DIGITAL TECHNOLOGIES IN FOCUS PROJECT PROPOSAL		
School name	**Bethany Christian School**	
School contact details	**37 Countess St, Paralowie SA 5108 T: (08) 8283 0000**	
School team members	**Team member**	**Role**
	Principal ICT Manager/Coordinator Upper Primary Digital Technologies Year 3 Teacher	
School profile	Number of students Location Sector School type Year range Proportion of students who are Indigenous Proportion of students with disability Proportion of students who have EAL/D	**<600** Metropolitan Independent Co-educational F–6 1.6% 32% NCCD 48%
Year level(s) involved in project and reason for choice	We would like to involve our Year 3 staff and classes in the project. This allows Joel to be a support to the Year 3 staff involved. Also, Robyn takes these students for a lesson a week so this arrangement will allow us to work together to teach Digital Technologies as a team. Year 3 haven't had a large focus in the area of Digital Technologies. Year 5–6 have had more exposure through our BYOD program, and R–2 have been working with IT Coordinator developing a Digital Technologies curriculum in 2017.	
Number of students involved	Approx. 78	
Number of teachers involved	4	

INVESTIGATING AND DEFINING

Proposal details

What is your research question? (Identify the challenge generally; refine the statement; get specific and express as a question.)

With a world where technology is evolving at a rapid rate, how can we prepare our students for an unknown future? To not only understand the current technology but understand a design thinking process that allows them to think, innovate, adapt and evolve with technology, and the changes to our culture, workforce and lifestyle that it will continue to bring?

How can we develop our teachers' TPACK in Digital Technologies and their capability in using design thinking to better prepare a curriculum that challenges students to think for themselves and solve real-world problems in their local and global communities?

Curriculum project: The Future of Work – finding solutions with robotics and automation

What are your project aims? (no more than five)

1. To further an ongoing whole school dialogue regarding the future of education, employment and lifestyle using design thinking and digital technologies to equip our students for a future of innovation and technology.
2. To provide opportunities for training and development for Year 3 teachers and the Digital Technologies teacher, to develop understanding in robotics, automation and programming. Year 4 staff to join in the project part way through the first year in order to roll out in second year.
3. For teachers to integrate ACARA Digital Technologies into their design thinking projects with a focus on algorithms and programming. Year 3 teachers by 2018, Year 4 by 2019, whole school 2020.
4. Students to participate in a Digital Technologies–rich design thinking project around the topic: Work of the future – Finding solutions with robotics and automation.
5. Year 3 PLT feedback to staff on what digital technologies they are implementing and what success stories and learning they are experiencing.

How will your school investigate the research question? (Consider literature review, connecting with other schools, working with members of your school's professional learning ecosystem.)

In review of our school DTiF project survey report we feel that our greatest need is to build staff awareness and capability around the area of Digital Technologies. The project group will spend time reading in order to understand the Digital Technologies section of ACARA. They will develop a realistic view of where technologies are taking us in the future, and the impact this will have on the workforce. Teachers will have intentional training and upskilling in the area of coding, robotics and automation to prepare them for successful integration of Digital Technologies.

- Access to Steve Grant, our Curriculum Officer, to spend some time with this group to have some Q&A and discussion around interpreting the Digital Technologies areas.
- Access support via Monica Williams through AISSA – look at what other AISSA schools are doing with Digital Technologies across the state.
- Student research and discovery – What are the jobs of the future? Partner with community businesses – find and visit a factory that is automated as a class excursion.
- Teacher release for training and development in the area of robotics and automation.
- PLT discussions – intentional learning with Steve; staff meeting discussions
- Literature research - TED Talks, YouTube videos, current research reports, articles
- Dr Yong Zhao – available for Skype conversations
- NOTOSH design thinking professional development

Please briefly describe your project. Include an explanation of how your project links to the Australian Curriculum: Digital Technologies and how it helps you achieve existing goals for your school. Include references to your school plan.

At Bethany we have been working with AISSA and Dr Yong Zhao to explore the development of entrepreneurial thinking, and we have been exploring the design thinking model of teaching to support this. In 2018 we begin a professional development program with NOTOSH to develop our teachers' understanding and implementation of design thinking across the curriculum. We will be intentionally integrating Digital Technologies curriculum within the projects that are developed.

Stage 1 – Whole school dialogue – The future of education, employment and lifestyle and how design thinking and digital technologies play a pivotal role in equipping our students for a future of innovation and technology. This will be led by Steve Grant and followed up with digital literature and discussions throughout the year with Jez. Introduce staff to the www.digitaltechnologieshub.edu.au website as a resource.

Stage 2 – Training and development – Year 3 teachers and Digital Technologies teacher to develop understanding of Digital Technologies generally and then specifically with robotics, automation and programming. Steve Grant to do half-day training followed by assisting with planning for implementation of the project. Steve to do some specific training in the Digital Technologies achievement standard: 'Students define simple problems, design and implement digital solutions using algorithms that involve decision-making and user input. They explain how the solutions meet their purposes.'

Stage 3 – Year 3 teachers to integrate Digital Technologies – with their design thinking projects with a focus on algorithms and programming. Steve Grant to model and demonstrate coding and robotics lesson with the Year 3 teachers and students (Year 4 by 2019, whole school 2020).

Discuss what involvement and connection we will have with community businesses and possible mentors/resources in the Digital Technologies world.

Stage 4 – Students to begin a Digital Technologies–rich design thinking project – topic: Work of the future – Finding solutions with robotics and automation. Steve Grant support with two observation lessons for each of our Year 3 teachers and our Digital Technologies teacher. Steve to also take part in some team teaching with teachers and modelling as necessary.

Students develop knowledge and understanding; and use/develop processes and production skills:

- Define simple problems, and describe and follow a sequence of steps and decisions (algorithms) needed to solve them (ACTDIP010)
- Implement simple digital solutions as visual programs with algorithms involving branching (decisions) and user input (ACTDIP011)

Stage 5 – Year 3 PLT report back their experience – what digital technologies they are implementing and what success stories and learning they are experiencing

Stage 6 – Student exhibition – showing their learning to a larger audience (unsure of who the audience will be)

Stage 7 – Year 4 teachers introduced to the Digital Technologies project – Year 3 PLT share their learning with Year 4 team. Steve Grant to give Digital Technologies training and development. Challenge Year 4s to start thinking about how they can integrate Digital Technologies into 2019 curriculum.

Stage 8 – Year 4 teachers have a planning day – integration of Digital Technologies in 2019. Steve stays for staff meeting with all teachers to follow up on how school is moving forward in Digital Technologies.

Stage 9 – Year 4 teachers to integrate Digital Technologies – with their design thinking projects with a focus on algorithms and programming. Steve Grant to model and demonstrate coding and robotics lesson with the Year 4 Teachers and students (Year 4 by 2019, whole school 2020)

State your criteria for success.

- Teaching staff demonstrate a better understanding of the future of education, employment and lifestyle and how design thinking and digital technologies play a pivotal role in equipping our students for a future of innovation and technology.
- Year 3 teachers and Digital Technologies teacher will have integrated robotics, automation and programming through their design thinking projects and curriculum.
- Students showing a deeper level of thinking and comprehension of Digital Technologies in their work of the future project. Students will use digital literacy to design a solution to a problem, code and solve problems in their algorithms.
- Year 3 PLT show a deeper understanding of the Digital Technologies when giving feedback through evaluation of their learning and curriculum planning.
- Students sharing their learning through what's happening in the project in their exhibition projects.
- Teachers' skill and capacity to embed and build upon the integration of Digital Technologies in their design thinking project.
- See application of Digital Technologies across multiple curriculum areas.

GENERATING AND DESIGNING

How will your project be delivered? What actions are planned?

(These dates are approximates and may change.)

Term 1 – Week 1 or 2 – Whole school dialogue around the future of education, employment and lifestyle and how design thinking and digital technologies play a pivotal role in equipping our students for a future of innovation and technology. This will be led by Steve Grant and followed up with a range of sources including digital literature and discussions throughout the year with Jez. Introduce staff to the www.digitaltechnologieshub.edu.au website as a resource.

Term 1 – Week 2 – Training and development for Year 3 teachers and Digital Technologies teacher to develop understanding of robotics, automation and programming. Steve Grant to do half-day training followed by assisting with planning for implementation of the project (Year 4 staff to join in the project mid first year to roll out in second year). Steve to do some specific training in the Digital Technologies achievement standard: 'Students define simple problems, design and implement digital solutions using algorithms that involve decision-making and user input. They explain how the solutions meet their purposes.'

Term 2 – Year 3 teachers to integrate Digital Technologies into their design thinking projects with a focus on algorithms and programming. Steve Grant to model and demonstrate coding and robotics lesson with the Year 3 teachers and students (Year 4 by 2019, whole school 2020).

Discuss what involvement and connection we will have with community businesses and possible mentors/resources in the digital technologies world.

Term 2 – Students to begin a Digital Technologies–rich design thinking project around the topic: Work of the Future – finding solutions with robotics and automation. Steve Grant to do two observation lessons for each of our Year 3 teachers and our Digital Technologies teacher: one observation in Term 2, Week 2 and a second in Week 8. Steve to also take part in some team teaching with teachers and modelling as necessary.

Students will be developing the following content descriptions in their project:

- Define simple problems, and describe and follow a sequence of steps and decisions (algorithms) needed to solve them (ACTDIP010)
- Implement simple digital solutions as visual programs with algorithms involving branching (decisions) and user input (ACTDIP011)

Term 2 – Week 9 – Year 3 PLT feed back to staff what digital technologies they are implementing and what success stories and learning they are experiencing.

Term 3 – Week 7– Year 4 teachers introduced to the Digital Technologies project. Year 3 PLT share their learning with Year 4 team. Steve Grant to give Digital Technologies training and development. Challenge Year 4s to start thinking about how they can integrate Digital Technologies into 2019 curriculum.

Term 3 – approx. Week 8 or 9 Student exhibition – showing their learning with a larger audience (unsure of who the audience will be)

Term 4 – Week 2 – Year 4 teachers have a planning day for integration of Digital Technologies in 2019. Survey staff regarding what has worked well and where to next prior to Steve visiting. Steve to stay for staff meeting with all teachers to follow up on how school is moving forward in Digital Technologies.

Term 1 – Year 4 teachers to integrate Digital Technologies into their design thinking projects with a focus on algorithms and programming. Steve Grant to model and demonstrate coding and robotics lesson with the Year 4 teachers and students (whole school 2020).

Are you collecting data? How do you plan to do this?

- Teacher self-assessment (early 2017 and late 2017)
  - Teachers Self-Assessment Matrix – ICT Proficiency Interactive
  - Teachers Self-Assessment Matrix – DT Interactive
- Checkpoints – Year 3 staff development presentations each term
- Portfolio – teacher research paper, goals, developments made, achievements
- Review process – observe each other's lessons, Steve's observations, self-reflection, staff surveys
- Student exhibition (live, video, other) as an assessment piece along with the use of a rubric designed with students and teachers

COLLABORATING AND MANAGING

Identify the resources you will need for the implementation of the project. (Include your key stakeholders / how ACARA can offer assistance / what will impact your capacity to deliver)

- Steve for training on Digital Technologies (approx. two visits per term)
- Excursion bus/resources/partnership with an innovative automation business in Adelaide for classes to visit
- Teacher release TRT days for teacher training and development
- NOTOSH design thinking program (school funded)
- Dr Yong Zhao, thought leader (Skype conversations organised by Wendy Matear)
- Robotics and coding resources: Code.org; various robots: Sphero, Edison robot, Ozobot, Robovac, Alpha 1, mBot, drone, etc.
- ICT ESO support officer and ICT coordinator to assist with more complex programming

Identify the potential risks your project may face. (Include risks, such as lack of resources; lack of interest by teachers, students, community)

- **Teacher confidence** – Make available as many resources as possible including Steve Grant as a resource that we can use to help us grow and develop in Digital Technologies. Demonstrate, model, give feedback and provide opportunities for teachers to understand new concepts before having to teach them. Collaborate with Steve, Jez, teachers and other outside experts as available to keep pushing thinking forward and to build confidence.
- **Student engagement** – Using robotics and coding in an area of the students' interest. Use scaffolding to support and build skills through the new process step by step for those that need it and allow students that are excelling to move ahead and set themselves new

challenges.

- **Building student capacity around the design thinking and Digital Technology language** – explicitly teach skills that are required, new vocabulary, related knowledge and practice regularly to embed the design thinking process. Teachers will need to ensure that they differentiate for each student within their class to provide genuine access to the curriculum.
- **Finding a business that will get on board with the project** – We will need to make contact with a few businesses and visit prior to the project to make sure they can manage a large group on site and have appropriate facilities for a school-aged group excursion.

Consider the deliverables and timelines for this project (progress reports, webinars, podcasts, final report). What are the milestones for your school's project?

Stage 1 – Whole school dialogue – 2017 Term 1 – Week 2

Stage 2 – Training and development – 2017 Term 1 – Week 2

Stage 3 – Year 3 teachers to integrate digital technologies – 2017 Term 2

Stage 4 – Students to begin a Digital Technologies–rich design thinking project – 2017 Term 2

Stage 5 – Year 3 PLT report back their experience – 2017 Term 2 – Week 9

Stage 6 – Student exhibition – 2017 Term 3 – Week 8 or 9

Stage 7 – Year 4 teachers introduced to the Digital Technologies project – 2017 Term 3 – Week 7

Stage 8 – Year 4 teachers have a planning day – 2017 Term 4 – Week 2

Stage 9 – Year 4 teachers to integrate digital technologies – 2018 Term 1

PRODUCING AND IMPLEMENTING

Describe how Digital Technologies will be implemented in your school.

Digital Technologies is already taught within Bethany Christian School with some success and with room for improvement. Previously the R– 2 students received a NIT specialist teacher that taught Digital Technologies, posing the problem of how to best integrate digital technologies across the whole curriculum. In 2017, staffing structures were changed in order to allow for Digital Technologies to be taught by class teachers with support. This has allowed for teachers to work on implementing Digital Technologies within their own curriculum. There has been a steep learning curve and a few challenges but teachers have adapted quite well and are keen to keep developing. In 2018, we will continue to work with R–2 teachers to integrate the Digital Technologies throughout the other curriculum learning areas.

Our Year 3–6 students have continued with a NIT specialist Digital Technologies teacher who in previous years has covered the achievement standard in these lessons alone. Teachers would then integrate ICT capabilities throughout other curriculum learning areas. This is the gap we would like to bridge with this DTiF project. We are bringing the specialist and classroom teachers together to implement a curriculum that integrates Digital Technologies across multiple learning areas. We are starting this with our Year 3s and then 4s in this project with the intention to have an integrated Digital Technologies curriculum in 2020.

EVALUATING
ACARA will be assessing students at the beginning and at the end of the project in terms of ICT literacy and computational thinking skills. **What additional evidence will you need to collect in relation to your school's specific action research question? You may like to consider:** ● Pre-assessment of 'Work of the future' project ● Post-assessment of 'Work of the future' project ● Collecting design pro forma folio – showing processes of design thinking ● Exhibition – teacher assessment rubric – peer assessment and self-assessment ● Student reflections on their learning and the project ● Teacher surveys, reflections and feedforward
ACARA will be surveying teachers at the beginning and at the end of the project in terms of their ICT literacy and their confidence in teaching Digital Technologies knowledge, understanding and skills. **What additional evidence will you need to collect in relation to your school's specific action research question?** ● Teachers' lessons will be observed by Steve and peers. ● Teachers reporting back to the staff what was learned in the project ● Year 3 teachers able to pass on their learning to the Year 4 teachers in Term 3 of 2017 ● Teacher presentation of the project and their learning to teaching staff ● Student reflections ● Student projects and innovations
Please add any other comments about your project that you would like to make. We look forward to the learning journey this will take us on as a school community and the positive outcomes that it will bring for our whole community.

Thank you for your time and commitment to the Digital Technologies in focus project.