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Innovation and Digital Transformation in Vocational Education and Training

Webinar One

Wednesday 23 August

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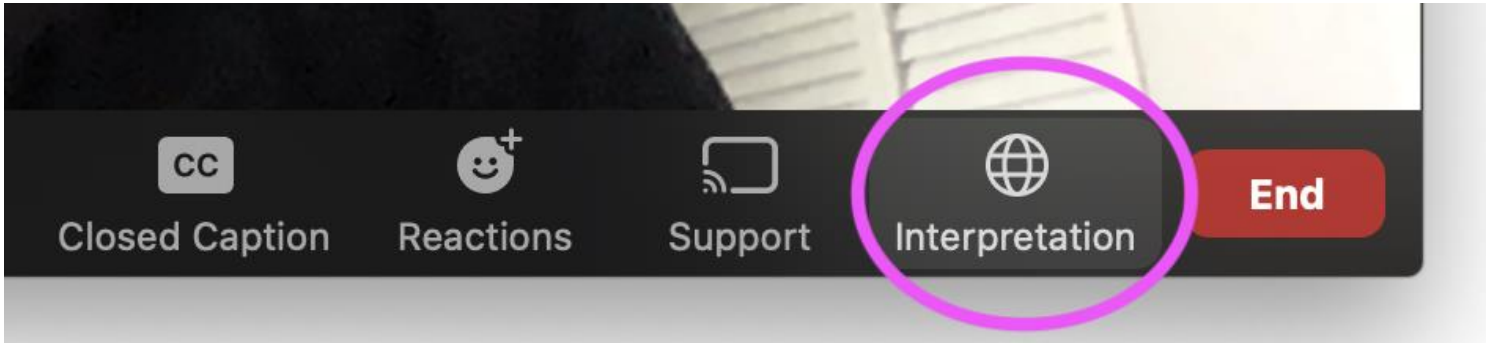

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Welcome

Webinar One Agenda

- Digital Capabilities
- Vietnamese Guest Speaker + QA
- SAMAR + TAM Model
- Artificial Intelligence in Education
- Demo of digital software in Education
- VR/AR and UX in Education
- Conclusion

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Session Etiquette

- Please turn on your camera
- Don't be shy!
- Make comments, ask questions and add to the conversation.

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Webinar Facilitator

Jye Marshall

- TVET Trainer
- Background in Education TV
- Educational Technologist
- From Rural Tasmania AU
- Researching barriers and drivers in industry 4.0

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Concepts of Digital Literacy

Topic One

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Digital Transformation & Innovation

Do you have an example of a digital transformation?

While to the everyday eye, transformation and innovation may seem interchangeable, they are anything but.

- Digital transformation predominantly focuses on the how, why, when and who of technology rather than the types of technology to be adopted.
- Digital innovation, on the other hand, looks at adopting new digital practices or technologies. A digital transformation may occur from multiple digital innovations.

The Importance of Digital Transformation

Why digital transformation is crucial in today's business environment?

- Digital transformation can lead to significant improvements in operational efficiency. Automation of routine tasks, for instance, not only reduces the possibility of human error but also frees up staff to focus on more complex and strategic tasks.
- Digital technologies can help businesses streamline their operations, improve efficiency, and offer better customer service. Companies that effectively leverage these technologies often gain a competitive edge in their industry.
- Digital transformation can drive sustainable innovation, helping companies develop new products or services that are both profitable and good for the environment.

Barriers to digital transformation

Common challenges and obstacles in digital transformation.

Digital transformation, while offering numerous benefits, also brings about certain challenges and obstacles.

- Resistance to Change
- Lack of Digital Skills
- Data Security and Privacy
- Unclear Strategy
- Resource Constraints
- Lack of Leadership Support
- Cultural Barriers
- Scalability

Digital Literacy

What is your understanding of digital literacy?

Right around the globe the workforce is going through a digitisation, and digital literacy is a concept on every leader's agenda. In today's world technology is providing disruption but is also transformative.

Digital literacy describes the physical and cognitive abilities to use digital technologies in everyday life.

Your Organisation

How has your organisation already started to bring digital literacy skills into the workforce?

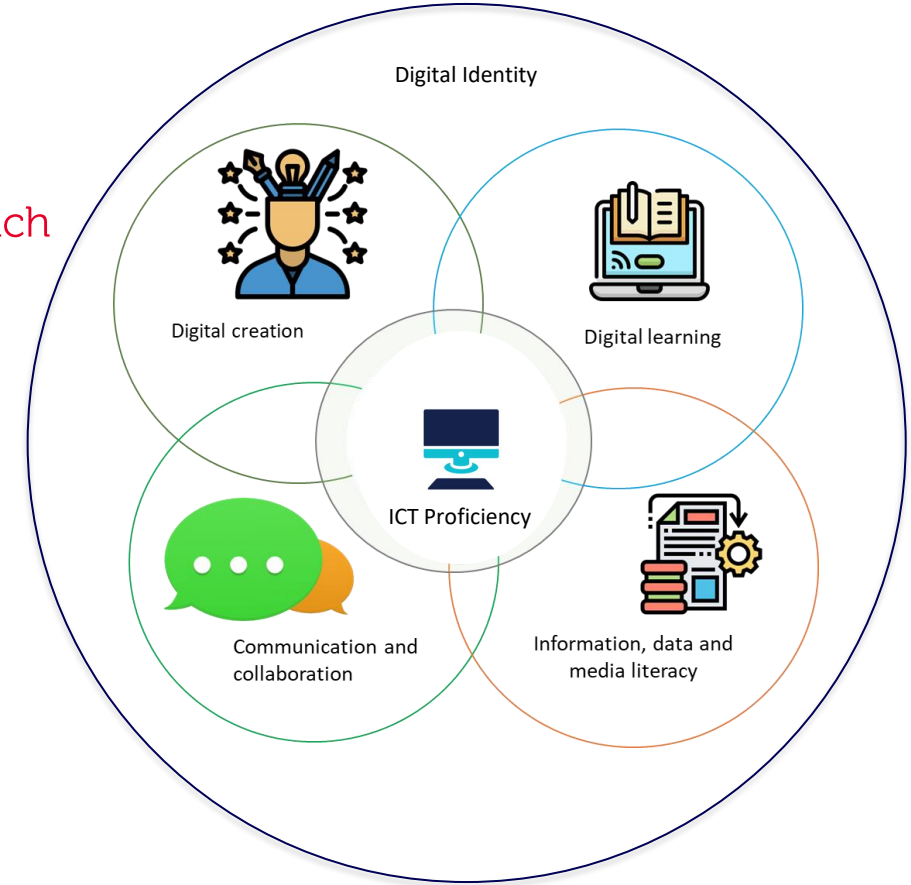
Workplaces play an essential role in how their employees develop digital literacy skills and build a digital workplace culture.

It is important for executives, managers and VET leaders to understand how to share important aspects of digital literacy and provide support channels to facilitate this learning.

Digital Capabilities

There are six key areas of digital literacy which consist of:

1. ICT Proficiency
2. Communication and collaboration
3. Digital creation
4. Information data and media literacy
5. Digital Learning
6. Digital Identity



1. ICT Proficiency

- This involves the basic skills needed to use digital technology effectively, such as understanding different software, hardware, and platforms, and being able to troubleshoot common issues.
- ICT proficiency sits in the middle of the digital capabilities framework as a foundational domain that intersects with other domains.
- This domain forms a crucial core that empowers individuals to leverage digital tools and technologies across various domains within the digital capabilities framework.

2. Communication and collaboration

- The ability to use digital Technologies to communicate and share ideas weather this be an online community space such as slack, teams or another communication application.
- Online communication tools not only provide further productivity but now as more people work from home with flexi hours having tools which embrace productivity are a huge help for VET leaders and executives to manage their workforce with ease.
- Web based applications such as time camp and monday.com provide useful ways to track time, assign jobs and project manage.

3. Digital creation

Digital creation

Technology provides the ability to express creativity through means of software and hardware, applications such as:

- Adobe Creative Cloud,
- Computer Aided Design (CAD),
- Dall-E AI image maker,
- 3D Printing,
- Canva,
- Scratch,
- Google Drive collaborative writing.

4. Information data and media literacy

Information, data and media literacy

- The role of an information researcher has increased linear with the expanding information stored on the internet.
- Once an encyclopaedia was thought to be a collection of the worlds knowledge, now new knowledge is uploaded to databases every day.
- Having the knowledge to find new research is critical to VET leaders to navigate the new emerging Technologies.

5. Digital Learning

Digital learning

- The 2019 pandemic completely changed the way we operate in education.
- RTOs who never thought online learning was possible had to completely change their teaching practices and now have learning management systems (LMS) in place.
- The digital learning domain focuses on developing the skills and competencies needed to engage in online learning. It involves the ability to navigate digital learning platforms, access and evaluate online educational resources, participate in virtual classrooms and webinars, collaborate with peers through online tools, and utilise digital assessment methods.

6. Digital Identity

- Having the skills to use technology in a responsible and ethical manner to support your responsibility as a citizen of the digital society, and as a VET leader.
- Technology while revolutionary comes with its risks, and as one of the top ten threats to humanity as our dependency on digital systems increase, we all play an important role in mitigating cyber vulnerabilities.
- Your own capabilities play a major role in the positive or negative digital wellbeing of your students and staff.
- There are multiple domains of digital literacy each with their own key features.

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Vietnamese Guest Speaker

TBC

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Digital Literacy Framework

Topic Two

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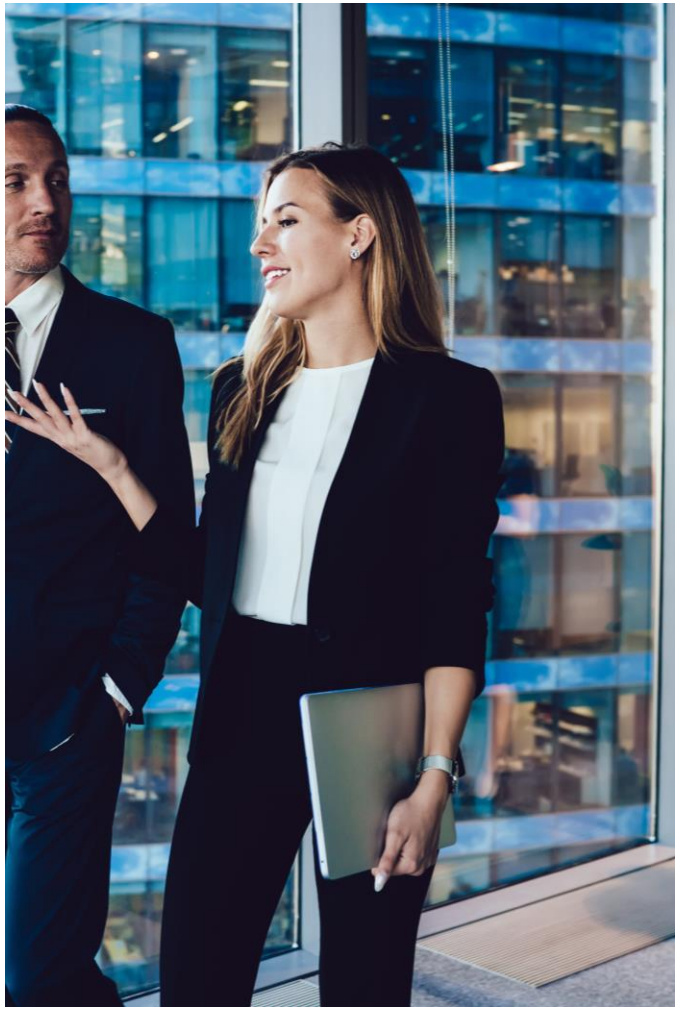
Digital literacy framework

How do we identify the digital literacy needs of an organisation?

- Now that you understand digital capabilities, it's time to think about how we can use this as a framework to boost digital literacy skills within the workforce.

- The JISC (Joint Information Systems Committee) and UNESCO (United Nations Educational, Scientific and Cultural Organisation) digital capabilities frameworks are crucial tools for organisations undergoing digital transformation.



Using the framework

What kind of benchmarking have you undergone within your organisation?

The following 5 steps provides a relatively simple procedure for using any digital framework to identify digital literacy skill gaps:

- **Step 1.** Identify and describe the required digital literacy skills.
- **Step 2.** Identifying Gaps
- **Step 3.** Developing a Digital Capabilities Strategy
- **Step 4.** Implementing the Strategy
- **Step 5.** Monitoring Progress

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Summary

Digital Literacy

The six domains of digital capabilities serve as a comprehensive framework for cultivating skills needed in today's digital workforce. This framework offers a structured approach to identify, develop, and enhance digital competencies, ensuring individuals are adequately prepared to thrive in the digital age.

An organisation's readiness for digital transformation can be evaluated using the six domains of digital capabilities as a framework. Each domain represents a key area where specific skills are needed for the successful adoption and integration of digital technologies.

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Digital Social Inclusion

Topic Three

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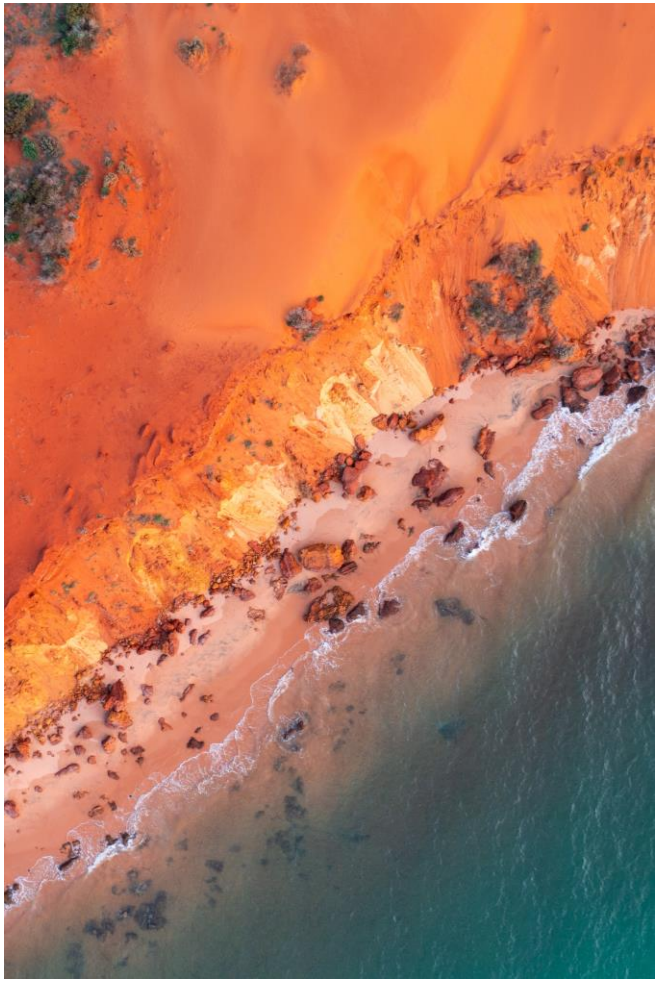
Digital Accessibility

How have you seen technology improve or hinder accessibility?

By identifying potential barriers to access, such as:

- limited internet connectivity
- inadequate devices

Organisations can take steps to provide necessary support and resources to enable everyone to participate fully in the digital transformation process.



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Concepts and issues surrounding social inclusion and technology

- Not every student will have the opportunity to use technology
- VET leaders have a responsibility to act creatively to ensure that partnerships are formed to leverage this gap.
- There are a lot of low-tech options to provide students to still learn digital literacy skills.

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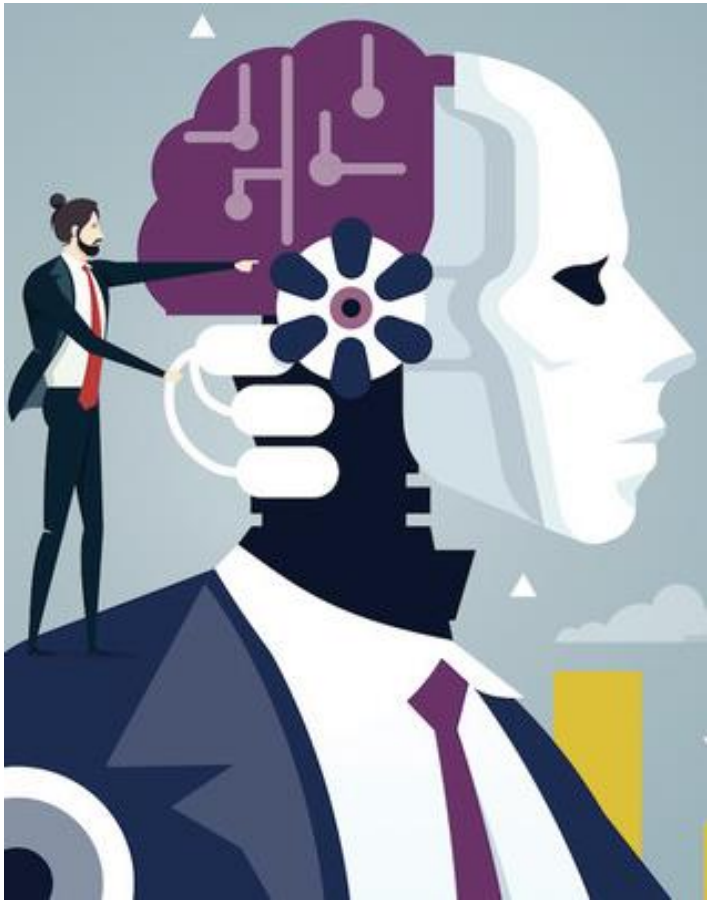
Bias in Technology

Examples of bias exist in commonly used technologies:

- Hiring judgments are made using AI bias.
  - Even if female candidates are equally qualified, an AI system that was trained on predominantly male candidates may prefer male applications.
- Technologies for voice recognition sometimes favour people with unusual accents or speech patterns.
  - When utilising voice-controlled gadgets or services, they could make more mistakes, which makes it more difficult for them to use the technology.
- Similarly, prejudices may be reinforced by recommendation systems if they only offer information or items based on past user behaviour, which leads to a lack of diversity.



Bias in Technology

- Algorithms are where bias thrives.
- Algorithms are technologies that generate conclusions and suggestions based on vast volumes of historical or user data.
- These algorithms will be biased if the data that was used to train them is skewed.
- This happens because gathering and categorising information to guarantee that individuals from all over the world are fairly represented is a big challenge.

Example: a facial recognition algorithm that has been trained mostly on data from white people may have trouble correctly identifying people of different racial and ethnic backgrounds, leading to false positives and arrests.

Organisation Accessibility

As set out by the universal declaration of human rights article 26 everyone deserves the right to quality education regardless of their background.

Not all businesses shift to digitalisation; some businesses put off digital transformation due to:

- Cost of resources and equipment
- The high amount of training
- Culture Transition
- Staff Accessibility to Technology
- Incompatible Technology
- Insufficient Awareness

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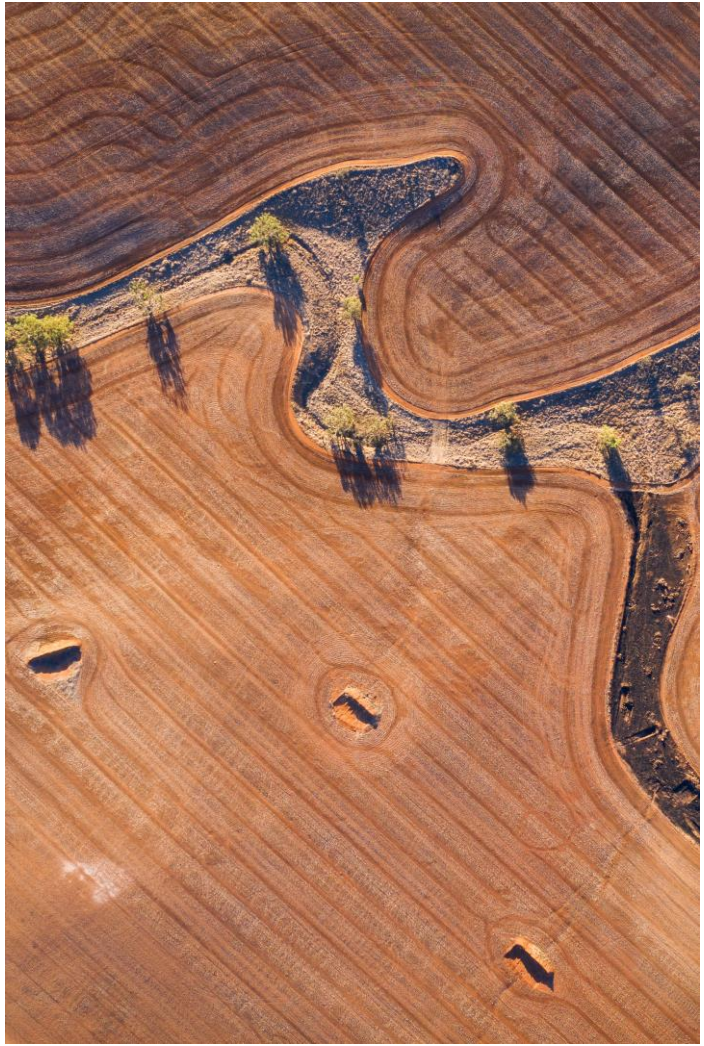
Bridging Connection

How can organisations bridge the barriers to technology adoption?

Not all businesses shift to digitalisation; some businesses put off digital transformation due to:

- Infrastructure Development
- Access to devices
- Digital skills training
- Community engagement
- Curriculum development
- Research



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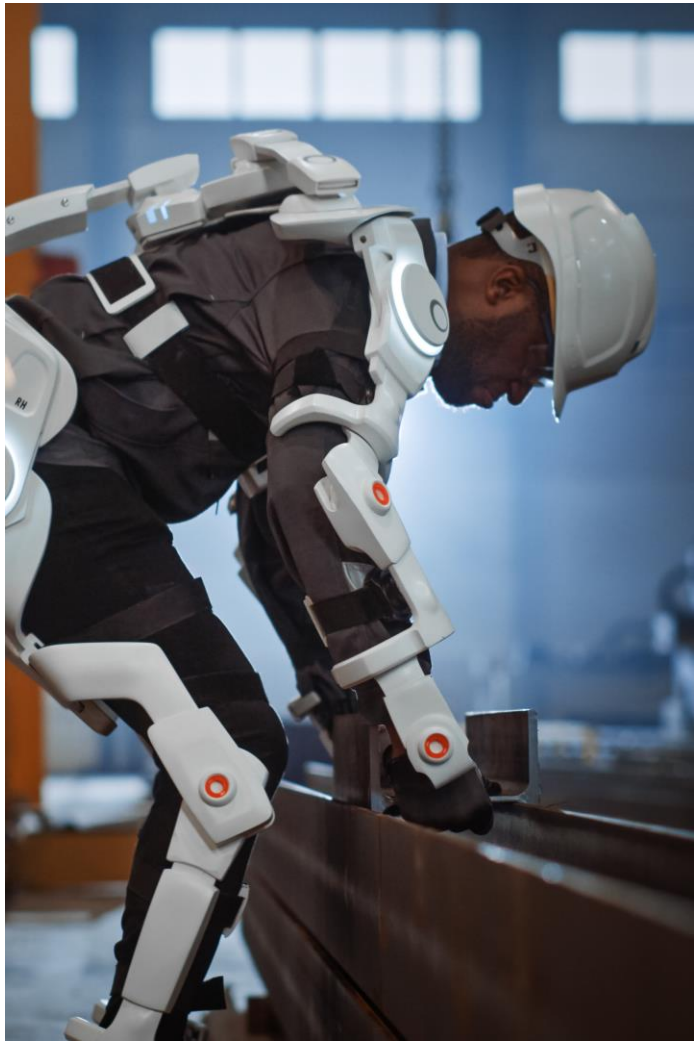
Summary

Digital Social Inclusion

Digital social inclusion focuses on ensuring equal access to digital technologies and literacy for all individuals, regardless of their socio-economic background. It aims at bridging the digital divide by fostering skills, providing resources, and creating opportunities for all to participate in the digital world.

- A digitally inclusive culture may foster quicker acceptance and adoption of new technologies across the organisation.
- Greater social inclusion means a larger talent pool with digital skills, essential for transformation.



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Methods for Digital Literacy

Topic Four

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Digital Literacy Instruction

How do we teach digital literacy?

- Digital transformation involves changing traditional systems and operations into digital ones. Without digital literacy, this shift can be challenging for individuals who are not used to digital technologies. Proper instruction can help them transition more comfortably and efficiently.

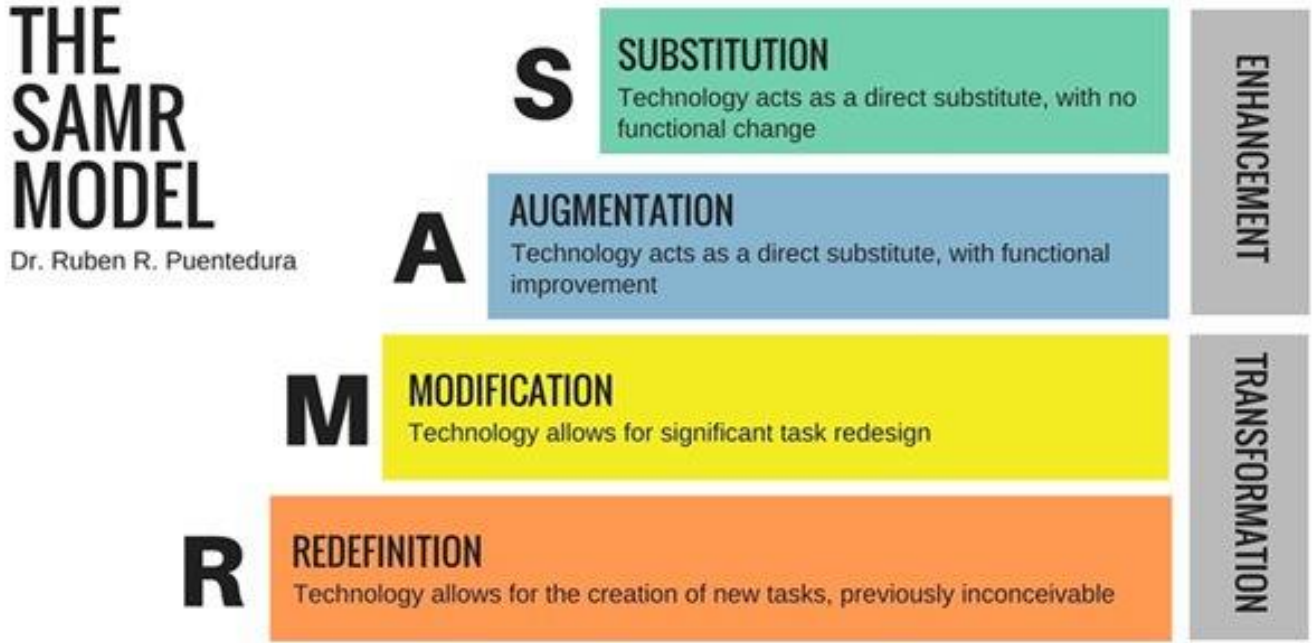
- A learner may want to equip himself or herself with skills on how to use a particular application, but such application is not available in the workplace or at home.

SAMR Model

Methods for technology integration

- Technology integration is a pivotal skill that VET leaders must acquire to equip students with a deeper understanding of the subject matter.

- While selecting technologies may be difficult, most Trainers and Assessors struggle more to integrate the technology into the classroom.


THE SAMR MODEL
Dr. Ruben R. Puentedura
S
SUBSTITUTION
Technology acts as a direct substitute, with no functional change
A
AUGMENTATION
Technology acts as a direct substitute, with functional improvement
M
MODIFICATION
Technology allows for significant task redesign
R
REDEFINITION
Technology allows for the creation of new tasks, previously inconceivable
ENHANCEMENT
TRANSFORMATION

The SAMER Model

1. Substitution (Digital Enhancement)

- Knowing students and how they learn is critical to ensuring a successful learning journey.
- Digital technology provides teachers with further options to be involved within a student's learning journey.
- Teaching online during covid19 revealed that students who could connect with their teachers fast and informally showed the highest levels of satisfaction on the course.
- Programs such as Microsoft Teams, LMS chat boxes, and traditional phone calls allowed students to interact with their teachers for rapid responses.

The SAMER Model

2. Augmentation (Digital Enhancement)

- The technology acts as a substitute within the augmentation framework and improves the functionality of the content such as turning a paper-based learning resource into a SCORM pack with interactive elements.
- At this phase within the framework our goal is to retain the initial learning content and bring life to that within a digital space.

The SAMER Model

3. Modification (Digital Enhancement)

- When innovation really starts to impact the original learning content almost redesigning the learning activity we consider this as a digital modification.
- At this stage we are integrating technologies which are amplifying digital skills within the learning content such as transforming a paper-based quiz into a game (Gamification).

The SAMER Model

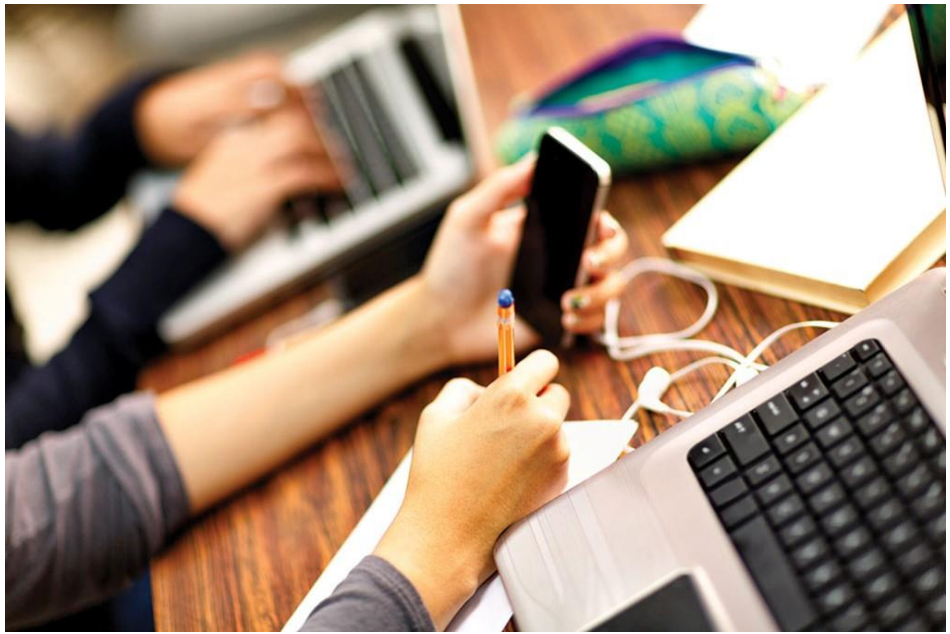
4. Redefinition (Digital Enhancement)

- At this stage the learning has been completely “redefined” by enabling new learning content which was not possible before technology.
- Some redefinition of education may be considered as video conferencing in an SME from across the world.

Digital literacy and factors

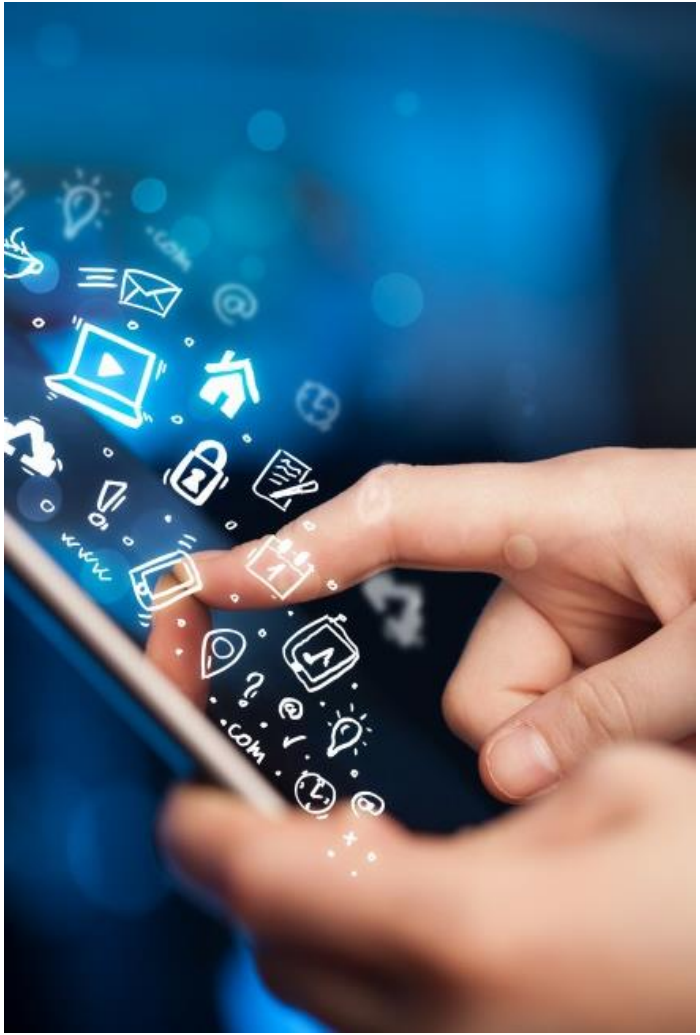
Frequency of training

- Learning among students varies depending on the abilities and skills of the student.
- Some require fast-track learning while others would want lengthy discussions and practice.
- Frequency of training may create a skill gap between what the student needs to learn and the timeframe available to learn digital skills.



Ways of developing digital skills

- Professional development exercises that strengthen the VET learners' capacity to use technology
- VET learners should be able to develop their digital skills while completing their vocational courses. Essential digital skills include:
  - using a computer, tablet, or smartphone for easy-to complete personal and professional tasks
  - using the internet to find and utilise information
  - knowing how to behave responsibly and safely online
  - using email, messaging, and social media to communicate on a personal and business level



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Summary

Methods for Digital Literacy

These provide practical, real-world experience with digital tools. Individuals learn better when they can practice using the tools, and this can accelerate digital transformation by ensuring employees are comfortable and efficient in using new digital systems.

Digital literacy methods help digital transformation by providing the necessary skills to operate digital tools, fostering an environment of continuous learning, promoting efficiency, and ensuring effective change management. The more digitally literate the workforce, the smoother and more successful the digital transformation will be.

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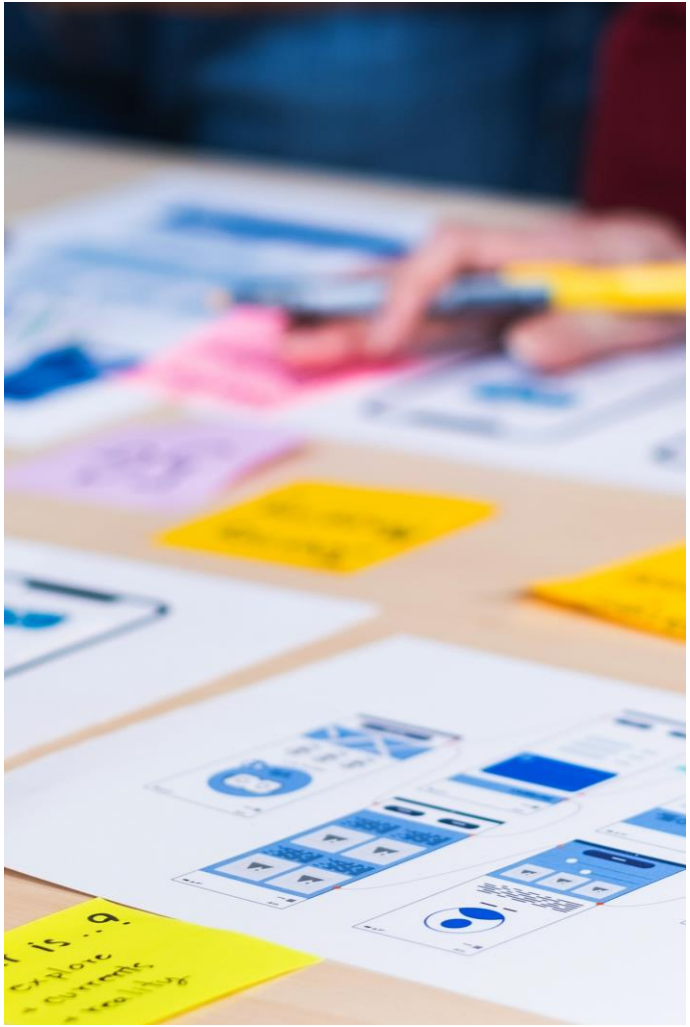


Steps to transformation

How has your organisation already started to bring digital literacy skills into the workforce?

Achieving digital transformation involves a series of steps that ensure the process is structured, manageable, and geared towards the organisation's unique needs and goals.

- Define the vision and objectives
- Assess the current state
- Identify priority areas
- Develop a roadmap
- Allocate resources and responsibilities
- Implement and monitor progress
- Foster a culture of change and innovation
- Ensure organisational readiness
- Evaluate and refine

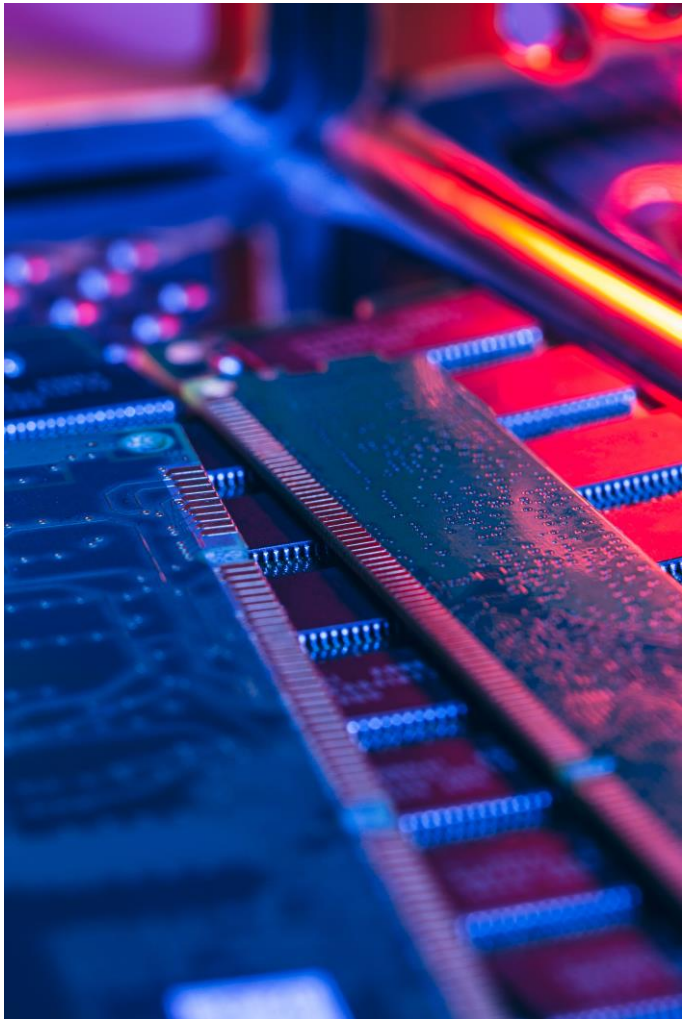
Change Management Models

A necessity, not a luxury

Digital transformation research often originates from grey literature, particularly white papers by various consulting firms, resulting in diverse models. Some popular change management models that can also be used for a digital transformation include:

- McKinsey's 7S Framework
- Lewin's change management model
- Nudge Theory

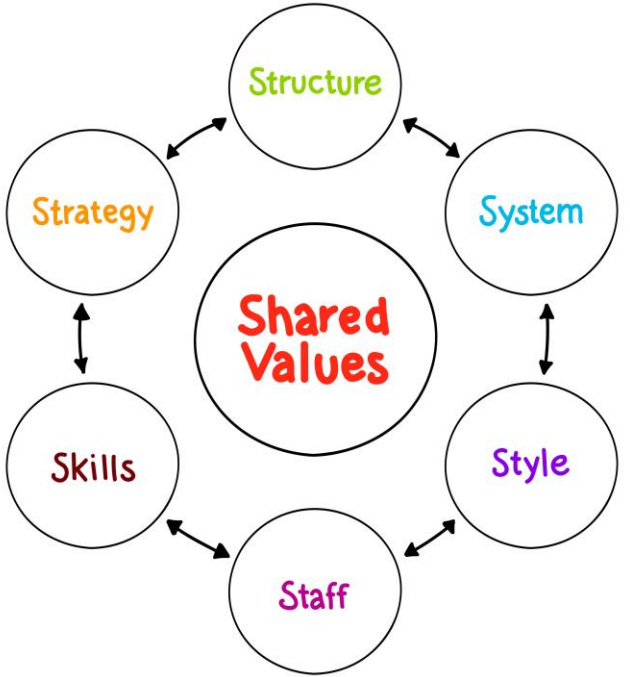
The model you choose depends on the characteristics of your organisation, such as size, industry, digital maturity, and transformation objectives.



McKinsey's 7S Framework

Elements of an organisation that need to be aligned

- While McKinsey's 7S Framework isn't a specific digital transformation framework, it is a model to implement change.
- Strategy: The plan to innovate to build productivity or competitive advantage.
- Structure: How the organisation is organised to build innovation
- Systems: The activities that are conducted day to day to get the job done.
- Shared Values: The core values of a company and their culture.
- Skills: The competencies of staff.
- Style: The organisations leadership approach.
- Staff: The employees and their abilities.

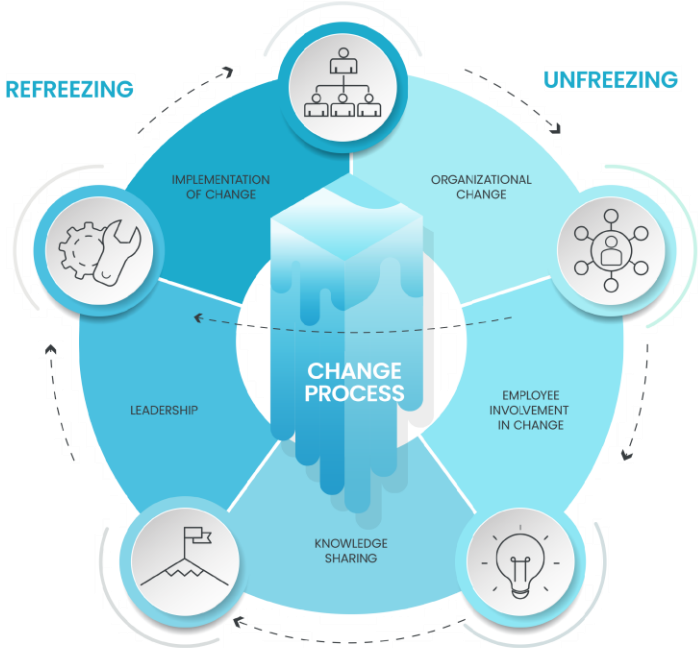


Lewin's change management model

Spiral of four key stages

While McKinsey's 7S Framework isn't a specific digital transformation framework, it is a model to implement change.

- Unfreezing: This first stage involves overcoming values and behaviours, which could be looking at the current digital state of your organisation.
- Change/Transition: Once you have identified the barriers and have unfrozen the culture, you can introduce an innovation. This period involves training, communication and building a digital culture.
- Refreezing: The final stage looks at reinforcing and evaluating the innovation to ensure progression and no reverting back to business as normal.



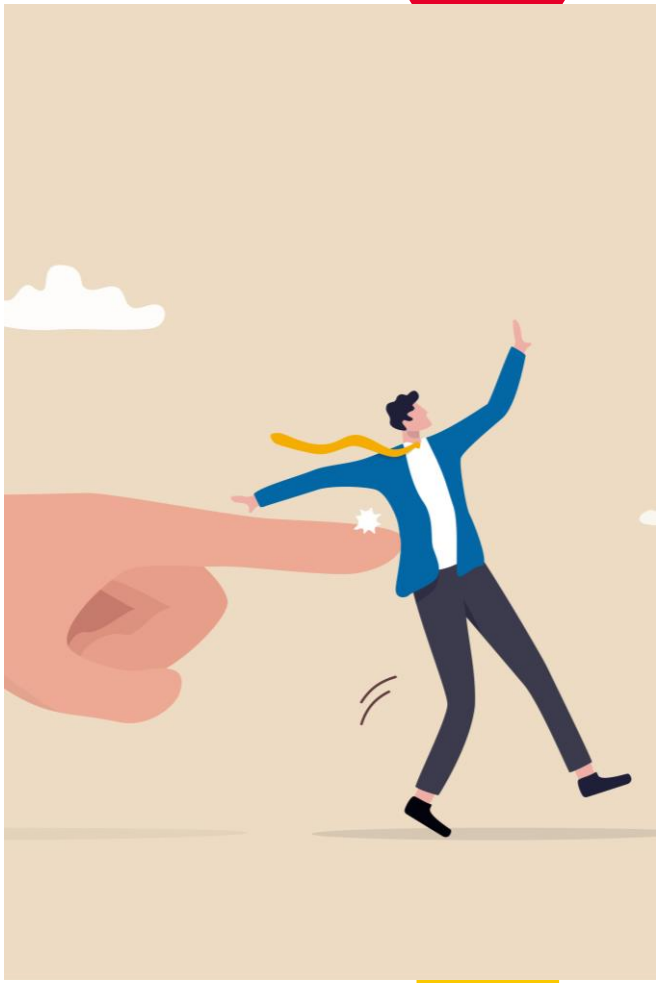
LEWIN'S CHANGE MANAGEMENT MODEL

Nudge Theory

Pushed in the direction of change

This theory focuses on making employees adopt new practices on their own terms.

1. Definition of Changes: Clearly articulate desired changes.
2. Empathy: Consider employees' perspectives and concerns.
3. Evidence-Based Choices: Showcase the benefits of change with data.
4. Freedom of Choice: Position change as an opportunity, not an imposition.
5. Feedback: Value and incorporate employee feedback.
6. Limit Options: Simplify decisions by offering fewer, more impactful choices.
7. Short-term Wins: Reinforce change through celebrating immediate successes.



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Case Study: Satya Nadella

A shift in digital culture and Cloud Services

When Satya Nadella took over as CEO of Microsoft, their current perception was that they were dropping behind competitors dominating the innovations.

Nadella implemented a digital transformation that reinvigorated Microsoft's brand, making it more relevant for the current industry needs.

- Cultural Transformation: Moving from an “expert” culture to encouraging mistakes, learning and innovation.
- Shifted to cloud services: Originally, Microsoft sold software licenses before Nadella transitioned to subscription-based cloud services.

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VET Sector Digital Trends

Topic Five

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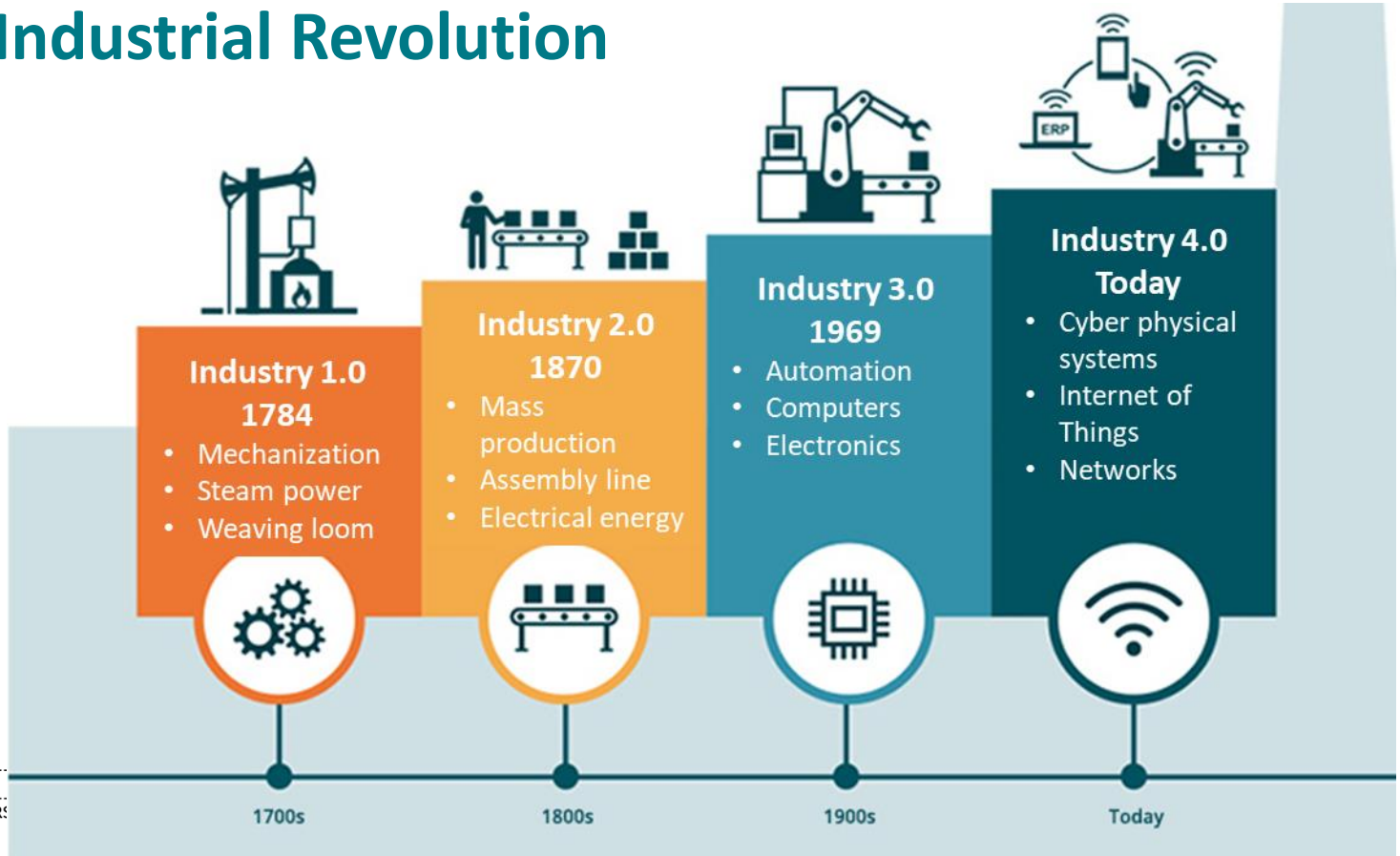
The Fourth Industrial Revolution



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VET Leaders and Industry 4.0

- Your role as a VET Leader or executive is to address the skill gap within your training organisation to support the adoption of industry 4.0 technologies.
- The Vietnam economy is undergoing a rapid increase of technological adoption
- Unless students and future workers digital literacy levels are increased, the industry will continue to see a resistance to these innovations.

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VET Leaders and Industry 4.0

- Start with ensuing that students and workers are exposed to technologies and therefore will feel more inclined to use the technology within the workplace.
- The use of digital technologies within education have shown significant results for increasing the countries adoption of technologies, therefore your role is critical to ensuring this innovation continues.
- It is essential that VET learners possess the abilities to efficiently incorporate technology into their educational learning; employ technologies appropriate to their sector; and assist co-workers in building their own digital talents.

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Online Learning Platforms

Do you have an example of a digital transformation?

While to the everyday eye, transformation and innovation may seem interchangeable, they are anything but.

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Virtual Reality (VR) and Augmented Reality (AR)

Integrating VR and AR technologies into vocational education can provide immersive and hands-on learning experiences. For example, VR simulations can allow students to practice skills in a virtual environment, such as conducting laboratory experiments or operating machinery. AR can overlay digital information onto real-world scenarios, enabling students to visualise and interact with content in a more engaging way.

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Data Analytics and Learning Analytics

Leveraging data analytics and learning analytics can provide insights into student performance, engagement, and progress. This data can inform instructional strategies, identify areas of improvement, and support personalised learning interventions to enhance student outcomes.

Microlearning

Microlearning involves delivering short, bite-sized learning modules or resources that focus on specific skills or topics. It accommodates learners' preferences for quick and on-demand access to information. Microlearning allows vocational students to acquire knowledge and skills in a concise and engaging manner, making learning more efficient and accessible.

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Personalised Learning Pathways

Personalised learning pathways leverage adaptive learning technologies and data analytics to tailor learning experiences to individual students' needs and preferences. By analysing students' progress, performance, and learning styles, vocational education programs can deliver customised content, resources, and learning activities that suit each learner's requirements, fostering personalised skill development.

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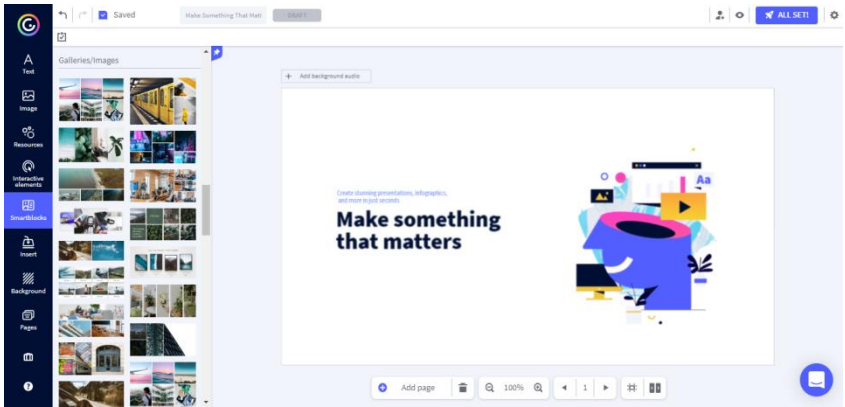
Gamification

Gamification is the process of utilising gaming concepts to change the conventional educational setting.

- Gamification aims to boost participation by including competition (both inside and across classes), creativity, student-led learning, and instant feedback.
- One excellent example of gamification in education is a web-based program Genially. It makes producing gamified elements easy with present games to customise.

genially



Gamification

Other examples include:

Padlet provides a cloud-based software-as-a-service, hosting a real-time collaborative web platform in which users can upload, organize, and share content to virtual bulletin boards called "padlets".

Mentimeter a Swedish company based in Stockholm that develops and maintains an eponymous app used to create presentations with real-time feedback

Miro, formerly known as RealtimeBoard, is a digital collaboration platform designed to facilitate remote and distributed team communication and project management.

Kahoot, a Norwegian game-based learning platform, used as educational technology. It has learning games, also known as "kahoots", are user-generated multiple-choice quizzes that can be accessed via a web browser or the Kahoot! app. Kahoot! also includes trivia quizzes

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What is Gamification

Gamification is used to boost student engagement through the use of game elements in the learning journey.

Important to note that while learning games can be part of a gamification strategy, they have a different purpose.

Gamification is about taking the key features that make games enjoyable and applying those features in an educational setting.

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Why gamify?

State of flow – concept developed by Mihaly Csikszentmihal – based on positive psychology. Looks at how a person becomes fully absorbed in a task, leading to higher performance or outputs.

Mastery – looks at how a person will continually practice a skill and move through initial failures to achieve higher levels

Intrinsic motivation – desire to do something for the enjoyment of it.

Why people play games?

-Pleasure
-Competition
-Learning
-Challenge
-Mastery
-Solves puzzles
-Storytelling

-Characters
-Enter different worlds
-Physical performance enhancement
-Strategy
-Social Connection
-Mystery
-Adrenaline

Key features of games

- Rules
- Levels
- Skills
- Rewards
- Narrative
- Challenges
- Support Structures
- Role-play
- Loyalty
- Progression Tracking
- Leader Boards
- Characters
- Simulated Worlds
- Communication & Collaboration
- Time limits

What does it look like when we apply this to education

Opportunities to practice (build mastery) → Assessment – use to check progress and → Levels – scaffold learning to build sense of mastery/increase complexity → Feedback – how does the student get real-time feedback through the journey

Cloud Based Learning

- Technology within education industry can be disruptive and can also be transformative
- The fourth industrial revolution is changing the way we operate within education globally and the importance of teachers and business leaders to support this will play a significant role in improving the current digital literacy skills.
- The cloud-like representation of the internet is referred to as the Cloud. This is a form of internet-based computing known as "cloud computing" which makes data and shared computing resources available instantly to computers and other devices.

Cons of Cloud Based

How can Cloud Based technology support us?

Pros:

- Scalability
- Cost Savings
- Flexibility and Accessibility
- Reliability and Disaster Recovery
- Innovation and Updates

Cons:

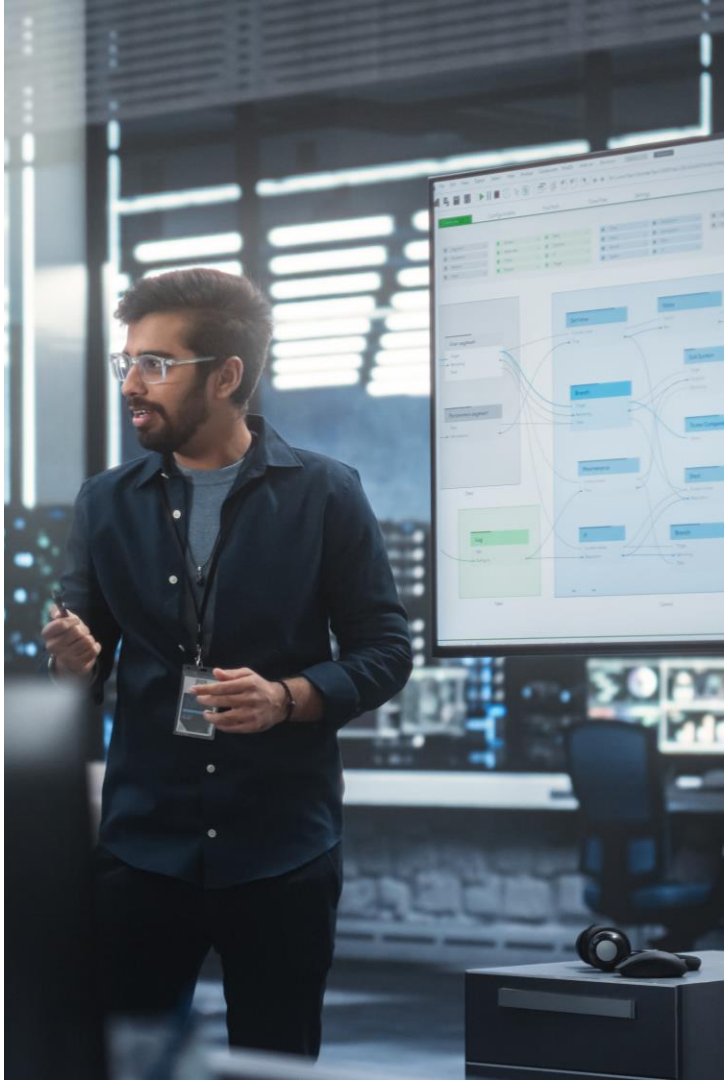
- Internet Dependency
- Data Security and Privacy
- Vendor Lock-In
- Downtime Risks
- Limited Control

- If you were to start a cloud-based e-learning program to teach your staff, you could also use a cloud-based authoring tool to generate your course materials online.

- You could either utilise a cloud-based Learning Management System (LMS) or store your work in the authoring tool, depending on the program you employ.

Cloud Based Learning

- One of the ground-breaking platforms for the educational system is cloud-based learning.
- Trainers and students may access data at any time, anywhere. People can easily learn from anywhere in the world using this platform without experiencing any trouble.
- Cloud-based applications reduce infrastructure and IT costs, increase accessibility, and enable collaboration.



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Artificial Intelligence Pedagogy

Guest Speaker By: Prof. Tony Jan

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Demo of Digital Software in Education

Facilitated By: Jye Marshall

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VR/AR and UX in Education

Guest Speaker: Dr. Zi Siang See (TBC)

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THANK YOU!
QUESTION TIME
Feel free to send any questions to jye.marshall@rmit.edu.au
Wednesday August 23rd