Document is subject to change. Updated 5 November 2024.

SESSION 4

10:22 AM - 11:20 PM, Friday 29 November 2024

Session 4.01

Workshop Maintenance – 101

David Morgan, Busselton SHS

Essential guidelines for maintaining a safe, organised, and efficient school workshop environment. The workshop will cover topics such as tool care and storage, safety protocols, cleaning routines, and the importance of routine equipment inspections. Additionally, the session will emphasise student accountability, with strategies for teaching responsibility in maintaining workstations and tools. By fostering a clean and well-maintained workshop, the presentation aims to improve learning outcomes and promote a culture of safety and respect for equipment among high school students.

Session 4.02

Bite Size - Project Showcase: Robotics, Metal Construction, STEM

Various Schools and Teachers

Teachers from various schools will showcase the work that they have had their students involved in, with a chance to discuss, take a closer look and be inspired by some of the great work being done.

Beverly Wild - Peter Carnley Anglican Community School

Ian Collishaw - Bob Hawke College

Jack Wilmot - Carey Baptist College

Steve Warwick - Ashdale Secondary College

Session 4.03

Fab Workshop - Creative and Accessible Projects from Outside the Box

Skye Ogrizek, Coastal Lakes College

Skye was part of the Fab Futures professional learning program that was run twice in 2024 and attended by 30 teachers. An inspiring program, Skye will share some insights from the program and inspire with the possibilities that exist as a result.

Session 4.04 – A Double Session (2hrs)

Introduction to CNC Machining: Project Creation and Fabrication with Fusion 360

Thomas O'Brien, Perth Modern School

This workshop begins with an introduction to CNC machining, covering its applications and the objectives of the session. Participants will then get acquainted with Fusion 360, learning the basics of the interface, project setup, and 3D model creation. The focus will then shift to designing parts specifically for CNC machining, exploring Fusion 360's design tools and features through the creation of a sample part.

Following this, the workshop will provide an overview of CAM (Computer-Aided Manufacturing) workflows, including setting up the manufacturing workspace, selecting tools, and defining toolpaths.

Participants will then simulate the machining process to detect potential issues and adjust toolpaths for optimal results. The hands-on project creation segment will allow participants to use supplied models to practice the workflows for a number of project types using Fusion 360, with guided assistance and troubleshooting provided. The workshop will conclude with a Q&A session, summarizing key takeaways and providing resources for further learning and exploration. By the end of the workshop, participants will have a solid understanding of using Fusion 360 for CNC machining, from project creation to fabrication.

Please note that participants are required to bring their own laptop with Fusion 360 installed and have access to an internet connection.

Session 4.05

H2GP - Hydrogen Powered Radio-Controlled Car Racing

Piers Forder, Prendiville Catholic College

A new competition that was held in Western Australia for the first time this year. Piers runs the program at Prendiville and will share his insights into the competition and the fantastic opportunities for students involved. Come and learn more about it and take a look at the cars being used and explore the technology and the goals behind the event.

Session 4.06

Mechatronics Flowchart Code with Nanoflo

Adam Preston, Nanoflo

Please note: Participants are to bring their own notebook computer as backup, although most will be able to use the desktop computers in the room.

This presentation will provide you with a hands-on opportunity to interface with Arduino micro-controllers using modern and supported flowcharting software. Nanoflo is a Mac and Windows compatible flowcharting software that allows students to intuitively interact with mechatronic engineering projects. In the workshop, you will see a demonstration of Nanoflo in action before having an opportunity to build and program your own circuits using the software. There will be opportunities to provide feedback, express interest, and information on your individual requirements to help us continue to tailor Nanoflo to your needs.

Bring a laptop and have a go!

Session 4.07

OnGuard Safety – what is all the fuss about anyway?

Bruce Lewis and Adam Giancaspro, OnGuard Safety Training

Please note: This session will be in a computer lab. Participants are to bring their own notebook computer as backup, although most will be able to use the desktop computers in the room.

Find out what all the talk is about and why your School needs it: OnGuard Safety is an online training platform that provides comprehensive safety education and certification for students, teachers, and staff, particularly in areas such as Design and Technology, STEM, and other practical subjects. It includes a range of modules covering equipment operation, tool safety, hazardous materials handling, and emergency procedures. The platform is designed to ensure that users understand the correct use of machinery and tools in workshops, classrooms, and labs, adhering to national safety standards. Successful completion of OnGuard Safety courses results in certification, ensuring a high standard of safety awareness in educational environments. Hear from the developers and get a feel for how it works.

Session 4.08

I have signed up to OnGuard Safety – now how do I get the best out of all its features?

Bruce Lewis and Adam Giancaspro, OnGuard Safety Training

Please note: This session will be in a computer lab. Participants are to bring their own notebook computer as backup, although most will be able to use the desktop computers in the room.

This presentation will be run as a hands-on workshop. It is intended for participants who have had exposure to OnGuard Safety and are keen to fine tune their use of the program. The following will be covered: creating courses and adding training units record and generate safety demonstration registers record and generate proficiency assessment registers generate certificates of student achievement setup and register machine inspections registers setup and record machine maintenance registers how to configure and schedule regular data backups generate comprehensive student training reports.

SESSION 5

11:25 PM - 12:25 PM, Friday 29 November 2024

Session 5.01

Compass: Suggestions and Ways To Use Compass in Design and Technology
Dylan Trent, Perth Modern School

Dylan will demonstrate how Perth Modern School use Compass to help streamline project task sheets, assessments and submissions of projects in Design and Technology.

Session 5.02

Augmented Welding Simulators
Weld Australia

A hands-on workshop providing participants with demonstrations and a chance to have a go at using an Augmented Welding Simulator for student training. Weld Australia will also provide some up-to-date discussion on changes in fume control and exposure regulations, what this means for welding in our workshops and how to mitigate risks associated.

Session 5.03

The Benefits of Wood - from sustainable forests to innovative solutions
Veronica Tyquin, Forestry and Wood Products Australia (FWPA) and Tom Rickerby (Wesbeam)

Join us to explore the sustainable story of wood production in Australia, innovations in the forest and wood products industry and the exciting future of wood solutions.

At Forest Learning we have created new teaching units for your classroom that are mapped to the ACARA v9.0 curriculum, Years 5 - 10. Each unit includes a different design project challenge across multiple natural materials, including wood, cardboard and rayon fabric; providing students the opportunity to build important production skills. Join us to unpack this teaching toolkit.

Our versatile units can be used to teach a term or semester program, or simply to support your existing programs where needed. They follow the design thinking process of investigating, generating, producing and evaluating and include teacher guides, factsheets, student workbooks and example answers.

Come on a virtual excursion and experience our VR videos that take your class into the forest and processing mills; learn about forest certification and ways to teach it; give the next generation the tools to choose and create sustainable options with wood.

Session 5.04

Why do we draw? The role of technical drawings in Design and Technology

Lachlan Murphy, Edith Cowan University

Why do we draw?
Discover the importance of drawing in Design and Technology and uncover answers to key questions about the role of sketching in this dynamic field. This workshop will explore effective strategies for teaching technical drawing by combining traditional hand-sketching techniques with modern digital tools. It aims to equip educators with practical approaches to scaffolding students' learning from basic hand-drawing skills to advanced computer-aided design (CAD) capabilities.

The session will begin by discussing the historical significance of sketching and technical drawing, emphasising their evolution from manual methods to the use of CAD software. Participants will explore how drawing meets various curriculum requirements, fostering critical thinking, creativity, and problem-solving. The workshop will then delve into the importance of teaching both hand and digital drawing. It will highlight the necessity of developing hand skills for foundational learning and exams, while also introducing digital tools to prepare students for modern industry practices.

Educators will learn a scaffolded approach to teaching drawing, starting with hand techniques and gradually incorporating digital tools. Practical demonstrations will cover essential skills such as rendering by hand, transitioning sketches to digital formats, and utilising machines like laser cutters and CNC routers.
By the end of the workshop, participants will be equipped with actionable strategies to effectively teach technical drawing, blending traditional and digital methods to enhance student engagement and achievement.

Session 5.05

Introduction to Mechatronics in Lower Secondary

Jared Faint, Guildford Grammar School

Jared will discuss the growth and development of Mechatronics at Guildford Grammar School and the directions that they are planning to take in further promoting the benefits of the subject, showcasing some work that has been done by students in 2024.

Session 5.06

A Study of Extended Reality (XR) and Creativity in an Australian Secondary School Context

Jodi Saunders Curtin University

Recent advancements in technology have enabled extended reality (XR), an overarching term that encompasses virtual reality (VR) and mixed reality (MR), to be viable and widespread, especially in the creative industries. Specifically, a key aim of the mandated Western Australian curriculum is for students to be exposed to various technologies and techniques to facilitate creative problem-solving (SCSA, n.d.). Indeed, the importance of creativity in education has long been established as a global goal. Aligning with

these aspirations, I will be conducting a study in partnership with Curtin University that will explore XR and its effects on creativity in a WA classroom. This will be a timely and useful investigation, especially as, based on current knowledge, no research studies currently exist regarding XR in this context. Using a case study methodology, the data collected will consist of semi-structured interviews, a questionnaire and evaluated artwork to provide a rich and insightful overview of XR intervention in the classroom. This study will be important to educators interested in practical information about incorporating XR in the classroom and those seeking information about XR's benefits in terms of creativity. This presentation will outline the study proposal and introduce and demonstrate the new XR technology that is making this study possible.

Session 5.07

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SESSION 6 – INDUSTRY VISITS

1:20 PM - 4:15 PM, Friday 29 November 2024

In line with the theme for the Conference there is a focus on getting back to basics and looking at manufacturing processes and techniques. So, jump on a bus and go to an industry location of your choosing. We have aimed to provide a good mix of industries, relevant to the multiple disciplines within our subject area. Take the chance to see manufacturing at the coal face, get some ideas, talk to the experts and take part in hands on activities if available. We have hired six buses for the afternoon session that will depart at the end of lunch and return in time for the Conference close, AGM and drinks.

Session 6.01
Beyond Tools - Routing and Laser Cutting, MALAGA

Session 6.02
Steve Morgan - Automotive Trade Centre, LEEMING SHS

Session 6.03
Adarsh Australia - Commercial 3D Printing, LANDSDALE

Session 6.04
Adarsh Australia - Machine Shop, MALAGA

Session 6.05
TRY A TRADE - Construction Futures Centre, BELMONT

Session 6.06
Tommotek - CNC Machining MALAGA

6.07 and 6.08
OnGuard Combined Sessions – Remain @ ECU option

For those that want the full OnGuard presentation in one hit and don't want to go on the industry visits bus trip, we have arranged for Bruce Lewis and Adam Giancaspro to offer a double session in the afternoon.

Get the introduction to the Safety platform and find out how to make more advanced use of it in your schools.