within a connected curriculum.

STEM - WHAT IS STEM ?

As we know and have been told - it is: Science - Technology - Engineering and Mathematics.

Let me challenge you to think a little more laterally:

- **It is about** connecting the Real World into the Classroom.
- **It is about raising** the NEXT Generation of STEM Global Citizens. They will be:
 - Innovators
 - Changemakers
 - Disrupters
 - Catalysts
 - Leaders.

- **It is about:**
 - Engaging
 - Inspiring
 - Innovating

THINK ABOUT THIS

Many systems of education were built for an economy and a society that no longer exists.

In the manufacturing economies that existed 50 years ago, it was enough to master the “Three Rs” (reading, writing, and arithmetic).

In the modern “flat world,” the “Three Rs” simply aren’t enough.

If today’s students want to compete in this global society, however, they must also be proficient communicators, creators, critical thinkers, and collaborators (the “Four Cs”).

Students need to master additional subject areas, including foreign languages, the arts, geography, science, and social studies.

Educators must complement all of those subjects with the “Four Cs” to prepare young people for citizenship and the global workforce.

WHAT WE DO IMMEDIATELY

HOW MAY WE BRING STEM INTO THE CLASSROOM. I share with you two enablers.

1. SUBJECT DESCRIPTORS

- **We do not** use jargon.
- **We use** subject descriptors that are welcoming to all students:
 - We remove jargon.
 - We ensure that the words work positively for both male and female students.
- To make subject descriptors welcoming and engaging we start with **WHY**.
 - Why would the student want to study this subject.
 - Why is it interesting.
 - Why is it relevant.
- Next look at **WHAT**
 - What will the student know by the end.
 - What skills are required for the future.
 - What fields of study does it open up for them.
- We Seek feedback
 - Ask someone from a different department to spot jargon

The above understandings very clearly align with the work and thinking of Hatti. That is - the significance and **importance of sharing learning intentions**.

2. REAL WORLD SCENARIOS

- To build such scenarios we use the Building blocks of :
 - **Story** - provides real life context, paints a picture and provides motivation.
 - **Activity** - allows students to think differently, approach.

- **Question** - backbone for learning. Keep the context of the story, build on one another.
- **Language** - to keep students engaged. Inclusive and non threatening. Language that allows for conversation.

CURRENT RESEARCH - HOW DOES IT APPLY

John Hatti

Let's for a minute reflect on the work of Hatti, - *Visible Learning*.

Hattie advocates, that as educators we must be mindful of the importance of:

- **Skill** - prior knowledge.
- **Will** - self efficacy.
- **Thrill** - enjoying the challenge.

Hatti would see that STEM is the natural interlocking of the disciplines of - Science, Technology, Engineering and Maths.

- **Hatti also** encourages us to develop a deep knowledge and understanding of a subject or topic.
- **Hatti** also challenges us to work with learners so as they are able to transfer their deep learning from one domain or situation to a new domain or situation.
- **I put it to you - STEM** - is an ideal vessel so as to maximise such learning outcomes as it lives not in isolation but within many disciplines.

WHAT WE ARE DOING

At St Aloysius we are currently developing :

- **Learning communities.**
- **We are also focussing on Professional Learning:** aligning learning opportunities for teams of teachers as well as individual learning for teachers who need that extra support.

- **We are working alongside and with colleagues.** Working with colleagues in their classroom as well as modeling for them what opportunities STEM may provide
- **We are Reaching out.** We understand that we cannot work in isolation. We need to be part of dynamic and exciting learning and professional networks.
- **Grants / Funding.** We have and will proactively seek and obtain grants to underpin our journey. For example: I applied for our school and was successful in obtaining a \$5000 grant to further strengthen our capacity to implement STEM. That is - “Make A Space Grant.”

LEADING AND INSPIRING STAFF

As leaders we often hear - how can I fit something else into what I am already doing? I am too busy!!

It is our responsibility to lead, enthuse as well as support our staff.

The reality is - STEM is not new:

- It is rather what we have been teaching in an isolated and often unrelated way.
- This explanation however, will not wash with classroom teachers.

In leading - we work hard not to be dismissive of these concerns.

I am believer in gaining a commitment from the **EARLY ADOPTERS** - that is - those who may be willing to have a go or try to do something different.

- I find that by investing, initially, in those 1 or 2 that are willing to take risks and reinvent themselves - there will one or two others on staff who may become interested in what others are doing.
- They are like the early **SETTLERS**. Not willing to go out and do the exploration and fight the unknown, but are comfortable to follow when there are some clear pathways in place and they can adopt some of the best practices.
- Of course, we will always have the **STAY AT HOMERS** - who will never venture into an unknown even when the exploring has been done. They will stay with what they know or feel safe with.

It is by creating a critical and enthused commitment to change, that we will be enabling access as well as an entitlement to an education in a world that is forever changing.

STEM - a natural linking of the disciplines. I challenge you to be a STEM innovator in your school and our Catholic Education System.