Cross-disciplinary collaboration platform using MMORPG technology – Virtual museum of Art and modern history.

MMORPG技術を利用した学際的協働プラットフォームの構築例 ～バーチャル美術史・近代史博物館

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A collaboration platform for finding cross-disciplinary relations between Art, Science & Technology and Society

What is MMORPG?

"Massively Multiplayer Online Role-Playing Game"

Virtual World, VW（仮想空間）

- Second Life by Linden Lab
- OpenSimulator (open source)

  by Tokyo University of Information Technology
- Mind Craft

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1. Why does collaboration learning needs VW? (1/2)

Example Movie: https://youtu.be/bemoDmWJqIU

Unique benefits of Virtual World Education

- Interactive presentation and discussion with participants remotely
- Visualize contents and curate contexts in 3D space
- Multi-sensing immersive experiences.
- Discovery learning by collaboration
- Social skill challenge
- Special training and experiment
- Person to person counseling remotely.

Suitable not for systematic knowledge transfer but for experiential learning by collaboration.

1. Why does collaboration learning needs VW? (2/2)

Major collaborators and patrons*

- **Greg Perrier,** Northern Virginia Community College, USA
- **Natalie Nussli**, University of Applied Sciences and Arts Northwestern Switzerland
- **Arcadia Ashylum** (avatar name), USA
- **Draceina Pinion** (avatar name), Japan
- **Dugong Janus** (avatar name), Japan
- **Sweecahcahche Ah** (avatar name), UK
- **Sui Morita**, The Modern Museum, Japan
- **Jun Takamoto**, Abyss Observatory and The Modern Museum, Japan
- **Kichizaburo Hirota**, Japan Society for Archaeological Information
- **Kenneth T.Y. Lim***, National Institute of Education, Singapore
- **Phillip Youngblood*,** University of the Incarnate Word, USA
- **Chantal Snoek*,** The Science Circle, Netherlands
- **Fumikazu Iseki***, Tokyo University of Information Technology
- **Jabara Janing*** (avatar name), Jabara Land Estate, Japan

2. Cross-disciplinary portal of VW learning resources

Example Movie: https://youtu.be/DgoBBMHxZE4

2. Cross-disciplinary portal of VW learning resources

Academic Discipline (Wikipedia)

https://en.wikipedia.org/wiki/Outline_of_academic_disciplines

- Humanities: History, Languages, Literature, Philosophy, Professions (Arts, Religions, Architecture, etc.)
- Social sciences: Economics, Geography, Psychology, Sociology, etc. Professions (Archaeology, Education, Law, Library and information science, etc.)
- Natural sciences: Biology, Chemistry, Earth sciences, Physics, Space sciences, Professions (Agriculture, Engineering, Environmental studies, Medicine and health, etc.)
- Formal sciences: Logic, Pure mathematics, Professions (Applied mathematics, Computer science, Systems science)
- ~~Applied Sciences~~
- ~~Inter-disciplinary Sciences~~

3. Collaboration learning platform, Moodle and Constructivism

In distance education, we need non-real-time communication platform to help real-time VW education.

Moodle: Modular Object-Oriented Dynamic Learning Environment

ftp://isis.faces.ula.ve/Educ_Distancia/Moodle/Moodle_MartinDougiamas.pdf

- Free and open-Source software for Learning Management System
- Originated by Martin Dougiamas, et al, released in 2002

3. Collaboration learning platform, Moodle and Constructivism

Constructivism

•Jean Piaget (1896-1980)

•People construct their own understanding and knowledge of the world, through experiencing things and reflecting on those experiences (, not through copying existing knowledge).

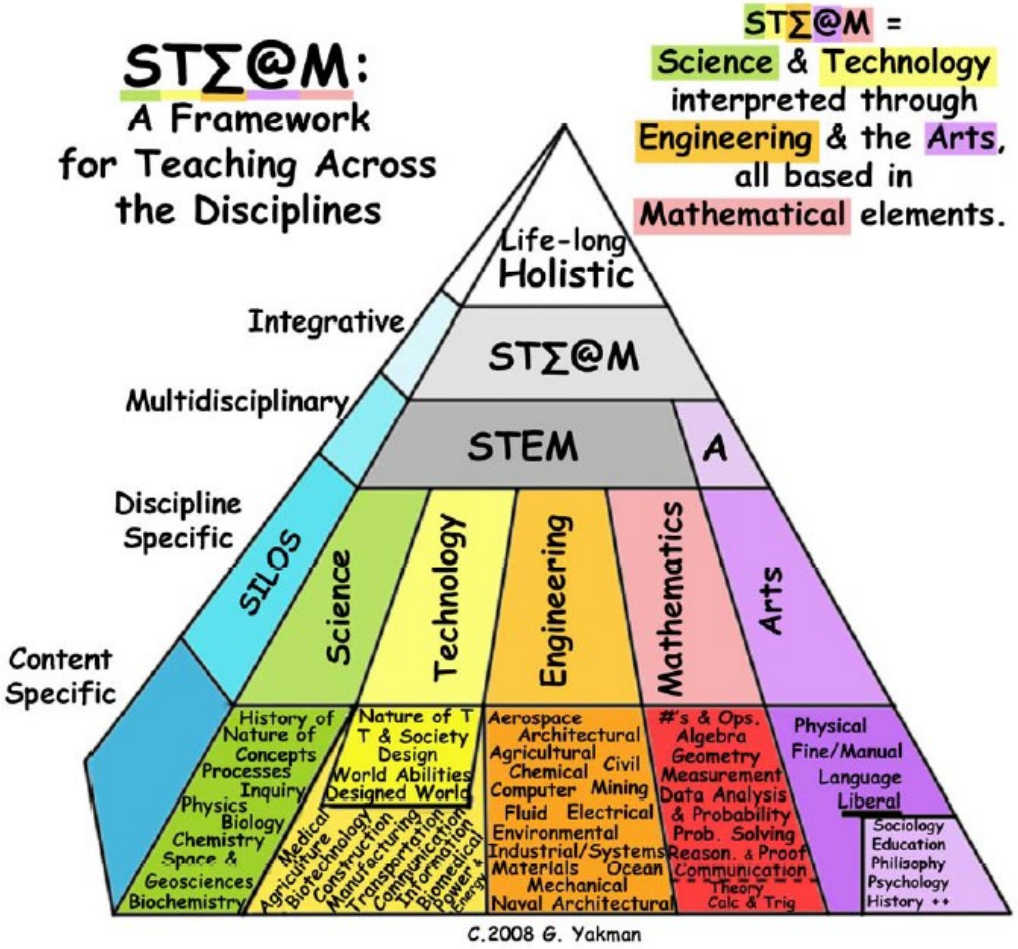
Moodle supports for constructivism;

- Distribution of learning materials, test and questionnaire
- Presentation by students, Discussion between students
- Project management by students
- Construction of knowledge portal and community portal

4. Cross-disciplinary movement, STEAM and Visualization(1/3)

STEM: Science, Technology, Engineering and Mathematics

STEAM: Science, Technology, Engineering, Art and Mathematics



4. Cross-disciplinary movement, STEAM and Visualization(2/3)

Yakman's papers

1) Georgette Yakman·Lee, Hyonyong, **Exploring the Exemplary STEAM Education in the U.S. as a Practical Educational Framework for Korea**, J Korea Assoc. Sci. Edu, Vol. 32, No. 6, pp. 1072-1086(2012. 8)

2) Georgette Yakman, **What is the point of STE@M? – A Brief Overview.** (2010) https://www.academia.edu/8113832/What_is_the_Point_of_STEAM_A_Brief_Overview_of_STEAM_Education

3) Georgette 'george' Yakman, **STΣ@M Education: an overview of creating a model of integrative education**. (2008) https://www.academia.edu/8113795/STEAM_Education_an_overview_of_creating_a_model_of_integrative_education

4. Cross-disciplinary movement, STEAM and Visualization(3/3)

Key points of Yakman's papers (next sheet)

•STEAM is a way to teach how all things relate to each other, in school and in life. It's more fun than traditional learning styles and makes more sense to all types of learners because it is based on the natural ways that people learn and are interested in things.

• Develop deeper understanding of content, process, and characteristics of science through 'Creative Design' and 'Emotional Learning'.

•Students need a literacy of a breadth of the primary disciplines which would include an ability to transfer knowledge with higher order thinking between disciplines, or to use my term, students need to obtain a *functional literacy*.

•"the easier it is to engage other subjects, due to factors like common language, the easier it is for students to realize how to apply knowledge from one curriculum to another." (Huber & Morrale, 2002, p. 2).

Question

•Is Art only an assistant roll for learning science? (Visualization of Idea)

5. Example: Museum of Art and Modern History (1/3)

Example Movie: https://youtu.be/7rNqlMh1ON4

Curated by Hajime Nishimura and Sui Morita
At “STEM Island” of University of the Incarnate Word, USA

5. Example: Museum of Art and Modern History (2/3)

•Collaboration platform for finding cross-disciplinary relations between Paintings, Architecture, Literature, Music, Invention of Science & Technology, Social events, etc. in modern history.

•Arrange panels of major Art works and events in 3D space. Altitude of panels are corresponding with their published years.

•Motivation: Finding synchronicity of birthday of Einstein (1879-1955), Picasso (1881-1973) and Stravinsky (1882-1971) who are initiators of strange physics, paintings and music.

5. Example: Museum of Art and Modern History (3/3)

Example Movie: https://youtu.be/s5EFL-V52Aw

Jun Takamoto developed above idea and introduced second axis in addition with altitude/ year axis.

•Second axis shows;

- "**Renaissance and Classicism**" vs. "**Mannerism and Baroque**" (by Heinrich Wölfflin and Gustav René Hocke)

- "**Geometric, planar, static and less-diversified Art**" vs. "**Non-geometric, Stereoscopic, dynamic and diversified Art** "

- "**Agricultural culture**" " vs. "**Hunting culture**"

- "**Logical Art**" vs. "**Emotional Art**"

- "**Symbolic/ deformed** (Feature extraction)" vs. "**Photo realistic**"

- "**Sophisticated expression**" vs. "**Excessive expression**"

6. Strategy of cross-disciplinary collaboration (platform for open science)

Each discipline side;

•Release data and achievements in common language (including visualization).

•Structuralize achievements based on each community's discipline

Data portal side;

•Develop data portal as a collaboration platform which data are structuralized and documented in common language.

•Provide the platform for developing new-discipline through cross-disciplinary collaboration

Thank you!