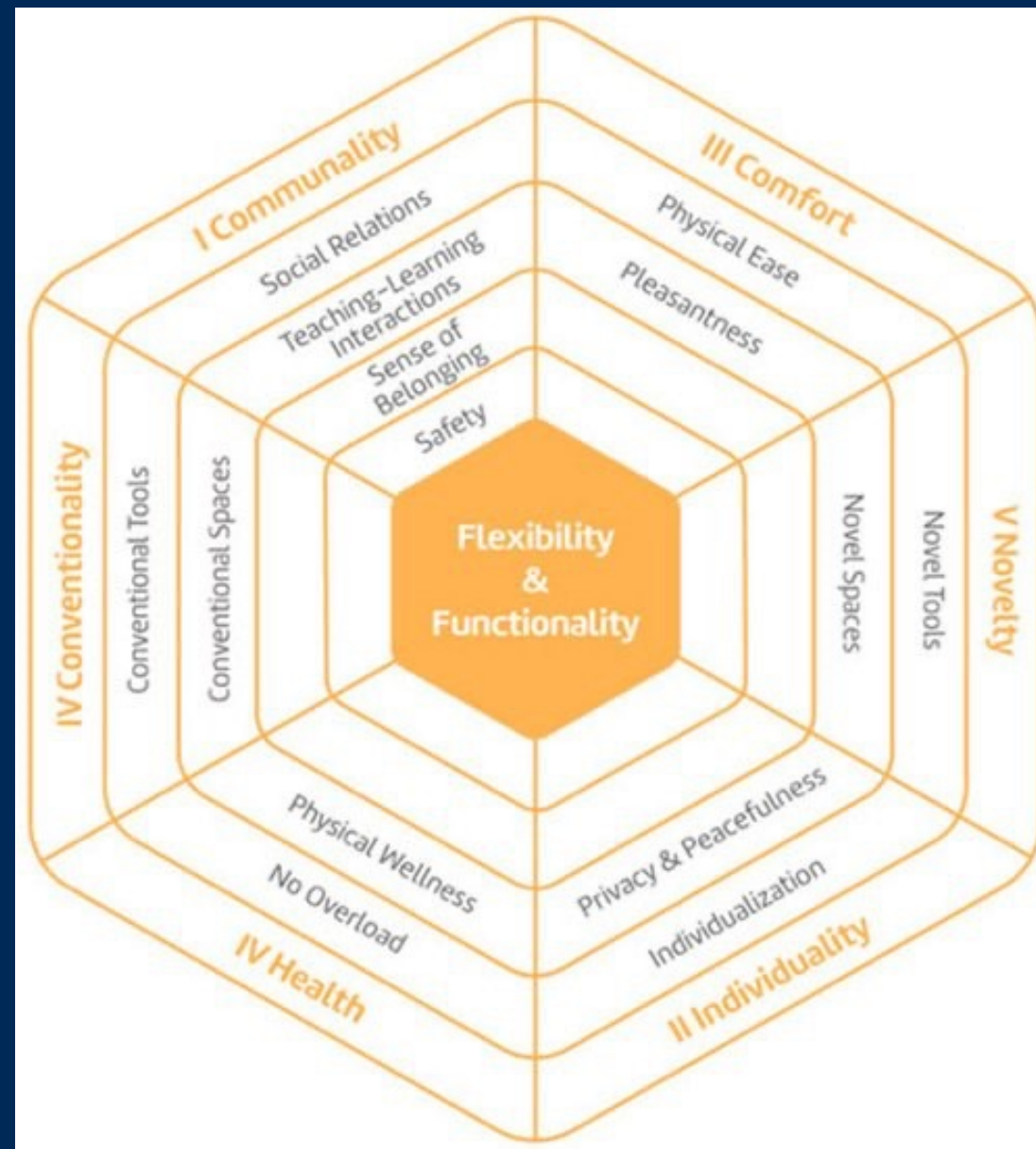JYVÄSKYLÄN YLIOPISTO
UNIVERSITY OF JYVÄSKYLÄ

FRAMEWORK FOR CO-DESIGNING ENVIRONMENTS CONDUCIVE TO LEARNING AND WELLBEING

Tiina Mäkelä (PhD),

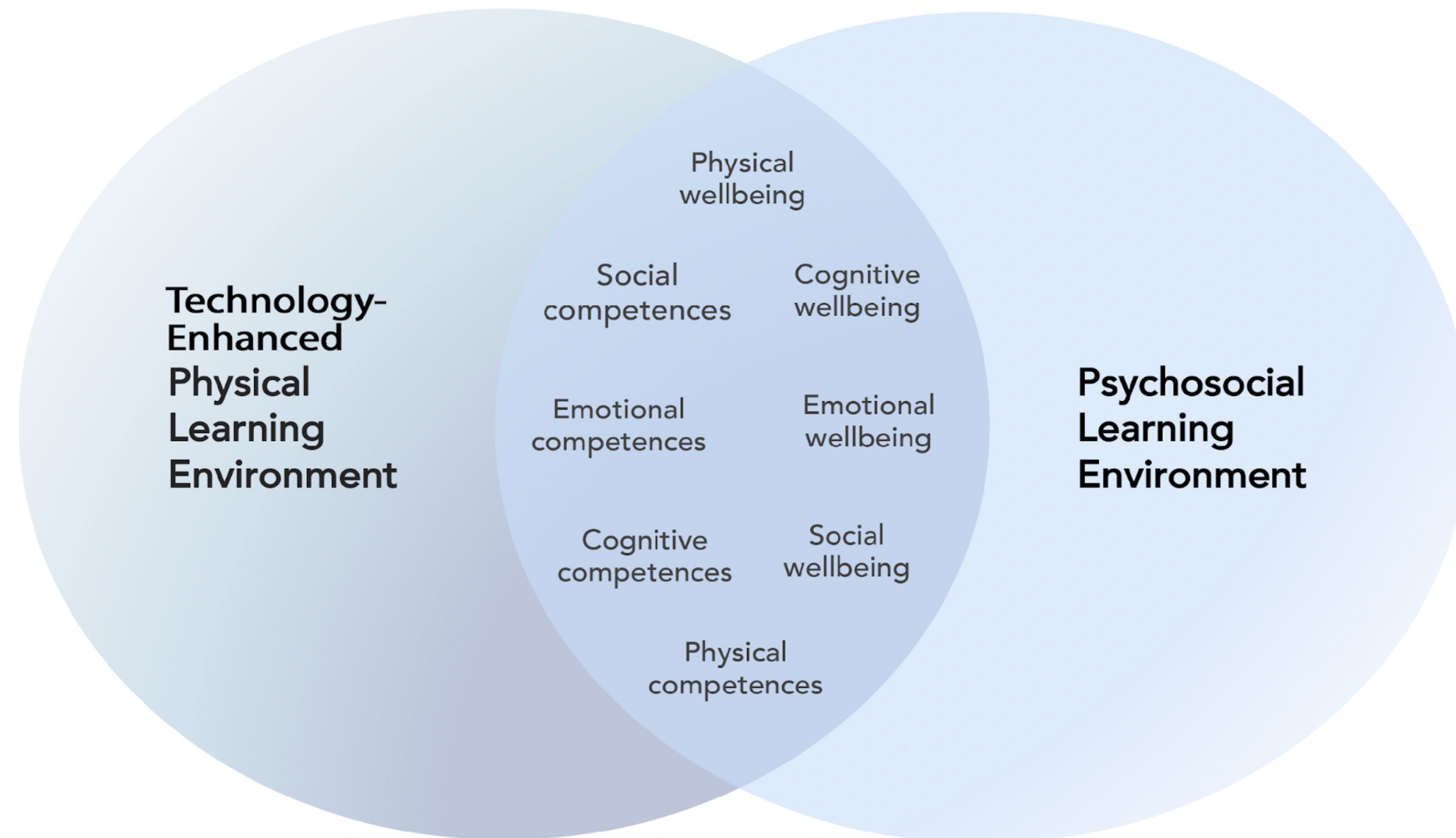Innovative Learning Environments research group

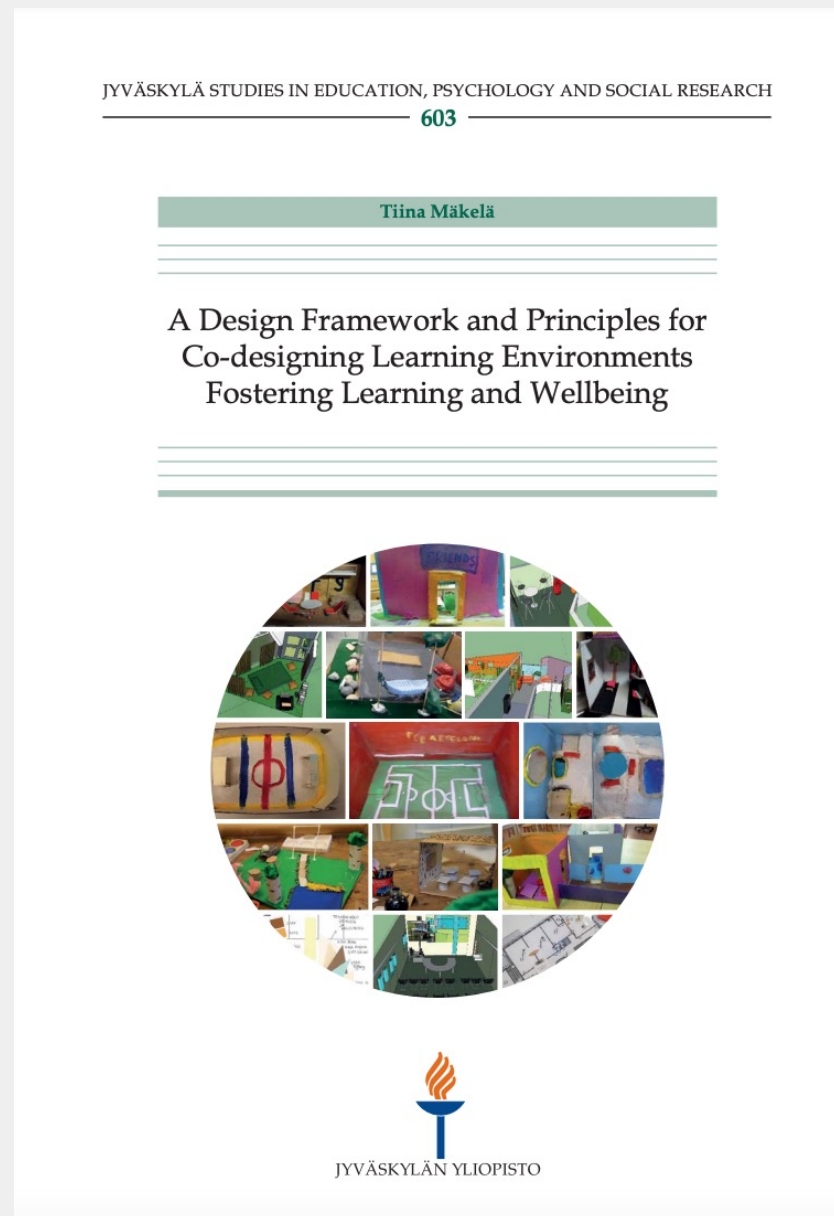Finnish Institute for Educational Research, University of Jyväskylä

Visualisation of the LED framework by Iconograph

Part I: Introduction to Learning Environment Design (LED) framework
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Part V: Flexibility and functionality

Defining learning environments

Technology-Enhanced Physical Learning Environment

Physical wellbeing

Social competences

Cognitive wellbeing

Emotional competences

Emotional wellbeing

Cognitive competences

Social wellbeing

Physical competences

Psychosocial Learning Environment

Mäkelä 2018

The LED framework version 1

JYVÄSKYLÄ STUDIES IN EDUCATION, PSYCHOLOGY AND SOCIAL RESEARCH

603

Tiina Mäkelä

A Design Framework and Principles for Co-designing Learning Environments Fostering Learning and Wellbeing

JYVÄSKYLÄN YLIOPISTO

Design Framework and Principles for Learning Environment Co-Design: Synthesis from Literature and Three Empirical Studies

by Tiina Mäkelä [1,*] and Teemu Leinonen [2]

1   Finnish Institute for Educational Research, University of Jyväskylä, P.O. Box 35, FI-40014 University of Jyväskylä, Finland

2   School of Arts, Design and Architecture, Aalto University, P.O. Box 11000, FI-00076 Aalto, Finland

*   Author to whom correspondence should be addressed.

(This article belongs to the Special Issue Learning Environment Design and Use)

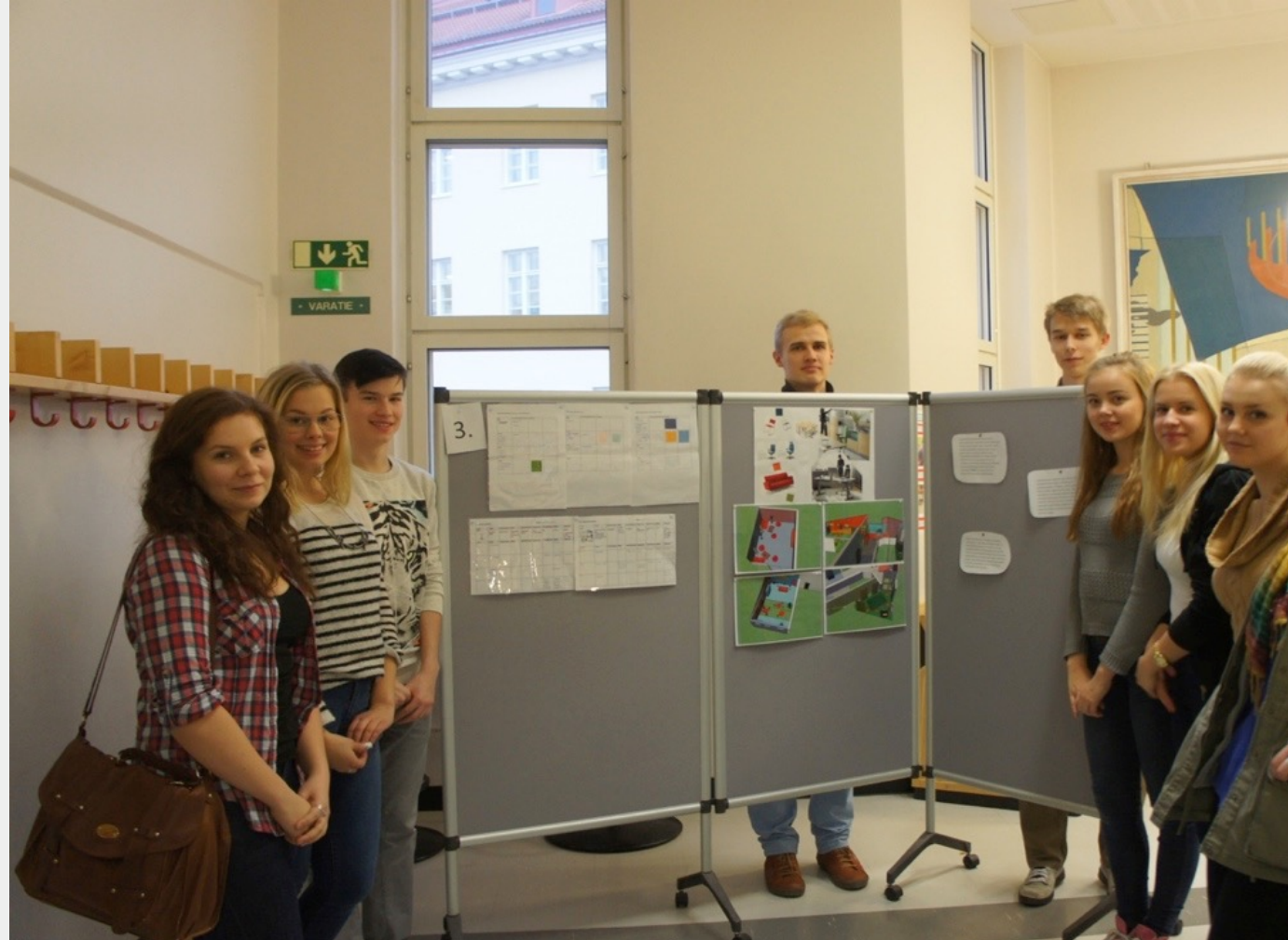View Full-Text   Download PDF   Browse Figures   Citation Export

Mäkelä, T. (2018). A design framework and principles for co-designing learning environments fostering learning and wellbeing. Jyväskylä, Finland: University of Jyväskylä. Jyväskylä studies in education, psychology and social research, 603. http://urn.fi/URN:ISBN:978-951-39-7332-2

Mäkelä, T., & Leinonen, T. (2021). Design Framework and Principles for Learning Environment Co-Design: Synthesis from Literature and Three Empirical Studies. Buildings, 11(12), 581. http://dx.doi.org/10.3390/buildings11120581
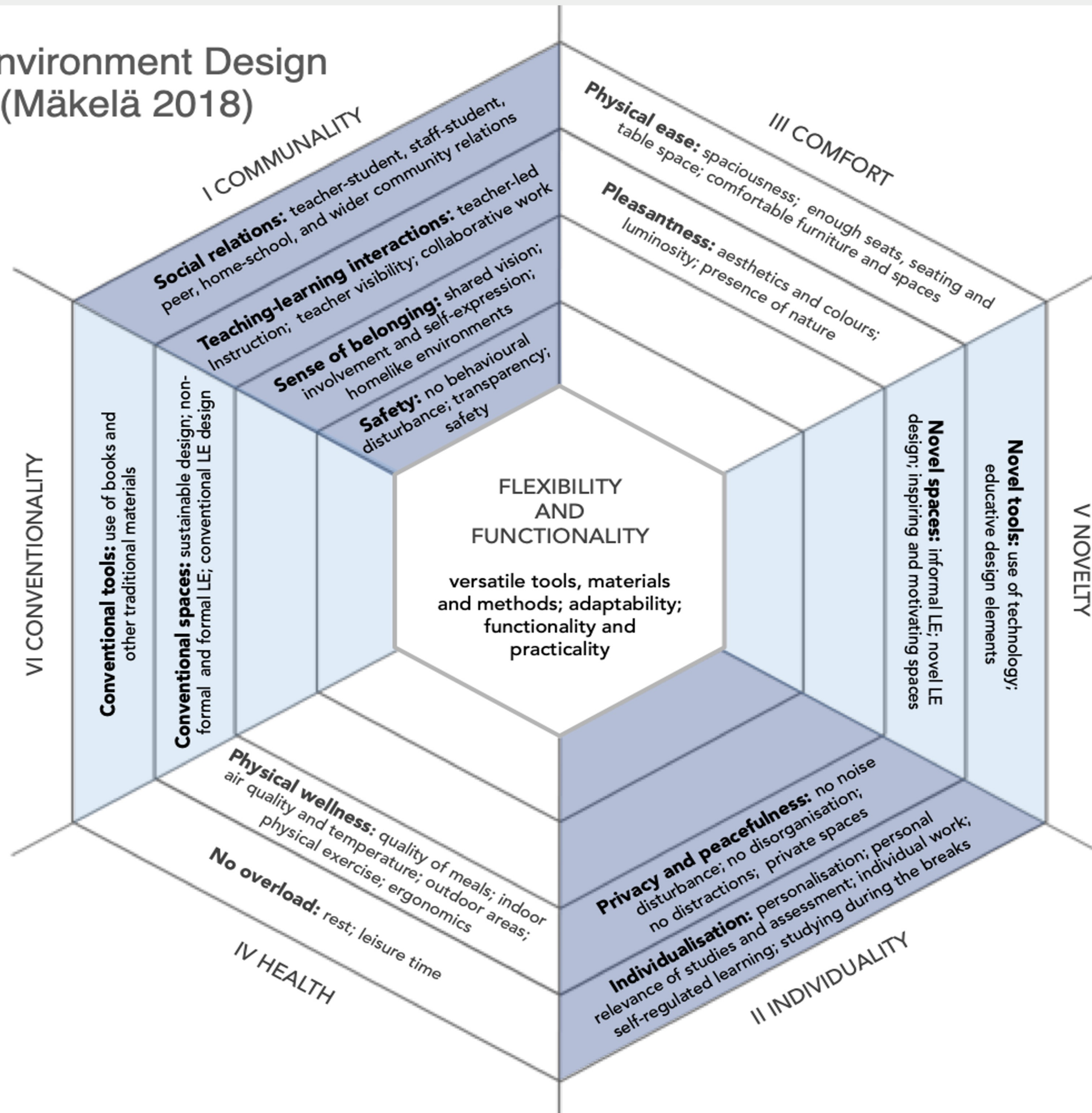
Learner perception:

LED framework V1 was based on research literature and empirical studies involving learners' in the LE design:

- Survey collecting learners' perspections
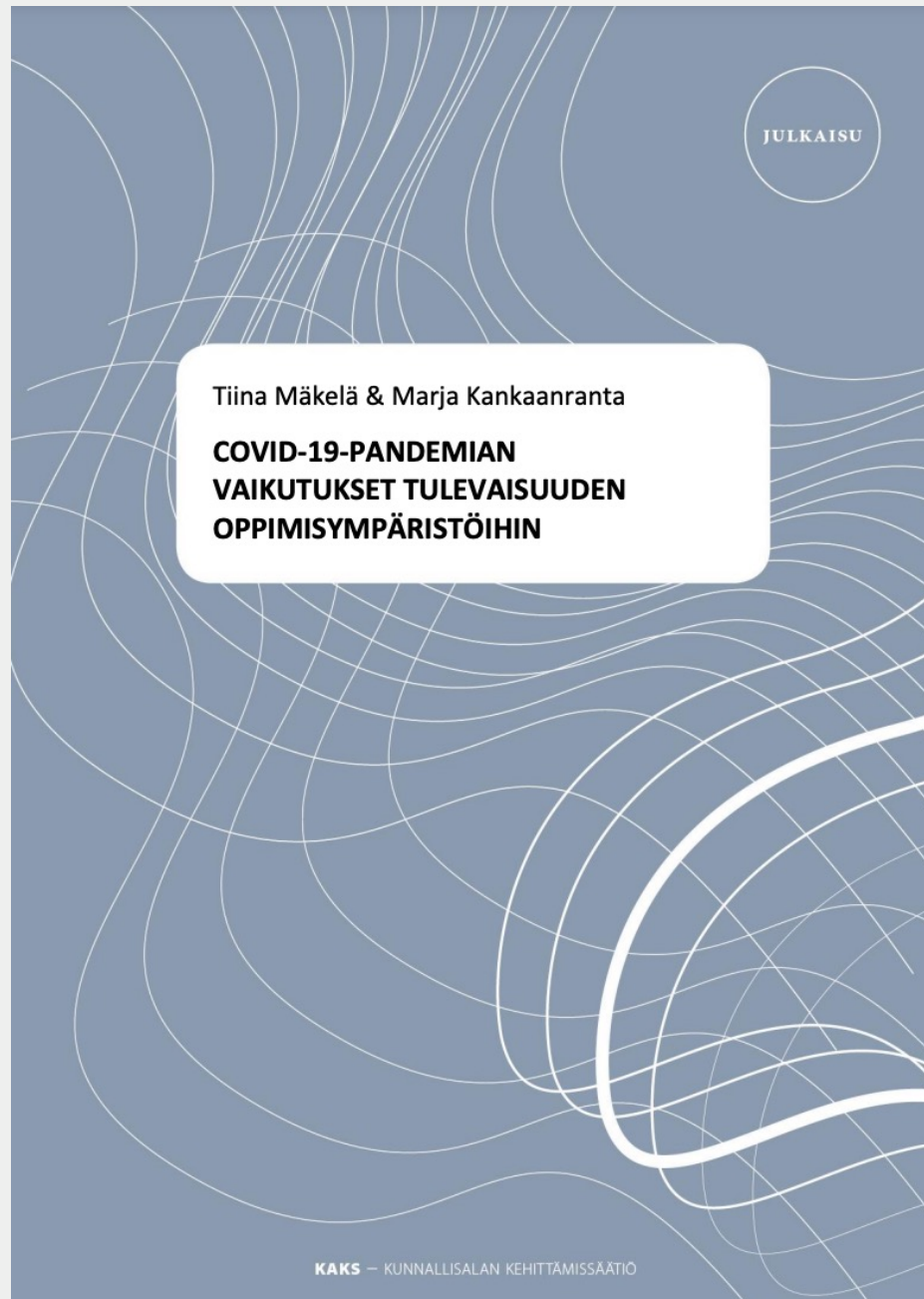
- Co-design workshops

Photos: University of Jyväskylä Teacher Training school archives

Learning Environment Design framework (Mäkelä 2018)

Need for updating the framework

Tiina Mäkelä & Marja Kankaanranta

COVID-19-PANDEMIAN VAIKUTUKSET TULEVAISUUDEN OPPIMISYMPÄRISTÖIHIN

JULKAISU

KAKS – KUNNALLISALAN KEHITTÄMISSÄÄTIÖ

- Need to consider better teachers' perspective

- Blended/hybrid LEs: combining onsite (at educational institution) and online (e.g., at home) teaching and learning

- Other LE requirements that COVID-19 pandemic brought into light.

- **Expert review:** Ten Finnish experts reviewed the framework/related questionnaire items.

  - Expertise on all educational levels from early childhood to higher education (researchers, architects, school directors, teachers, administrators, consultants)

Impacts of COVID-19 pandemic on future learning environments:
Mäkelä, T., & Kankaanranta, M. (2021). COVID-19 pandemian vaikutukset tulevaisuuden oppimisympäristöihin. Kunnallisalan kehittämissäätiön julkaisu, 42.
NOTE: Currently published only in Finnish. Finnish publication entails, however, a good list of references in English related to this topic: https://kaks.fi/wp-content/uploads/2021/05/42_covid-19-pandemian-vaikutukset-tulevaisuuden-oppimisymparistoihin.pdf

Learning environment design (LED) -survey

- Created based on the framework and its seven LE constructs, 16 subthemes and 89 characteristics fostering teaching-learning processes and wellbeing

- Both closed and open-ended questions to collect teachers' and learners' perceptions of

  (a) the importance of each LE characteristic (Likert scale 1-5),

  (b) how well they are considered in their actual LE (Likert scale 1-5), and

  (c) how they could be better considered in their LEs (open-ended questions).

	1 Täysin eri mieltä	2 Eri mieltä	3 Ei samaa eikä eri mieltä	4 Samaa mieltä	5 Täysin samaa mieltä
Opettajajohtoinen opetus on tärkeää.	◯	◯	◯	◯	◯
Nykyinen ympäristö tukee opettajajohtoista opetusta. *Esim. mahdollisuudet opettajajohtoiseen opetukseen; opettajan pöytä ja liitutaulu tai sähköinen taulu luokan edessä; sopiva katseluetäisyys esitystekniikkaan; (video)luennot ilman vuorovaikutusta.*	◯	◯	◯	◯	◯

LED-survey

- Currently data from

  - teachers (n = 150) representing early childhood (n = 36), primary (n = 37) and secondary (n = 77) education: *similarities and diffferences between educational levels*

  - high school teachers (n = 176) and students (n = 1189): *similarities and differences between teachers and students*

  - high school teachers (n = 16) before and after employing new school spaces: *experienced improvement*

> **Research-based principles for designing learning environments conducive to learning and wellbeing**

RELATED PUBLICATIONS

Mäkelä, T., & Leinonen, T. (2021).Design Framework and Principles for Learning Environment Co-Design: Synthesis from Literature and Three Empirical StudieS. *Buildings 11*, (12), 581.

Mäkelä, T., & Kankaanranta, M. (2021). COVID-19 pandemian vaikutukset tulevaisuuden oppimisympäristöihin. *Kunnallisalan kehittämissäätiön julkaisu, 42*.

Mäkelä, T. (2019). Suunnitteluviitekehys ja periaatteita oppimista ja hyvinvointia edistävien oppimisympäristöjen yhteissuunnitteluun. Oppimisen ja oppimisvaikeuksien erityislehti : NMI-bulletin, 29 (1), 10-18.

Mäkelä, T. (2018). A Design Framework and Principles for Co-designing Learning   Environments Fostering Learning and Wellbeing. Learning by design, 27 (Supplement: Dialogues 02), 10-11.

Mäkelä, T. (2018). A design framework and principles for co-designing learning environments fostering learning and wellbeing. Jyväskylä, Finland: University of Jyväskylä. Jyväskylä studies in education, psychology and social research, 603.

Mäkelä, T., Helfenstein, S., Lerkkanen, M.-K., & Poikkeus, A.-M. (2018). Student   participation in learning environment improvemenT: analysis of a co-design project in a Finnish upper secondary school. Learning Environments Research, 21 (1), 19-41.

Mäkelä, T. & Helfenstein, S. (2016). Developing a Conceptual Framework for Participatory Design of Psychosocial and Physical Learning Environments. Learning Environments Research,   19(3), 411-440.

Mäkelä, T., Lundström, A., & Mikkonen, I. (2015). Oppimistilojen yhteissuunnittelua: opiskelijat aktiivisina osallistujina. (Co-designing learning spaces: Students as active participants) In S. Nenonen, S. Kärnä, J.-M. Junnonen, S. Tähtinen, & N. Sandström (Eds.), Oppiva kampus: how to co-create campus? (pp. 272-287). Tampere, Finland: Suomen Yliopistokiinteistöt.

Mäkelä, T., Kankaanranta, M., & Gallagher, C. (2014). "Involving students in the redesing of learning environments conducive to learning and wellbeing", Proceedings of the 6th Annual Architectural Research Symposium in Finland, 23.-25.10.2014, Oulu , 268-281.

Mäkelä, T., Kankaanranta, M. & Helfenstein, S. (2014). Considering Learners' Perceptions in Designing Effective 21st Century Learning Environments for Basic Education in Finland. The International Journal of Educational Organization and Leadership, 20 (3), 1-13.

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https://www.jyu.fi/it/en/research/research-areas/cognitive-science-and-educational-technology/ile
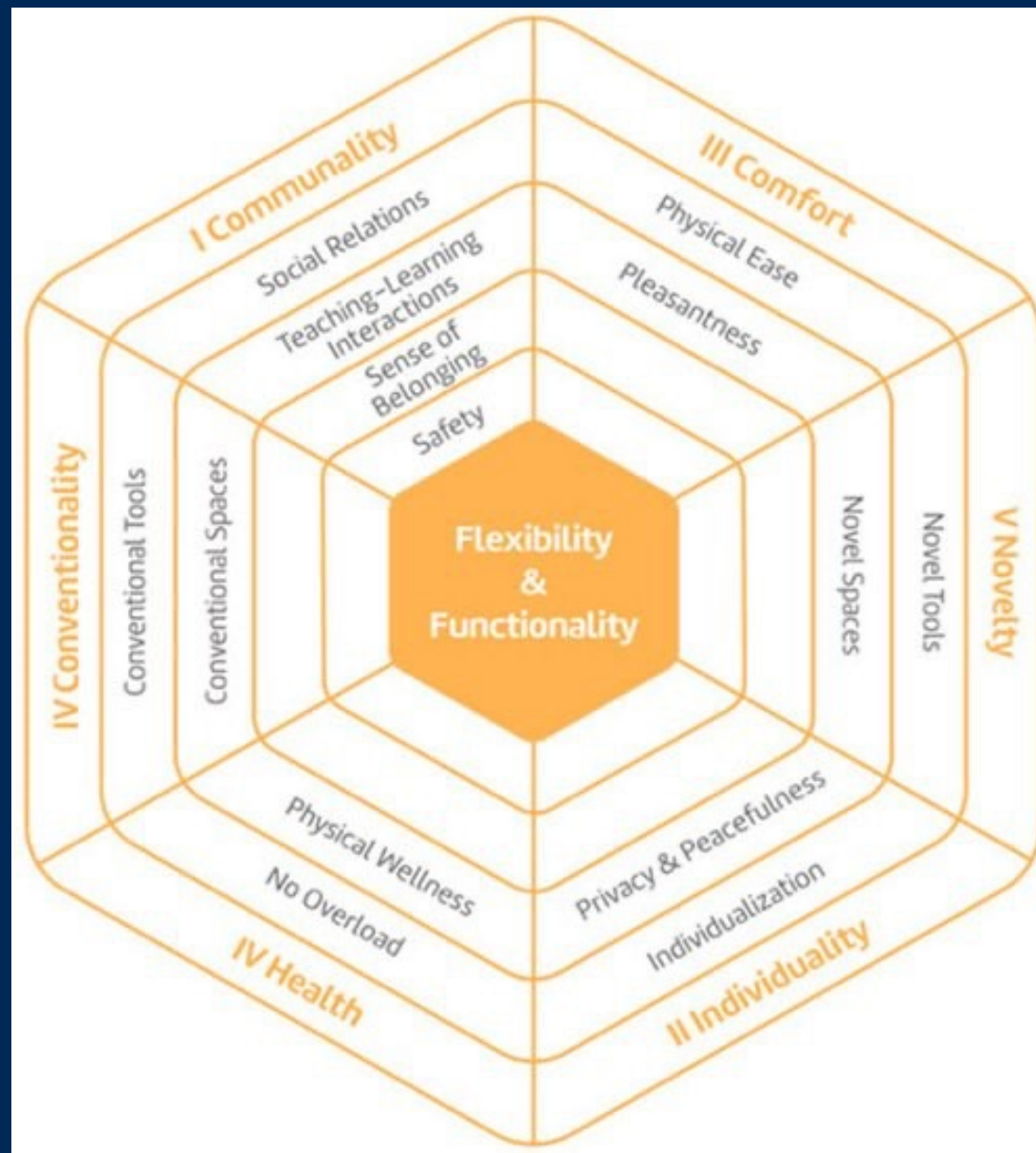
JYVÄSKYLÄN YLIOPISTO
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FRAMEWORK FOR CO-DESIGNING ENVIRONMENTS CONDUCIVE TO LEARNING AND WELLBEING

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Visualisation of the LED framework by Iconograph

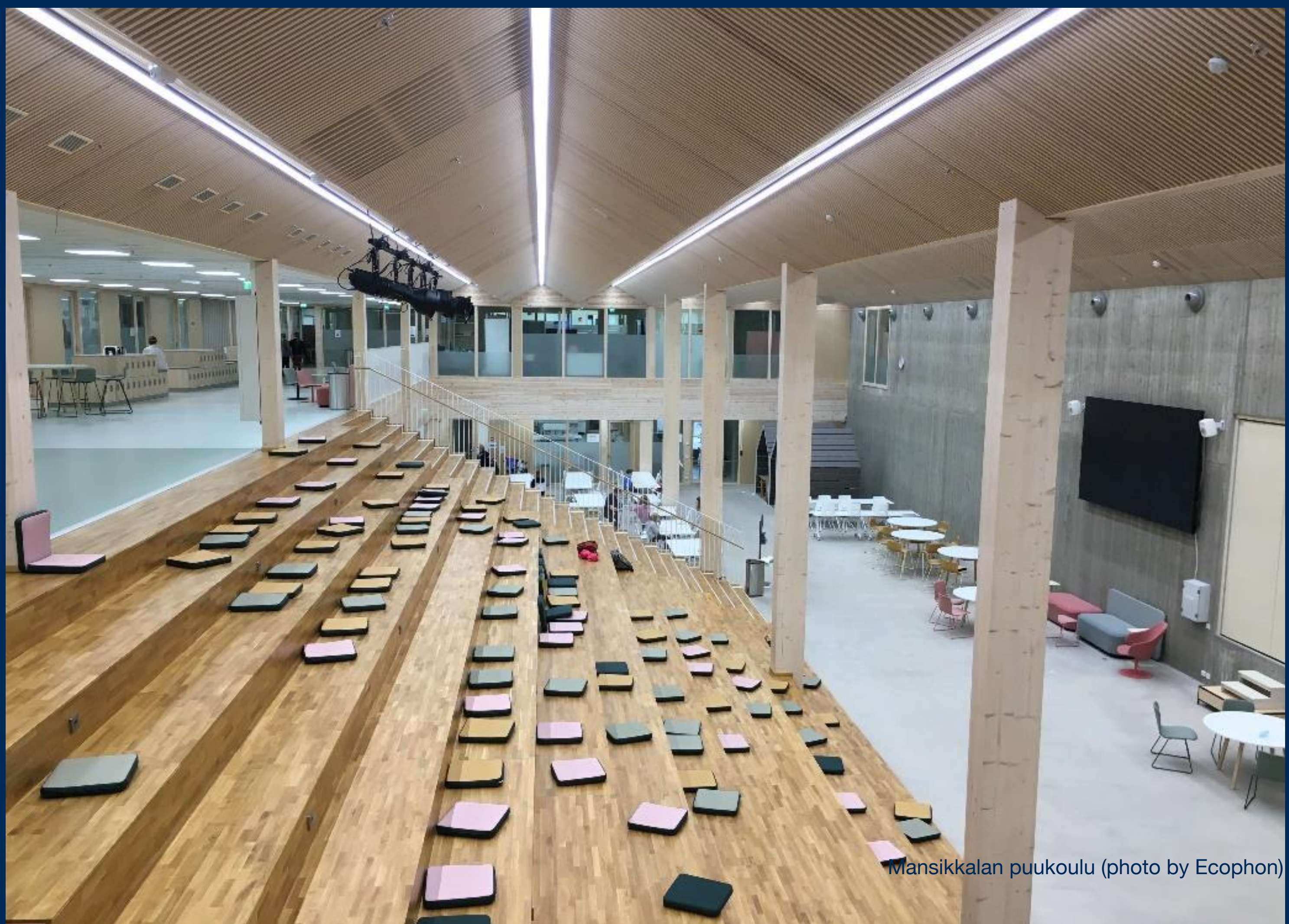Part I: Introduction to Learning Environment Design (LED) framework
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Part V: Flexibility and functionality

Mansikkalan puukoulu (photo by Ecophon)

I COMMUNALITY (A) TEACHING-LEARNING INTERACTION

"Versatile possibilities and spaces for collaboration"

I.1 Teacher-led instruction

I.2 Teacher visibility

I.3 Learner-centredness

I.4 Collaboration between teachers

I.5 Collaboration between teachers and support personnel

I.6 Learner collaboration

I.7 Transversal project-based learning

I.6 Learner collaboration & I.7 Transversal project-based learning: Laboratory tables in the classroom; group working areas inside and outside the classroom

I.2 Teacher visibility: Glass walls, wide sliding doors

Muutosalueen tilat 2. kerros

I COMMUNALITY

"Spaces for encounters, participation and self-expression"

(B) SOCIAL RELATIONS

I.8 Teacher-learner relations

I.9 Peer relations (teachers)

I.10 Peer relations (learners)

I.11 Teacher-staff relations

I.12 Learner-staff relations

I.13 Teacher-management relations

I.14 Learner-management relations

I.15 Home-school relations

I.16 Wider community relations

(C) SENSE OF BELONGING

I.17 Shared vision

I.18 Involvement and self-expression (teachers)

I.19 Involvement and self-expression (learners)

I.20 Homelike environment

I COMMUNALITY (D) SAFETY

"Confidential atmosphere and easy monitoring, but not necessarily glass walls"

I.21 No behavioural disturbance

I.22 Transparency

I.23 Psychosocial safety

I.24 Physical safety

I.25 Safe distance

I INDIVIDUALITY (A) INDIVIDUALISATION

"Possibilities and spaces for personalised, self-regulated and individual work"

II.1 Personalised learning

II.2 Personal relevance of teaching

II.3 Personal relevance of studies

II.4 Personally relevant assessment

II.5 Self-regulated learning

II.6 Individual work (teachers)

II.7 Individual work (learners)

II.8 Studying during breaks

I INDIVIDUALITY (B) PRIVACY AND PEACEFULNESS

"Good soundproofing and private spaces"

II.9 No noise disturbance

II.10 No disorganisation

II.11 No distractions

II.12 Privacy (teachers)

II.13 Privacy (learners)

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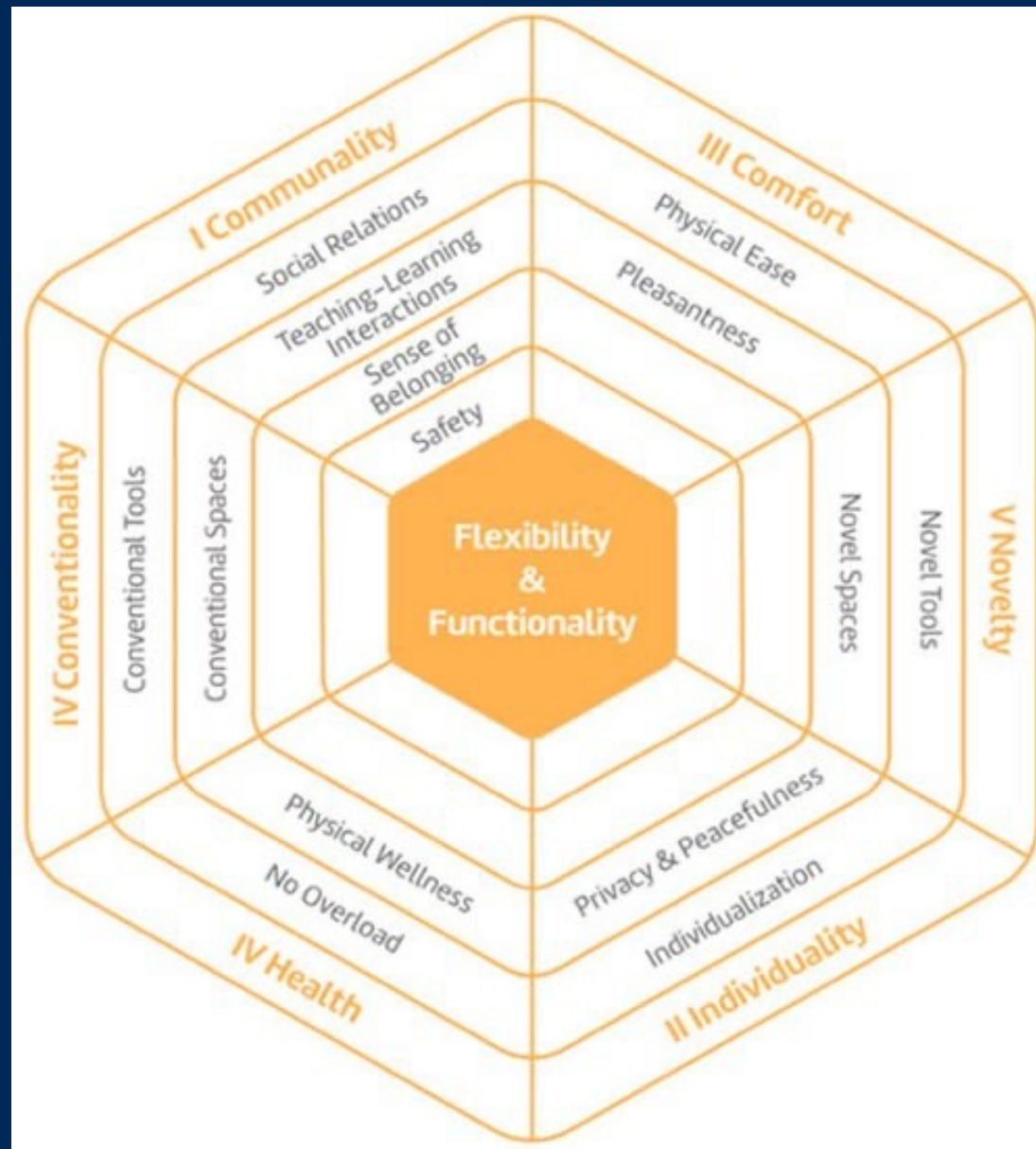https://www.jyu.fi/it/en/research/research-areas/cognitive-science-and-educational-technology/ile

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Finnish Institute for Educational Research, University of Jyväskylä

Visualisation of the LED framework by Iconograph

III COMFORT (A) PHYSICAL EASE

"Enough space and comfortable furniture"

III.1 Spaciousness

III.2 Enough seating space

III.3 Enough table space

III.4 Enough seats

III.5 Enough tables

III.6 Comfortable furniture

III.7 Comfortable spaces

III COMFORT (B) PLEASANTNESS

"Aesthetic interior design, colours, luminousity and presence of nature"

III.8 Aesthetics

III.9 Colours

III.10 Calming colours

III.11 Inspiring and motivating colours

III.12 Luminosity

III.13 Presence of nature

IV HEALTH (A) PHYSICAL WELLNESS

"Good indoor air, ergonomics and possibilities for physical exercise"

IV.1 Quality of meals

IV.2 Indoor air quality

IV.3 Indoor air temperature not too hot

IV.4 Indoor air temperature not too cold

IV.5 Cleanliness and hygiene

IV.6 Health care possibilities

IV.7 Ergonomics

IV.8 Physical exercise (indoors)

IV.9 Physical exercise (outdoors)

Photo by Jussi Koskela, Valteri Centre for Learning and Consulting   **Photo: Puistokatu school**

IV HEALTH (B) NO OVERLOAD

"Rest, leisure time and outdoor activities"

IV.10 Rest (teachers)
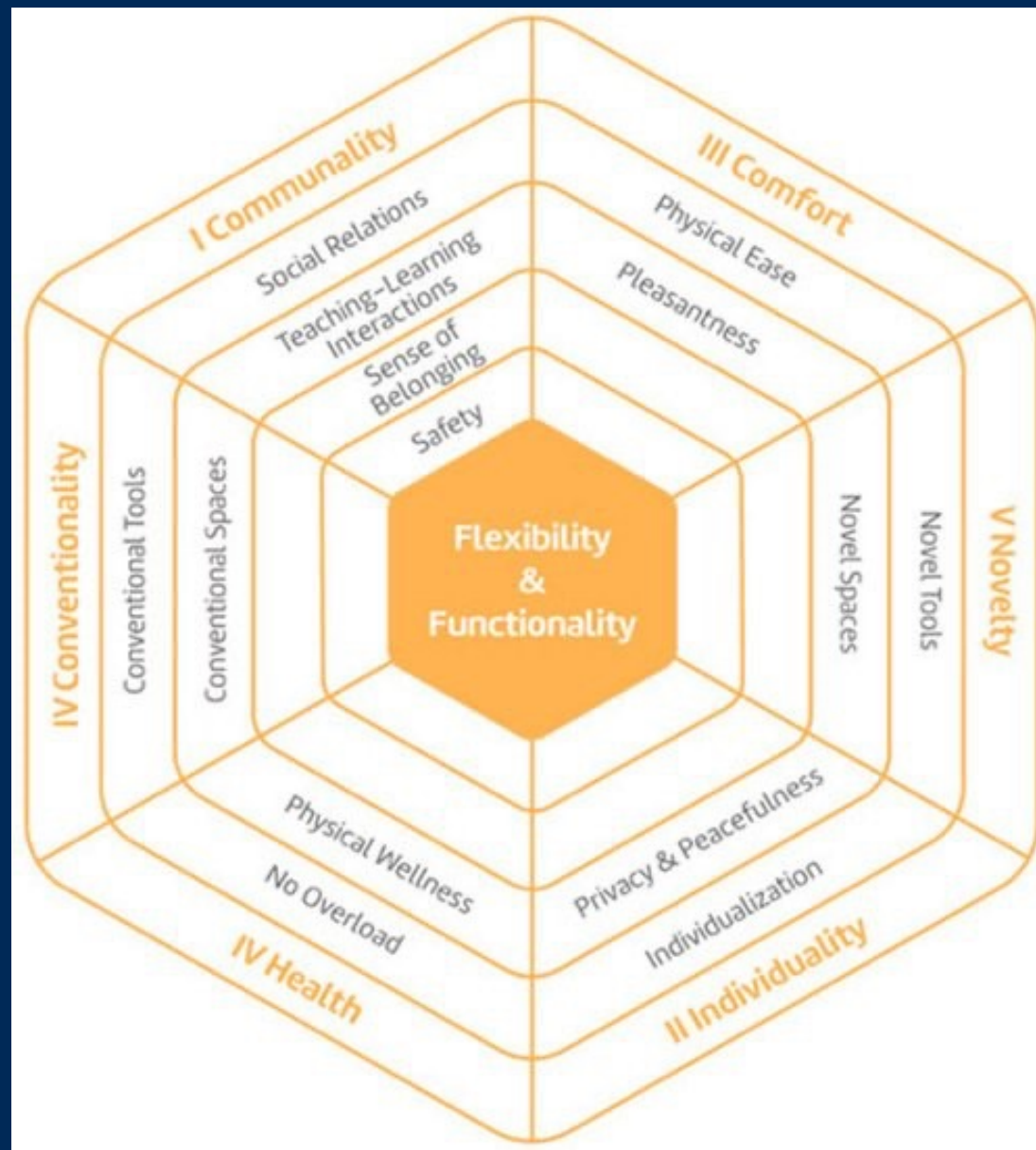
IV.11 Rest (learners)

IV.12 Leisure time

IV.13 Good outdoor activity areas

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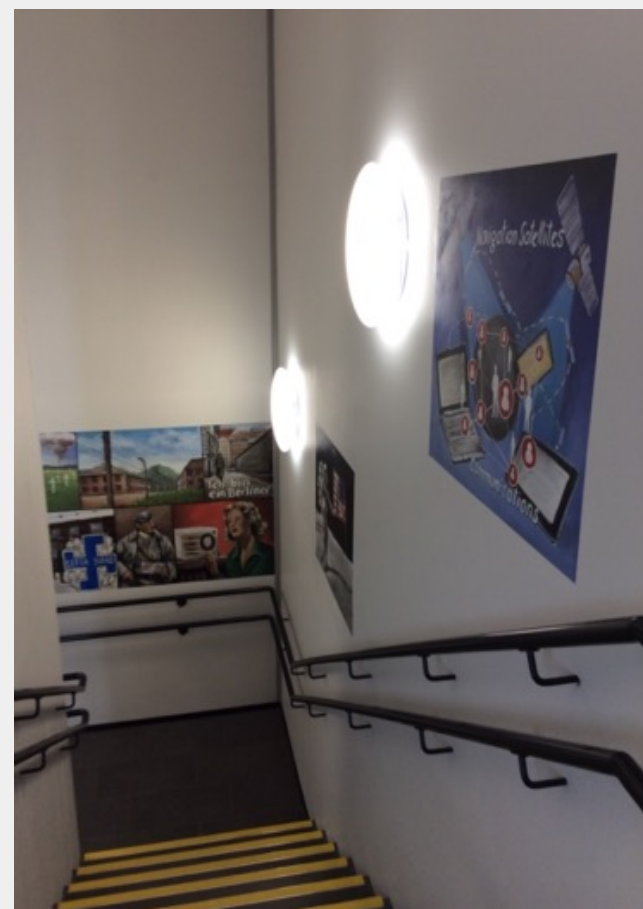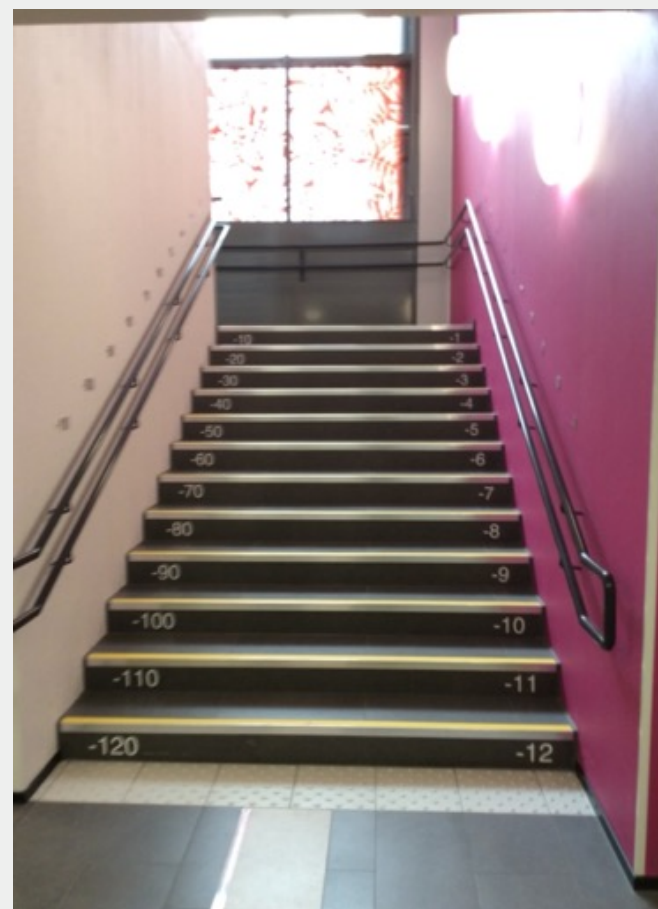Part V: Flexibility and functionality

V NOVELTY (A) NOVEL TOOLS

"Technology as a part of everyday work"

V.1 Use of technology (hardware/devices)

V.2 Use of technology (software/programs)

V.3 Educational design elements

V NOVELTY (B) NOVEL SPACES

"Inspiring but not too open environments"

V.4 Informal learning environments

V.5 Outdoor learning

V.6 Novel design

V.7 Open learning environments

V.8 Inspiring and motivating spaces

VI CONVENTIONALITY (A) CONVENTIONAL TOOLS

"Paper books and other traditional materials are important"

VI.1 Use of books

VI.2 Use of other traditional materials and tools

VI CONVENTIONALITY (B) CONVENTIONAL SPACES

"There should be room for traditional school design"

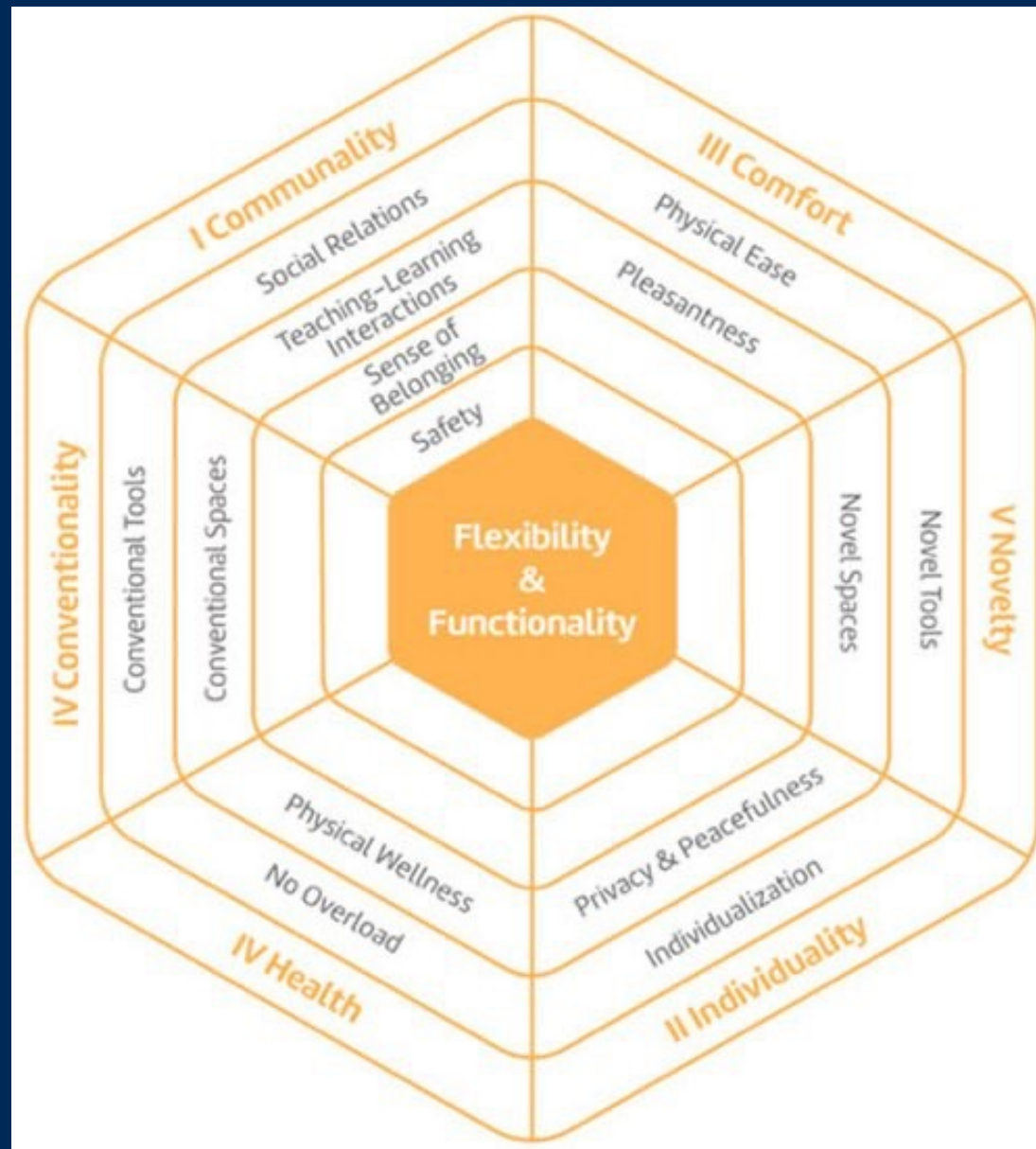VI.3 Formal learning environments

VI.4 Conventional design

VI.5 Non-formal learning environments

VI.6 Sustainable design

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VII FLEXIBILITY AND FUNCTIONALITY (A) VERSATILITY

"Versatile methods, tools, space and ease of flexibility"

VII.1 Versatile methods

VII.2 Versatile use of tools and materials

VII.3 Versatile spaces

VII.4 Versatile decoration and furniture

VII.5 Adaptability and modifiability

VII FLEXIBILITY AND FUNCTIONALITY (B) EASE OF USE

"Functioning technology and spaces"

VII.6 Functionality and practicality

VII.7 Accessibility

VII.8 Ease of movement
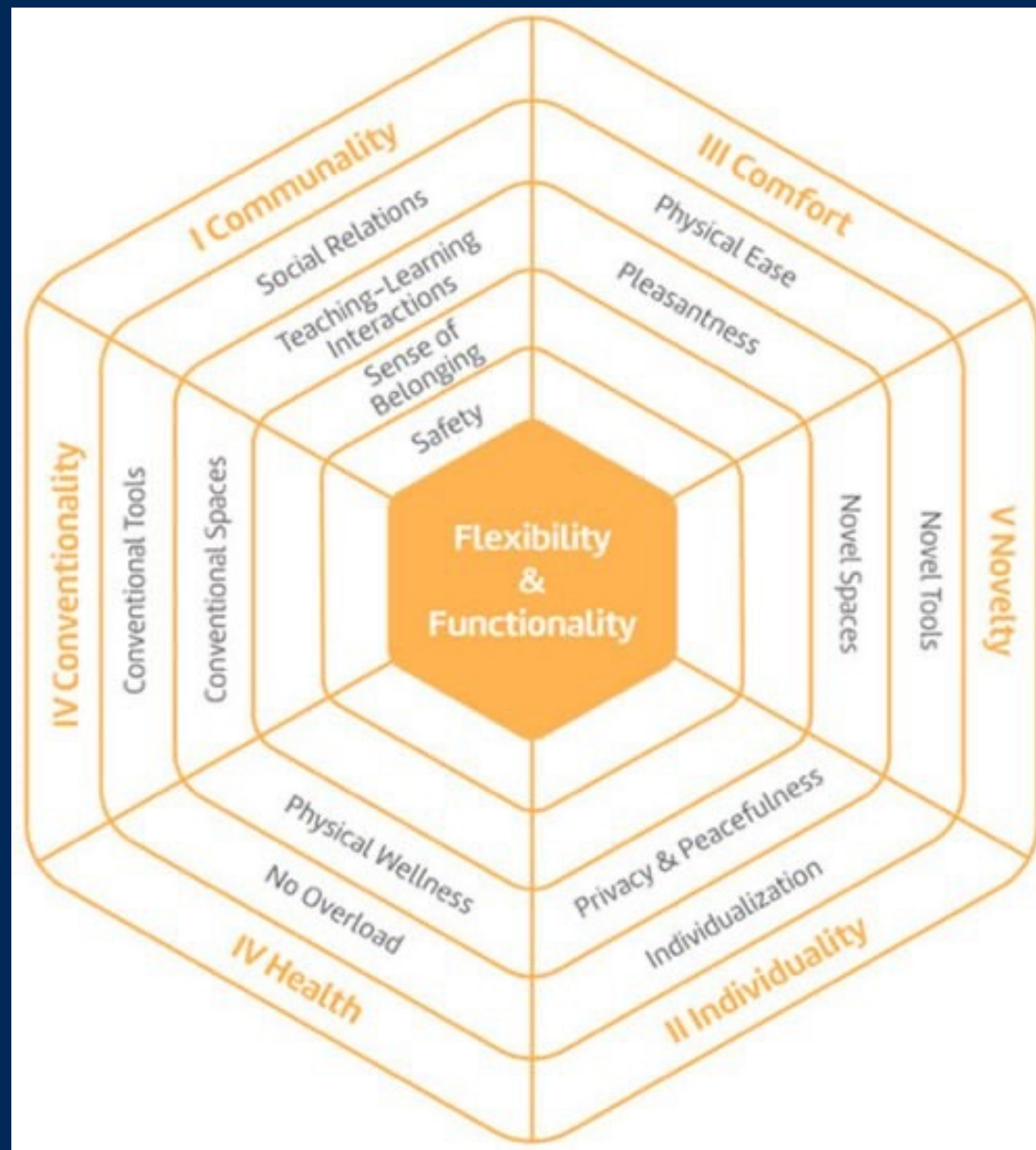
VII.9 User support (physical spaces)

VII.10 Technological support

VII.11 Functionality of the technological infrastructure

Hiukkavaara school (photo by Ecophon)

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THANK YOU!

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