

Trends in e-Learning and Virtual Education

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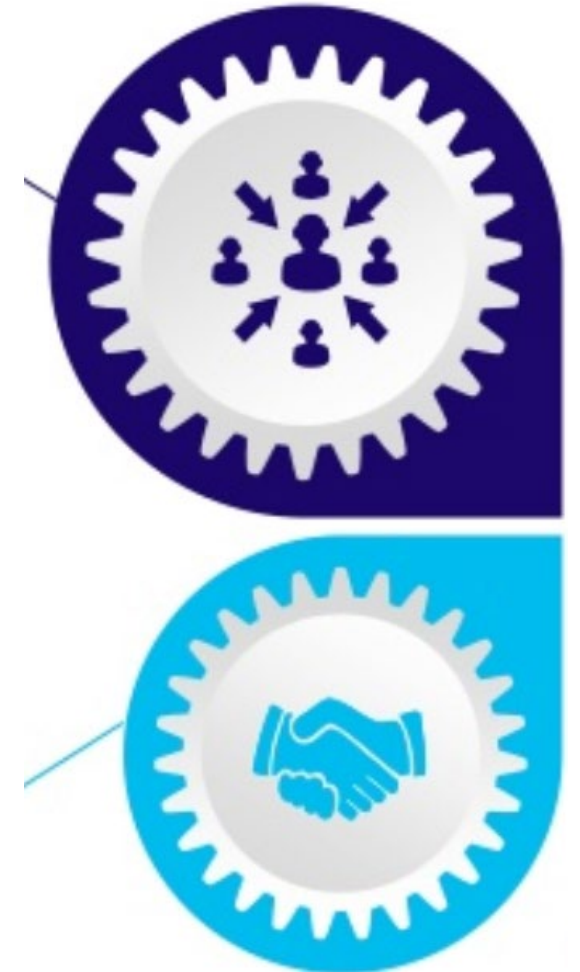
for the

7th International e-Learning Seminar

January 28, 2019

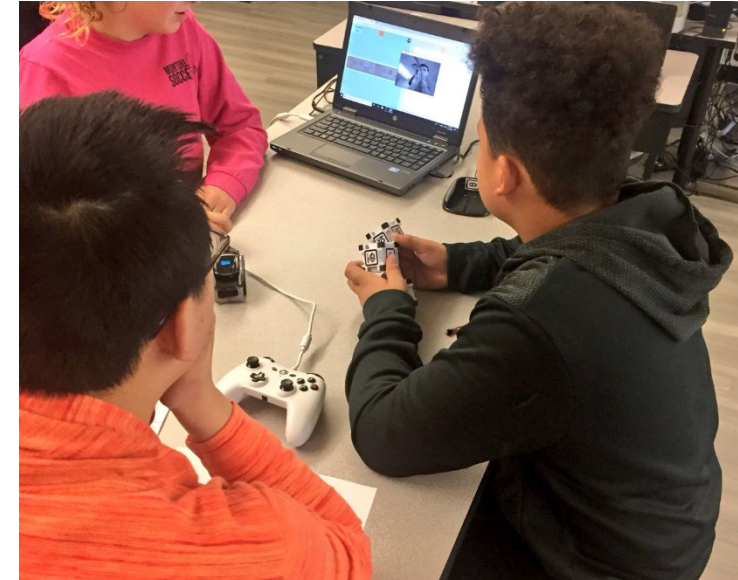
AI in Education

- Assisted intelligence – improves manual tasks, requires constant human intervention – eg. Auto-grading
- Augmented intelligence – helps people perform tasks faster and better through access to services and resources – eg. Natural language processing, image recognition
- Autonomous intelligence – establishes machines that perform in the place of humans – eg. Auto-tutor



AI in Education – Montour School District

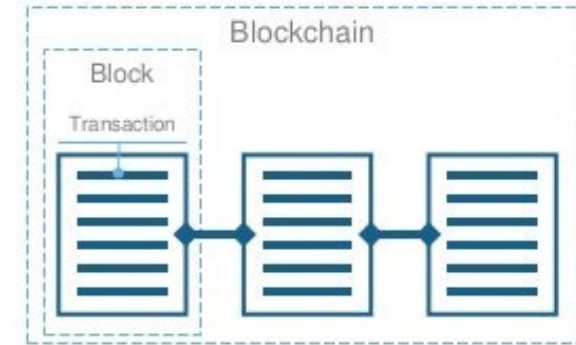
- AI Ethics course ... The three-day course is a required for all 5th through 8th graders students through Media Arts.
- Bill Black... teaching a six-week AI Autonomous Robotics to 7th and 8th-grade students
- 7th and 8th-grade students are creating their own music through Montour's AI ten-day music program in collaboration with Amper Music



- Carnegie Learning - Montour School District: An Artificial Intelligence Program in Action - <https://www.carnegielearning.com/blog/montour-school-district-ai-program/>
- Justin Aglio - An Inside Look – America's First Public School AI Program - <https://www.gettingsmart.com/2019/01/an-inside-look-americas-first-public-school-ai-program/>
- Amper Music - <https://www.ampermusic.com/>

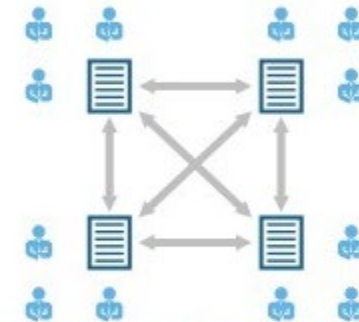
Blockchain

- Linked data through hash technology
- Distributed database through linked nodes
- Consensus through:
 - Proof of work
 - Proof of authority
 - Proof of stake



- Block = all transactions within a certain time period
- Blockchain = links all blocks together

Peer to Peer = No central authority



Distributed peer-to-peer network ensures the data integrity

- Nolan Bauerle - What is Blockchain Technology? <https://www.coindesk.com/information/what-is-blockchain-technology>
- Tech Geek - What is Blockchain. Guide for Beginners - <https://medium.com/@techgeek628/what-is-blockchain-guide-for-beginners-ed093fdbb8c5>

Blockchain in Education

- Verify credentials, skills and experience
- Payment and education financing
- IP and knowledge
- Peer-to-Peer Ecosystems
- Education resource marketplace



- David McArthur - Education Blockchain Market Map - Will Blockchains Revolutionize Education? <https://er.educause.edu/articles/2018/5/will-blockchains-revolutionize-education>
- Rachael Hartley - What is the role of blockchain in education?– <https://edtechnology.co.uk/Blog/what-is-the-role-of-blockchain-in-education/>
<https://www.downes.ca/search/blockchain>

Spitball, Rocketshoes, Learning Machine

- Spitball... “students learn and earn while helping each other.”
- Rocketshoes... “allow students to produce and keep track of their learning materials, such as assignments, notes and digital assets
- Learning Machine... “provides a complete system to issue official records using a blockchain format”

Handwritten mathematical notes on a piece of paper. The notes include:

$$\nabla \cdot \mathbf{H} = 0$$
$$\nabla \times \mathbf{H} = \frac{1}{c} \frac{\partial \mathbf{E}}{\partial t}$$

Below these are several lines of algebraic expressions involving variables like Ψ , C_s , Q , C_o , D , M , F_o , N , P , D_i , w_i , d_i , $(1+w)$, F_r , F_{rL} , and $(\log 2)^2$. The notes are somewhat messy and appear to be working out a derivation or calculation.

- Spitball - <https://www.spitball.co/>
- Rocketshoes - <https://rocketshoes.io/>
- Learning Machine - <https://www.learningmachine.com/>

Virtual and Augmented Reality

- Immersive storytelling and journalism
- Immersive simulations
- VR, AR being merged with AI to create open-ended experiences



- Emory Craig and Maya Georgieva - VR and AR: The Art of Immersive Storytelling and Journalism - <https://er.educause.edu/blogs/2018/2/vr-and-ar-the-art-of-immersive-storytelling-and-journalism>
- OISE - Virtual Reality in the Classroom - <https://guides.library.utoronto.ca/c.php?g=607624&p=4494048>
- Rob Marvin - How Unity Is Building its Future on AR, VR, and AI - <https://www.pcmag.com/feature/362057/how-unity-is-building-its-future-on-ar-vr-and-ai/1>

Brandon's WW1 internment camp

- “Players’ choices will affect their experiences in the camp and give them a chance to interact with a variety of people involved with or interned in the facility.”



www.internmentcanada.ca

- Brandon University - Grant will help faculty and students develop interactive virtual reality look at Brandon's WW1 internment camp - <https://www.brandonu.ca/news/2018/08/21/grant-will-help-faculty-and-students-develop-interactive-virtual-reality-look-at-brandons-ww1-internment-camp/>
- Internment Canada - <https://www.internmentcanada.ca/>

VR in eLearning: A Case Study On Safety Training

- “Would give the employees a realistic feel for the situation such as a fire emergency. ”
- “Employees can decide to fight the fire, but they must first find the fire extinguishers, water sprinklers, and fire alarms in their workplace...”



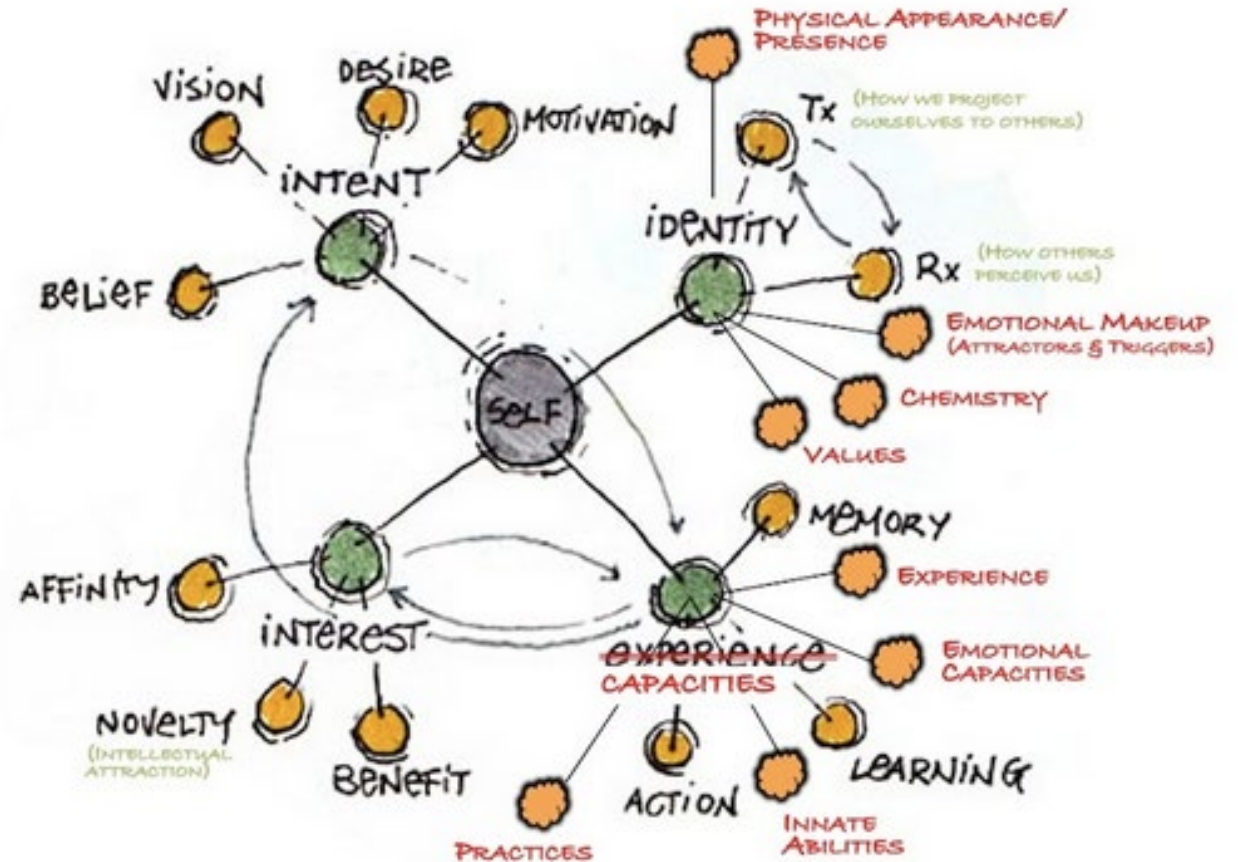
New Critical Literacies

- Working with Data
- Mastering cloud technologies
- Network competencies
 - Micro – as a node
 - Macro – pattern recognition



Community Network Development

- Identity management
- Rich data-informed learning resources
- Consensus-building and community formation



- Dave Pollard - A Model of Identity and Community - <https://www.resilience.org/stories/2013-08-21/a-model-of-identity-and-community/>
- https://el30.mooc.ca/course_outline.htm

Growth and Development

- Recognition – identifying, expanding and marketing one's skills and competencies
- Experience – active engagement, interacting with the world and others
- Agency – initiative, motivation, self-management



- Dave Pollard - A Model of Identity and Community - <https://www.resilience.org/stories/2013-08-21/a-model-of-identity-and-community/>
- https://el30.mooc.ca/course_outline.htm