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Exploring Alternate Technology Teacher Education Models: Some Preliminary findings

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Abstract

Partly the result of necessity and partly the result of research opportunities and expected synergies, the Southern Cross University has signed a minimum three year alliance to enable it to deliver university education to undergraduate Design and Technology (D&T)¹ pre-service teachers at a local independent high school. The alliance is an internal Innovations and Development Grant project of Southern Cross University (SCU) with Bishop Druitt College (BDC) that seeks to utilise real school facilities and interactions to deliver its practical units of study usually after school hours.

Many interesting pedagogy, research and strategic advantages have already emerged that provide positive signs for the future of the alliance and possible expansion into other local schools. It is a model that appears to offer greater flexibility and educational value than the current trend to join Universities with other sectors. These include significant reduction of course facilities costs, improved course administration and management efficiencies, enriched teaching settings, reduced teacher practicum costs, increased local awareness and regional commitment to the course among school teachers and students and richer and more creative exchange of intellectual property and research effort potential. In short, there is a case for schools and universities to form alliances in technology teacher education where there is enhanced similarities of institutional cultures, flexibilities and interest in pedagogical and epistemological pursuits. The paper examines the evolving model.

Background

Recently, Southern Cross University committed itself to the delivery of post primary design and technology teacher education. While other institutions have either delivered their units of study with or without sectors other than Higher Education and Secondary Education, Southern Cross identified mutual benefits and flexibility to explore a delivery and technology education research relationship with a local high school with progressive and committed practicing Design and Technology Teachers. With this commitment many aspects were new both to the local high schools nearest to the University's Coffs Harbour campus, and to the University itself.

A driving philosophy of the University's Technology Teacher Education course is its goal to exchange knowledge with and develop the local region as an incubator for world class expertise in holistic technology innovation education (Technacy Education): included are themes in the areas of educational development, technology transfer, delivery and design education research. All themes that can be too complex to partner with the VET sector due mostly to differences in academic purpose, timetable, funding, delivery and research ethos drivers.

Incubator Rationale: the bigger picture of the alliance in the region

One of the most underdeveloped areas of technologies education is the dearth of peer reviewed research, including qualitative, quantitative and theoretical research papers in technology education. The bigger picture for this alliance with a local school

¹ D&T is the mandatory non-vocational syllabus in New South Wales secondary schools through years

includes the desire to engage the region of D&T teachers in efforts to address at various levels, new and innovative methods for teaching D&T curriculum. These efforts are planned to slowly develop, in the region, expertise at a practical level in the following:

- *Technacy Pedagogy*
(removing the vocational case completely, what is the educational case for technology studies in k-12 schooling? How and what ought we be teaching today for the future?)
- *Technacy Epistemology*
(what do we understand of the phenomenology of technological activity, designing and technical experience in the development of knowledge, values, and in various settings such as in cross-cultural technology transfer settings and future studies settings?)
- *Developmental Technacy*
(what may be the development psychology and sociology aspects of technacy education? Can we develop a technacy age index as we have for diagnosing development in reading and number? Can we develop a taxonomy for aspects of technacy education?)

Much of this knowledge relates to teaching within the Design and Technology workshop facilities, resources, spatial layout and staffing *realities* of secondary schools and the need for syllabus specific behaviour and resource management education for D&T educators. The alliance with BDC therefore, includes goals to explore and exchange intellectual property in the broad areas noted above.

Developing and Planned Outcomes

The presence of the university in this educational setting greatly strengthens local professional support opportunities to schools while raising school student awareness of the new university degree offered in the region. School teachers develop greater awareness of relevant research opportunities at the university. Similarly University academics maintain a real school settings exposure not only in the realities of the school facilities but also in their many weekly interactions with D&T high school students of various years who often stay back and are present in university lectures and workshop tutorials. The benefits to be explored in this project are many including:

- nil practicum placement costs at BDC in 2000/1
- joint papers on D&T education and the partnership
- exposure of local D&T school teachers to research opportunities, research culture and research findings (such as those presented at this conference)
- joint enhanced behaviour and resource management methods in a real school D&T setting
- opportunities for university academics and pre-service teachers to engage more frequently in their career context during the course (weekly rather than at set Practicum Times exclusively)
- opportunities for school students and teachers to develop a close relationship with the university generally and the Bachelors course specifically

- raised awareness of BDC HSC² students of the Bachelors course.

The Evolving Model

The fate of technology teacher qualifications and courses in NSW has varied in value and sustainability terms. It would be fair to characterise the status of technology teacher education courses as relatively low and as a fractured field when tested on educational grounds in research and pedagogy compared to most other subject areas. It was not until post WWII³ - to as recent as the early 1960's - that 'technology' teachers were entitled the same salary and conditions as regular subject teachers in public schools. Technology teachers were essentially skilled tradespeople whom the Departments of Education employed over the years and to whom would award a teacher certificate or later a teaching diploma.

The central motivation for their employment and inclusion in public schooling was to meet the boom in steel, building and mining related industries with school leavers who have been introduced to their trade domain as early as primary education and later early secondary education. 'Technology' was not a confused broad theme, it meant the manufacturing and construction trades and that was all. There was certainly no Government nor teacher profession contemplating the educational purpose of technology in the curriculum, its purpose was without any doubt, vocational and simultaneously accommodated that sector of society deemed to be good with their hands but not much else. Technology Education Research was not only vacant from the Department of Education's, teacher's, industry's and community's vocabulary, were it voiced it would most likely have been met by the teachers themselves as a wasted and fanciful 'academic' whim.

Until the late 1960's early 1970's one could not obtain a university degree as a technology teacher (in a time when university teacher degrees were the only way the more core subject teachers could obtain their teacher qualifications). Between then and now several technology teacher courses have folded with a few attempting to resurrect themselves like the proverbial phoenix: they have through policy rather than research, package training through trade-based VET courses coupled to the education units. The strategies of government and private schools used since 1830.

Why did these courses fold? There is some suggestion that technology teacher courses did not fold due to the cost of their delivery but essentially due to the complete lack of peer reviewed research those courses failed to generate. Cost for delivery issues could well have been triggered by lackluster performance in attracting research value if not income and for establishing the technology teacher as a serious advocate of educational progression. This lack of research is reflected in the lack of Ph.D. graduates from our many technology teacher courses through history across Australia. Of the many technology teacher courses now available, Australia only has three technology teacher courses that are led by Ph.D. level coordinators. In its biggest State, NSW, only one of the many coming on line is led by post graduate expertise in technology education.

² HSC: Higher School Certificate awarded on completion of year 12 studies in NSW secondary schools.

The Bishop Druitt College project seeks to re-engage local technology teachers at least into the culture of research and peer review and hopefully, through incubation principles, the region.

How the Southern Cross University -Bishop Druitt College Alliance Project Operates

The Alliance 2000 project began with the signing of a memorandum of understanding in mid 2000. Some modest exchange of resources accompanied the arrangement to ensure university units were able to be delivered in the schools facilities. This paved the way for university units with a practical content to be offered normally from 3.30pm to 6pm week days. University staff have regular access to workshop equipment to prepare and hone their skills not only in syllabus content but also in teaching and learning methods and lesson planning.

School and university staff have met regularly, often very early in the morning before 8am. These meetings are kept informal and are driven by ideas and issues that the group address to plan or resolve problems. Thus far, the issues raised have been mostly about creative delivery ideas and planning in orientation. Minimal problems have had to be discussed while the tone of the meetings have been mutually supportive and innovative.

Part of the arrangements of the alliance is to allow and indeed encourage student teachers to interact with the many high school students in D&T that often stay behind for an hour to progress their projects. University students and lecturers regularly find they are in the same learning setting shared with school students and dedicated Design and Technology teachers.

With this regular school context and common philosophy between school teachers and university academics, opportunities arise where university staff maintain school setting appreciation and communication with high school students, while in the reverse, school students and teachers are exposed to and exchange ideas with university expertise in their field.

University staff have developed a relationship with the school, its teachers and some of its students that occasionally stay back after school to continue projects. It has proven to be a most welcoming experience with flexibilities and common values in educational direction and interests.

In addition, university student teachers have, in a very short period of time, developed a realistic understanding of, knowledge about and confidence in working in the high school setting (as reflected in their practicum reports). While it is difficult to measure this early in the project, it would also appear that many student teachers have developed much better workshop context and equipment handling confidence and skills.

Conclusion

The Alliance 2000 project is different from most other partnerships now emerging in NSW Universities. It is a partnership with a local high school rather than with a local technical and further education (TAFE) college. While the latter sector is in itself a highly valuable one, its learning culture, funding incentives and delivery constraints

contrasted significantly with the school sector. The arrangement to work with the school sector has meant that student technology teachers and university academics maintain weekly context knowledge and first hand social skills in engaging with a range of school students, school staff and age groups. Unlike the TAFE sector, student teachers learn in a setting that is particularly relevant to their ultimate career placement. They develop an appreciation of both the reality and the rhetoric and quickly learn techniques for adapting to such realities. Teacher practicum blocks are less traumatic when placed in other schools.