Future of Work

Revolutionizing Training and Operations

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BRITISH COLUMBIA
INSTITUTE OF TECHNOLOGY

BCIT™

The British Columbia Institute of Technology acknowledges that our campuses are located on the unceded traditional territories of the Coast Salish Nations of **Sḵwx̱wú7mesh** (Squamish), **səl̓ilwətaʔɬ** (Tsleil-Waututh), and **xwməθkwəy̓əm** (Musqueam).

- Evolution of training and education
- Use of Simulators in Training
- Emerging Technologies
- Role of AI to enhance operational performance
- Synergies –AI and simulators
- Challenges
- BCIT – Shaping the future
- Conclusion

Evolution of Learning and Training

Traditional Training	Emergence of Digitalization	Shift to Data-Driven Decision Making.	Adoption of Innovative Technologies
The Future of Training:	AI-Driven Simulations:	- AI and Machine Learning (ML) Integration: Enhanced realism and effectiveness.	- Gamification: Increased engagement through game design elements.

- Blockchain for Credentialing: Secure verification of educational achievements.

Simulators for Realistic Training

Transformative Tools: VR and AR simulators

Immersive Learning

Real-World Replication

Operational Readiness

Workforce Development

Emerging Technologies

Trends

Autonomous vessels

AI driven decision support system

Predictive analytics

Adaptive Learning platforms

Impacts

Increased efficiency and safety (autonomous vessels)

Real-time strategic insights (AI decision support systems)

Optimize resource allocation (predictive analytics)

Accelerate skills development (adaptive learning platforms)

Workforce Development

Foster innovation and continuous learning

Adaptability to technological advancements

Personalized training experiences

The Role of AI in Enhancing Operational Performance

Predictive maintenance

Route Optimization

Crew management

Decision support system

Synergies - AI and Simulators

Cost-Effective Training:

Enhanced Safety Measures

Reduced Downtime

Operational Excellence:

Competitive Advantage

Success Stories

Kongsberg Maritime Training – have implemented AI-driven simulators, resulting in 30% reduction in training costs and significant improvement in trainees' proficiency.

Lufthansa Group have adopted AI-powered maintenance simulators, leading to 20% decrease in aircraft downtime and enhanced predictive maintenance capabilities.

BMW Group have used AI-based simulators for driver training, resulting in improved driver safety records and 25% reduction in accident rates.

Lessons Learned: Continuous data integration is crucial, Customized training solutions are necessary , real-time feedback optimizes training outcomes.

Challenges

Data Protection

Cybersecurity,

Regulatory compliance and workforce upskilling.

Developing strategies for overcoming barriers to technology adoption, fostering a culture of continuous learning, and managing organizational change.

BCIT – Future expansion plan

- We are working on initially data collection and information for a feasibility study for the proposed expansion.
- Our vision is to build an AI supported advanced simulator training center augmented with AI, VR and AR to ensure we support the future proofing Canada's transportation industry.
- Important features of the center will be a Training tank to support both marine and aviation industry personnel (HUET, HERT, MED courses) and a full suite of Navigation, Marine Engineering and Marine Emergency duty simulators.

BCIT – AI supported Simulator Training center

Technical and Engineering

- Full Mission Engine Room Simulator
- High Voltage Training
- Ship Energy management
- Digital Twining
- 3D virtual modelling
- Augmented Reality (AR)
- Virtual Reality (VR)
- Cargo handling (LNG, Chemical, oil).
- Maritime Autonomous Surface Ships (MASS).
- Vessel modelling
- Pollution modelling and testing.

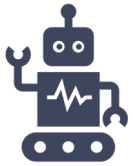
Marine Emergency Duties

- Training tank
- Freefall lifeboat motion simulator
- Immersive cabin twin-fall lifeboat simulator
- Release hook training station
- Desktop lifeboat simulator with VR
- Fast Rescue boat payload and winch control operator station.

Nautical

- Full mission / motion Bridge Simulator.
- GMDSS (Communication)
- ECDIS (Electronic Charts)
- Towing and barging
- Marine Pilotage
- Ice Navigation
- Harbor Patrol & Surveillance
- Coast, river & tidal water navigation
- Dynamic Position
- Vessel Traffic System
- Port Operations
- Crisis Management
- Search and Rescue
- Dept of National Defense
- Coast Guard

Conclusion



AI-supported simulators are anticipated to play a pivotal role in the education and training of our future workforce. As technology continues to advance exponentially, it will bring tremendous advantages to our industry.

A major challenge remains in preparing the workforce to be competent and highly skilled in response to these rapid technological developments.

QUESTIONS & ANSWERS