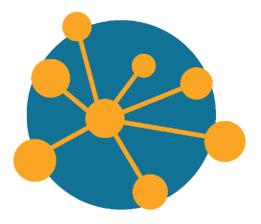# Digital Technologies in focus:

Supporting implementation of Digital Technologies

Faith Lutheran College
Plainland
Queensland
Final project report

![acara logo] AUSTRALIAN CURRICULUM, ASSESSMENT AND REPORTING AUTHORITY

DIGITAL TECHNOLOGES IN FOCUS FINAL REPORT	
School name	Faith Lutheran College – Plainland (FLC)
School team members	- CL (Digital Tech.)/Teacher - Deputy Principal - MYC/Teacher - HESS/STEM Teachers
School profile	Number of students 690 Location Plainland, Qld Sector Independent School type Secondary Year range 7–12 Proportion of students who are Indigenous: 5.8% Proportion of students with disability: 17.4% Proportion of students who have EAL/D: 0.2%
Year level(s) involved in project and reason for choice	Project focus group (Year 7) was chosen because the nature of the unit designs within the transdisciplinary units allowed us to collaborate and evaluate in an authentic space.
No. of students involved	130 (typical Year 7 cohort size for the past three years)
No. of teachers involved	6–8 (typical teacher involvement size for the past three years)

INVESTIGATING AND DEFINING

Research question

How can project based learning, enriched by digital technologies through curriculum design and specific technologies, cultivate a love of learning and challenge learners to realise their potential?

How has the research question evolved over time?

n/a

How has your understanding of the question evolved over time?

The only changes concerning our group's understanding of the question has been regarding how we can best address this question in practical ways based on evolving staff and student dynamics each year.

Aims: Reflection

Have the aims changed? If so, how and why?

No, there haven't been any changes to the project's aims, mostly because they were initially quite broad and still current to this day. The aims have remained as follows:

1. Improve Year 7 staff capacity to implement Digital Technologies curriculum and ICT capabilities.
2. Establish curriculum links which allow for deeper learning needs of students, whilst balancing budgetary constraints.
3. Empower and engage learners by augmenting the Digital Technologies curriculum with the Core Curriculum standards.
4. Establish routines that encourage strong habits of mind such as growth mindset, critical thinking, and collaborative learning:
   - Regular two lesson a week routine which established the cycle of learning in a CLC (collaborative learning classroom) where growth mindset, critical thinking skills and computational thinking skills were developed and embedded.

Students were provided their understanding of their learnings throughout subsequent assessment projects within the integrated curriculum.

Research

If you conducted research describe it.

- Staff surveys in the early phase of the project (2017), as well as recently with follow-up surveys with HESS (Humanities, English, Social Science)/STEM teachers.
- HESS/STEM units have also been reviewed on an ongoing basis throughout the project, which has included analysing student work and the effectiveness of transdisciplinary assessment pieces.

How has your project improved implementation of the Australian Curriculum: Digital Technologies?

The College has had mixed success in implementing the Australian Curriculum: Digital Technologies. Whilst some teachers have engaged fully in the implementation, which resulted in increased engagement from students, others did not get to a level of comfort that allowed them to implement fully.

Criteria for success: Evaluating

Comment on progress against each criteria for success.

- Increased student engagement (students being empowered to learn new skills through digital technologies, such as displaying key learnings/ways of thinking made available through this curriculum (i.e. systems and computational thinking))
- Students displaying an increased sense of enjoyment, an inquisitive mind, and competitive spirit through the shared learning opportunities the transdisciplinary unit provided
- Increased staff engagement (utilising key learnings from provided training across other teaching/curriculum areas)
- Increased use of technologies (which would be captured with analytic data) to deepen learning opportunities for the Faith community

Student engagement and enjoyment on Digital Technologies day was high, as was the Design Process Day where students designed and created roller coasters out of specific materials. However, student engagement was not as fully present when Digital Technologies was delivered through curriculum. Some staff engagement improved from previous experience in delivering Digital Technologies, and this was paralleled by student engagement in those cases. No increased use of technologies could be ascertained.

GENERATING AND DESIGNING

What actions/steps were undertaken?

1. Staff training was developed and delivered.
2. Resources for staff use in classes was developed and provided to teachers.
3. Teachers delivered the CLC lessons on computational thinking with standardised enquiry questions to establish understanding to students prior to engaging with Digital Technologies curriculum lessons and project assessment of same.
4. A review of class interactions was held by teachers and a plan for future resources developed. Cyclic core teachers' meetings were held. Teachers were provided with PD of the same lessons that students were to undergo so that teachers were cognisant of all aspects of lesson, any potential pitfalls and how to overcome them, facing the same challenges that students might so empathy of students problem-solving was experienced.
5. Resources developed and delivered to teachers.

What were the effects of these actions?

Mixed effect - computational thinking posters distributed to staff were displayed and referred to by some staff. Some teachers were daunted by the level of knowledge required to deliver Digital Technologies curriculum.

To what extent have the proposed actions been implemented?

All above actions implemented.

Were there any challenges which arose in negotiating actions with others, or in negotiating time and resources?

Many challenges arose when teachers did not feel comfortable with the level of knowledge required. When staff would hand over from STEM to HESS lessons, some teachers who had teaching partners who were more collaborative felt greater empowerment in understanding the why and the how.

What were the intended and unintended effects of your actions? Explain why they may have occurred.

Some students had a better experience than others depending on the level of understanding of their teacher and the efficiency of the technology in the moment.

Data collection: Evaluating

What strategies are being used to collect data and monitor progress?

Surveys of staff were done before and after teacher PD. Meaningful data collection was minimal due to resource restraints.

Were there any ethical problems which arose in negotiating access to, and release of, information? How was this resolved?

No, there were no ethical issues. Easy to obtain permission.

COLLABORATING AND MANAGING

Resources

Identify the resources used in the implementation of the project.

Arduinos, Lego Mindstorms, Ozobots, Spheros, everyday items to complete roller coaster. USQ professor, ACARA Curriculum Officer, CL Digital Technologies FLC, IT support staff FLC.

Challenges

If there were challenges, what were they and what were the causes?

- Staffing changes each year – this impacted the momentum of the project in a number of respects.
- Curriculum Leaders buying into the process, as there was a tendency at times for CLs to want to revert to specific subject/department content needs, rather than the project needs of the transdisciplinary units; however, in saying this, part of this was due to staffing changes of CLs, where new CLs weren't necessarily a part of the original creation of these units, so they weren't necessarily abreast of the units within the project from the get-go. Some buy-in issues were also present due to the lack of clarity as to where this teaching and learning approach progressed, as the College has yet to define any transdisciplinary/project-based learning programs beyond Year 7.

How have you handled these implementation challenges?

- Providing teachers time to meet regularly to review units studied and (re)engage project aims
- Involving CLs in these meetings, to ensure they are across these units as well as the project aims
- Providing staff specific Digital Technologies trainings to increase their ability to utilise this curriculum area within not only the defined transdisciplinary units but also across other teaching areas and year levels they may also teach.

Milestones and deliverables

Provide revised milestones and deliverables for the sustainable implementation of Digital Technologies in your school.

From 2020, a constant is now the computational thinking skills will continue within the Year 7 Integrated Units. A separate Year 7 Digital Technologies curriculum offering will be offered to all Year 7 students, where they'll have specific curriculum time (2 x 60 min) designated each week and then not again until Year 9.

PRODUCING AND IMPLEMENTING

Describe how Digital Technologies is being implemented in your school.

- Currently within transdisciplinary HESS/STEM units, which are largely project-learning based.
- As detailed above, from 2020, a separate Year 7 Digital Technologies curriculum offering will be offered to all Year 7 students.

  Prior to entry in Year 7, students respond to questions in a Microsoft form regarding the ICT and DT that has been delivered in their primary school experience – however we have 23 feeder schools which provides a great diversity in exposure.

How does this differ from your original plans? What contributed to this change?

The only real difference is that there will also be a specific Digital Technologies curriculum offering from next year (as detailed in previous question response). The transdisciplinary model will remain the same and has largely been the same since the start of the project.

If you intend making further changes to your implementation plans, please describe.

No, not at this stage.

Next steps

What goals do you need to set as the next step as you work towards achieving sustainable implementation of Digital Technologies in 2020–23?

- Ensure teaching staff and CLs involved in this curriculum area, particularly when it is embedded into defined transdisciplinary units, have the opportunity to review and adjust units that they deem necessary. Previously, having units defined for them has probably limited the impact of teachers buying into each unit, where it's envisaged that if they have more time and resources to develop these units how they see fit, greater ownership and genuine engagement with each unit should be achieved.

See table below.

	Action	Who?	When?	How?
Short term	Dedicated semester unit with qualified staff to ensure all students experience the same of level of exposure, experience in a resource-limited environment.	Director of Teaching Learning CL Digital Technologies Digital Technologies Teachers	2020	Timetabling
	Computational thinking skills will be maintained within current model Year 7s	Core Year 7 staff	2020	Within STEM/HESS
Mid term	Review of Middle Years curriculum at the College – determining whether the transdisciplinary approach is broadened to include Years 8 and 9	Director of Teaching Learning Middle Years Coordinator Curriculum Leaders	2020	Research, defined working party