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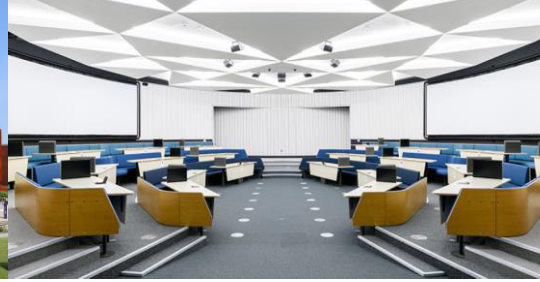


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## Symposium – Learning and Teaching Space in Higher Education in the Western Balkans

AAB College, Pristina, Kosovo  
21 October 2022

# PRINCIPLES OF DESIGN, IMPLEMENTATION AND USE OF L&T SPACE(S) IN HIGHER EDUCATION.

Intermediate results from the  
Erasmus+ Strategic Partnership LTSHE



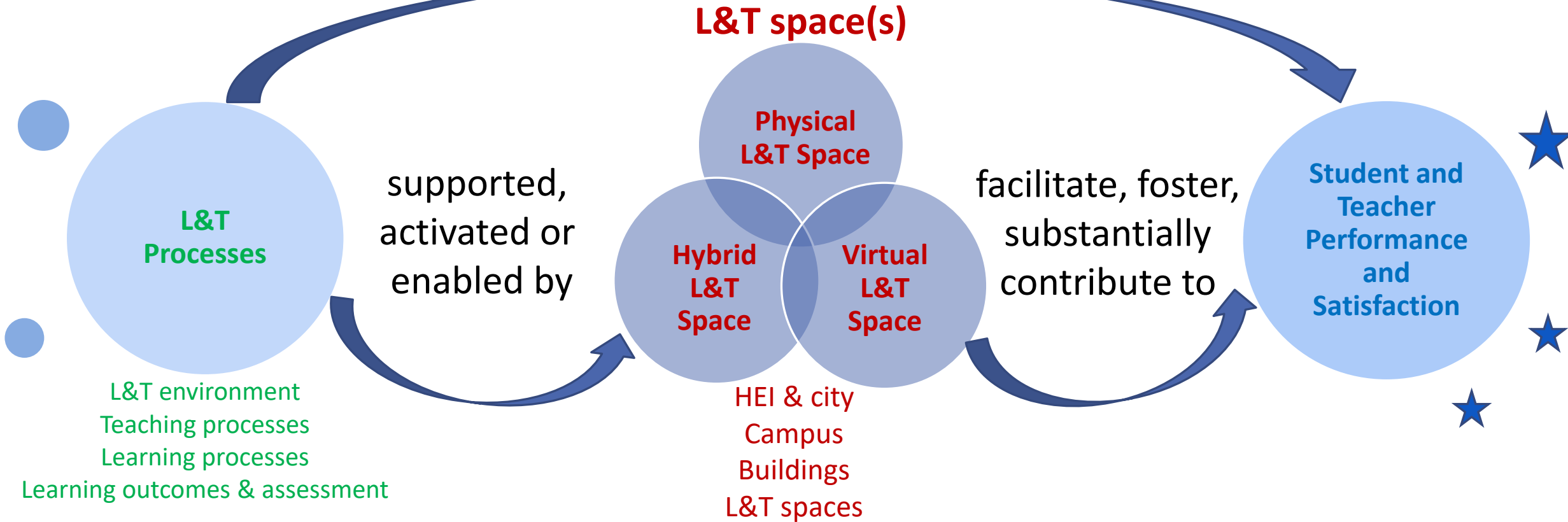
## THEODOR LEIBER

# Content

All about principles of the design, implementation and use of L&T spaces in HE



- ✓ **Introduction**
  - ✓ General task
  - ✓ LTSHE partners and goals
  - ✓ Principle(s) – Definition
- ✓ **Methodology** – sources for developing and deriving principles
- ✓ **Principles** and guidelines for the design, implementation and use of L&T spaces in higher education



Practice, needs, options and obstacles  
for the design, implementation and use of L&T space(s) in HE?  
**Are there principles which could inform HEIs?**

# Introduction – principle(s) - definition



- **Etymology**
  - From *principium* (Lat.) = **a beginning, an origin, a commencement** (from *princeps* (first, foremost; chief, distinguished))
- **Multiple semantic versions** in use
  - a comprehensive and fundamental law, doctrine, or assumption
  - a rule or code of conduct
  - habitual devotion to right principles (e.g., a man of principle)
  - the laws or facts of nature underlying the working of an artificial device
  - a primary source : origin
  - an underlying faculty or endowment (e.g., such principles of human nature as greed and curiosity)
  - an ingredient (such as a chemical) that exhibits or imparts a characteristic quality
  - a fundamental truth or proposition that serves as the foundation for a system of belief or behaviour or for a chain of reasoning (e.g., the basic principles of justice)
  - a general scientific theorem or law that has numerous special applications across a wide field
- Summary – **“a very basic important rule”**

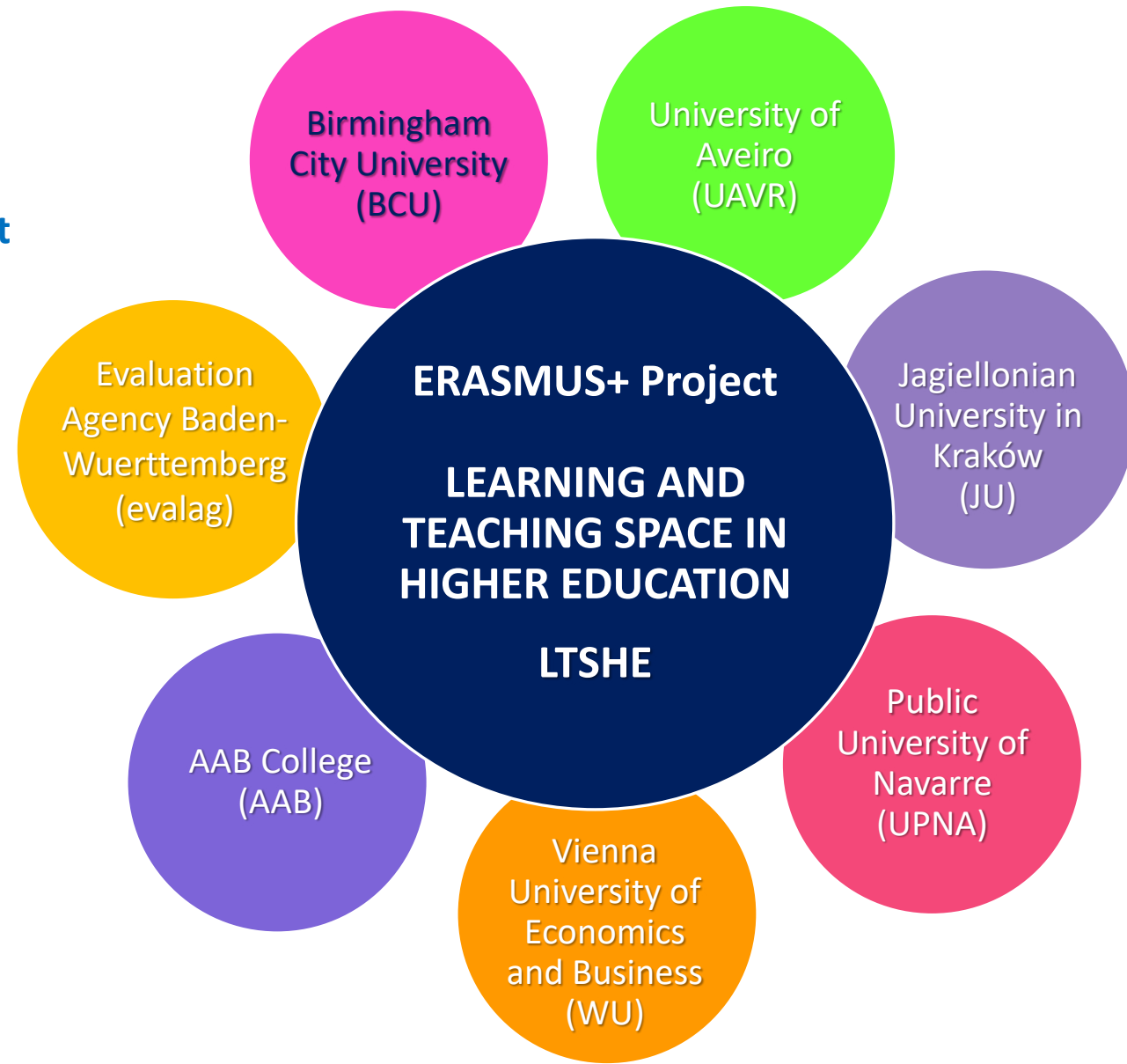
# Introduction – LTSHE partners and goals

## LTSHE aim and objectives

**Aim:** develop a **set of comprehensive design principles that HEIs can draw on to inform the development of new learning spaces**

To be achieved through the following **objectives:**

- Identify **existing policy and practice towards L&T space** and related issues across EU and **national HE sectors**
- Identify **existing policy and practice towards L&T space** across the **partnership institutions**
- **Highlight examples of good practice** in design, implementation and use of L&T space in HE
- **Reflect other** (earlier and competitive) **approaches**



# Methodology

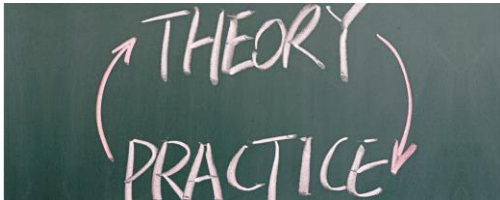
Sources for developing and deriving principles of the design, implementation and use of L&T spaces in HE



- ✓ **LTSHE IO1: 8 Reports on Politics/Policy and Practice of L&T Spaces** (8 countries, many HEIs)
- ✓ **LTSHE IO2: 7 Reports on Experience Case Studies** (7 countries, 7 HEIs)
- ✓ **LTSHE IO3: 4 Reports of Site Visits of L&T Spaces** (7 partners at 4 partner HEIs)
- ✓ **Strategic SWOT analyses:** recommendations from utilising strengths (or other measures) to overcome weaknesses, exploit opportunities and avoid/counteract threats (Leiber et al., 2018, 355)

<https://evalag.de/ltshe/>

- ✓ **L&T theories/pedagogy**
- ✓ **Scholarly literature** on L&T spaces ranging from psychology of learning to architecture theory and practice
- ✓ **Neuroscience perspectives on L&T**



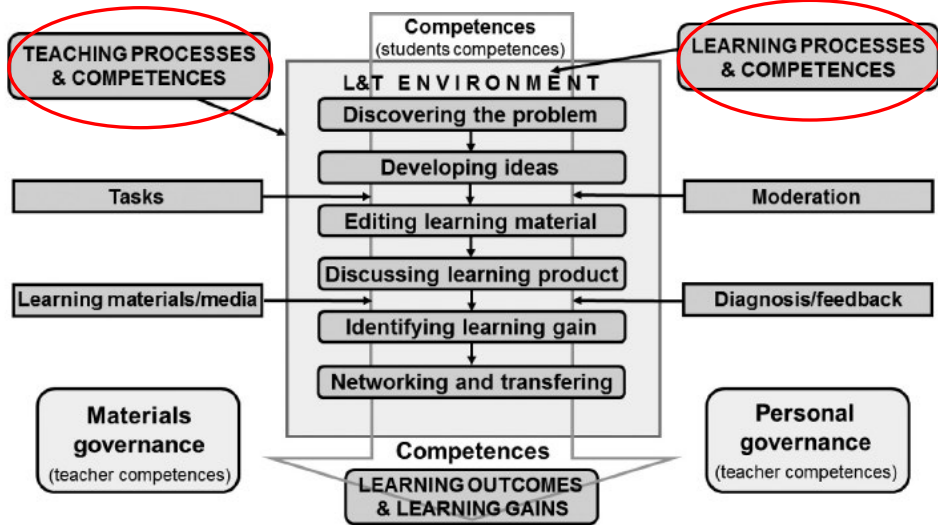
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<https://meteoeducation.com/neuroscience-in-classroom-practice/>



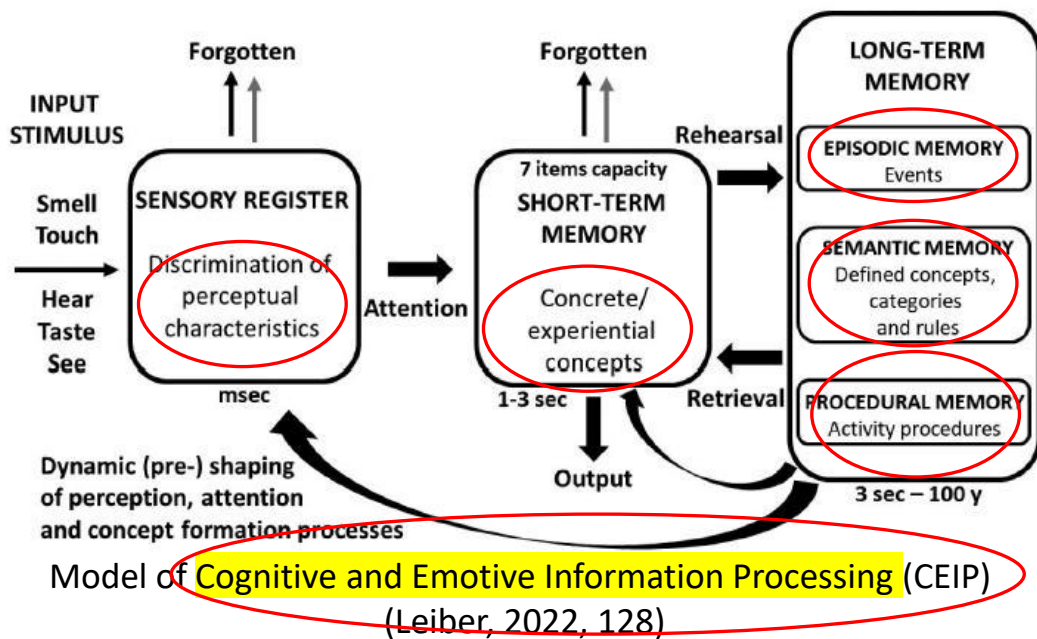
# Methodology Sources for developing and deriving principles of the design, implementation and use of L&T spaces in HE



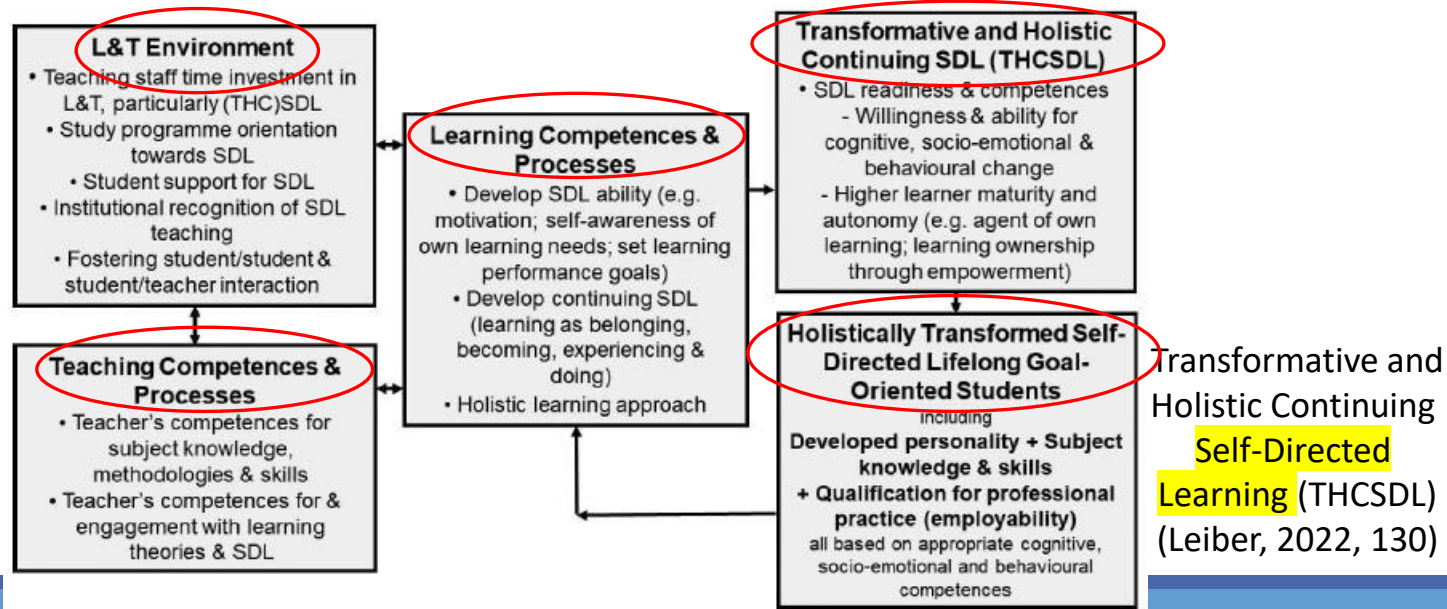
A model of the L&T process in education (Leiber, 2019, 82)

| COGNITIVE & EMOTIVE INFORMATION PROCESSING (CEIP)<br>Atkinson, Davies, Gagné, Shiffrin, Wallace                                    |   |   |   |   |  |
|--|---|---|---|---|--|
| Computer (programme)models; Developmental psychology models; Neural network models (e.g. artificial neural networks/Deep Learning) |   |   |   |   |  |
| Theories of L&T & their advocates  | <b>BEHAVIOURISTIC</b><br>Guthrie, Hull, Pavlov, Skinner, Thorndike, Tolman, Watson  | <b>COGNITIVIST</b><br>Ausubel, Bruner, Chomsky, Engeström, Gardner, Koffka, Kohler, Lewin, (Piaget)                               | <b>SOCIAL</b><br>Bandura, (Boud), Engeström, Eraut, Jarvis, Mezirow, (Piaget), Rötter, Salomon, (Vygotsky), Wenger                      | <b>CONSTRUCTIVIST</b><br>Boud, Candy, Dewey, Illeris, Kegan, Mead, Mezirow, Piaget, Rogoff, Taylor, von Glasersfeld, Vygotsky | <b>HUMANISTIC</b><br>Maslow, Mezirow, Rogers   |
| Focused purpose of learning/ education   | Produce behavioural change in desired direction solely based on input/output observation  | Develop cognitive & emotive capacities & skills while emphasising continual reorganisation of these to improve learning abilities | Develop cognitive & emotive capacities & skills while emphasising the relevance of social context; develop new social roles & behaviour | Develop cognitive & emotive capacities & skills while emphasising the constructive activities of learners                     | Develop cognitive & emotive capacities & skills while emphasising self-determination & autonomous personhood |
| Mechanisms/ characteristics of L&T   | Stimulus/black box/ response model  |   |   |   |  |
|  | <b>Bloom's Taxonomy</b> (Anderson <i>et al.</i> , 2001)<br>(6 cognitive levels: Remember; Understand; Apply; Analyse; Evaluate; Create)<br><b>Gagné's Instructional Design</b> (Gagné <i>et al.</i> , 2004)<br><b>Multiple Intelligences</b><br>(9 learning styles: musical, spatial, linguistic, logical-mathematical, bodily-kinesthetic, interpersonal, intrapersonal, naturalistic, existential) (Gardner, 2011)<br><b>Transformative &amp; Holistic Continuing Self-Directed Learning (THCSDL) theory</b> (Du Toit-Brits, 2018)<br><b>Personality models</b> (e.g. 5-Factor (Big Five) Personality model; John <i>et al.</i> , 2008)<br><b>Non-linear multi-layered, multi-causality, probabilistic causality, iteratively reinforcing</b> |   |   |   |  |
| Basic mechanism types  | Linear-(mono-) deterministic, iteratively reinforcing   |   |   |   |  |

## L&T theories (Leiber, 2022, 126)



Model of Cognitive and Emotive Information Processing (CEIP) (Leiber, 2022, 128)



Transformative and Holistic Continuing Self-Directed Learning (THCSDL) (Leiber, 2022, 130)

# Methodology Sources for developing and deriving principles of the design, implementation and use of L&T spaces in HE

Theoretical perspectives, mechanisms and features of L&T performance (Leiber, 2022, 132)

Behaviouristic

CEIP

Cognitivist

Social

Constructivist

Humanistic

| Theoretical perspectives of L&T                   | General mechanisms and focuses of L&T   | Features of L&T performance that can be grasped by certain performance indicators   |
|---|---|---|
| Behaviouristic perspective                        | Learning is directly affected by rewards, absence of rewards, or punishment<br>Learning by reinforcement is based on feedback<br>Focus on (changes in) observable behaviour   | Observable behavioural performance objectives/outcomes<br>Observable stakeholder satisfaction<br>Performance incentive systems  |
| Cognitive & Emotive Information Processing (CEIP) | Learning by complex internal 'three-level processing' (sensory register; short-term memory; long-term memory; see Figure 2) and reinforcement (Deep Learning)   | Learning according to complex 'three-level processing'<br>Learning as systematic extension of previous knowledge and skills<br>Learning as recursive information processing   |
| Cognitivist perspective                           | Knowledge and learning are based on symbol manipulation and connection (symbol systems: syntax, semantics)<br>Learning occurs as systemic extension of syntax and semantics of previous knowledge and skills<br>Learners are actively involved in generating knowledge and skills                           | Active discovery learning (for example cooperative learning, problem-based learning, research-based learning, case studies, hands-on experiments)<br>Critical thinking and self-determination   |
| Social perspective                                | Learning is an interactive social process (situated learning; communities of practice; distributed cognition; intercultural experience and learning)<br>Learning goals include transdisciplinary and intercultural competences  | Social-in-group and community-based learning (for example cooperative and collaborative learning, situated learning, discussion and debates, group work)<br>Student-centredness of L&T<br>Student/teacher & student/student communication   |
| Constructivist perspective                        | Learning is an interactive social process and knowledge is actively co-constructed in contextualised situations   | Responsibility of learners for their learning process (self-directed learning)<br>Learning performance as a holistic phenomenon<br>Learning as dialogic and recursive processes (for example cooperative and collaborative learning, discussion and debates, group work, self-directed learning)                |
| Humanistic perspective                            | Humans are intrinsically motivated for self-determination, self-actualisation and learning; personality development is core<br>Learning motivation and success depends upon a hierarchy of needs (physiological, psychological, intellectual)<br>Learning involves both affective and cognitive enhancement | Development of self-competences and social competences (personality development, (Leiber, 2016))<br>Responsibility of learners for their learning process (self-directed learning)<br>Critical thinking and self-determination<br>Learning performance as a holistic phenomenon<br>Learning as dialogic process |



## UNIVERSITY and CITY

### Develop a strategy for the university/city relation

Develop a **coherent mission statement (values, vision, mission) and Masterplan** for the university/city relation

- **Serve Third Mission with university/city relation**
  - **Conceive an Open Campus** (e.g., by inviting infrastructure for all university members and the public)
  - **Align development of campus with city plans** for redevelopment and regeneration
  - **Secure that city benefits from the university (campus) and vice versa** (e.g., university spaces as public event spaces; star architecture as a tourist magnet; redevelopment of the city quarter)
  - **Engage with local organisations to collaborate and share with space**
  - **Ensure the preservation of historic buildings**, if appropriate
- **Implement sustainable university/city relation**
  - **Implement climate friendly access/exchange** (e.g., sustainable public transport connections; short journeys from all directions; bicycle parking spaces and garages)
- **Secure stakeholder participation** in design and development

## UNIVERSITY CAMPUS

### Develop a strategy for the campus

Develop a **coherent mission statement (values, vision, mission) and Masterplan** for the campus including all core performance areas, with an appropriate focus on L&T (also in terms of buildings' arrangements/symbolically)

- **Implement a communicative campus**

Communication should be a key function of campus space(s) (e.g., providing informal learning spaces on campus and linking these with formal learning spaces, as well as a multi-functional and open campus)

- **Implement an accessible campus**

Secure accessibility for impaired people (e.g., wheelchair access to all campus; inductive audio systems and orientation and guidance systems for visually impaired people)

- **Implement a sustainable campus**

- **Green Campus** (e.g., use of groundwater for cold and heat generation; heat recovery in the data center; little sealed areas; sponge campus)
- **Campus of Wellbeing** (e.g., provide sufficient shaded areas)

- **Secure stakeholder participation** in design and development

- **Consider future flexibility for externally induced of needs/usage of campus** (e.g., demography; pandemics)

- Reserve space for campus expansion
- Consider flexibility for campus reduction

## UNIVERSITY BUILDINGS

### Develop a strategy for the university buildings

Develop a **coherent mission statement (values, vision, mission) and Masterplan** for the university buildings including all core performance areas, with an appropriate focus on L&T (also in terms of buildings' arrangements/symbolically)

- **Implement communicative university buildings**
- **Avoid overemphasis of form, aesthetics and architecture over educational design and practicability** in the design of the buildings
- **Implement sustainable buildings**
  - **Build low energy buildings**
  - **Use green energy** (e.g., PV systems; heat pumps)
- **Build accessible buildings**

Secure accessibility for impaired people (e.g., wheelchair access to all buildings; inductive audio systems and orientation and guidance systems for visually impaired people)
- **Provide easy room allocation for teachers and students** through central room management and digital booking options
- **Secure stakeholder participation** in design and development
- **Protect historical monuments and buildings**, if appropriate
- **Consider future flexibility for externally induced change of need/usage of university buildings** (e.g., demography; pandemics)
  - Consider options for buildings expansion
  - Consider options for buildings reduction

## University L&T spaces

### Develop a strategy for the L&T spaces

Develop a **coherent mission statement (values, vision, mission) and Masterplan** for the university L&T spaces

- **Develop a Learning World University**
  - **Implement User Centred Design**, so that **users** can intuitively **understand** the **L&T spaces**, **use** them, and **experience** them in multi-sensory ways (e.g., active learning; self-directed learning)
  - **Implement a mix of different learning areas**, for a **variety of learning scenarios and learning styles** (e.g., quiet zones, possibility for collaborative learning, learning areas directly adjacent to seminar rooms and classrooms, bookable project rooms, ...)
  - **Use multi-perspective** (disciplinary, interdisciplinary, transdisciplinary) **knowledge and skills** to design and implement L&T spaces that meet diverse requirements of different HEI stakeholders who use the spaces
  - **Implement digital infrastructures** to guarantee the necessary **flexibility and modularity** of L&T spaces (e.g., physical, digital, hybrid L&T spaces)
  - **Equip L&T spaces with flexible furniture**
  - **Build comfortable L&T spaces** (e.g., daylight access; colours experience; room aesthetics)
- **Implement accessible L&T spaces**

Secure accessibility for impaired people (e.g., wheelchair spaces in all lecture halls; wheelchair access in seminar rooms; inductive audio systems and orientation and guidance systems for visually impaired people)
- **Provide staff development and support system for L&T** including **training for teachers (and students)** to improve usage of the new L&T spaces
- **Continuously expand and improve digital and electr(on)ic infrastructure**
- **Avoid predominance of technological considerations over pedagogical or didactic ones** in the design and implementation of L&T spaces
- **Implement sustainable L&T spaces** (cf. sustainable buildings)
  - **Equip L&T spaces with sustainably produced furniture, facilities and materials**
- **Secure stakeholder participation** in design and development



## OVERARCHING – politics, institutional policies

- **Conceive the design, implementation and use of L&T spaces in HE as a strategic core area** (to implement the thesis that L&T space is the “third pedagogue” in addition to teachers and students). This may be achieved by
  - **Institutional mission statement on L&T and L&T space(s)**
  - **Institutional Structure and Development Plans on L&T and L&T space(s)**
  - **Intensify institutional discourse on L&T spaces with HE politics**
  - E.g., **develop a national plan for buildings and construction projects** in HE
  - E.g., **implement performance agreements** between HEIs and HE politics
- **Bundle and coordinate the areas of didactics, digital requirements and infrastructure** of different departments to facilitate/enable collaboration on issues affecting multiple units and (strategic) areas of interest
- **Inform HEIs’ strategies** for the design, implementation and use of L&T architecture/spaces **by contemporary scientific knowledge about L&T processes** to meet pedagogical requirements
- **Balance architectural and aesthetic design with usefulness for L&T needs and requirements**
- **Ensure enduring financing** of the design, implementation and maintenance of L&T space(s) on various organisational levels
  - Activate public (state) funding or private firm funding
  - Activate third-party funding
  - Activate philanthropy funding
- **Secure stakeholder participation** in design and development
- **Ensure continuous quality enhancement** of the design, implementation and use of L&T space(s)
- **Ensure sustainability** as stated in the other areas

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# Thank you!

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The authors would like to thank **the European Commission (EC) for co-funding the Erasmus+ project LTSHE** (grant no. **2019-1-UK01-KA203-061968**). However, the EC support for producing this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and neither the EC nor the project's national funding agency can be held responsible for any use which may be made of the information contained therein.



Co-funded by the  
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