Review of Year 9-12 in Tasmania

TASITE Submission

Review background

- https://www.acer.edu.au/tasmania-912-review/

Review submission

- https://www.acer.edu.au/tasmania-912-review/public-submissions

Review goals

- Improve attendance
- Improve retention
- Attainment outcomes

Submission

Introduction

The Tasmanian Society for Information Technology in Education (TASITE) group welcomes the opportunity to provide this submission for the review of Years 9-12 in Tasmania.

TASITE is a cross-sectoral association for teachers and support staff using information and communications technologies across all education levels. Our membership ranges in disciplines across the curriculum, from early childhood to the tertiary sector, and includes specialist IT and vocational teachers in compulsory years of schooling, tertiary teachers, academics and researchers, teacher librarians, technicians, technical/teacher aides and other support personnel. TASITE was established in 1991 (then known as CESIGT) from the amalgamation of long standing regional groups. Our objectives are to promote knowledge of the applications of information technology in teaching and learning and to play a role in teachers' professional development. TASITE organises workshops, talks by guest speakers and site visits to educational, scientific and cultural organisations supporting education. We promote professional communication through an online discussion list, a monthly newsletter, a contact database of interested members' skills and membership of state, national and international associations. TASITE was set up as a Special Interest Group (SIG) of the Australian Computer Society (ACS) and the Tasmanian member of the Australian Council for Computers in Education (ACCE), the umbrella body for state groups and national representative at international forums. It is also a

member of [Network of Educational Associations Tasmania (NEAT)](#) and the [International Society for Technology Education (ISTE)](#).

This submission is in five sections. The first four pertain to the review goal of increased attainment. The last section, Learning Environments, pertains primarily to attendance and retention.

1. Current curriculum provision and effectiveness

Current Issues:

- Pathways from Years 9/10 into either of the two ATAR scoring courses (Computer Science or Information Systems and Digital Technologies) is not clear and interest in ICT/Digital Technologies can be lost in years 9/10 leading to lower numbers of students studying computing in Years 11/12. There is a lack of computer science, project management & information systems content present in the Years 9/10 curriculum which needs to be addressed.

- Digital Technologies curriculum is mandatory K-8 and then optional in Years 9/10. The capacity of schools to provide this option in Years 9/10 varies and is low priority in some schools. This is problematic if these schools were also asked to provide Years 11/12 courses.

- In the Australian Curriculum (F-10) these is confusion within schools between the ICT Capabilities and Digital Technologies requirement. General curriculum teachers (not ICT specific) can be unaware of their obligations towards ICT capabilities and students can remain as passive users of technology, not being taught specifically how to use the tools and create with them.

- Ability to study topics such as mobile app development, robotics, embedded systems, big data and data visualisation etc are limited due to (supposed) TASC rules on repeat enrolments in same subject.

- The TASC Level 2 courses "Essential Skills - Using Computers and the Internet" and "Computer Applications" are generally not perceived as appealing to students in their descriptions and teachers may present/market these courses differently - e.g. app development, game making or robotics. This leads to confusion at assessment and reporting time.

- There is currently no consistent mechanism for being able to teach new and developing technologies throughout Years 9/10. Topics such as robotics, artificial intelligence, digital control systems, drone applications etc do not easily fit into a 12 month Year 9 or 10 course.

- The pathways for VET-related ICT courses from Year 9 through to Year 12 are unclear.

General Concerns:

- Students in some schools could progress from Years 9 to 12 without any specific computing education. The effectiveness of the Australian Curriculum ICT Capabilities integration across the 7/10 curriculum can vary within schools and if the take up of Digital Technologies (Years 7/8) has been low then it is possible students will have minimal exposure to ICT skill development throughout their entire 9-12 education.

- The increasing student dependency (and potential disruption to learning) on technology, social media and gaming is not being addressed in the curriculum 9-12. Vital social constructs such as eSafety, personal security, eSustainability and ethics are also areas that are not being adequately addressed.

- ICT competences are not being measured in Years 9/10 which is of concern given the impending NAPLAN Online initiative.

- There is a low take up of ICT related subjects by female students and a general confusion by parents and the larger community on what employment can be gained by studying ICT related subjects. Marketing of the subject area needs to occur so that all can see the benefits.

2. Alignment of assessment and moderation in Years 9 - 12

Current Issues:

- Moderation for Years 11/12 subjects have become overly onerous onto the subject moderator without adequate time allowance.

- Moderation is needed for any school/sector specific ICT subjects being run in years 9/10, and in the mandatory P-8 years. However, this does not occur.

- There is no clear teaching pedagogy or transition pathways between courses. Assessment models needs to be developed which allow for effective electronic delivery.

General Concerns

- Formative assessment should be used in courses where students are receiving continual feedback on their work. Rich and engaging assessment tools need to be developed and used. This is an issue in all subject areas.

- Scenarios in the classroom need to be developed where real world problems and situations are modelled.
- Involvement by industry needs to increase so students can see the relevance of what they are doing and the benefits that come from their study.

3. Future directions for curriculum design and provision

Current Issues:

- There are significant questions as to why Tasmania needs specific Years 11/12 curriculum developed for the computing (or any) subject area. There is no fundamental reason why we should be different. It is costly, inefficient and results in curriculum that is not supported by texts, resources etc.

- ICT Curriculum design in Tasmania has traditionally been undertaken by teachers with minimal time release or support.

- Teachers are not being provided with enough specific professional development for the implementation and delivery of the courses. There is a lack of pre-service training available in Australian Universities.

- Given the introduction of NAPLAN Online and NAPLAN ICT testing, it is logical that the TCE standard of ICT Literacy for Everyday Use should be attainable in Year 10, rather than requiring specific subjects or the Safety Net test in Years 11/12.

General Concerns:

- The introduction of the Australian Curriculum Digital Technologies subject has created a challenge for many schools and school leaders who do not have the expertise or support needed to unpack and understand the Digital Technologies curriculum.

- All parts of the community including industry and the tertiary sector need to add input into the relevancy of new courses being developed.

- All three sectors of schooling in Tasmania (independent, Catholic and government) need to work together in developing new courses.

- Courses need to focus on questioning, curiosity, creativity and problem solving, not primarily on the regurgitation of information and facts. Peer to peer,collaborative and globally connected learning needs to be encouraged.

4. Workforce planning beyond current characteristics and specialisations

Current Issues:

- ICT education take up by teachers is low. Currently there is no explicit certifications of competence for teachers other than the Australian Professional Standards for Teachers, within which ICT competence is an inferred requirement rather than being explicitly articulated.

- Levels of external professional development available to teachers are inadequate and have been minimal in recent years for Years 11/12 Computer Science and Information Systems, Years 11/12 Level 2 Computing subjects, and Digital Technologies in K-10.

- Pre-service teacher training in broad field of Computer Science (one core aspect of Australian Curriculum Digital Technologies) is non existent at the University of Tasmania, and is progressively disappearing in interstate teacher training institutions.

  "ICT Literacy" can be confused with Computer Science in schools, including by senior administrators who have not had the need to engage with this curriculum area.
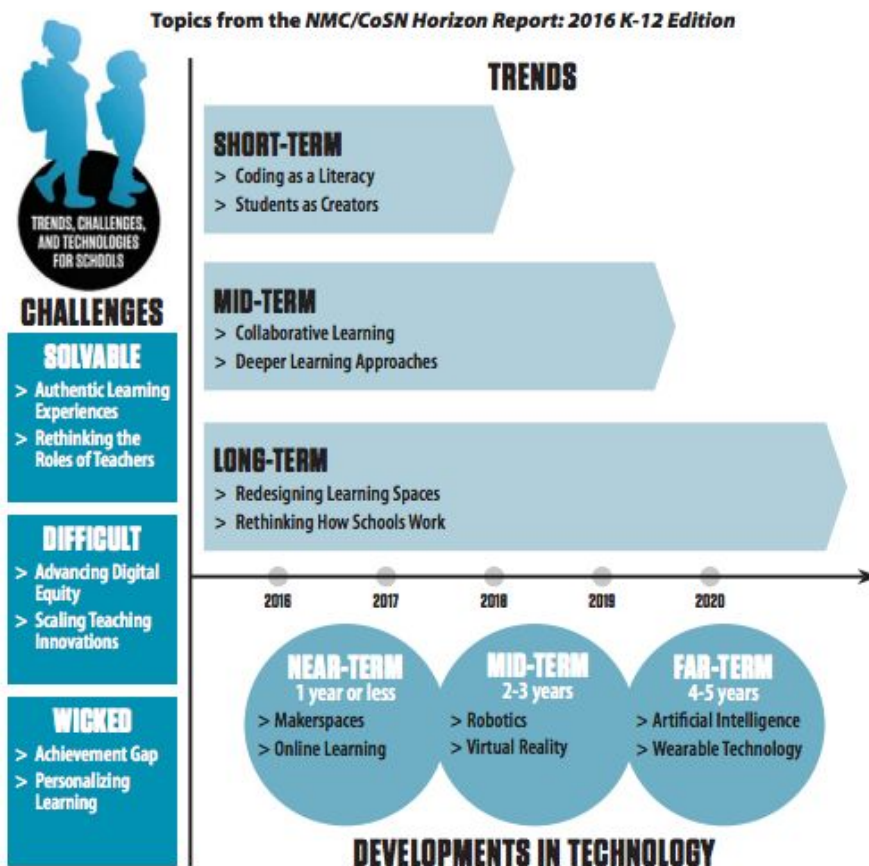
General Concerns:

- Innovative approaches to supporting student development of digital technologies expertise are needed, rather than relying primarily on teacher capacity. For example, strong partnerships with University and Industry to provide mentoring and entrepreneurial skills development.

- External provision of appropriate professional development should be actively promoted in addition to local provision. For example, the CSER MOOC courses provided by the University of Adelaide.

5. Learning environments

Attendance and retention are directly correlated with how relevant and engaging students perceive school life, the curriculum and how it is provided, to be.

Most students, from a young age, engage naturally with technology, particularly in relation to social media, tinkering and experimenting with tools. Most students are naturally inquisitive and when motivated by their own interests, are willing learners.

The NMC/CoSN Horizon Report: 2016 K-12 Edition is an annual publication that charts the five-year horizon for the impact of emerging technologies in school communities across the globe. The following infographic from the Report, provides a snapshot of the current and emerging technology developments as they impact on K-12 education, organised by short, medium and long term timeframes.

Topics from the *NMC/CoSN Horizon Report: 2016 K-12 Edition*

TRENDS

SHORT-TERM
> Coding as a Literacy
> Students as Creators

MID-TERM
> Collaborative Learning
> Deeper Learning Approaches

LONG-TERM
> Redesigning Learning Spaces
> Rethinking How Schools Work

CHALLENGES

SOLVABLE
> Authentic Learning Experiences
> Rethinking the Roles of Teachers

DIFFICULT
> Advancing Digital Equity
> Scaling Teaching Innovations

WICKED
> Achievement Gap
> Personalizing Learning

TRENDS, CHALLENGES, AND TECHNOLOGIES FOR SCHOOLS

2016   2017   2018   2019   2020

NEAR-TERM
1 year or less
> Makerspaces
> Online Learning

MID-TERM
2-3 years
> Robotics
> Virtual Reality

FAR-TERM
4-5 years
> Artificial Intelligence
> Wearable Technology

DEVELOPMENTS IN TECHNOLOGY

In recent years, the emergence of the makerspace movement to support tinkering with technology and creative problem solving engineering approaches; and initiatives such as Sugata Mitri's, self-organised learning environments (SOLE) have provided models for more relevant contemporary approaches to learning and teaching than the traditional classrooms seen in most schools.

Sir Ken Robinson's iconic [2006 TED talk *Do Schools Kill Creativity*](), continues to resonate today in many classrooms and schools.

Recommendations

1. The TCE standard of ICT Literacy for Everyday Use (commonly referred to as the "ICT tick"l) be attainable in the Years 9/10 curriculum for all Tasmanian students.

2. Digital Technologies become a compulsory subject in Years 9&10 for all Tasmanian students.

3. Programs are developed to aid teachers with the delivery of ICT capabilities in Years 9/12.

4. A cross sectoral approach to ICT delivery be taken so that all students in the state receive a similar entitlement to ICT education.

5. Support and equity for all BYOD (bring your own device) programs in Tasmanian schools.

6. Increased professional development for all teachers of ICT related subjects and certification of teachers' ICT competencies.

7. Improved levels of pre-service training for beginning teachers in the fields of Computer Science and Information Systems, particularly at the University of Tasmania.

8. Social impact areas such as eSafety, personal security, eSustainability, internet addiction and ethical use of ICT, be formally included and embedded in the year 9/12 curriculum.

9. Awareness programs are created which promote ICT programs to all but in particular female students and help explain to the wider community the benefits in undertaking a career in ICT.

10. Assessment models for subjects move away from hand written exams, but instead use rich digital assessment methods combined with formative assessments through the course to aid in student retainment.

11. Develop a vision and associated policies and school leadership that foster contemporary learning environments and pedagogical approaches in which access to digital technologies is pervasive without being intrusive, to foster engagement and creativity.

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