

Insights into the Future of DL | 18 August

Using the 'Red Pill' to Conceptualize Training Optimization; Insights on Future Learning Ecosystems from 'The Matrix'

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Using the 'Red Pill' to Conceptualize Training Optimization

Insights on Future Learning Ecosystems from 'The Matrix'

iFEST 22

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What did Trinity “Learn”?

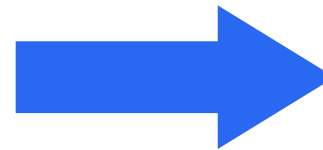
(In less than 30 seconds!)



- Comprehensive technical skills training
- Start and operate a medium-lift twin engine helicopter, single pilot, day/VMC, high-rise urban environment, AIE, weapons employment, emergency procedures, high-performance tactical aircraft maneuvering
- Restructuring of neural networks and mental models to shift information processing from:

Conscious

Limited attentional resources, working memory capacity



Subconscious

Second nature, muscle memory



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Training Requirements

'Matrix' Example

- Clear statement of expectations and outcome (“a pilot program”)
- What was Trinity’s prior aviation experience?
- Needs analysis and feedback



22nd Century Expectations

- Precise training on a specific skill or behavior at precisely the right time, at the precise level of knowledge for the stated requirement and student
- Detailed understanding of student’s previous knowledge and experience
- Training Needs Analyses (TNA) structured around refined requirements schedules and evaluation strategies, fully integrated into performance feedback loops

Methodology

'Matrix' Example

- Time to train is critical
- Receive, comprehend, and assimilate complex knowledge quickly
- Trinity did not view a PPT slide deck



22nd Century Expectations

- Time becomes the most precious training variable
- Rapid content delivery based on previous experience and knowledge
- ISD strategies and taxonomies to align approach and media (hyper-focused, individualized curriculum)
 - Neuroscience and behavioral psychology as ISD tools
 - 'Bake in' high levels of flexibility and adaptability
- Adaptation and improvisation, reflecting higher order cognition and synthesis skills
- Metacognitive and self-efficacy practices, competency-based learning frameworks, adaptive learning construct

Tools & Environment

'Matrix' Example

- Specific tool for specific outcome
- Injecting knowledge vs. acquiring it on demand
- Trinity did not rehearse in “The Construct”



22nd Century Expectations

- Media analysis to deliver ‘right tool, right outcome’
- Brick & Mortar to Metaverse
 - Distance Education / Distributed Learning
- Synthetic Environments for learning and rehearsal
- Understanding training needs for unknown or indeterminate variables
 - Flight Training vs. Jujitsu

Trends for Future Learning Ecosystems

Technological and Methodological Changes for 22nd Century Training System Design



- **Biometrics / Cognitive Load Structures**
 - Enhanced understanding of human performance limitations in learning
- **Human/Machine Teaming (HMT) / Brain-Computer Interface (BCI)**
 - Reassessing the interaction between human and machine
- **Blockchain**
 - Immutable, secure personal training records
- **Integrated Virtual Classrooms**
 - Integrating VR and experiential learning constructs

Thank you



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Elements of Adaptive Learning

Personalized learning journeys, integrating instructional methodology with education technology to improve outcomes and capacity.

- Monitoring user activities
- Interpreting domain-specific models
- Inferring requirements and preferences
- Model representation
- Dynamically facilitating the learning process



Learner Profile

- Demographics
- Previous Experience
- Individual Competencies



Learning Science

- Cognitive Load
- Biometrics
- Evaluation Strategies



Technology

- VR/AR/XR
- Artificial Intelligence/ Machine Learning
- Gamification
- LVC



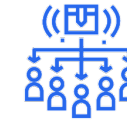
Feedback Systems

- Student / Instructor
- Program
- End User



Learning Management System

- Accessibility
- Integration
- Security



Distributed Instruction

- Security
- Platform Agnostic
- Social Connections



Low-Cost Individual Training Devices

- Accessible
- Affordable
- Concurrency



Data Analytics

- Structures to Collect / Analyze
- Security
- Exploitation Strategies

Future Trends in Learning Science



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Future Trends in Learning Science



- **Micro-learning vs. Comprehensive Instruction**
 - Student-focused standards in instructional design
- **Credentialing / Badging**
 - Reimagining competency-based approaches to evaluation and certification
- **Increasing Emphasis in Environmental and Social Governance (ESG)/Diversity, Equity, and Inclusion (DEI)**
 - Culturally-reflective education models

