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Sustainable Quality Enhancement in Higher Education Learning and Teaching

Integrative Core Dataset and Performance Data Analytics

Acronym: SQELT

Grant co-funded by European Union (Erasmus+ Projects)
Key Action: Cooperation for Innovation and the Exchange of Good Practices
Action: Strategic Partnerships
Main objective of the project: Development of Innovation

5th Transnational Project Meeting & **1st Multiplier Event**

Danube University Krems (DUK), Krems, Austria, 1-2 July 2019

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Justifying and Contextualising Performance Indicators of Learning and Teaching: The Role of Theories of Learning and Teaching

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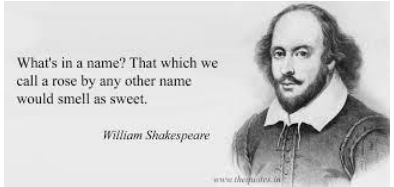
Overview

- **SQELT strategic partnership & case study & goals & methodology**
- **Basic Elements of Performance Data Governance & Management (PDGM) in Learning and Teaching (L&T)**
- **Theories of Learning and Teaching (TOLT) and Their Models**
- **Justification and Contextualisation of Performance Indicators (PIs) of L&T: The complicated interweaving of types of performance, indicators and learning theories**



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Strategic partnership and case study

Country	University	Characteristics	No. students
Austria	Danube University Krems	Further education	9,000
Belgium	Ghent University	Comprehensive university	41,000
Italy	University of Milan	Comprehensive university	63,000
Poland	Jagiellonian University Kraków	Comprehensive university	44,000
Portugal	University of Aveiro	Natural, social, engineering, medical sciences; polytechnics profile; Public foundation under private law	15,000
UK	Birmingham City University	Health social, engineering sciences; business and law; art, media and design; Polytechnics roots	24,000
Germany	evalag	HE research, evaluations, accreditations, counseling	n/a
Netherlands	M. Beerkens, Uni Leiden	External expert	–
Norway	B. Stensaker, Uni Oslo	External expert	–
Portugal	C. Sarrico, CIPES	External expert	–

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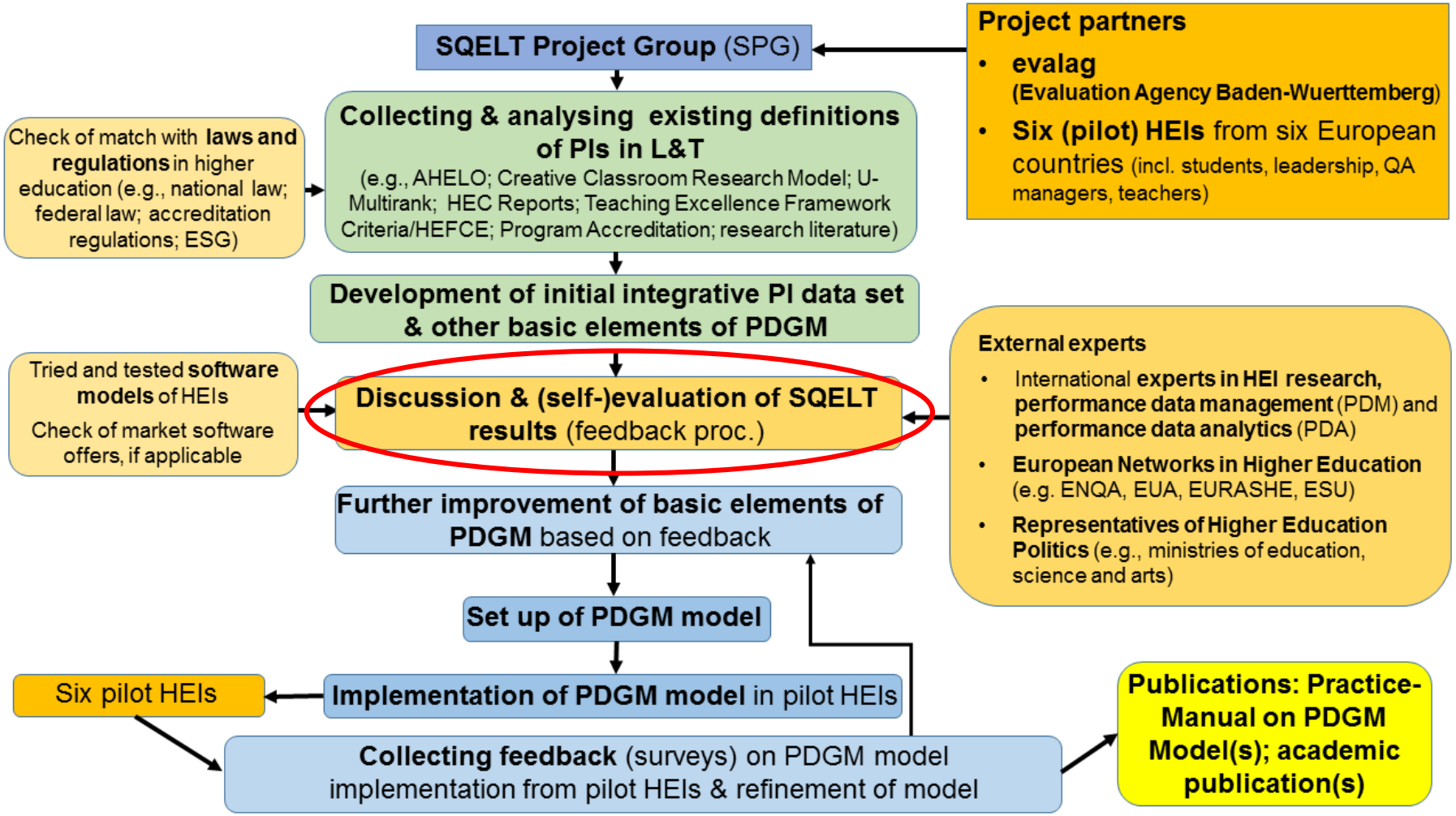
Goals and methodology

Workflow (schematic main steps) of SQELT project (updated)



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Goals and methodology

- Two main goals: **individual benchlearning** at partner HEIs & **intensive case study** including **generic results** (e.g. SQELT Manual; publications) (e.g. Leiber, 2019b)

- Aims at **comprehensive set of performance indicators** (PIs) **for L&T** and their **PDGM framework** (comprehensive: of large scope; covering or involving much; inclusive; thorough; far-reaching; broad; widespread; detailed; cross-disciplinary)

- Builds on **available scholarly models of PDGM in L&T**, **research literature**, **benchlearning** and **surveys** with respect to PDGM models of **sample HEIs**, and **external experts**' knowledge

- Builds on **various PI models** (e.g. AHELO; Creative Classroom Research Model (Uni Leuven); **U Multirank**; HEC Reports; TEF/HEFCE; Program Accreditation; **NSSE Engagement Indicators**; **QILT** (Australian Quality Indicators for L&T); …)

Outputs of SQELT project											
O20 Questio-nnaire	O1 6 Bench-learning Reports	O3 6 Baseline Reports	O4 Compre-hensive PI set	O5 Compre-hensive PI set	O6 Compre-hensive PI set	O7 **Evaluation Report**	O8 PDGM/ **Learning Analytics Ethics**	O9 **Compre-hensive PI set**	O10 6 Endline Reports	O11 **PDGM Policy/ SQELT Manual**	O12 **Publica-tions**

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Goals and methodology:
Benchlearning around PDGM

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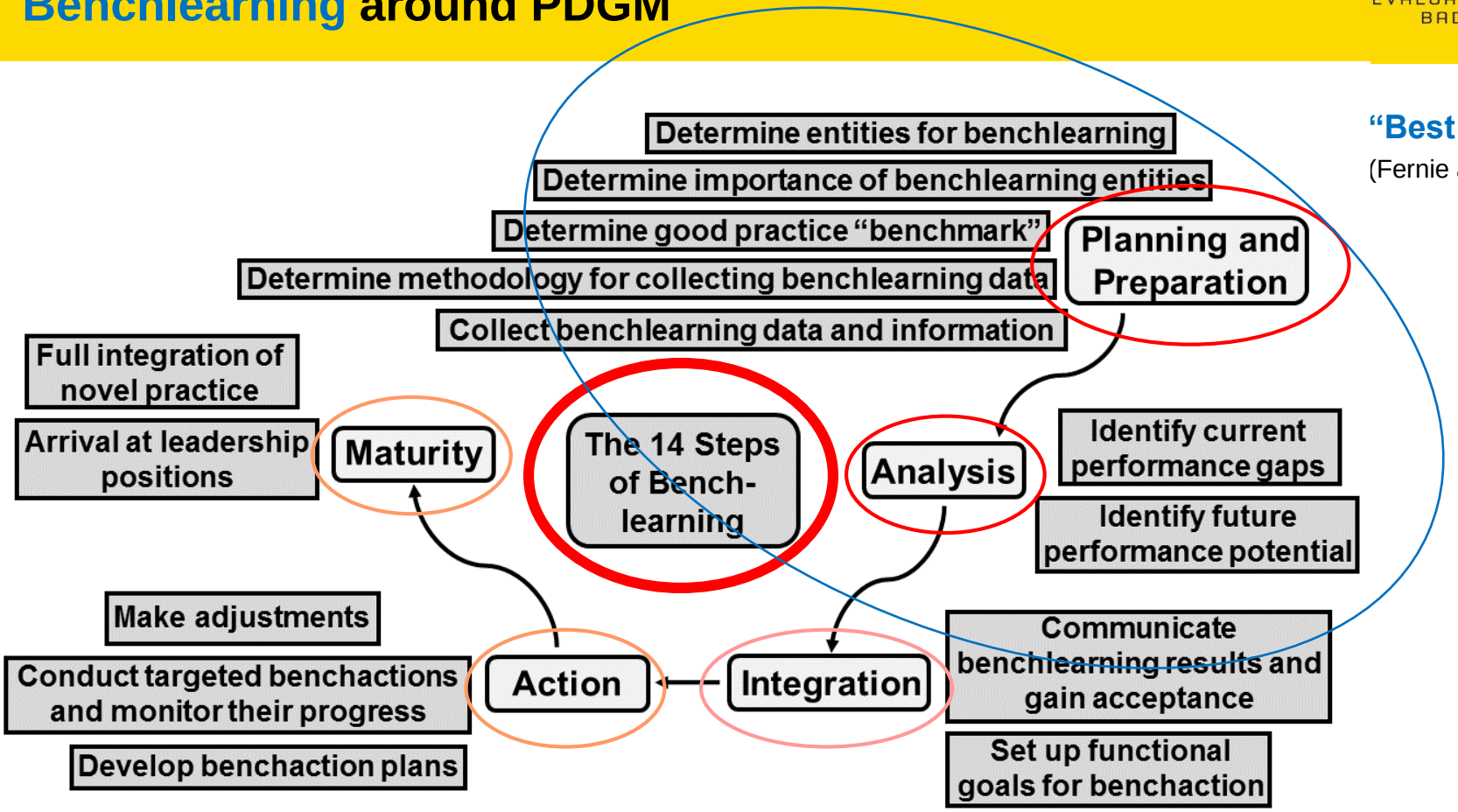
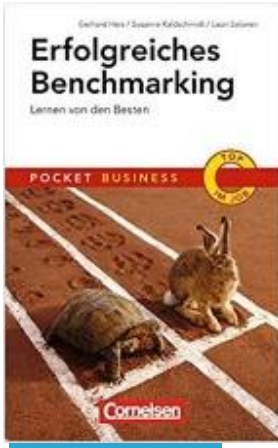


"Best practice is a myth"
(Fernie and Thorpe, 2007, p. 328)



Benchlearning is a way of monitoring and assessing the strategies and performance of an organization against comparable, good-practice competitors; it includes an ongoing performance improvement strategy and change management process.

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Basic elements of PDGM

For the pursuit of these goals the following is “helpful”:

- **Identification of Stakeholders & usage of performance data** – generic –
- Actionable **Performance Data Governance & Management Policy (PDGMP)** (& its various supporting documents) – generic – : Indispensable for HEIs as autonomous, multiple-hybrid organisations: **regulates** issues of **governance** & **strategy**; **ethics** & **responsibility**, including **sustainability**; **quality**, **accessibility** & **usability** of information & data (about student lifecycle); **investments** of human & financial resources.

- (**Digital**) **PDM System** is required that makes performance data/information operational and coherent. – ‘quasi-generic’ –

- **Suitable set of PIs** to monitor, measure & report information & data related to L&T – ‘quasi-generic’, comprehensive –

- **Systematic & ongoing reflection** of **methodological** & **ethical** issues of PDGM is essential to secure validity, reliability, moral values. – (theoretically) generic (in the EU) –

- **Vivid PDGM culture: sufficiently widespread understanding of PDGM ownership & related interpretation capabilities & evidence-based decision-making**

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Basic elements of PDGM

Few selected arguments for PIs:

'PIs can be defined as concepts that represent **qualitative and quantitative** information and data, which **indicate** functional qualities ('performance') of institutional, organisational or individual performance providers. As such, PIs provide information about the degree to which quality performance objectives [can be or] are being met. This modelling perspective seems to be indispensable for any systematic approach to QM, particularly development-oriented QM in HEIs' (Leiber, 2019b, 77).

- PIs are **(only) indicating** something about their related performance; PIs are **not "complete or perfect images"** of their related performance
- 'PIs reflect the quality goals ('targeted performance') of institutions, institutional units and programmes' (Leiber 2019b, 77), in more direct or more indirect ways
- PIs can 'open the way to objectify communication and operationalisation of quality relevant features and, in the case of quantitative PIs, measure them' (Leiber 2019b, 77)

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Basic elements of PDGM

Few selected arguments for PIs:

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- 'PIs are used by HEIs for two primary reasons
  - to facilitate monitoring, assessing and evaluating their performance for the purposes of internal or external QM (for example, in audits, evaluations and accreditations)
  - to provide information to the financiers (e.g., government, taxpayers) and potential beneficiaries (e.g., students, broader public) for accountability and reporting purposes' (Leiber 2019b, 77).
- 'PIs are used at the national and international level mainly
  - to ensure accountability for public funds
  - to facilitate national and international comparisons of HEIs, e.g., by […] [benchlearning], ratings and rankings, which are based on PIs' (Leiber 2019b, 77)
- '[…] single PIs, or single types of PIs will usually **sketch trends** and **reveal interesting questions**. Due to the performance complexity of the social multiple-hybrid organisations called HEIs, single **PIs do not**, as a rule, **provide objective explanations that exhaustively cover a certain performance area or achievement**. […] the measurement of single PIs normally does not permit immediate conclusions for quality improvement measures to be drawn in the sense of the Deming quality cycle. […] **PIs need to be interpreted and contextualised in light of manifold information concerning strategies, purposes and operation** at institutional and programme levels. Accordingly, multiple sources of both quantitative data and qualitative information are needed to make PIs really informative about quality performance and make them a source of evidence for implementing enhancement measures' (Leiber 2019b, 77-78).

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"Path-breaking research is, by definition, exploratory" (Gerring, 2004, p. 349).

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Some research questions of the SQELT case study

- **Theory-basedness of PIs: How can PIs of L&T be justified by, or "derived from" L&T theories?**
- **Integrative data management system**: How would a (digital) PDM System (incl. software solutions) allow for integration of data from different sources? How generic can suggested PDM System models be?
- **Aggregation levels of PIs**: Differentiation of "aggregate data" and "base data" – PIs & simple PIs? – further classification & relations of PIs (list) necessary, useful, …?
- **Data analytics and data privacy**: Clarify, harmonise (?) different ethical regulations in different countries and HEIs.
- **Performance data policy**: Consensus on a PDGM Policy (docu

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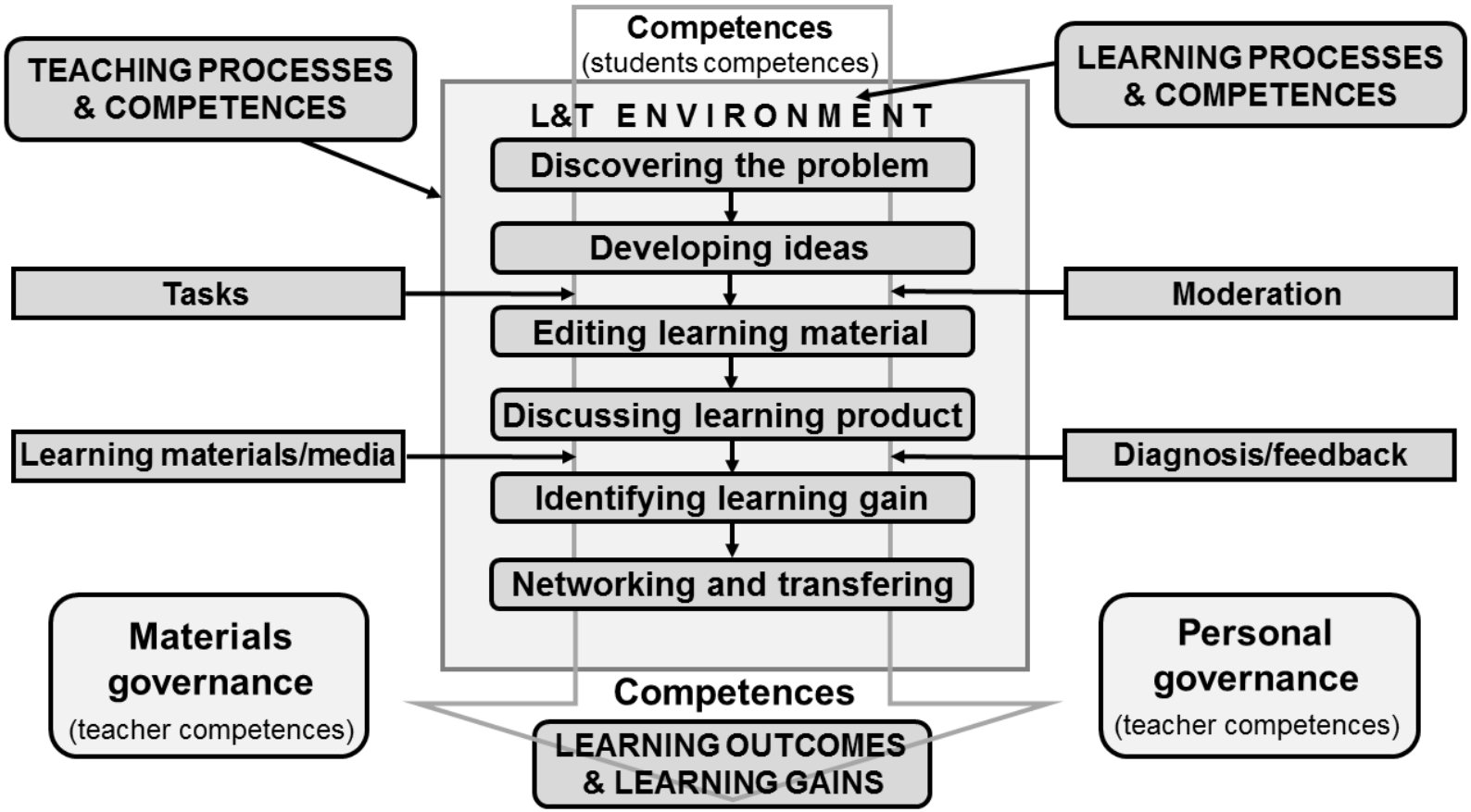
Theories of learning and teaching (TOLT) and their models

A **model of the L&T process** in HEIs, schematic (Leiber, 2019, p. 82);
Six typical learning steps
Open for any elaborate theory of learning & teaching



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Theories of learning and teaching (TOLT) and their models

(COGNITIVE) INFORMATION PROCESSING

Atkinson, Davies, Gagne, Shiffrin, Wallace

Computer (programme) models; Developmental psychology models; Neural models (e.g. artificial neural networks/Deep Learning)

	BEHAVIOURISTIC Guthrie, Hull, Pavlov, Skinner, Thorndike, Tolman, Watson	**COGNITIVIST** Ausubel, Bruner, Chomsky, (Engeström), Gardner, Koffka, Kohler, Lewin, (Piaget)	**SOCIAL** Bandura, (Boud), Engeström, Eraut, Jarvis, Mezirow, (Piaget), Rotter, Salomon, (Vygotsky), Wenger	**CONSTRUCTIVIST** Boud, Candy, Dewey, Illeris, Kegan, Mead, Mezirow, Piaget, Rogoff, Taylor, von Glasersfeld, Vygotsky	**HUMANISTIC** Maslow, Mezirow, Rogers
Focused purpose of learning/ education	Produce behavioural change in desired direction	Develop cognitive & emotive capacity and skills; continually reorganise these to improve learning abilities	Develop cognitive & emotive capacity and skills by emphasising the relevance of social context; develop new social roles and behaviour	Develop cognitive & emotive capacity and skills by emphasising the constructive aspects	Become a self-actualised, autonomous person
TOLT models (random selection)	**Stimulus**/(black box)/**response model**	**"Multiple Intelligences"** (7 learning styles: musical-rhythmic, visual-spatial, verbal-linguistic, bodily kinesthetic, interpersonal, intrapersonal, and naturalistic) (Gardner) **Bloom's Taxonomy** (knowledge; comprehen-sion; application; analy-sis; synthesis; evaluation)	**Transformative learning** (perspectives of transformation: self; beliefs; behaviour) **Self-directed learning** (SDL)	**Transformative learning** **Self-directed learning** "Zone of Proximal Development" & "Scaffolding" (Vygotsky)	**Transformative learning** **Self-directed learning**
		Transformative and Holistic Continuing SDL (THCSDL) theory (Du Troit-Brits, 2018) **Teacher personality models** (e.g. 5-Factor) (Göncz, 2017)			
Basic mechanism type	**Linear-(mono-) deterministic, iteratively reinforcing**	**Dialectical, non-linear, multi-causality, iteratively reinforcing**			

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Theories of learning and teaching and their models

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A model of Cognitive Information Processing

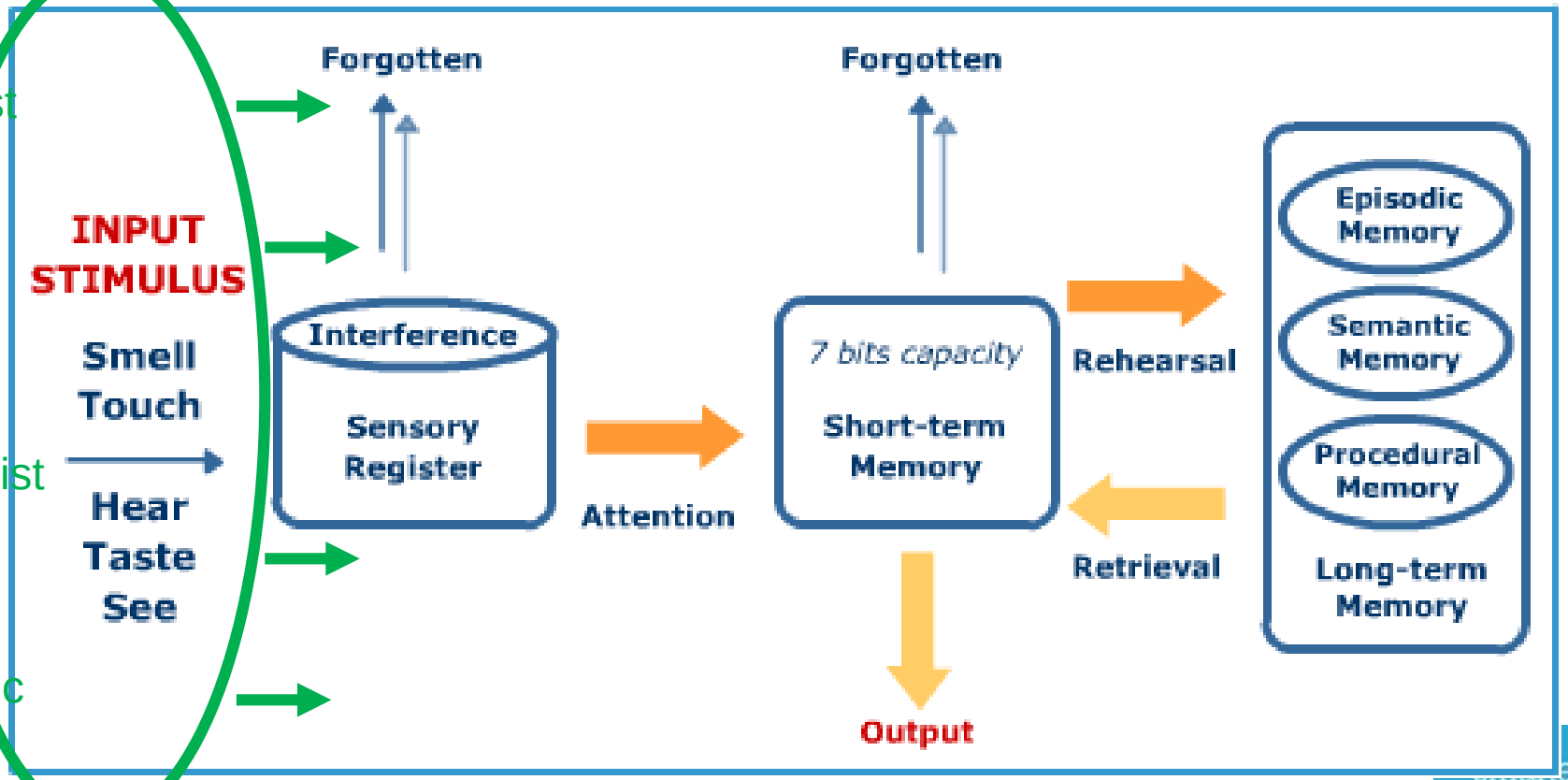
Open for any elaborate theory of learning & teaching

Cognitivist

Social

Constructivist

Humanistic



Source: https://www.tcd.ie/Education/ICT/unit02/explanation03b.htm

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Theories of learning and teaching (TOLT) and their models

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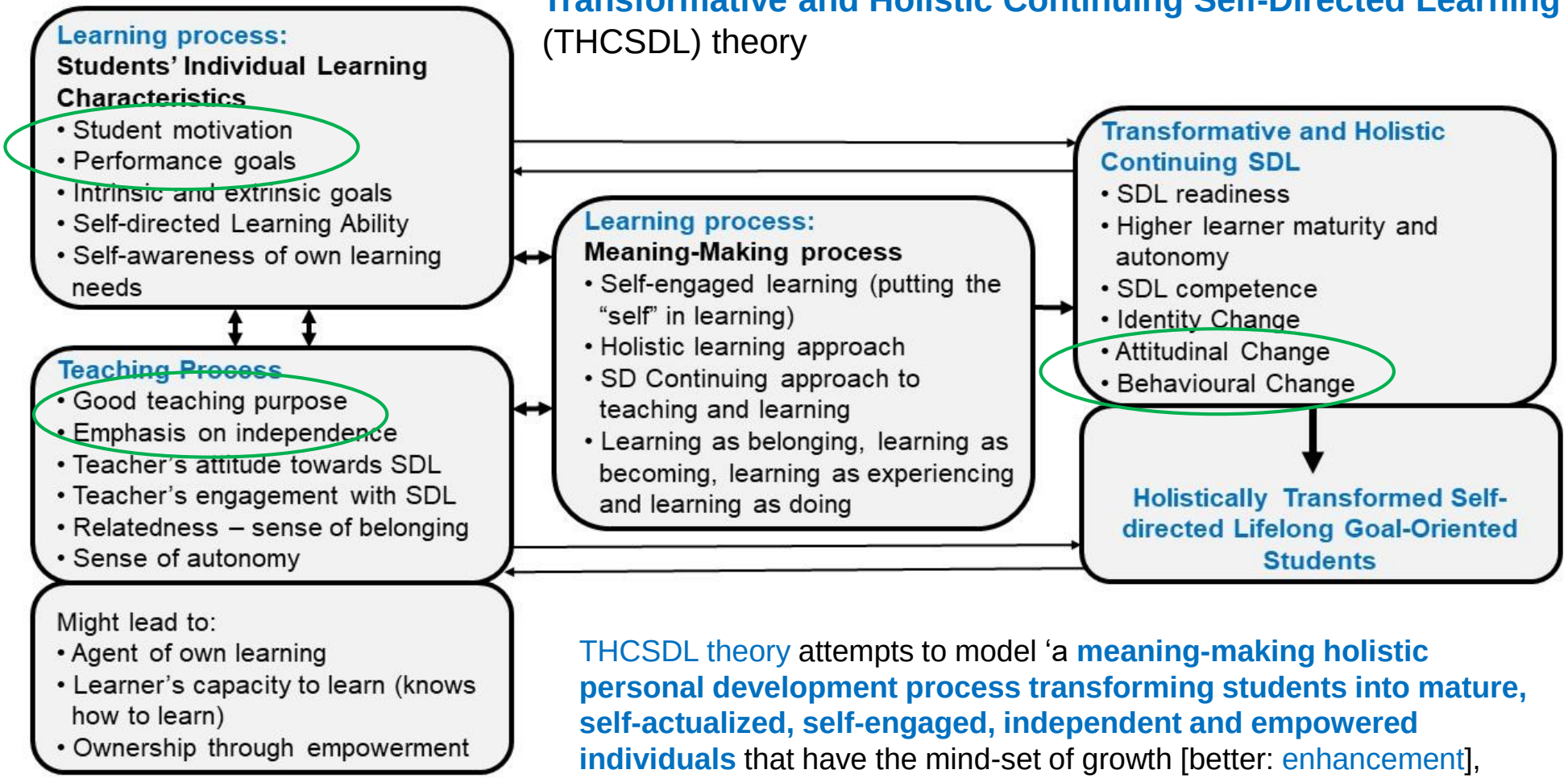
Transformative and Holistic Continuing Self-Directed Learning (THCSDL) theory



(du Toit-Brits, 2018, 55, with alterations)

THCSDL theory attempts to model 'a **meaning-making holistic personal development process transforming students into mature, self-actualized, self-engaged, independent and empowered individuals** that have the mind-set of growth [better: enhancement], aptitude/capability of taking ownership, authentic control of and accountability for their learning, and in so doing, fostering intellectual openness **to evolve into self-directed lifelong goal-oriented students**' (Du Troit-Brits, 2018, 62).

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Complementary theories of learning applied to HE teaching, **together forming a general theory of learning** (Leiber, 2019, p. 84, further developed)

6 TOL(T)	Core assumptions & mechanisms relevant to L&T	Selected core aspects relevant for L&T performance and PIs
Cognitive Information processing	Learning by complex internal processing and reinforcement ("deep learning") Simultaneous "three-level processing" (SR; STM; LTM)	**Consideration of the complex "three-level processing" when designing L&T processes, learning outcome assessments and L&T environment** Option of digitisation of performance data and analysis
Behaviouristic	Learning is directly affected by rewards, absence of rewards, or punishment Learning by reinforcement is based on feedback Focus on (changes in) observable behaviour	**Capture observable performance** & **behavioural objectives/outcomes** **Capture observable satisfaction** of stakeholders Provision of adequate, frequent and clear **feedback based on** assessments and evaluations including **PIs** Use of **incentive systems based on PIs**
Cognitivist	Knowledge and learning are based on symbol manipulation and connection (symbol systems: syntax, semantics) Learning occurs as systemic extension of syntax and semantics of previous knowledge and skills Learners are actively involved in generating knowledge and skills	**Active discovery learning** (e.g. cooperative learning, problem-based learning, research-based learning, case studies, hands-on experiments) **Critical thinking and self-determination** **Student-centredness** of L&T
Social	Learning is an interactive social process (situated learning; communities of practice; distributed cognition; intercultural experience and learning)	**Social-in-group and community-based learning** (e.g. cooperative and collaborative learning, situated learning, discussion and debates, group work) **Student-centredness** of L&T
Constructivist	Learning is an interactive social process and knowledge is actively constructed in and by contextualised situations	**Responsibility of learners for their learning process** (SDL) **L&T/HEI performance as a holistic phenomenon** **Learning as dialogic and recursive processes** (e.g. cooperative and collaborative learning, discussion and debates, group work, self-directed learning) **Student-centredness** of L&T
Humanistic	Humans are intrinsically motivated for self-determination, self-actualisation and learning; personality development is core Learning motivation and success depends upon a hierarchy of needs (physiological, psychological, intellectual) Learning involves both affective and cognitive enhancement	**Responsibility of learners for their learning process** (SDL) **Critical thinking and self-determination** **L&T/HEI performance as a holistic phenomenon** **Learning as dialogic and recursive processes** (see above) **Student-centredness** of L&T

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Justification and Contextualisation of Performance Indicators (PIs) of L&T: The complicated interweaving of types of performance, indicators and learning theories

Performan-ce types	Performance sub-types	("Non-simple") PIs and their measures/performance measurement methods	Mainly, directly involved TOL(T)	Indirectly involved TOL(T), mediated across complicated, sometimes tiny, mechanisms
Learning resources	Organisation of study programmes	**Assessment** survey of students about **organisation of study programmes** (e.g. transparency of entrance requirements/admission regulations; access to classes; average class size; completeness of courses offered compared to the study guide; **transparency of the examination system**; opportunity offers for **studying abroad**; possibility of inclusion of study periods abroad) **Assessment** survey of teaching staff about **organisation of study programmes** **Expert/peer assessment** (report) about **organisation of study programmes**	**Social** (performance options for intercultural experience and learning)	Aspects of **Self-directed learning** (SDL)
…	…	…		
Supportive environ-ment	**Personality development** and well-being of students (**social and societal competences**)	**Satisfaction** survey of students about measures of **encouraging contact among students from different backgrounds** (social, ethnic, religious)/**provision of opportunities for students to be involved socially**/**provision of student support for managing non-academic responsibilities** (e.g. work, family)/**experience in discussions with diverse others**	**Humanistic** (performance options for intercultural, social, non-academic experience and learning) **Social** (performance options for intercultural, social, non-academic experience and learning)	Aspects of **Bloom's Taxonomy** Aspects of **"Multiple Intelligences"**
…	…	…		

(Leiber, 2019)

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Justification and Contextualisation of Performance Indicators (PIs) of L&T: The complicated interweaving of types of performance, indicators and learning theories

Performan-ce types	Performance sub-types	("Non-simple") PIs and their measures/performance measurement methods	Mainly, directly involved TOL(T)	Indirectly involved TOL(T), mediated across complicated, sometimes tiny, mechanisms
Quality of teaching staff, quality teaching and teaching staff engagement	Teaching staff recruitment	Expert assessment and/or assessment survey of students and/or assessment survey of teaching staff of recruitment procedures (e.g. procedural responsibilities; recruitment and selection process; **recruitment quality criteria**) for lecturers/associate professors/full professors (e.g. **teaching skills, pedagogic skills**, research success)	**Social** (performance options for intercultural experience and learning) **Teacher personality models** (e.g. 5-Factor) **Cognitive Information Processing theory** **THCSDL**	**Transformative learning**
	…	…		
	Teaching staff competences	Satisfaction survey of students about teaching staff's subject-matter competences/methodological competences/vocational training competences/digital skills competences/**social competences** (e.g. **team, communication and leadership competences**)/ respect and interest for students/**encouraging students' autonomous thinking and acting**/ pedagogical knowledge and skills (e.g. knowledge of teaching models and learning processes)/sensitivity to class level and progress/fostering sustainability values (social, ecological, economical)/feedback to students (e.g. on work in progress, test, completed assignments)	**Humanistic** (performance options for intercultural, social, non-academic experience and learning) **Social** (performance options for intercultural, social, non-academic experience and learning) **THCSDL**	
…	…	…		

(Leiber, 2019)

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Justification and Contextualisation of Performance Indicators (PIs) of L&T: The complicated interweaving of types of performance, indicators and learning theories

Performance types	Performance sub-types	PIs and their measures/performance measurement methods	Mainly, directly involved TOL(T)	Indirectly involved TOL(T), mediated across complicated, sometimes tiny, mechanisms
Quality learning and student engagement	Student interactions with learning content	Number of students and their identity and duration of their interactions with course activities (e.g. solution of exercises, watching videos, listening to lecture, **participation in working groups**) based on reports generated from Learning Management Systems (LMSs) and Learning Analytics tools	**Cognitivist** **Social** (performance options for intercultural experience and learning) **Constructivist** **Teacher personality models** (e.g. 5-Factor) **Cognitive Information Processing theory** **THCSDL**	**Transformative learning** **Active discovery learning** **Social-in-group and community-based learning** **Learning as dialogic and recursive processes**
		Number of students and their identity and duration of their interactions with course contents based on reports generated from LMSs and Learning Analytics tools		
		…		
	Student motivation	Assessment survey of **students** about their **dispositions, values and attitudes towards learning**, that is collection of learner data and pedagogical descriptors (e.g. **students' ability in deactivating negative learning emotions, students' learning strategies**)	**THCSDL** **Humanistic** (performance options for intercultural, social, non-academic experience and learning) **Social** (performance options for intercultural, social, non-academic experience and learning)	
	…	…		
.(Leiber, 2019)	…	…		

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Justification and Contextualisation of Performance Indicators (PIs) of L&T: The complicated interweaving of types of performance, indicators and learning theories

Performan-ce types	Performance sub-types	PIs and their measures/performance measurement methods	Mainly, directly involved TOL(T)	Indirectly involved TOL(T), mediated across complicated, sometimes tiny, mechanisms
Constructive alignment of study programmes / courses	Learning outcomes	Expert assessment and/or satisfaction survey of students and/or satisfaction survey of teaching staff about **intended learning outcomes** (e.g. **clear formulation and transparency of goals of study modules and courses**)	Aspects of **Bloom's Taxonomy** Aspects of **"Multiple Intelligences"**	**Goal-directed learning**
		Expert assessment about teaching staff awareness of existing intended learning outcomes		
		Expert assessment/ student satisfaction survey/ teaching staff satisfaction survey about **design and adjustment of teaching and assessments/ examinations to defined intended learning outcomes**	**All TOLTs** **Cognitivist** (performance options for developing cognitive and emotive capacities and skills experience and learning) **SDL** **Social** (performance options for intercultural, social, non-academic experience and learning) **Humanistic** (performance options for self-directed learning and self-determination) **Constructivist**	
… (Leiber, 2019)	…	…		

Learning-oriented assessment practices:
- **Tasks as learning tasks (authentic)**
- **Self-assessment and peer assessment**
- **Feedback to determine learning potential**

Examination practices:
- **Do not reflect assessment for learning**
- **Teacher-centred**

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Justification and Contextualisation of Performance Indicators (PIs) of L&T: The complicated interweaving of types of performance, indicators and learning theories

Performan-ce types	Performance sub-types	PIs and their measures/performance measurement methods	Mainly, directly involved TOL(T)	Indirectly involved TOL(T), mediated across complicated, sometimes tiny, mechanisms
Student learning gain		Assessment survey of students and/or assessment survey of teaching staff about **learning gain** in **subject-matter competences** (e.g. by random control trials and/or comparison of knowledge and skills before and after learning phases, including examination grades and earned credit points)/ in **methodological competences**/ in **higher-order learning**/ in **reflective and integrative learning**/ in **learning strategies and self-learning competences**/ in **quantitative reasoning**/ in **collaborative learning**/ in digital skills/ in **interdisciplinary competences**/in **transdisciplinary competences**/ in **social competences** (e.g. team, communication and leadership competences; empathy; ability to cooperate; ability to solve conflicts)/ in **self-competences** (e.g. self-determination; capability of decision and learning; flexibility of action; ability to reflect; sovereignty)	**All TOLTs** **Cognitivist** (performance options for developing cognitive and emotive capacities and skills experience and learning) **SDL** **Social** (performance options for intercultural, social, non-academic experience and learning) **Humanistic** (performance options for self-directed learning and self-determination) **Constructivist**	
…	…	…		

(Leiber, 2019)

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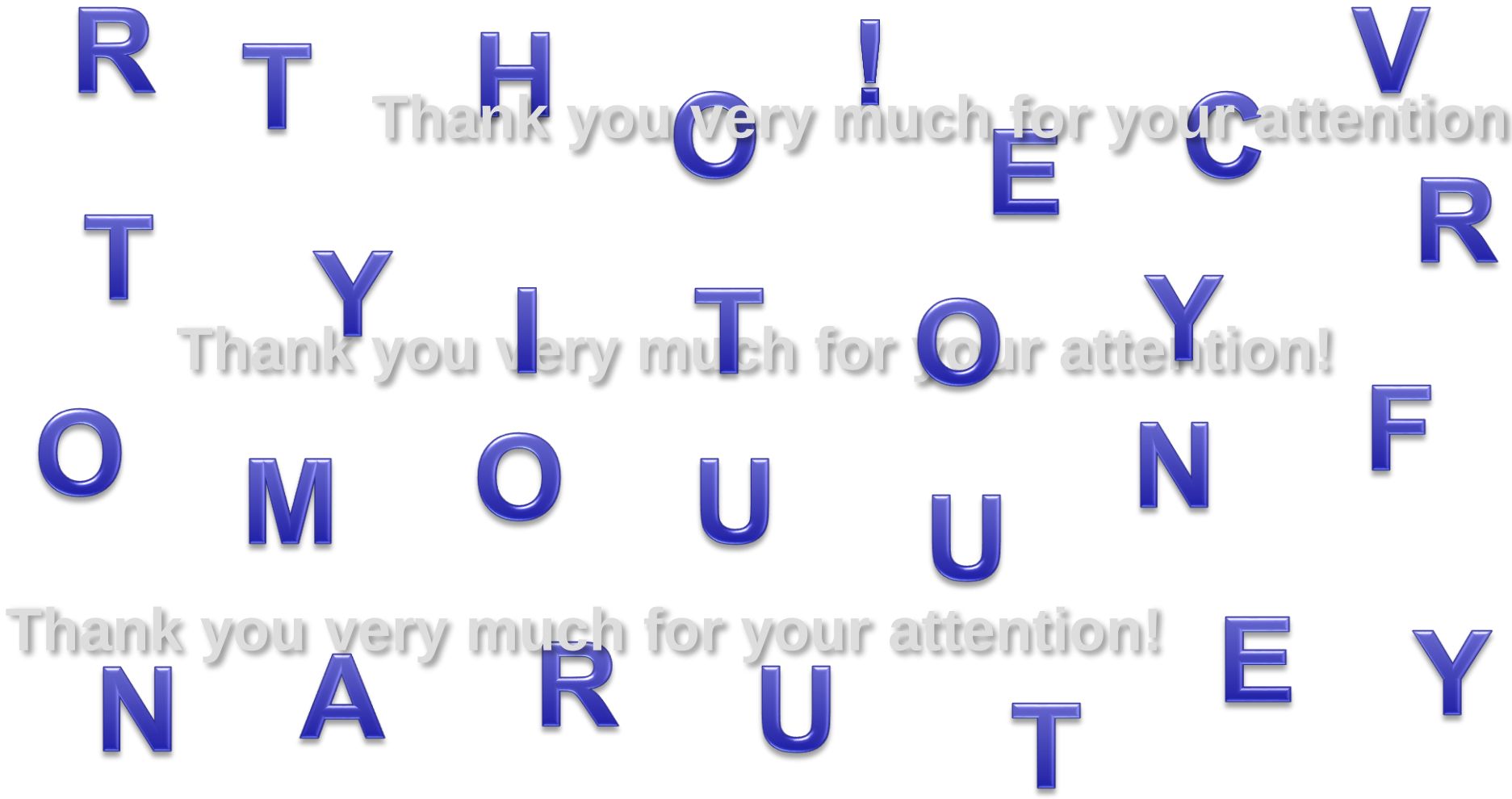
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References

- Abend, G. (2008) The meaning of 'theory'. *Sociological Theory* 26(2), 173-199.
- Åkerlind, G.S. (2004) A new dimension to understanding university teaching. *Teaching in Higher Education*, 9(3), pp. 363–75.
- Alderman, L., Towers, S. & Bannah, S. (2012) Student feedback systems in higher education: a focused literature review and environmental scan. *Quality in Higher Education*, 18(3), 261-280.
- Ambrose, S.A., Bridges, M.W., DiPietro, M., Lovett, M.C. & Norman, M.K. (2010) *How Learning Works. Seven research-based principles for smart teaching* (San Francisco, CA, Jossey-Bass).
- Arnold, R. (2015) *How to Teach Without Instructing. 29 rules for clever teaching. The LENA model* [in German] (Heidelberg, Carl Auer).
- Ashwin, P. & McVitty, D. (2015) The meanings of student engagement: implications for policies and practices. In: A. Curaj, L. Matei, R. Pricopie, J. Salmi & P. Scott (Eds.) *The European Higher Education Area. Between Critical Reflections and Future Policies*. Cham: Springer, pp. 343-360.
- Baird, J. & Gordon, G. (2009) Beyond the rhetoric: a framework for evaluating improvements to the student experience. *Tertiary Education and Management* 15(3), 193-207.
- Barr, R.B. & Tagg, J. (1995) 'From teaching to learning. A new paradigm for undergraduate education', *Change: The Magazine of Higher Learning* 27(6), pp. 12–26.
- Behn, Robert D. 2003. "Why measure performance? Different purposes require different measures." *Public Administration Review* 63(5), 586-606.
- Bennett, R. & Kane, S. (2014) Students' interpretations of the meanings of questionnaire items in the National Student Survey. *Quality in Higher Education* 20(2), 129-164.
- Berk, R.A. (2005) Survey of 12 strategies to measure teaching effectiveness. *International Journal of Teaching and Learning in Higher Education* 27(1), 48-62.
- Borden, M.H. & Coates, H. (2017) Learning Analytics as a counterpart to surveys of student experience. *New Directions for Higher Education* 179, 89-102.
- Callender, C., Ramsden, P. & Griggs, J. (2014) *Review of the National Student Survey*. London: HEFCE.
- Campbell, C.M. & Cabrera, A.F. (2011) How sound is NSSE? Investigating the psychometric properties of NSSE at a public, research-intensive institution. *The Review of Higher Education* 35(1), 77-103.

References

- Center for Postsecondary Research (CPR). (2018) *Engagement Insights. Survey Findings on the Quality of Undergraduate Education*. National Survey of Student Engagement (NSSE), Annual Results 2018. Bloomington: CPR. Available at: http://passthrough.fw-notify.net/download/435626/http://nsse.indiana.edu/NSSE_2018_Results/pdf/NSSE_2018_Annual_Results.pdf (accessed 5 April 2019).
- Challice, G., Compton, S. & Vickers, N. (2018) *2017 Student Experience Survey. Methodological Report*. Melbourne: Social Research Centre. Available at: https://www.qilt.edu.au/docs/default-source/gos-reports/2017/2017-ses-methodology-report.pdf?sfvrsn=3048e33c_2 (accessed 5 April 2019).
- Dandy, K.L. & Bendersky, K. (2014) Student and faculty beliefs about learning in higher education: inplications for teaching. International Journal of Teaching and Learning in Higher Education 26(3), 358-380.
- De Freitas, S., Gibson, D., du Plessis, C., Halloran, P., Williams, E. Ambrose, M., Dunwell, I. & Arnab, S. (2015) Foundations of dynamic learning analytics: using university student data to increase retention. *British Journal of Educational Technology* 46(6), 1175-1188.
- Drachsler, H. & Greller, W. (2016) Privacy and analytics – it's a delicate issue. A checklist for trusted learning analytics. 6th Leaning Analytics & Knowledge Conference 2016, 89-98. Available at: https://dspace.ou.nl/bitstream/1820/6381/1/Privacy%20a%20DELICATE%20issue%20%28Drachsler%20%26%20Greller%29%20-%20submitted.pdf (accessed 20 May 2019).
- Du Troit-Brits, C. (2018) Towards a transformative and holistic continuing self-directed learning theory. *South African Journal of Higher Education* 32(4), 51-65.
- Elken, M. & Stensaker, B. (2018) Conceptualising 'quality work' in higher education. *Quality in Higher Education* 24(3), 189-202.
- Elouazizi, N. (2014) Critical factors in data governance for Learning Analytics. *Journal of Learning Analytics* 1(3), 211-222.
- Fernie, S. & Thorpe, A. (2007) Exploring change in construction: supply chain management. *Engineering, Construction and Architectural Management* 14(4), 319-333.
- Freytag, Per V., and Svend Hollensen. 2001. "The process of benchmarking, benchlearning and benchaction." *The TQM Magazine* 13(1), 25-33.
- Fritz, J. (2017) Using analytics to nudge student responsibility for learning. *New Directions for Higher Education* 179, 65-75.
- Fry, H., Ketteridge, S. & Marshall, S. (2009) *A Handbook for Teaching and learning in Higher Education. Enhancing Academic Practice*. 3rd. ed. London: Routledge.
- Gerring, J. (2004) What is a case study and what is it good for? *The American Political Science Review* 98(2), 341-354.
- Göncz, L. (2017) Teacher personality: a review of psychological research and guidelines for a more comprehensive theory in educational psychology. *Open Review of Educational Research* 4(1), 75-95.

References

- Gordon, J., Ludlum, J. & Hoey, J.J. (2008) Validating the NSSE against student outcomes: Are they related? *Research in Higher Education* 49, 19-39.
- Harvey, L. (2003) Student feedback. *Quality in Higher Education* 9(1), 3-20.
- Harvey, L. (2011) Overview: The nexus of feedback and improvement. Student feedback. In: C.S. Nair & P. Mertova (Eds.) *Student Feedback: The Cornerstone to an Effective Quality Assurance System in Higher Education*. Cambridge: Woodhead.
- Higher Education Authority (HEA). (2018) *The Irish Survey of Student Engagement (ISSE). Results from 2018*. Dublin: Higher Education Authority/ Irish Universities Association/ Technological Higher Education Association/ Union of Students in Ireland. Available at: http://hea.ie/assets/uploads/2018/11/ISSE-Report-2018-TEXT-Tag-A.pdf (accessed 5 April 2019).
- Hora, M.T., Bouwma-Gearhart, J. & Park, H.J. (2017) Data driven decision-making in the era of accountability: Fostering faculty data cultures for learning. *The Review of Higher Education* 40(3), 391-426.
- Illeris, K. (2018) *Contemporary Theories of Learning*. London: Routledge.
- Johnson, J.A. (2017) Ethics and justice in Learning Analytics. *New Directions for Higher Education* 179, 77-87.
- Khatri, Vijay, and Carol V. Brown. 2010. “Designing data governance.” *Communications of the ACM* 53(1), 148-152.
- Keshavarz, M. (2011) Measuring course learning outcomes. *Journal of Learning Design* 4(4), pp. 1–9.
- Kim, Y. (2007) Difficulties in quality doctoral academic advising: experiences of Korean students. *Journal of Research in International Education* 6(2), 171-193.
- Kim, C.K. & Chang, H.-C. (2019) The current state of data governance in higher education. *Proceedings of the Association for Information Science and Technology (ASIS&T)* 55(1), 198-206. Available at: https://onlinelibrary.wiley.com/doi/epdf/10.1002/pra2.2018.14505501022 (accessed 18 April 2019).
- Klemenčič, M. & Chirikov, I. (2015) How do we know how students experience higher education? On the use of student surveys. In: A. Curaj, L. Matei, R. Pricopie, J. Salmi & P. Scott (Eds.) *The European Higher Education Area. Between Critical Reflections and Future Policies*. Cham: Springer, pp. 361-380.
- Kuh, G. D. (2009) The national survey of student engagement: Conceptual and empirical foundations. *New Directions for Institutional Research* 141, 5-20.
- Leiber, T. (2016) Personality development as elemental educational goal. Methodological options of implementation and evaluation in higher education [in German], *die hochschullehre. Interdisziplinäre Zeitschrift für Studium und Lehre*, 2, pp. 1–21. Available at http://www.hochschullehre.org/wp-content/files/diehochschullehre_2016_leiber.pdf (accessed 19 February 2019).

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https://www.evalag.de/sqelt

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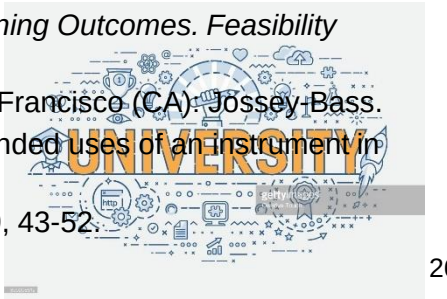
EVALUATIONSAGENTUR BADEN-WÜRTTEMBERG

References

- Leiber, T. (2019a) Organizational change and development through quality management in higher education institutions: theory, practice, and recommendations for change agents. In: Robert G. Hamlin, Andrea D. Ellinger, Jenni Jones (Eds.) *Evidence-Based Initiatives for Organizational Change and Development*. Hershey (PA): IGI Global, pp. 316-341. See also: https://www.igi-global.com/book/evidence-based-initiatives-organizational-change/197443
- **Leiber, T. (2019b) A general theory of learning and teaching and a related comprehensive set of performance indicators for higher education institutions. *Quality in Higher Education* 25(1), 76-97. See also: https://doi.org/10.1080/13538322.2019.1594030**
- Lodge, J.M. & Bonsanquet, A. (2014) Evaluating quality learning in higher education: re-examining the evidence, *Quality in Higher Education* 20(1), pp. 3–23. Lonn, S., McKay, A. & Teasley, S.D. (2017) Cultivating institutional capacities for Learning Analytics. *New Directions for Higher Education* 179, pp. 65-75.
- Marshall, S. (2016) Quality as sense-making. *Quality in Higher Education* 22(3), 213-227.
- McCormick, A.C. & McClenney, K. (2012) Will these trees ever bear fruit? A response to the special issue on student engagement. *Review of Higher Education* 35(2), 307-333.
- Mezirow, J. (1997) Transformative learning: theory to practice. *New Directions for Adult and Continuing Education* 74, 5-12.
- Moullin, M. (2007) Performance measurement definitions: Linking performance measurement and organisational excellence. *International Journal of Health Care Quality Assurance* 20(3), 181-183.
- Museus, S.D. (2014) The Culturally Engaging Campus Environments (CECE) model: A new theory of success among racially diverse college student populations. In M.B. Paulsen (Ed.) *Higher Education: Handbook of Theory and Research*. New York (NY): Springer, pp. 189-227.
- Neves, J. & Hillman, N. (2018) *2018 Student Academic Experience Survey*. Oxford: AdvanceHE/Higher Education Policy Institute (hepi). Available at: https://www.hepi.ac.uk/wp-content/uploads/2018/06/STRICTLY-EMBARGOED-UNTIL-THURSDAY-7-JUNE-2018-Student-Academic-Experience-Survey-report-2018.pdf (accessed 15 April 2019).
- Organisation for Economic Cooperation and Development (OECD). (2013) *Assessment of Higher Education Learning Outcomes. Feasibility Study Report*. Vol. 2: *Data Analysis and National Experiences*. Paris: OECD.
- Pascarella, E.T. & Terenzini, P.T. (2005) *How Colleges Affect Students*. Vol.2: *A Third Decade of Research*. San Francisco (CA): Jossey-Bass.
- Pike, G.R. (2013) NSSE benchmarks and institutional outcomes: A note on the importance of considering the intended uses of an instrument in validity studies. *Research in Higher Education* 54, 149-170.
- Pistilli, M.D. (2017) Learner analytics and student success interventions. *New Directions for Higher Education* 179, 43-52.



References

- Pistilli, M.D., Willis III, J.F. & Campbell, J.P. (2014) Analytics through an institutional lens: definition, theory, design, and impact. In J.A. Larusson & B. White (eds.) *Learning Analytics: From Research to Practice*. New York (NY): Springer, pp. 79-102.
- Porter, S.R. (2011) Do college student surveys have any validity? *Review of Higher Education* 35(1), 45-76.
- Porter, S.R. (2013) Self-reported learning gains: A theory and test of college student survey response. *Research in Higher Education* 54, 201-226.
- Porter, S.R., Rumann, C. & Pontius, J. (2011) The validity of student engagement survey questions: Can we accurately measure academic challenge? *New Directions for Institutional Research* 150, 87-98.
- Ramsden, P. (1991) 'A performance indicator of teaching quality in higher education: the course experience questionnaire', *Studies in Higher Education* 16(2), pp. 129–50.
- Richardson, J.T.E., Slater, J.B. & Wilson, J. (2007) The national student survey: Development, findings and implicatons. *Studies in Higher Education* 32(5), 557-580.
- Saeys, T. & Ištván, M. (2016) Integrated student lifecycle management. Higher education: gaining the edge through outstanding student experiences. IT White paper. Diegem: Itelligence Business Solutions. Available at: https://itelligencegroup.com/wp-content/usermedia/4806_ITEL_WhitePaper_Education_WEB_fin.pdf (accessed 5 April 2019).
- Skolnik, M.L. (2010) Quality assurance in higher education as a political process. *Higher Education Management and Policy* 22(1), 67-86.
- Sustainable Quality Enhancement in Higher Education Learning and Teaching (SQELT). 2018. "Sustainable quality enhancement in higher education learning and teaching. Integrative core dataset and performance data analytics." Erasmus+ project. Available at https://www.evalag.de/sqelt (accessed 28 May 2019).
- Tan, A.H.T., Muskat, B. & Zehrer, A. (2016) A systematic review of quality of student experience in higher education. *International Journal of Quality and Service Sciences* 8(2), 209-228.
- Taylor, John. 2014. Informing or distracting? Guiding or driving? The use of performance indicators in higher education. In: M.E. Menon et al. (eds.) Using Data to Improve Higher Education. Dordrecht: Sense Publishers.
- Thille, C. & Zimmaro, D. (2017) Incorporating Learning Analytics in the classroom. *New Directions for Higher Education* 179, 9-17.
- Wächter, B., Kelo, M., Queenie, K.H.L., Effertz, P., Jost, C. and Kottowski, S., 2015, *University Quality Indicators: A Critical Assessment*. Brussels: Directorate General for International Policies. Available at: http://www.europarl.europa.eu/RegData/etudes/STUD/2015/563377/IPOL_STU%282015%29563377_EN.pdf (accessed 28 May 2019).

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EVALUATIONSAGENTUR BADEN-WÜRTTEMBERG

References

- Webber, M., Lynch, S. & Oluku, J. (2013) Enhancing student engagement in student experience surveys: a mixed method study. *Educational Research* 55(1), 71-86.
- Weick, K.E. (1995) *Sensemaking in Organizations*. Thousand Oaks (CA): Sage.
- Whiteley, S. (2016) Creating a coherent performance indicator framework for the higher education student lifecycle in Australia. In R.M.O. Pritchard, A. Pausits, J. Williams (eds.) *Positioning Higher Education Institutions. From Here to There*. Dordrecht: Sense Publishers, pp. 99-124.
- Williams, J. (2014) Student feedback on the experience of higher education. A significant component of institutional research data. In: M.E. Menon et al. (Eds.) *Using Data to Improve Higher Education*. Amsterdam: Sense Publishers, pp. 67-80.
- Yorke, M. (2009) 'Student experience' surveys: some methodological considerations and an empirical investigation. *Assessment & Evaluation in Higher Education* 34(6), 721-739.
- Zilvinskis, J., Willis, J. & Borden, M.H. (2017) An overview of Learning Analytics. *New Directions for Higher Education* 179, 9-17.