Qualitative Criteria for Physical Learning Environments in Higher Education
- a Multiple-Case Study in Aalto University
History of Car

2013 Lamborghini Ferrucio
History of Animation

Mickey Mouse 1928

The Adventures of Tintin 2011
History of Class Room

Medieval class room

2012 class room
Is Class Room Concept like Chopstick Concept?

Han Dynasty chopsticks, Flickr photo

Sticks 2010 (á la mode blog)
Learning Environment Framework

Who is learning? (status)

- Student
  - Undergraduate / postgraduate
- Employee
  - Academic

What is learnt? (subject)

- Existing subject
  - Knowledge sharing
- New knowledge
  - Knowledge creation

How is something learnt? (where, in which manner, when)

- Physically
  - Individually / socially
  - Informally / formally
  - Scheduled, self-selected, flexible
- Virtually
  - Individually / socially
  - Informally / formally
  - Scheduled, self-selected, flexible

Needs

- Target learners
  - Value proposition
  - Communication

Disciplines and Services

- The idea of learning
  - Core subjects
  - Supportive services

Co-Operation relations

- Network structure
  - Processes and Resources
    - Parties
    - Mutual goals
    - Involvement

Added value of learning environment

- What are the learners’ needs?
- How is knowledge captured?
- How are the learners’ needs satisfied?
- What supportive services are needed?
- How is knowledge created?
- Core learning processes?
  - Needed resources?
- Who are involved?
- Community’s goals vs. individuals’ goals?
- How often do the parties meet?
  - In which levels?

Aalto University
School of Engineering
Learning Environment Framework

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Disciplines and Services

Added value of learning environment

Value proposition
Communication

What are the learners’ needs?
How does the network communicate with the learner?

Core subjects
Supportive services

How are the learners’ needs satisfied?
What supportive services are needed?

Network structure
Processes and Resources
Nature and quality of relations
Mutual goals
Involvement

Core learning processes? Needed resources?
Who are involved?
Community’s goals vs. individuals’ goals?
How often do the parties meet? In which levels?

How is knowledge captured?
How is knowledge created?
How is knowledge distributed?

Aalto University
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Hierarchy of Needs

(Maslow, 1954)
Well-being

(Ryan and Deci, 2001)
# Learning Environment Framework

## Needs

### Who is learning? (status)
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### Disciplines and Services

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## Added value of learning environment

### Core learning processes?
- Needed resources?
- Who are involved?
- Community’s goals vs. individuals’ goals?
- How often do the parties meet? In which levels?

### How is knowledge captured?
- What are the learners’ needs?
- How does the network communicate with the learner?

### How is knowledge created?
- How are the learners’ needs satisfied?
- What supportive services are needed?

### How is knowledge distributed?
- What is the idea of learning?
- Core subjects
  - Supportive services
Thinking, Feeling, Reflecting and Acting as Properties of Learning

“From the back to the front of the brain, we move from the recent past to future, what's there? (sensory), what do I care? (temporal, limbic), what do I do about it? (motor, frontal).”

(M. D. Bownds, “The "I" Illusion”, Mind Blog)

(McGill University, Faculty of Medicine)
Experimental Learning Cycle

(Kolb, 1984, 2009)
Some other Models

Ba-Concept
- Nonaka and Konno, 1998
- An organizational knowledge creation process/model (SECI) in a context called *Ba*.

Cycle of Expanding Learning
- Engeström, 1987; Virkkunen et al., 2001
- A cycle of expansive learning, change laboratory.

Explorative Learning Method
- Hakkarainen, Lonka and Lipponen, 2004
- Pedagogic approach
Learning Process

Feeling
BRAINSTORMING
Sharing experiences

Critiquing
Feedbacking

Informing
Stimulating

Recreation
Engagement

Systemization
Assimilation

Acting
Testing, Demonstrating

Clarifying
Reflecting

Practicing
Conceptualizing

Thinking

Social Hub

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School of Engineering
Learning Environment Framework

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Disciplines and Services
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Added value of learning environment
- Target learners
  - Value proposition
  - Communication

- What are the learners’ needs?
  - How does the network communicate with the learner?

- How are the learners’ needs satisfied?
  - What supportive services are needed?

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  - Needed resources?
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- Community’s goals vs. individuals’ goals?
- How often do the parties meet?
- In which levels?

Co-operation relations
- Network structure
- Processes and Resources
- Parties
- Nature and quality of relations
- Mutual goals
- Involvement

How is knowledge captured?
How is knowledge created?
How is knowledge distributed?
Framework for designing an enabling context in Knowledge Management

(Choo & Alvarenga Neto (2010))
Framework for designing an enabling context in Knowledge Management

(Choo & Alvarenga Neto (2010))
Cognitive vs. autopoietic epistemology

(Koskinen 2004; modified from von Krogh & Roos, 1995)
# Learning Environment Framework

<table>
<thead>
<tr>
<th><strong>Who is learning?</strong> (status)</th>
<th><strong>Added value of learning environment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
<td>What are the learners’ needs?</td>
</tr>
<tr>
<td>Undergraduate / postgraduate</td>
<td>How is knowledge captured?</td>
</tr>
<tr>
<td>Employee</td>
<td>How does the network communicate with the learner?</td>
</tr>
<tr>
<td>Academic</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>What is learnt?</strong> (subject)</th>
<th><strong>How is knowledge created?</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing subject</td>
<td>How are the learners’ needs satisfied?</td>
</tr>
<tr>
<td>Knowledge sharing</td>
<td></td>
</tr>
<tr>
<td>New knowledge</td>
<td></td>
</tr>
<tr>
<td>Knowledge creation</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>How is something learnt?</strong> (where, in which manner, when)</th>
<th><strong>How is knowledge distributed?</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physically</td>
<td>Core learning processes?</td>
</tr>
<tr>
<td>Individually / socially</td>
<td>Needed resources?</td>
</tr>
<tr>
<td>Informally / formally</td>
<td>Who are involved?</td>
</tr>
<tr>
<td>Scheduled, self-selected, flexible</td>
<td>Community’s goals vs. individuals’ goals?</td>
</tr>
<tr>
<td>Virtually</td>
<td>How often do the parties meet?</td>
</tr>
<tr>
<td>Individually / socially</td>
<td>In which levels?</td>
</tr>
<tr>
<td>Informally / formally</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th><strong>Disciplines and Services</strong></th>
<th><strong>Target learners</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The idea of learning</td>
<td>Target learners</td>
</tr>
<tr>
<td>Core subjects</td>
<td>Value proposition</td>
</tr>
<tr>
<td>Supportive services</td>
<td>Communication</td>
</tr>
</tbody>
</table>
Balancing conditions:
Social / Behavioural conditions
Balancing conditions:
Social / Behavioural conditions
Research scope: Learning Community

- Organisation
- Community
- Network
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School of Engineering
Messy?

Learning Process

Enabling Conditions

Information Flow
The selected cases

- Department of Finance
- Department of Civil and Environmental Engineering
- Department of Motion Picture, Television and Production Design and Lume
- Design Factory
Learning modes: Engagement.

Learning functions

<table>
<thead>
<tr>
<th>Activity</th>
<th>Brainstorming, Sharing experiences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Informing, Stimulating</td>
</tr>
<tr>
<td></td>
<td>Clarifying</td>
</tr>
</tbody>
</table>

Atmosphere

Formal - Informal

Group size / relatedness level

Anything possible. Increased formality when larger groups/teams.

Archetypical places

<table>
<thead>
<tr>
<th>Space</th>
<th>Artefact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture Room</td>
<td>Smartboard Documentary Post</td>
</tr>
<tr>
<td>(Web-)TV Blog</td>
<td></td>
</tr>
</tbody>
</table>

Physical Virtual Social

[Diagram showing engagement and related activities]

Aalto University School of Engineering
Best practice examples in balanced learning environment: Engagement.

• Design Factory
  – Stage
  – Studio
  – Kino
  – Diverse meeting rooms, e.g. Engine room, Birch
Best practice examples in balanced learning environment: Engagement.

- Chydenia, Töölö / Department of Finance
  - 5th floor meeting room
  - 3rd floor banqueting hall
  - 1st floor teaching classes
Learning modes: Assimilation.

<table>
<thead>
<tr>
<th>Learning functions</th>
<th>Activity</th>
<th>Atmosphere</th>
<th>Group size / relatedness level</th>
<th>Archetypical places</th>
<th>Space</th>
<th>Artefact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Clarifying</td>
<td>Informal - Formal</td>
<td>Tendency towards small sizes</td>
<td>Physical</td>
<td>Library</td>
<td>Book</td>
</tr>
<tr>
<td></td>
<td>Conceptualizing</td>
<td></td>
<td>/ private working. Absorbed</td>
<td>Virtual</td>
<td>Database</td>
<td>Journal Article</td>
</tr>
<tr>
<td></td>
<td>Practicing</td>
<td></td>
<td>ambience required.</td>
<td>Social</td>
<td>Open encyclo-pedia</td>
<td>Wikipedia</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Book club</td>
<td>Review report</td>
</tr>
</tbody>
</table>
Best practice examples in balanced learning environment: Assimilation.

- Department of Civil and Environmental Engineering (Raksa)
  - Library
  - Team work rooms
  - Open areas
    - Corridors and lobbies around 1st floor student guild room, library and team work rooms
    - 2nd floor open working space and lobby
## Learning modes: Systemization

### Learning functions

<table>
<thead>
<tr>
<th>Activity</th>
<th>Practicing</th>
<th>Producing</th>
<th>Testing, demonstrating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atmosphere</td>
<td>Formal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group size / relatedness level</td>
<td>Anything possible. Protocols and objectives determine working methods.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Archetypical places

<table>
<thead>
<tr>
<th>Physical</th>
<th>Virtual</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>Space</td>
<td>Artefact</td>
<td></td>
</tr>
<tr>
<td>Laboratory</td>
<td>Software</td>
<td>Banqueting Hall</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stethoscope Spreadsheet Silk Hat</td>
</tr>
</tbody>
</table>

![Diagram](image-url)
Best practice examples in balanced learning environment: Systemization.

- Lume and Department of Motion Picture, Television and Production Design (Elo) Arabia
  - Lume spaces around the building
  - Computer rooms
Learning modes: Recreation.

### Learning functions

<table>
<thead>
<tr>
<th>Activity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Testing, demonstrating</td>
<td></td>
</tr>
<tr>
<td>Critiquing, feedbacking</td>
<td></td>
</tr>
<tr>
<td>Brainstorming, sharing experiences</td>
<td></td>
</tr>
</tbody>
</table>

| Atmosphere          | Informal - Formal    |

| Group size / relatedness level | Anything possible, however tendency towards small group sizes. Respectful ambience and “out-of-the-box” approach required. |

<table>
<thead>
<tr>
<th>Archetypical places</th>
<th>Space</th>
<th>Artefact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical</td>
<td>Innovation Laboratory Discussion Forum Gallery Space</td>
<td>Prototype Message Work of Art</td>
</tr>
<tr>
<td>Virtual</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

![Diagram showing learning modes and related activities](image)
Best practice examples in balanced learning environment: Recreation.

- **Design Factory**
  - Informal meeting rooms
  - Puuhamaa-concept (“Pottering land”)
- **Arabia / Finance**
  - Office-rooms’ white-board-brainstorming areas
# Learning modes: Social Hub.

## Social functions

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>No obligation into learning based activities. Coincidental learning, serendipity.</td>
<td></td>
</tr>
<tr>
<td>Services, e.g. healthcare, restaurants, cafés, student counselling, porters.</td>
<td></td>
</tr>
<tr>
<td>Breakout</td>
<td></td>
</tr>
<tr>
<td>Sport</td>
<td></td>
</tr>
<tr>
<td>Events, parties</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Atmosphere</th>
<th>Informal (- Formal)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Group size / relatedness level</th>
<th>Anything possible, activity based.</th>
</tr>
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</table>

<table>
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<tr>
<th>Archetypical places</th>
<th>Space</th>
<th>Artefact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Virtual Social</td>
<td>Lounge Virtual world Social media</td>
<td>Sofa Second Life Facebook</td>
</tr>
</tbody>
</table>
Best practice examples in balanced learning environment: Social hub.

- DF
  - Informal meeting places
  - Kafis
- Raksa
  - Coffee rooms and students’ guild room
    - However strong segregation
  - Sauna and sauna-lounge
MARILLE ♡ ♡
OLET TOIMISSONE
RUNAINEN ROUSO ♡
JA ALYSI VÄLKKYY
KOIN TAIJAAN TARJOI?
TI HERIA X

Fridge will be emptied on Mondays!
Learning modes: Ma-spaces.

### Social functions

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<tbody>
<tr>
<td>Orientation for the upcoming learning activity</td>
<td></td>
</tr>
<tr>
<td>Conversations before and after learning activity</td>
<td></td>
</tr>
<tr>
<td>Waiting</td>
<td></td>
</tr>
<tr>
<td>Passaging</td>
<td></td>
</tr>
<tr>
<td>Coincidential meeting (serendipity)</td>
<td></td>
</tr>
<tr>
<td>Notifying</td>
<td></td>
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<table>
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<table>
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<tr>
<th>Group size / relatedness level</th>
<th>Anything possible, activity/space- design based. Space-design can be versatile and in consequence versatile activity can be enabled.</th>
</tr>
</thead>
</table>

### Physical settings

- Corridors, entrance halls, lobbies, passages, lifts, staircases and touch down sets.
- E.g. seating sets, benches, stand up computers, plug-in sets, stand up bars, notice boards, demonstrations, enquiry stands.

### Archetypical places

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<td>Corridor</td>
<td>Door</td>
</tr>
<tr>
<td>Virtual</td>
<td>Webpage’s front page</td>
<td>Menu bar</td>
</tr>
<tr>
<td>Social</td>
<td>Information desk</td>
<td>Sign</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Best practice examples in balanced learning environment: Ma-spaces.

- Elo and Lume
  - Corridor galleries (recreation), noticeboards, dressing rooms, staircases, etc..
  - Thousands of stories.
Enabling conditions: Social / Behavioural conditions

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Competence</th>
<th>Encouragement</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unique and context-dependent. Focused on outputs or organisation.</td>
<td>Resources (efficient methods, equipment and spaces)</td>
<td>Opportunities provided, exceptional attention</td>
<td>Support provided for learners to enhance their progress in personal or mutual learning processes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Competition</th>
<th>Relaxation</th>
<th>Autonomy</th>
<th>Hierarchy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unique, context-dependent. Directed towards outputs.</td>
<td>Welcoming spaces that are either inspiring or calming</td>
<td>Possibilities of individuals and learning groups to control their own learning process</td>
<td>Possibilities of community members to access and share knowledge or information as well as to influence their tasks and environment</td>
</tr>
</tbody>
</table>
Future of Learning Environment?
My suggestions

- varied learning settings

(Gee, 2006)
My suggestions

- varied learning settings
- open design

(Gee, 2006)
My suggestions

- varied learning settings
- open design
- neutral zones

(Gee, 2006)
My suggestions

- varied learning settings
- open design
- neutral zones
- human scale

(Gee, 2006)
My suggestions

- varied learning settings
- open design
- neutral zones
- human scale
- places that assist unintended encounters

(Gee, 2006)
My suggestions

• varied learning settings
• open design
• neutral zones
• human scale
• places that assist unintended encounters
• freedom of expression and frank communication

(Gee, 2006)
My suggestions

- varied learning settings
- open design
- neutral zones
- human scale
- places that assist unintended encounters
- freedom of expression and frank communication
- caring support

(Gee, 2006)
Questions?