Premier’s **Adobe Information and Communication Technologies** Scholarship

Connecting regional and rural gifted primary students (K–6) using engaging and innovative technologies

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*Technology can be a beneficial or value-adding tool for improving the efficiency and quality of gifted education, including bringing abundant resources to distance learners, building online learning communities for isolated gifted learners, connecting them with mentors otherwise out of their reach, providing authentic opportunities for developing higher order thinking skills and creativity, and offering multiple ways for productive work and real-life investigations.*

—Chen, Dai & Zhou, 2013

My study tour looked at gifted education and online education in a number of centres to determine what practices are transferable to the Australian regional and rural context to help achieve New South Wales’ goal that primary aged gifted and talented rural and remote students have the same curriculum opportunities as students in metropolitan areas.

The main questions asked throughout the tour were:

* + What kind of local infrastructure and off-line and online support are needed for program success?
  + How do we provide authentic learning experiences and help students advance their knowledge and skills to the next level of which they are capable?
  + How do we ensure using online learning will increases the quality of services provided for gifted education through more tailored, authentic learning experiences and better social, pedagogical, and technical support?

According to Baldus, Assouline, Croft, and Colangelo (2009), technologies are making gifted programs and services available to a larger number of gifted students in rural areas who cannot access more traditional educational resources for geographic reasons. Technology has the capacity to improve gifted education in terms of achieving equity, reducing feelings of social isolation (Ng & Nicholas, 2007; Pyryt, 2009) and putting students in their zone of proximal development (Vygotsky, 1978).

Study Tour

*Belin and Blank Centre – University of Iowa*

The Belin and Blank Centre is focused on nurturing potential and inspiring excellence through a range of programs and services including professional development courses and workshops for teachers, the Iowa Online Advanced Placement Academy (IOAPA), a clinic that offers counselling and assessment services, and an institute dedicated to academic acceleration.

The IOAPA offers students in rural districts, or those with limited access to advanced placement courses, access to challenging academic courses, offsetting some of the disadvantage associated with being in small isolated schools. Year 9–12 (Australian equivalent) students at Regina Catholic School Iowa City has been using the IOAPA for many years to self-select a variety of AP courses to complete either across a semester or full year. This allow them to accelerate through subjects and course material and provide them with credit into their college (university) degrees. The students work independently online, with some students leaving the school during the day to attend classes at the nearby University of Iowa.

The advanced level online AP courses are provided by the Apex Learning Company. A course coordinator assigned to each subject and an in-school mentor is assigned to assist students at their home schools. Teachers must be specifically trained to take the AP courses and can also design their own courses, which must be approved by the College Board. During the 2013–2014 school year, the completion rate for all IOAPA courses was 87 per cent (retention rates for all online learning opportunities is 20 to 50 per cent nationally).

The Belin Family Research Library is a dedicated area for publications concerning gifted and talented education. ‘A Nation Empowered’ is the ten year follow-up work to ‘A Nation Deceived: How Schools Hold Back America’s Brightest Students’. Dr Susan Assouline, the principal author, works out of the Belin and Blank Centre.

The purpose of the new book is to:

* + inform about the current research on acceleration
  + show how that information has been applied to educational policy
  + show how the educators can use the findings to make decisions for gifted students.

The STEM Excellence Project (Grade 6–8) is a privately funded initiative to encourage rural schools to incorporate extension science and math programs into their curricula. The funding is used to pay teachers to run the classes outside of regular class time (two hours for each subject each week), assist funding a coordinator and help with supplies and support materials the schools don’t already have. The teachers also received two days of professional development at the University of Iowa.

*Centre for Talent Development (CTD), Northwestern University, Illinois*

Through the Northwestern University’s Midwest Academic Talent Search (NUMATS) program and CTD’s Weekend Enrichment Programs, students (including international students) can apply to take standardised tests; Years 3–6 generally take the Explore Test, a high school equivalent test, and Years 6–9 do either of the cognitive tests ACT or SAT, an HSC equivalent standard. Students and parents have online access to their test scores, comparative test data, a recommended course sequence and static resources that educators and parents can use. Students are reassessed each year to help track their growth and progress against standards.

The Accelerated Weekend Experience (AWE) provides academically talented students from Year 5–8 a full weekend to explore an area of study in depth with an expert in that field. The days are offered in partnership with host sites, and any school across the country can request to host one of these events. The Saturday Enrichment Program (SEP) is a series of courses that run across autumn, winter and spring. These courses present opportunities to delve deeper into a single topic and to develop advantage in an area of strength. There is also an option for those high school students wishing to gain credit from an Honors level course.

The SEP is available to students from the age of 4 years up to Year 9. This is the first program I have come across that covers such a diverse age group and the first to begin to identify students at the pre-kinder level. Part of the reasoning is that if the CTD assesses and identifies these students early, they have a comprehensive database of students to include in their various programs and they can monitor and check their participation and progress.

As much of the standardised testing does not occur in the US schools until the third grade, for Pre-kinder–Grade 2, the CTD uses the Kaufman Test of Educational Achievement Brief Form (KTEA-II Brief Form), the Kaufman Brief Intelligence Test (KBIT-2), and builds a special inventory measuring the child’s cooperation and attentiveness, separation ability, social adeptness and ability to engage in an adult conversation. The instructors used for the SEP from pre-kinder up to Grade 3 are often classroom teachers to provide a more familiar environment for younger students. Paraprofessionals and highly trained or credentialed gifted teachers are often hired to run the courses from Grades 4–9.

Gifted Learning Links (GLL) refers to the range of online learning programs offered by the CTD to schools in Illinois, across the US and internationally. GLL offers unique online programs designed to enhance and enrich the learning of gifted students from kinder through to Year 12. The Family Program is targeted at kinder to Year 3 students. These nine-week courses provide a variety of hands-on activities for families to enjoy together.  The GLL Family Program was created to tap into the motivating aspects of learning with technology by providing an alternative to passive screen time and published educational software that children use in isolation. While the programs contain clear links to content outcomes for students, they are also focusing on parent objectives such as developing higher order thinking skills, spatial reasoning and guided talk with their children and providing opportunities for parents to practise these at home.

The Enrichment and Core Essentials Programs target students in Years 3–8 and are also of nine weeks duration. ‘Enrichment’ explores interesting and exciting topics beyond the core curriculum typically provided by schools. In addition to providing an in-depth introduction to the topic of each course, course activities are designed to cultivate higher-level thinking and creative problem solving skills. ‘Core Essentials’ allows students in Years 3–8 to master essential subject-area content that goes above and beyond what is traditionally offered at their year level. In both courses students participate in a variety of activities including online discussions, work on collaborative projects and/or attend real-time class sessions with like-minded peers.

The Honors Electives, Honors, Accelerated Summer Option and Advanced Placement courses are offered to Years 6–12 (AP only 9–12). Expert teachers guide students through course material and engaging activities, providing individualised feedback and facilitating peer interaction through online discussion forums and other online learning tools.

*NEAG Centre for Gifted Education and Talent Development   
University of Connecticut*

Dr Joseph Renzulli’s research has focused on strength-based assessment, identifying and developing creativity and giftedness in young people, and models for personalised learning. He is world renowned for his work with the Schoolwide Enrichment Model (SEM) and his own Three Ring Conception of Giftedness.

The SEM Infusion Based Approach to Curriculum Enrichment is an approach which allows an entire school incorporate enrichment for all students into their daily lessons while still achieving syllabus goals and standards. The SEM is designed to strike a balance between traditional approaches to learning and approaches that promote thinking skills, hands-on learning, and creative productivity on the part of all students.

Project M3: Mentoring Mathematical Minds has a special focus on developing critical and creative thinking skills in problem solving. The units of work are designed to help students assume the role of mathematicians as they develop critical and creative thinking skills in solving real problems.

The Renzulli Gifted and Talented Academy, in Hartford, features many unique characteristics. It is a dedicated school for identified gifted students across Hartford from Grades 4–8, they utilise the SEM when planning their curriculum and programs, and all staff teach their classes using this model. In the primary grades the teachers specialise in Maths, Science and Social Studies, meaning the students experience very rich content by experienced staff.

One of the most significant features of this school is its student demographic. Its student population is 60 per cent African American, 30 per cent Hispanic, 8 per cent either Asian or ESL and only 2 per cent Caucasian. The school is situated in Hartford to make specialised gifted programs and curriculum available to populations that are normally underserved and under-identified for these types of programs. Student outcomes in standardised testing suggest that this method of education is not only serving the needs of the student population but that the students are thriving in a school that recognises and nurtures their gifts and talents.

The online Renzulli Learning (about to be renamed GoQuest) differentiation tool is used by a number of schools that comprise the SEM. An individual student account with this system consists of the following:

* + a snapshot of student interests and preferences, enabling teachers to match content, activities and projects
  + a research database of more than 40,000 curated online resources, giving students and educators a vast pool of thoroughly vetted digital content
  + a differentiation engine that allows teachers to individualise instruction for each student.

*Summer Institute for the Gifted (SIG), Stamford Connecticut*

Summer Institute for the Gifted (SIG) programs are designed to reach students who do not have access to other gifted education services. Their courses offer students curriculum beyond what is offered in schools, are wide ranging in interest areas for individualised learning, and engage students in distance learning while applying curriculum content through writing, research, creating, analysing, reasoning and questioning.

*Only through partnerships have we managed to increase our impact, ensure that the voices and experiences of the teachers, students and parents are heard, and issues of transferability are understood. And only through partnerships with our international colleagues, can we understand what really works around the world and transform how all of our brightest students are recognised, supported and challenged.*

— The Tower Education Group, London UK

*London Gifted and Talented*

Ian Warwick, Senior Director at London Gifted and Talented, provides services and support for students and teachers through teaching and learning projects, professional development, and student packages including e-learning resources. An extensive study done on a rural area of England identified the primary issues and concerns around such factors as teacher training and development, community perceptions, expectations and engagement with school and gifted rural students specific needs. Senior Director Ian Warwick has co-written a research report with Prof. Joan Freeman and Johanna Raffan entitled Worldwide Provision to Develop Gifts and Talents, which gives a snapshot of current practice in providing gifted and talented education internationally. Two major trends to come from the survey are:

* + that program providers are becoming more discerning in choosing and applying different models/recommendations  in gifted education to suit their specific, localised conditions
  + that collaboration between gifted education providers is taken up from the local level, through to state, national and international level.

*International Gateway for Gifted Youth (IGGY) – University of Warwick*

A part of the Centre for Professional Education at University of Warwick, IGGY is a truly international online program for students aged between 13 and 18 years of age.

The program offers:

* + stretching content in maths, creative writing , science, history & politics
  + debates on topical, academic and ethical issues
  + a support network that includes doctoral student mentors, as well as academic experts and leading figures from business and industry.

IGGY is one avenue that students can take to engage with like minds and to do it on a global scale. This means that the students use IGGY in their own time and can complete courses at their own pace.

*Hong Kong Academy Gifted Education*

Hong Kong Academy of Gifted Education (HKAGE) works closely with the Education Bureau in Hong Kong. The Bureau, a government department, was established to implement the gifted education policy across Hong Kong and provide financial support in the form of grants to all primary and secondary schools. They have jointly established a professional development framework in gifted education, which provides access to programs and services for teachers consistent with their central themes of student-centred learning and catering for learner diversity.

Along with a clear pathway of professional certification for gifted education teachers, lectures are conducted by world-leading gifted education experts as well as conferences available to all educators and school staff. The responsibility of delivering professional development is shared by both the Bureau and HKAGE, with each organisation playing a specific role in the framework. Each year over 3000 teachers participate in these programs. From surveys conducted, 70 per cent of school across Hong Kong report having gifted and talented services and trained teachers within their schools.

Outcomes

Specific roles are undertaken by all of the gifted education centres I visited on the study tour. These include:

* + establishing dedicated centres for administering, researching and delivering online programs for gifted students
  + combining university research with in-school practice
  + providing grant funding to run projects in conjunction with gifted education centres
  + providing ongoing support for professional development for program instruction and technology use
  + using established and researched gifted programs to adapt to digital platforms.

A number of areas of need which were highlighted during schools visits are:

* + increased social interaction between students and staff engaged in the online platforms
  + full time curriculum-based programs for primary age students; currently they are all enrichment provisions apart from AP for high school students
  + direct liaison with schools in program delivery; most current programs are sought by parents through outside agencies not via their child’s school.

Technology has the capacity to enable the expansion of gifted education by increasing its capacity and efficiency. Technology can also enhance the quality of gifted education by strengthening content presentations and pedagogical features, leading to better learning outcomes. For this to be truly effective the program offerings need to focus on a localised model of delivery and ensure that there is continued support for students and staff.

I have been asked to present a session at the World Conference of Gifted Education in Odense, Denmark (August 2015). This is part of a group submission between the University of New England and Dublin City University, with my talk focusing on the challenges of identifying and meeting the learning needs of gifted rural students through local specialist online provisions.

I am also completing a Master of Education (Research) that will focus on developing an online math program for Stage 3 students. The Project M3, created through the University of Connecticut, will be reworked into a digital version that will also align with the NSW and Australian curriculum. Dr Kathy Gavin at the University of Connecticut and the author of the original research study will be working with me on this project.

Shavinina (2009) suggested that gifted education should adopt high intellectual and creative educational multimedia technologies as possible methods for future development. A combination of these online technological approaches can also be used to broaden students’ intellectual horizons and build connectivity of ideas, people, and places (Shavinina, 2009; Siegle, 2005).

One proposal is to use the current method of online delivery – a combination of the localized eGATS program and the NSW Distance Education Centres – as a model of delivery. Establishing a specialised gifted education centre in a regional area with the support of a regional university already delivering both undergraduate and post graduate gifted education courses, would be a promising first step. Programs could be tailored uniquely for NSW primary age students, created and delivered from a strong research base and supported through ongoing professional development and training for both staff and students. The links already established with schools in the Armidale region through the eGATS program and support from the University of New England would make this a viable proposition.

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