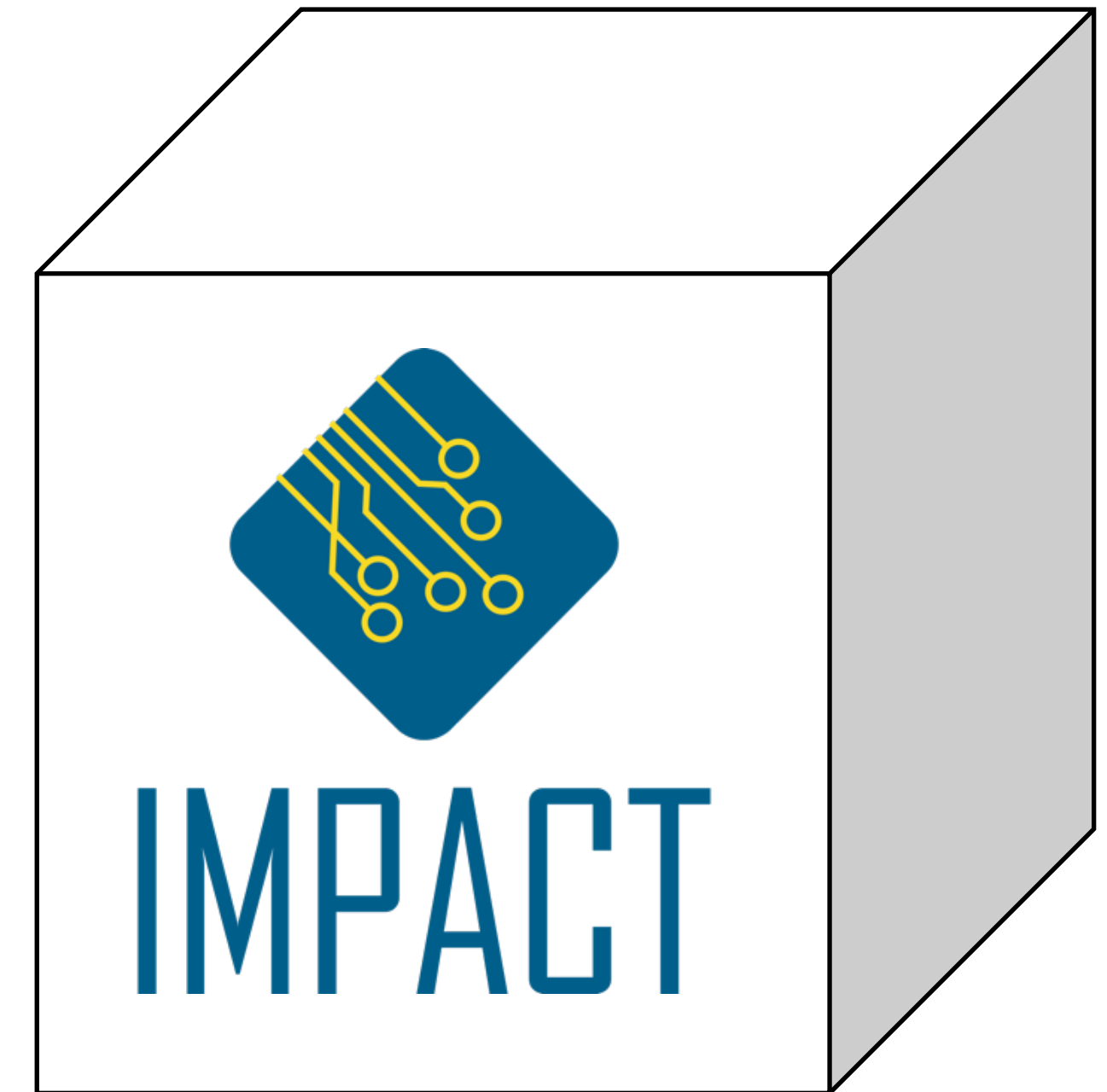




KI-basiertem Feedback und Assessment mit Trusted Learning Analytics in Hochschulen





IMPACT IMPLEMENTIERUNG VON KI-BASIERTEM FEEDBACK UND ASSESSMENT MIT TRUSTED LEARNING ANALYTICS IN HOCHSCHULEN

Seit dem 01. Dezember 2021 fördert das Bundesministerium für Bildung und Forschung (BMBF) im Rahmen der Förderlinie „Digitale Hochschulbildung“ das Verbundprojekt IMPACT

Projektziele

Implementierung von KI-Verfahren an Hochschulen (ChatBots, formatives und summatives Feedback) unter Einhaltung aller ethischen, rechtlichen und sozialen Voraussetzungen

AP1 | Change Management & Rollout

Implementierung innovativer technischer Lösungen anhand der sechs Schritte des SHEILA-Prozessmodells



AP2 | Ethik & Datenschutz

Anwendung und Implementierung eines Verhaltenskodex zur Umsetzung von TLA (Trusted Learning Analytics) unter Berücksichtigung von ELSI (ethische, rechtliche und soziale Implikationen)

AP3 | KI in der Studieneingangsphase

Ausbau von Beratungsangeboten für angehende Studierende durch KI-gestützte Anwendungen in Form von Chatbots



AP4 | KI für formatives Assessment und Feedback

Bereitstellung & Weiterentwicklung spezifischer KI-Anwendungen für formatives Feedback auf Basis von Text- und Lernprozessdaten



AP5 | KI für summatives Assessment und Feedback

(teil-)automatisierte Korrektur und Erstellung von Feedback für Freitextantworten in summativen Prüfungsformen



AP6 | Pilotierung, Evaluation & Implementierung

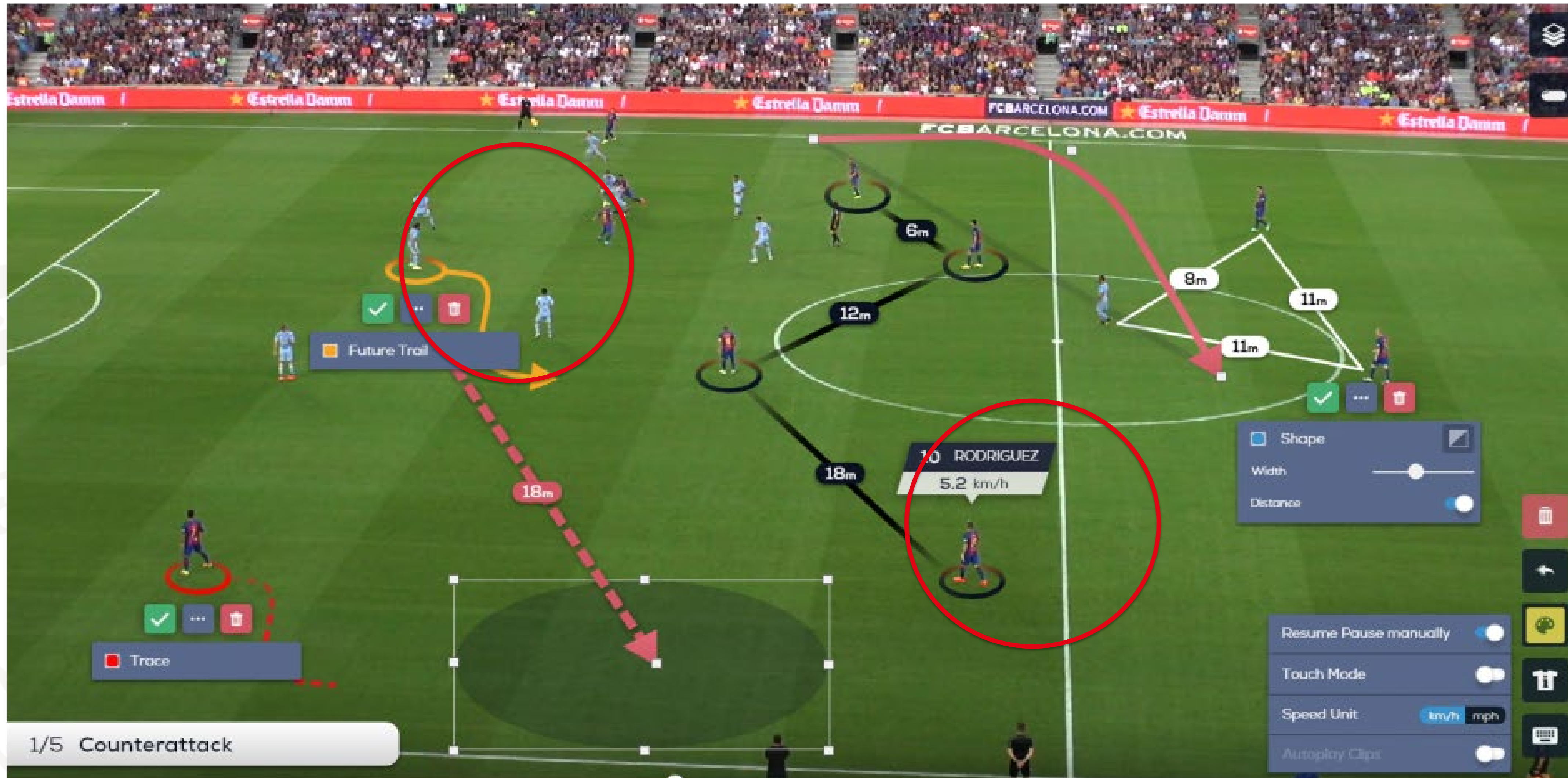
Testung der TLA-Anwendungen durch Pilot- und Evaluationsstudien in den Hochschulen sowie Vorbereitung der universitätsweiten Implementierung

Outline

1. Grounding
2. Highly Informative Learning Analytics (HILA)
3. The role of Learning Design
4. Data-enriched Learning Analytics (DeLA)
5. Evaluation of DeLAs
6. Take away messages



Aim: Personalised Feedback for students



In reality: Very little feedback in most cases



Challenges for the rollout of Learning Analytics



Contents lists available at ScienceDirect

Computers & Education

journal homepage: www.elsevier.com/locate/compedu



Learning analytics in European higher education—Trends and barriers[☆]

Yi-Shan Tsai^{a,*}, Diego Rates^b, Pedro Manuel Moreno-Marcos^c,
Pedro J. Muñoz-Merino^c, Ioana Jivet^d, Maren Scheffel^d, Hendrik Drachsler^{e,d,1},
Carlos Delgado Kloos^c, Dragan Gašević^{a,2}

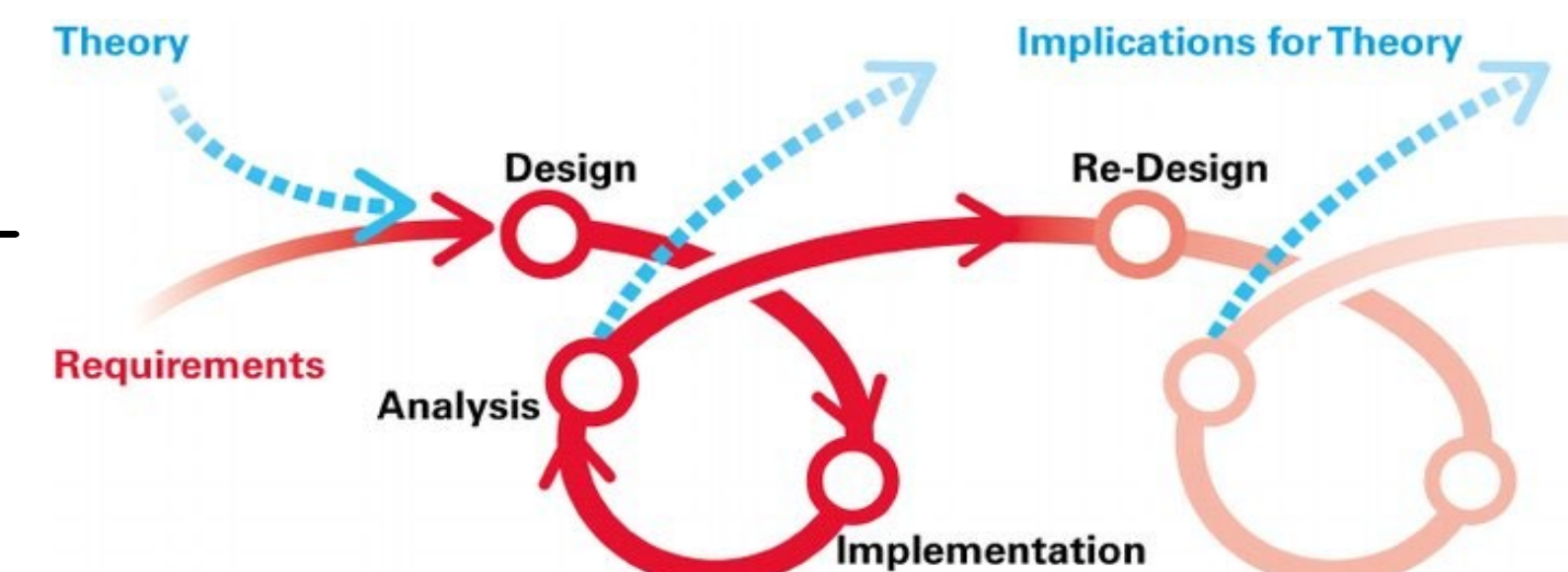
Challenge 1: Stakeholder engagement and buy-in.

Challenge 2: Weak pedagogical grounding.

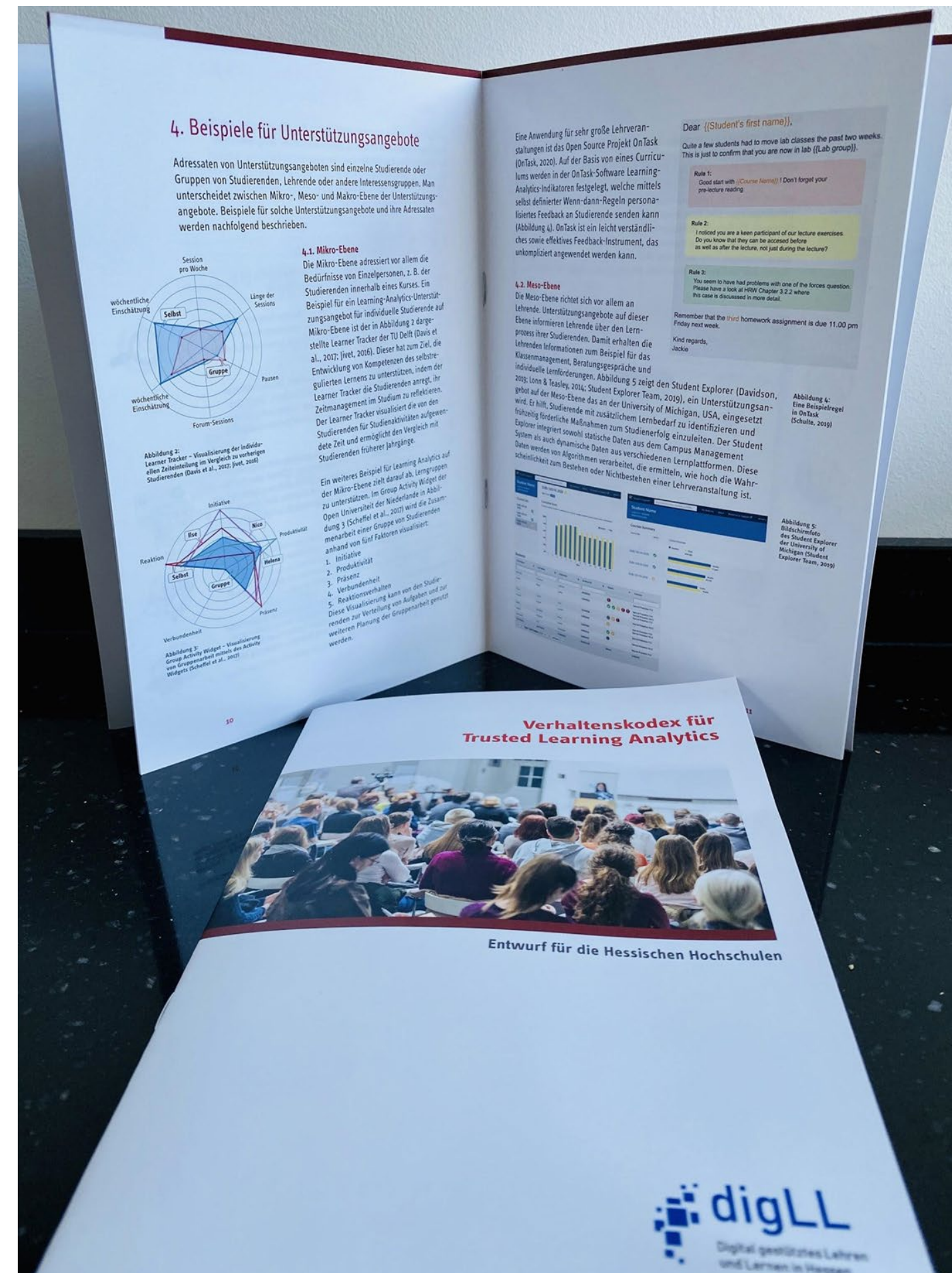
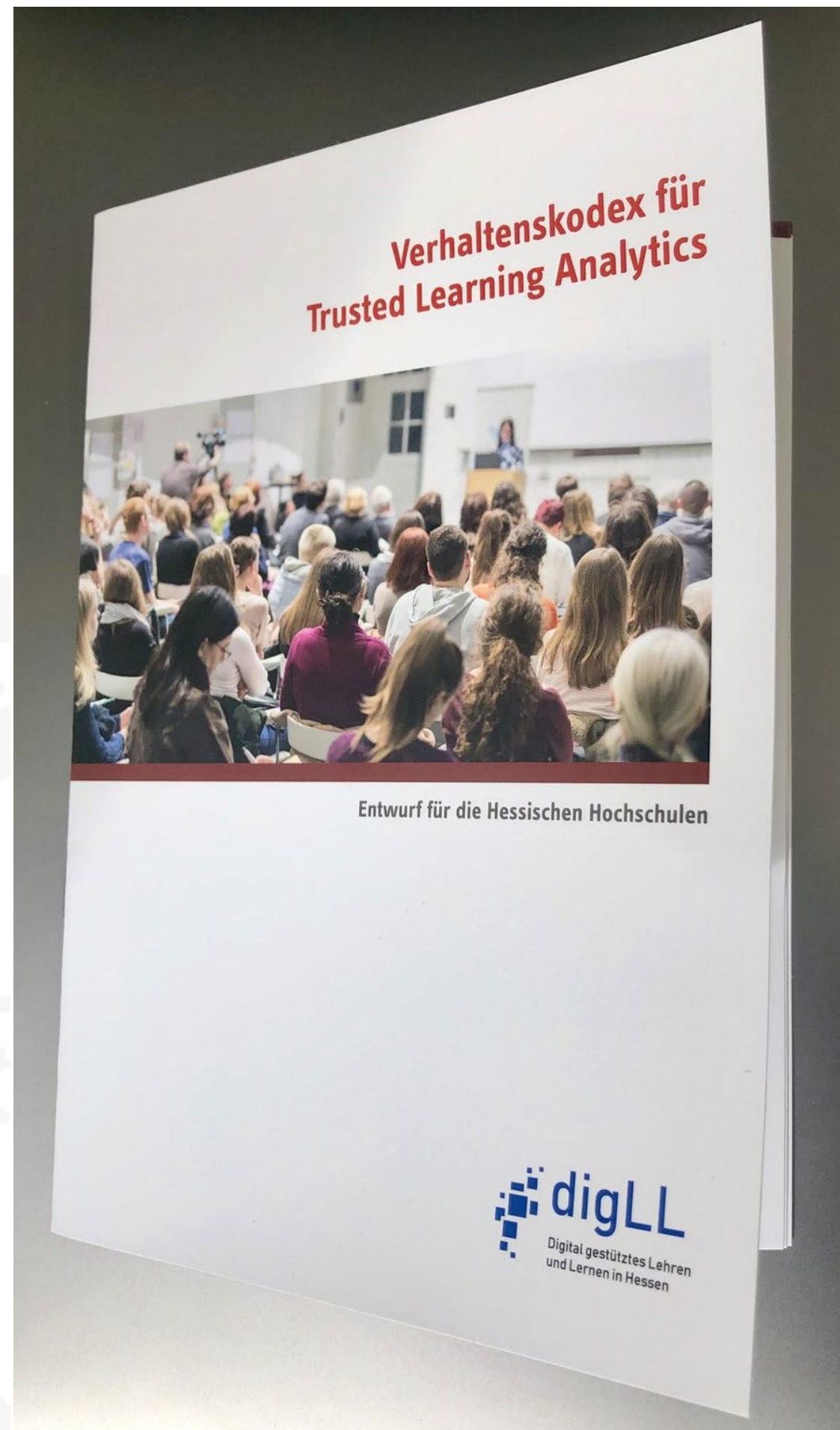
Challenge 3: Resource demand.

Challenge 4: Ethics and privacy.

Design-Based Research Methodology



Challenge 4: Ethics and privacy



7 Principles

1. Improving conditions for learning and teaching
2. Support services for all students
3. Transparent handling of data
4. Critical handling of data
5. Human control
6. Managerial responsibility
7. Commitment to continuing training

Outline

1. Grounding
2. Highly Informative Learning Analytics (HILA)
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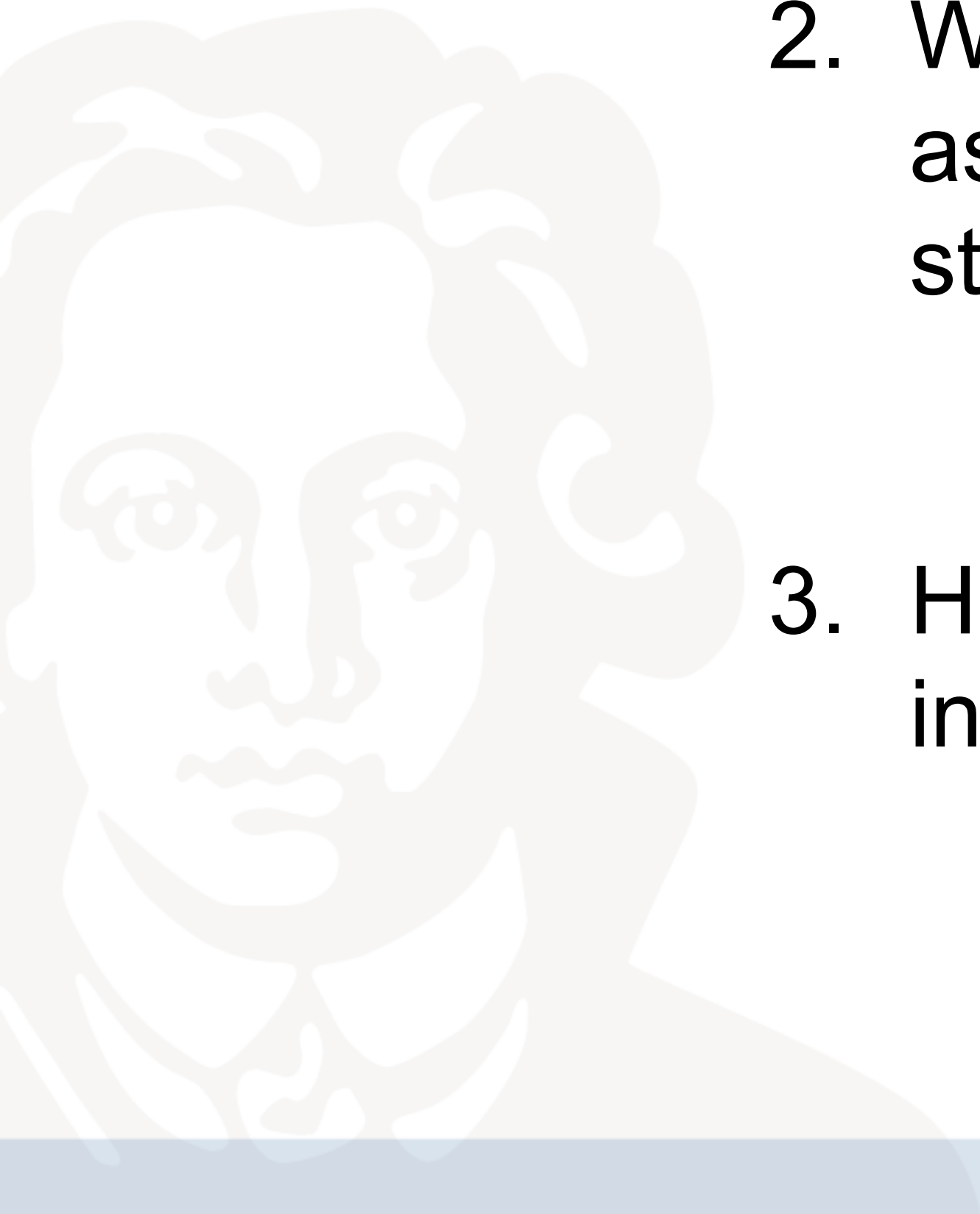
Aims of AI in Education for student feedback



Photo by [Annika Gordon](#) on [Unsplash](#)

Highly informative feedback goes beyond feedback on right/wrong, it provides correct solutions, possibilities for improvement, hints on competence development and effective learning strategies.

1. How can relevant data for the learner goals and outcomes of a course be extracted from digital learning environments?
2. What is the effect of different feedback types for assignment results, exam performance, and affective student variables?
3. How does feedback literacy influence students' interpretation and reaction to the received feedback?

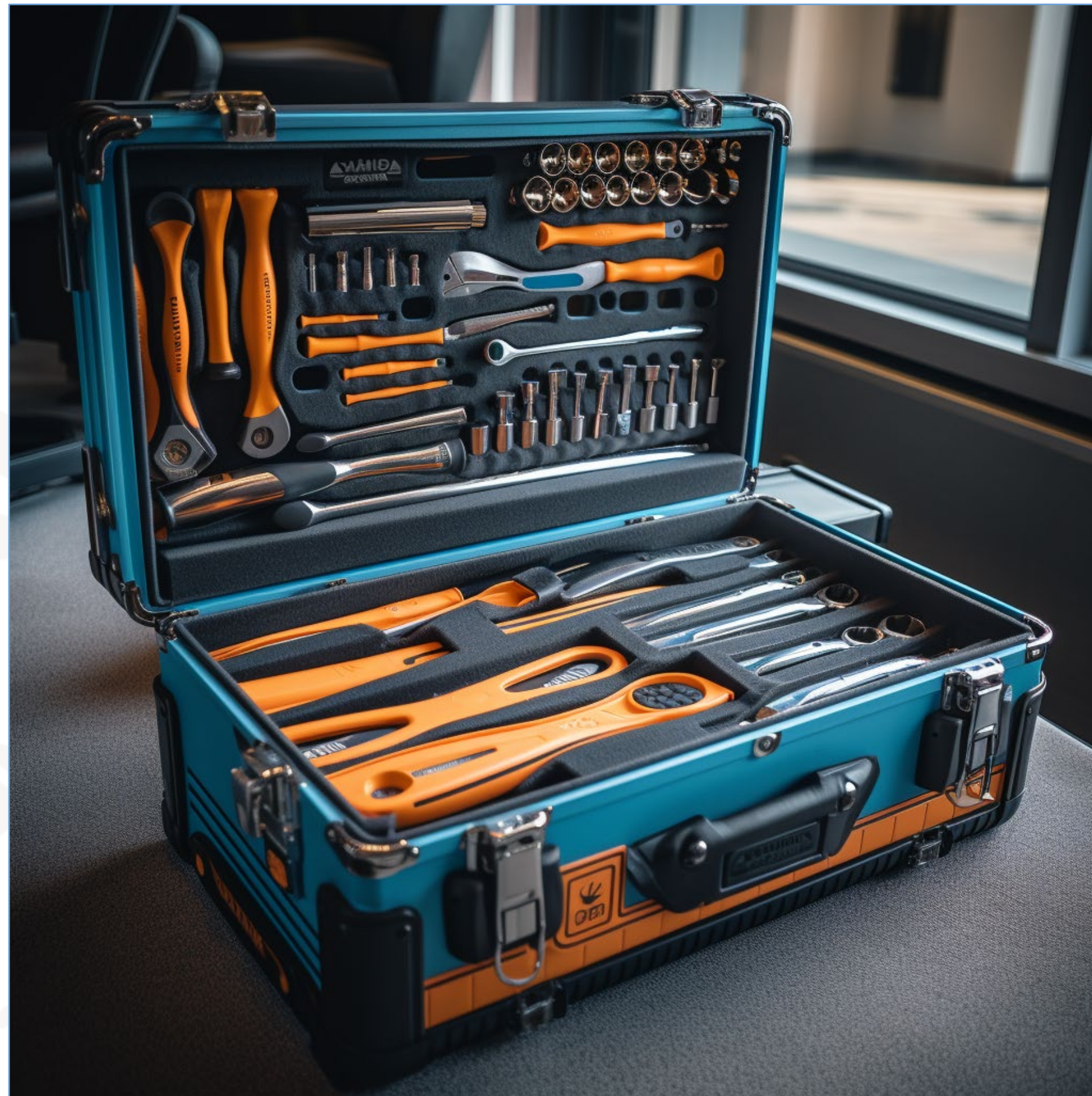


Outline

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Design: Evidenzbasierter Designprozess



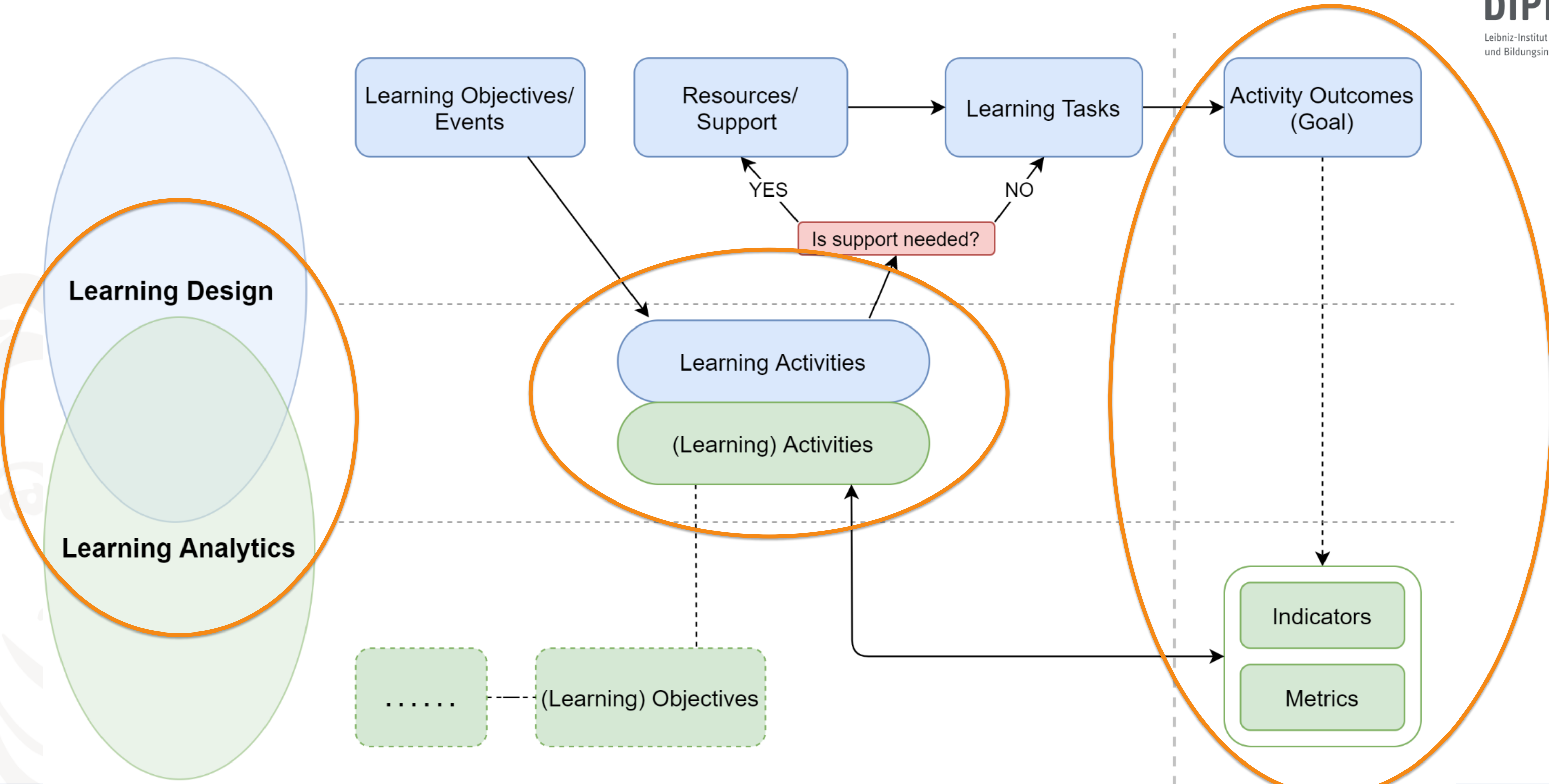
Learning Analytics *Mit Design*

Photo by [Alexander Schimmeck](#) on [Unsplash](#)

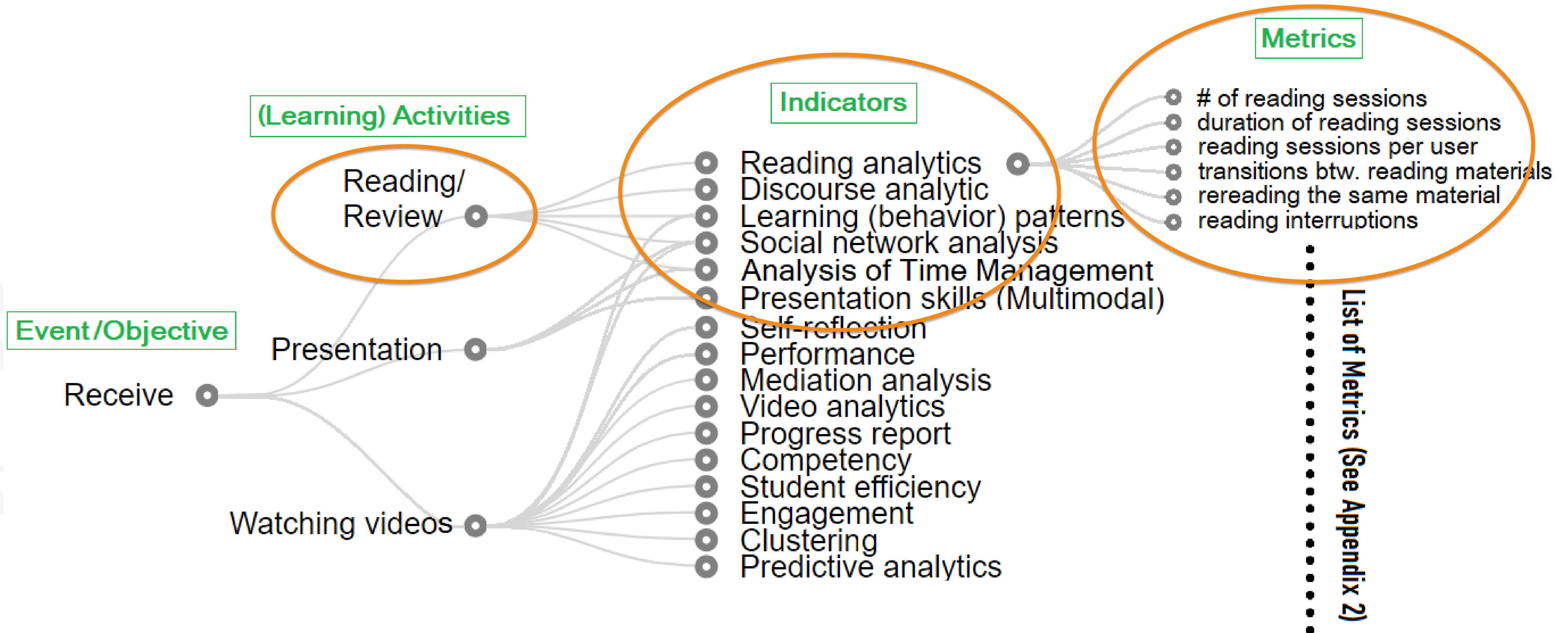


Learning Analytics *OHNE Design*

Design: Evidenzbasierter Designprozess



Design: Evidenzbasierter Designprozess



Design: Evidenzbasierter Designprozess



Limited Edition: LAK20 Version

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Schmitz, M., Scheffel, M., Bemelmans, R., & Drachsler, H. (2022). **FoLA2 — A Method for Co-creating Learning Analytics–Supported Learning Design**. *Journal of Learning Analytics*, 9(2), 265-281. <https://doi.org/10.18608/jla.2022.7643>

BETA Version

FoLA

Feedbackorientierte Lern-Designs
und Analytics

inspiriert von FoLA²



<https://FoLA.digital>

The screenshot shows the 'DemoBoard: Evaluation und Wirkungsanalyse in der digitalen Lehre'. It features a grid of learning activities including 'Einführung in die Evaluation von LV', 'Einführung in das PHINEO Results Staircase Model', and 'Evaluationsziele für eigene LV formulieren'. A red arrow points to the 'Selbstlernphase' section. The interface includes navigation icons and a footer with links for 'About us', 'Privacy Policy', 'Legal Notice', and 'Accessibility'.

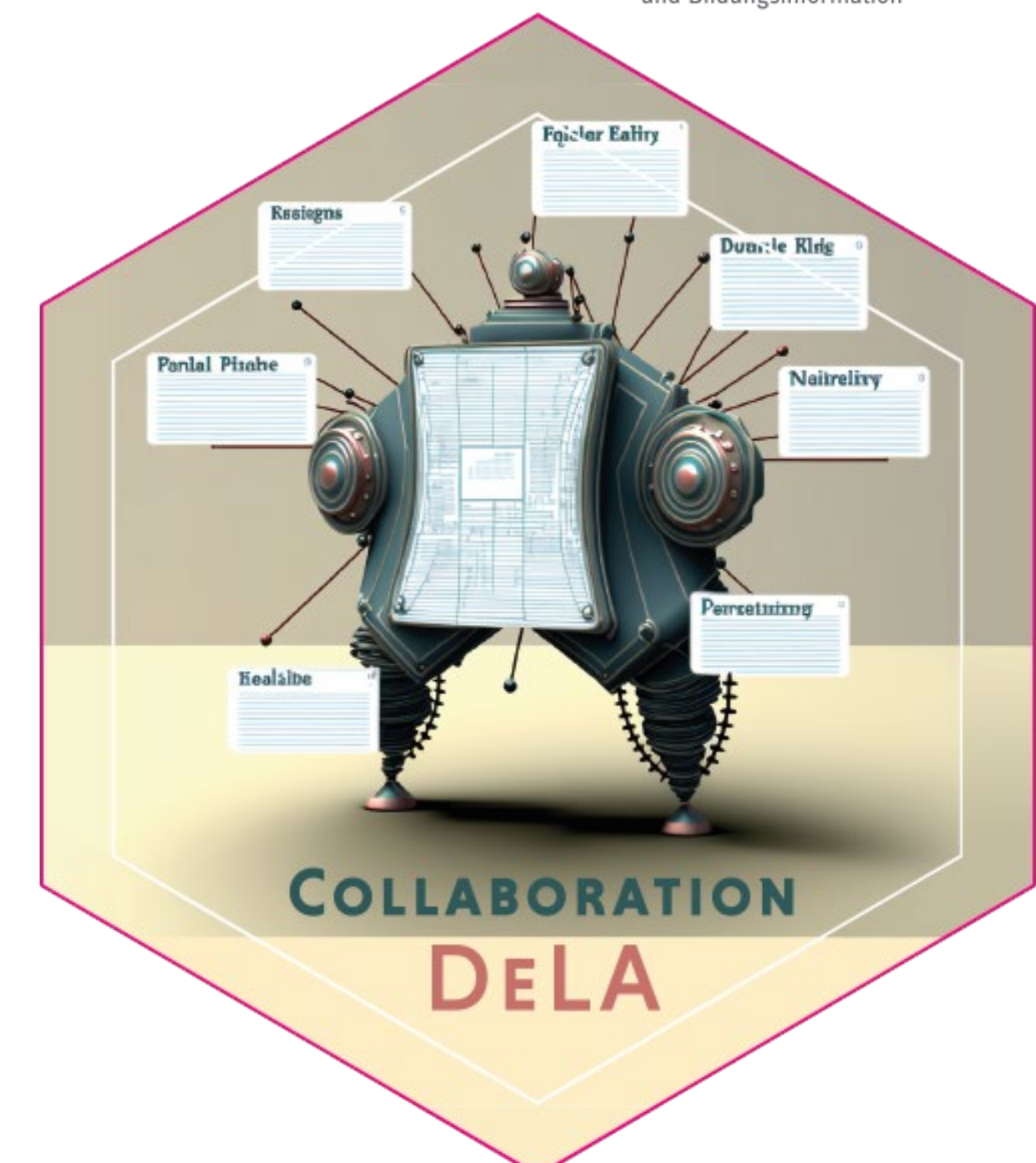
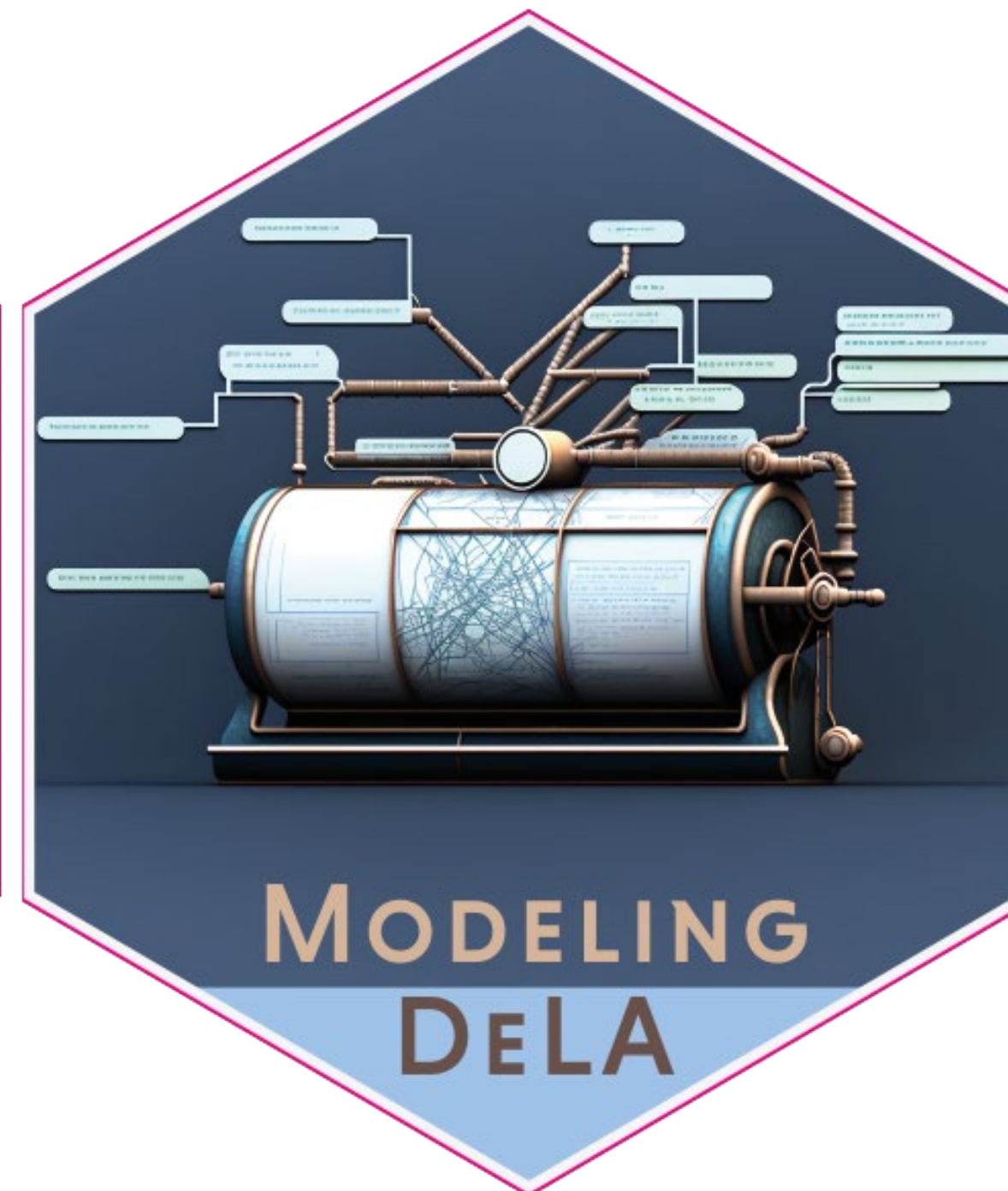
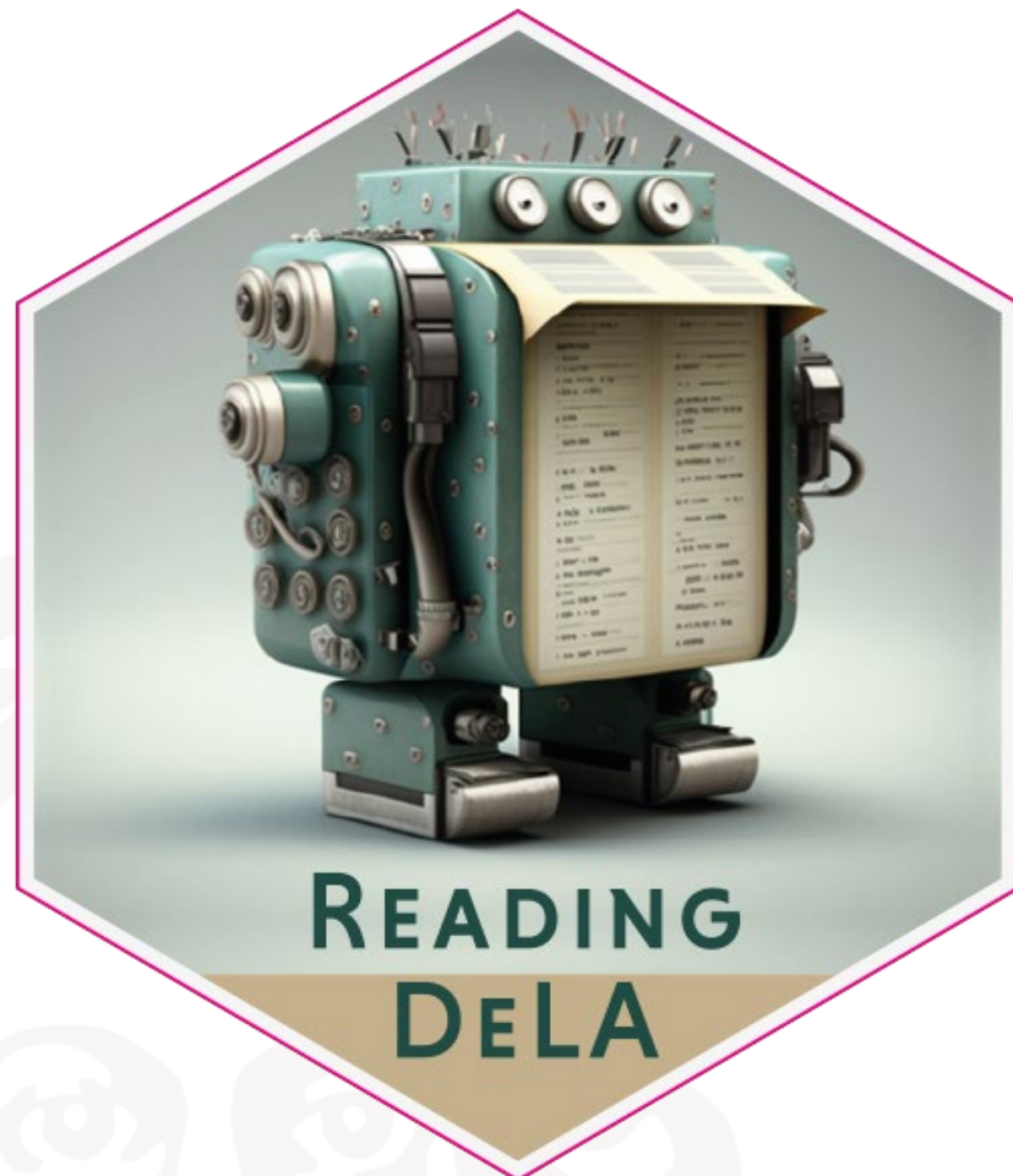
The 'Lerneinheit' dialog box allows for configuring a learning unit. It includes fields for 'Titel der Lerneinheit' (set to 'Selbstlernphase'), 'Beschreibung', 'Betreuungsaufwand in Minuten', and 'Lernzeit in Minuten'. A list of 'Lernziele' (learning objectives) is provided with checkboxes and weight sliders. The objectives include: 'Feedback geben', 'Evaluationsziele festlegen', 'Indikatoren und Skalen recherchieren', 'Evaluationskonzept und Studiendesign erstellen', and 'Evaluationsarten und -parameter benennen und diskutieren'. A 'Speichern' (Save) button is at the bottom right.

Outline

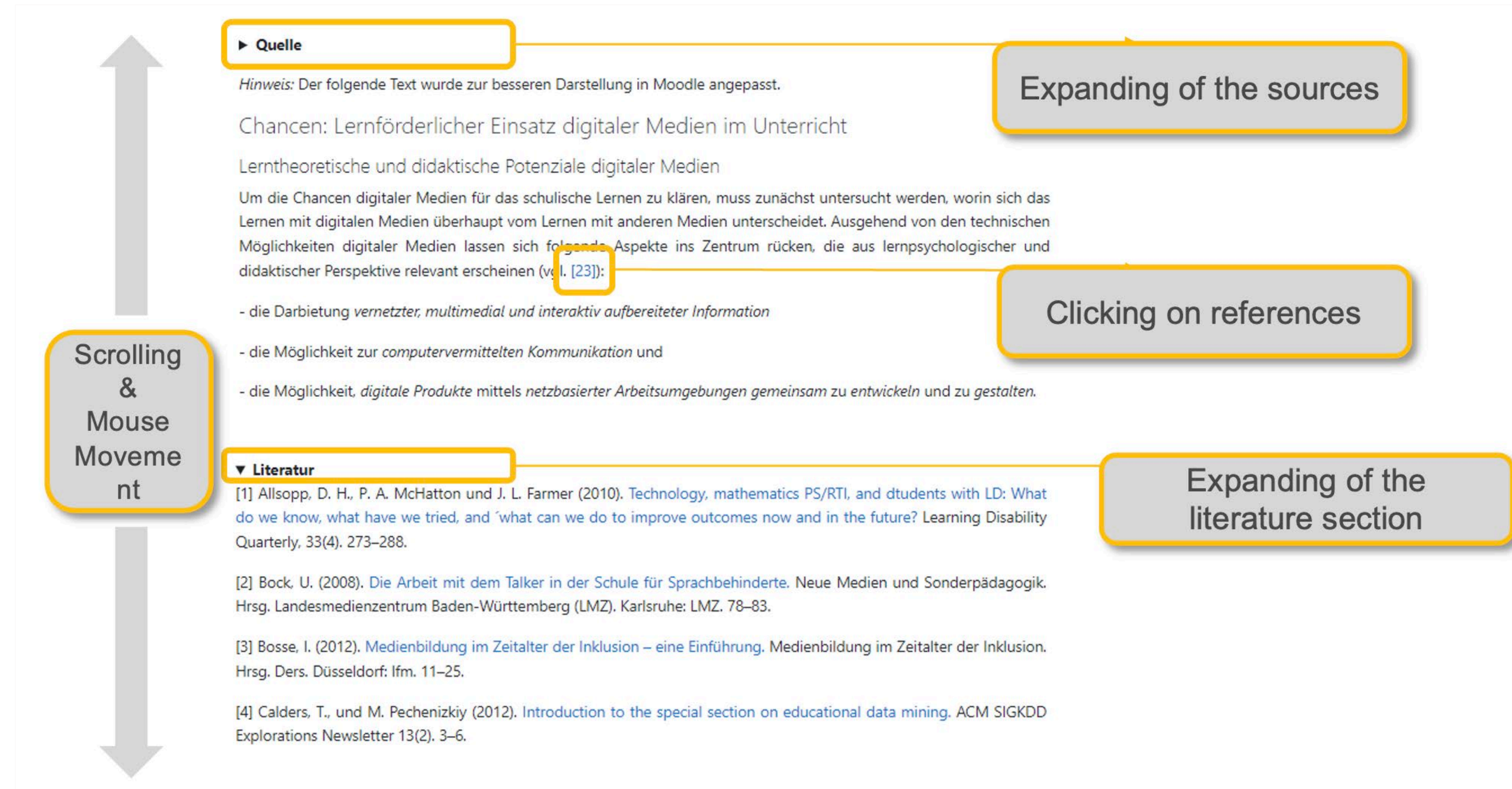
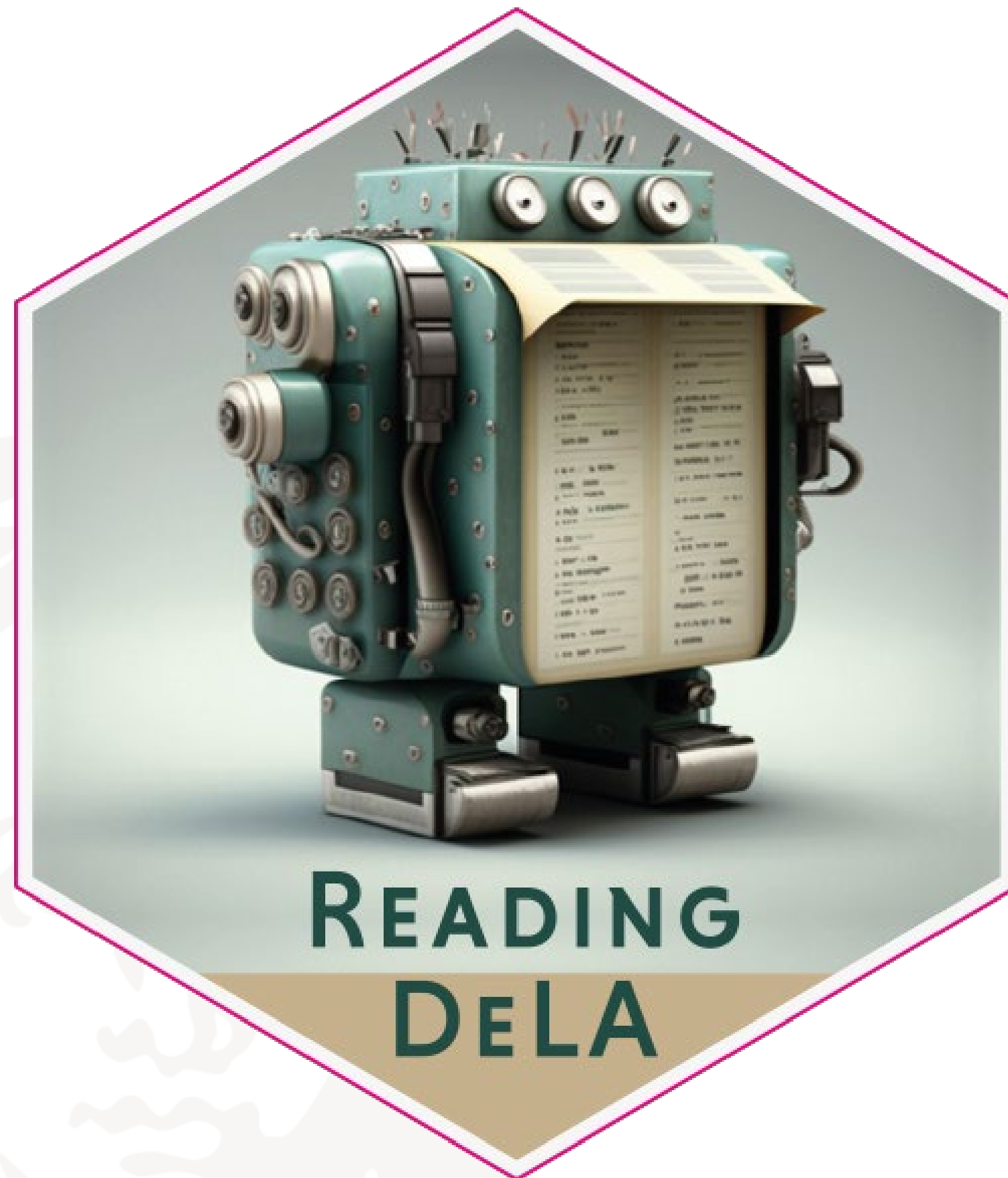
1. Grounding
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Entwicklung von Data-enriched Learning Analytics (DeLA)



DeLA für die am häufigste vorkommenden Unterrichtsaktivitäten.





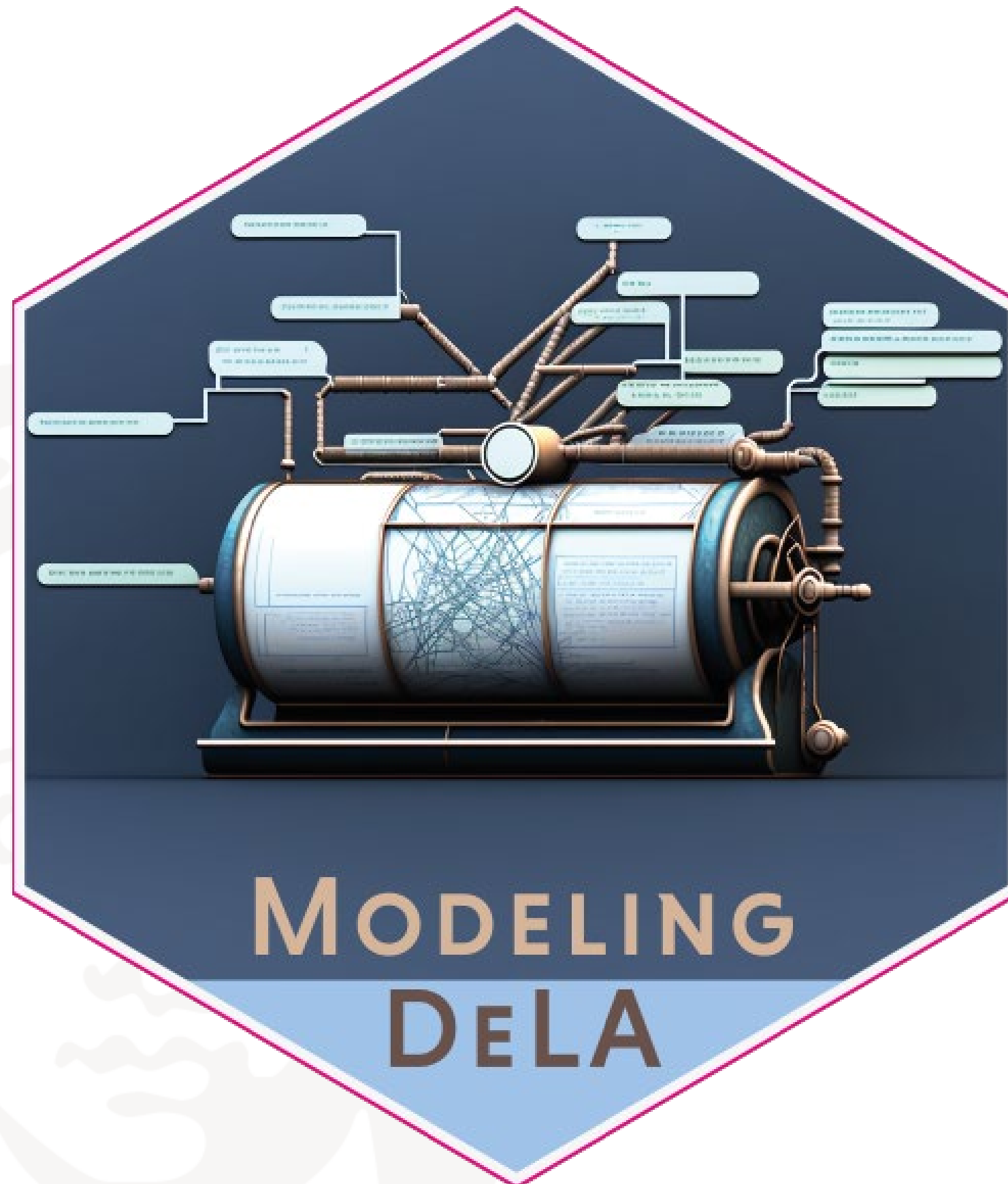
Prüfen

Free text answer of students



Students Scores based on Learning Goals

<input type="checkbox"/> Schüler*innen	Elektrische.. Avg: 38%	Strahlungse.. Avg: 44%	Umwandlung.. Avg: 38%	Erklären Avg: 44%	Versuche Pl.. Avg: 38%	Daten Auswe.. Avg: 50%	Energieform.. Avg: 0%	Umwandlung.. Avg: 0%	Alle goals
<input type="checkbox"/> Peter Kahn	<div style="width: 38%;"></div>	<div style="width: 44%;"></div>	<div style="width: 38%;"></div>	<div style="width: 44%;"></div>	<div style="width: 38%;"></div>	<div style="width: 50%;"></div>	<div style="width: 0%;"></div>	<div style="width: 0%;"></div>	57%
<input type="checkbox"/> Tom Müller	<div style="width: 38%;"></div>	<div style="width: 44%;"></div>	<div style="width: 38%;"></div>	<div style="width: 44%;"></div>	<div style="width: 38%;"></div>	<div style="width: 50%;"></div>	<div style="width: 0%;"></div>	<div style="width: 0%;"></div>	55%
<input type="checkbox"/> Bob Boyy	<div style="width: 38%;"></div>	<div style="width: 44%;"></div>	<div style="width: 38%;"></div>	<div style="width: 44%;"></div>	<div style="width: 38%;"></div>	<div style="width: 50%;"></div>	<div style="width: 0%;"></div>	<div style="width: 0%;"></div>	55%
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<input type="checkbox"/> Peter Kahn	<div style="width: 38%;"></div>	<div style="width: 44%;"></div>	<div style="width: 38%;"></div>	<div style="width: 44%;"></div>	<div style="width: 38%;"></div>	<div style="width: 50%;"></div>	<div style="width: 0%;"></div>	<div style="width: 0%;"></div>	49%
<input type="checkbox"/> Bob Boyy	<div style="width: 38%;"></div>	<div style="width: 44%;"></div>	<div style="width: 38%;"></div>	<div style="width: 44%;"></div>	<div style="width: 38%;"></div>	<div style="width: 50%;"></div>	<div style="width: 0%;"></div>	<div style="width: 0%;"></div>	47%



Preparation phase

Summer semester

Implementing LA and content in Moodle
Consulting pilot partners

Preparing lecture/seminar

Instrument-development
SRL, MSLQ, FL
LPQ, MDC,
align scales of psychometrics and LA

Implementing Surveys

DMiU Zeitplan neu. Stand 06.10.2022

17.10.-24.10.22	24.10.-07.11.22	07.11.-21.11.22	21.11.-05.12.22	05.12.-19.12.22	19.12.22-16.01.23 <i>Winterpause!</i>	16.01.-23.01.2023	23.01.-06.02.23	06.02.-13.02.23
1 Woche	2 Wochen	2 Wochen	2 Wochen	2 Wochen	2 Wochen + Winterferien	1 Woche	2 Wochen	1 Woche
Prä	L1	LE2	LE3	LE4	LE5	Post	LE6	LE7
	5 Texte	3 Texte	5 Texte	Foliensatz	3 Texte		2 Texte	Aktuelle Forschung zu Themen des Seminars
		3 Videos		VL Aufz.	3 Videos		2 Videos	
		Forum	Concept-Map	Forum	Concept-Map		Activity-Annotation	TN an Studien



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Preparation phase

Summer semester

Implementing LA and content in Moodle
Consulting pilot partners

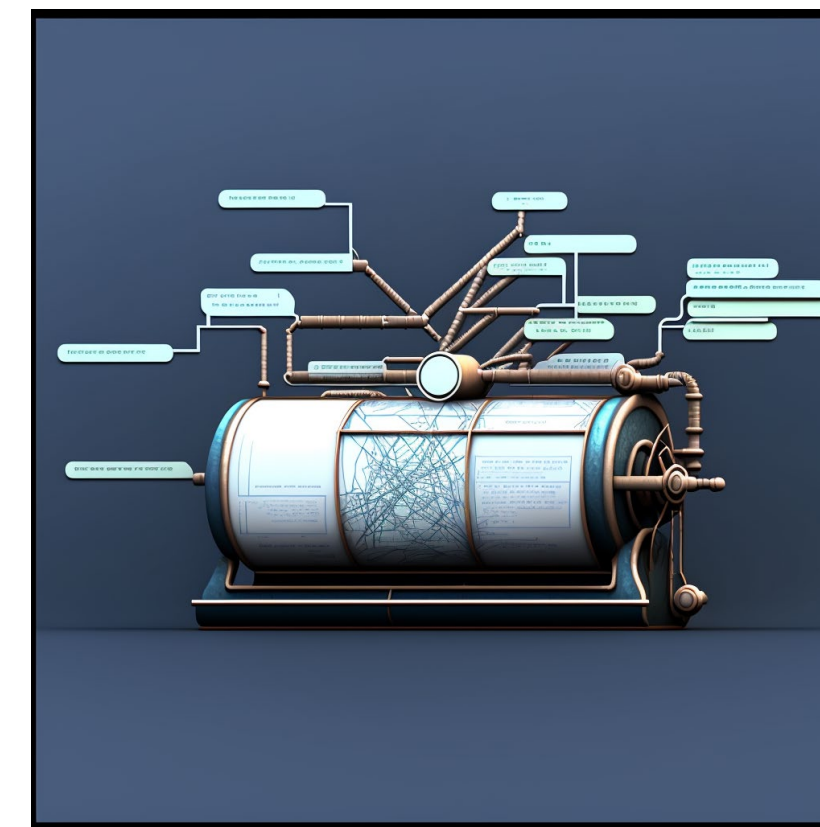
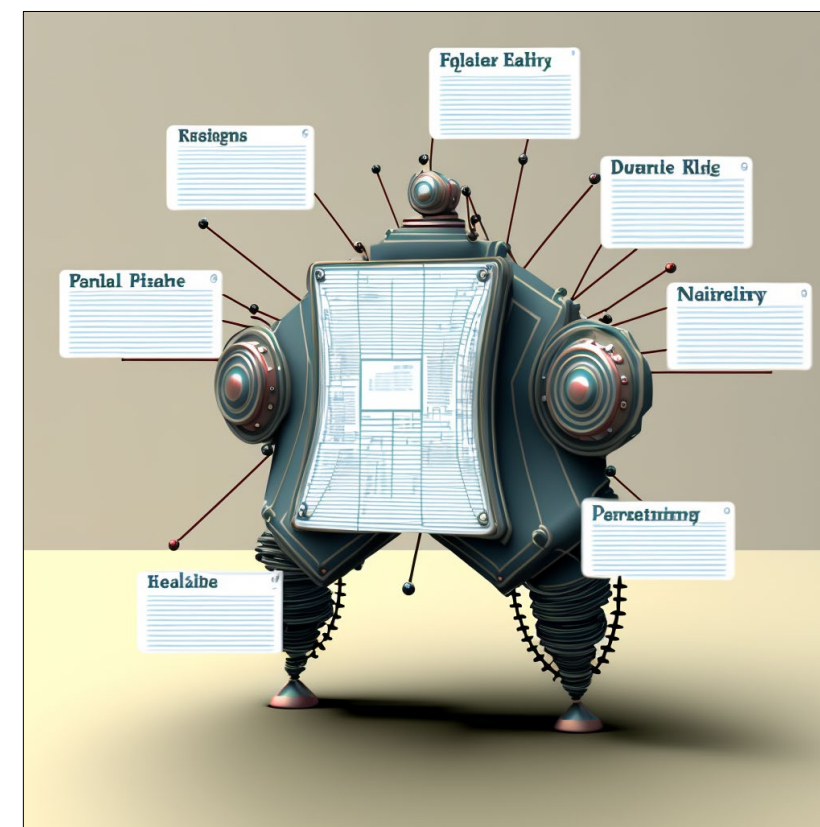
Preparing lecture/seminar

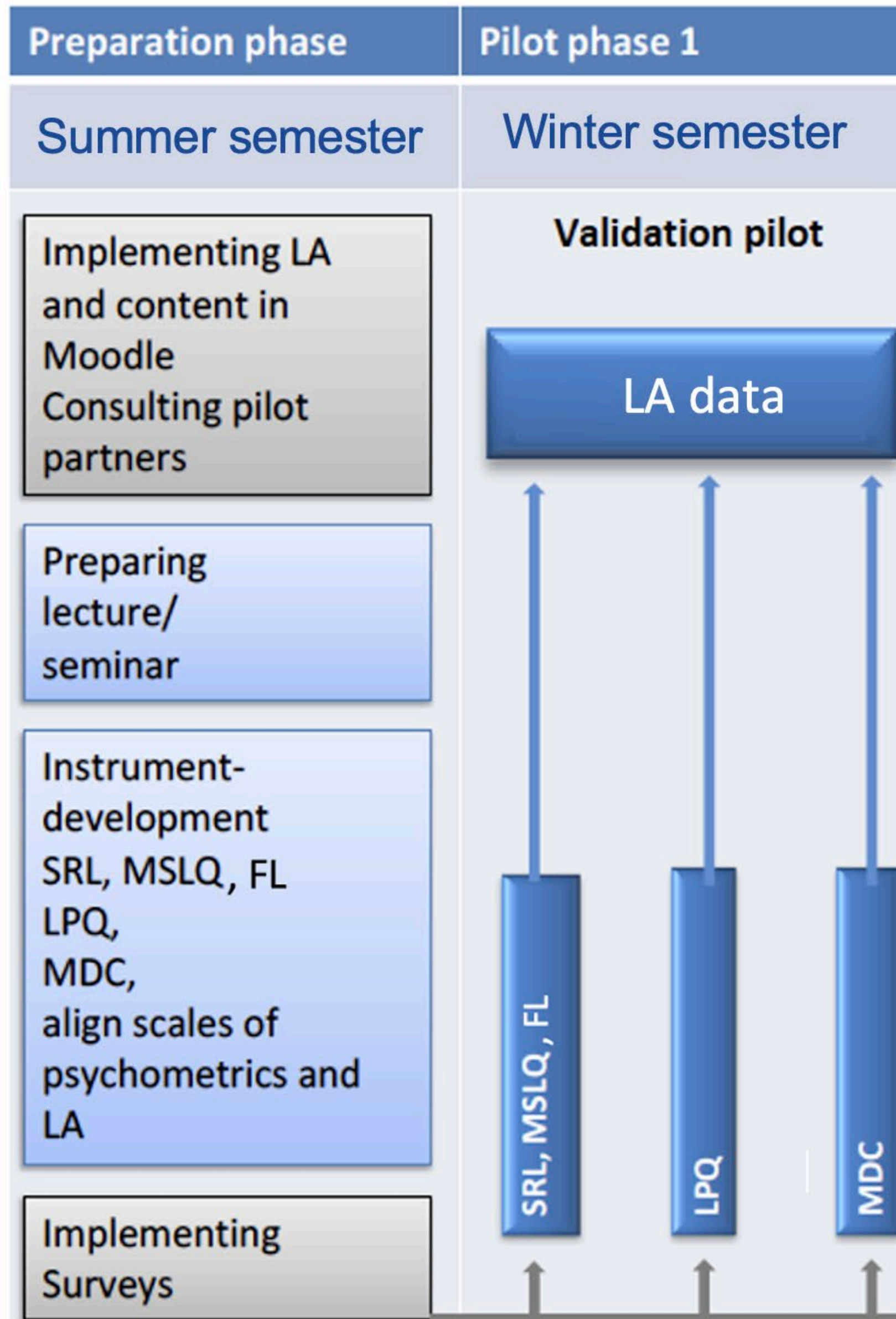
Instrument-development
SRL, MSLQ, FL
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Implementing Surveys

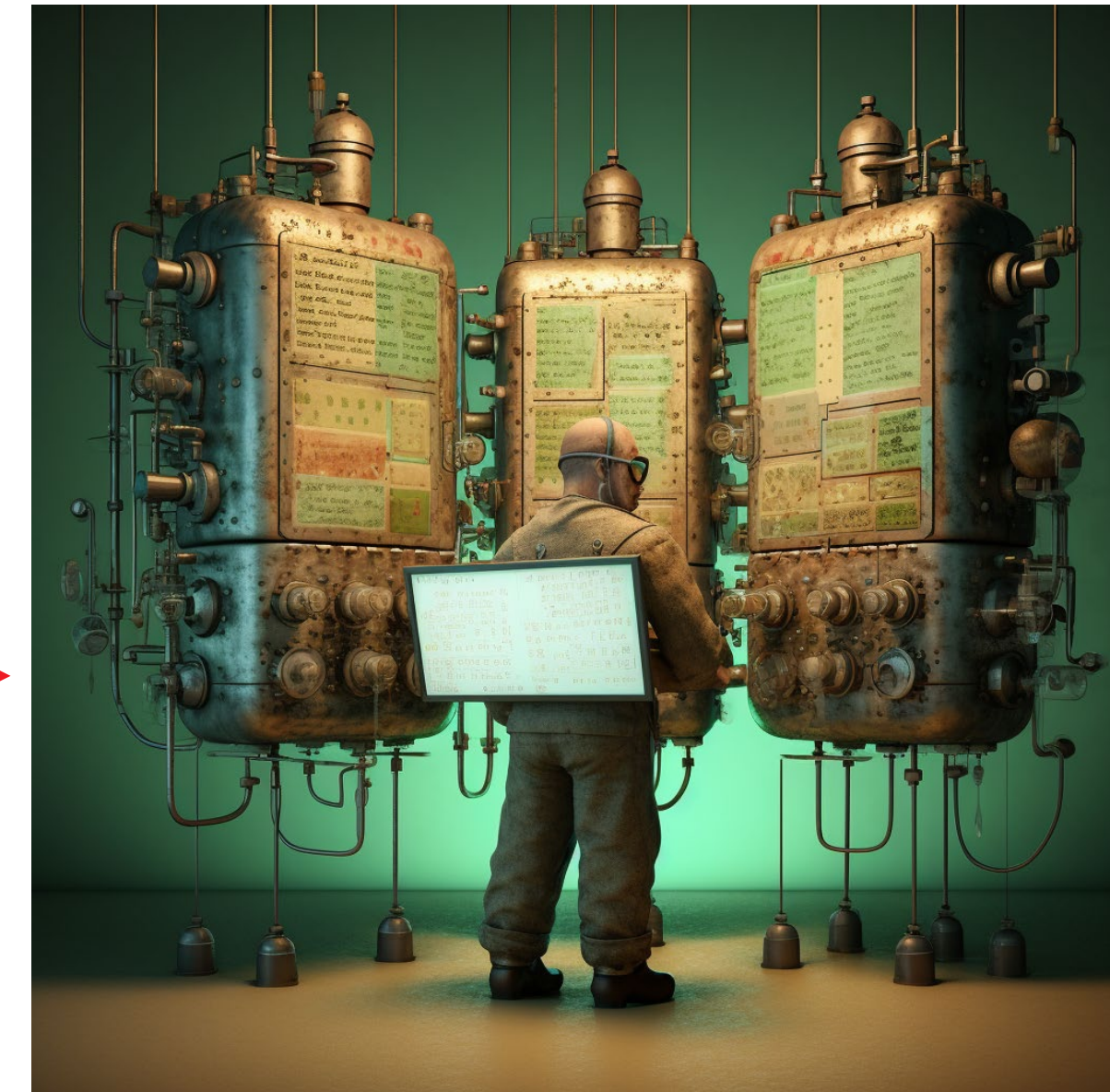
DMiU Zeitplan neu. Stand 06.10.2022

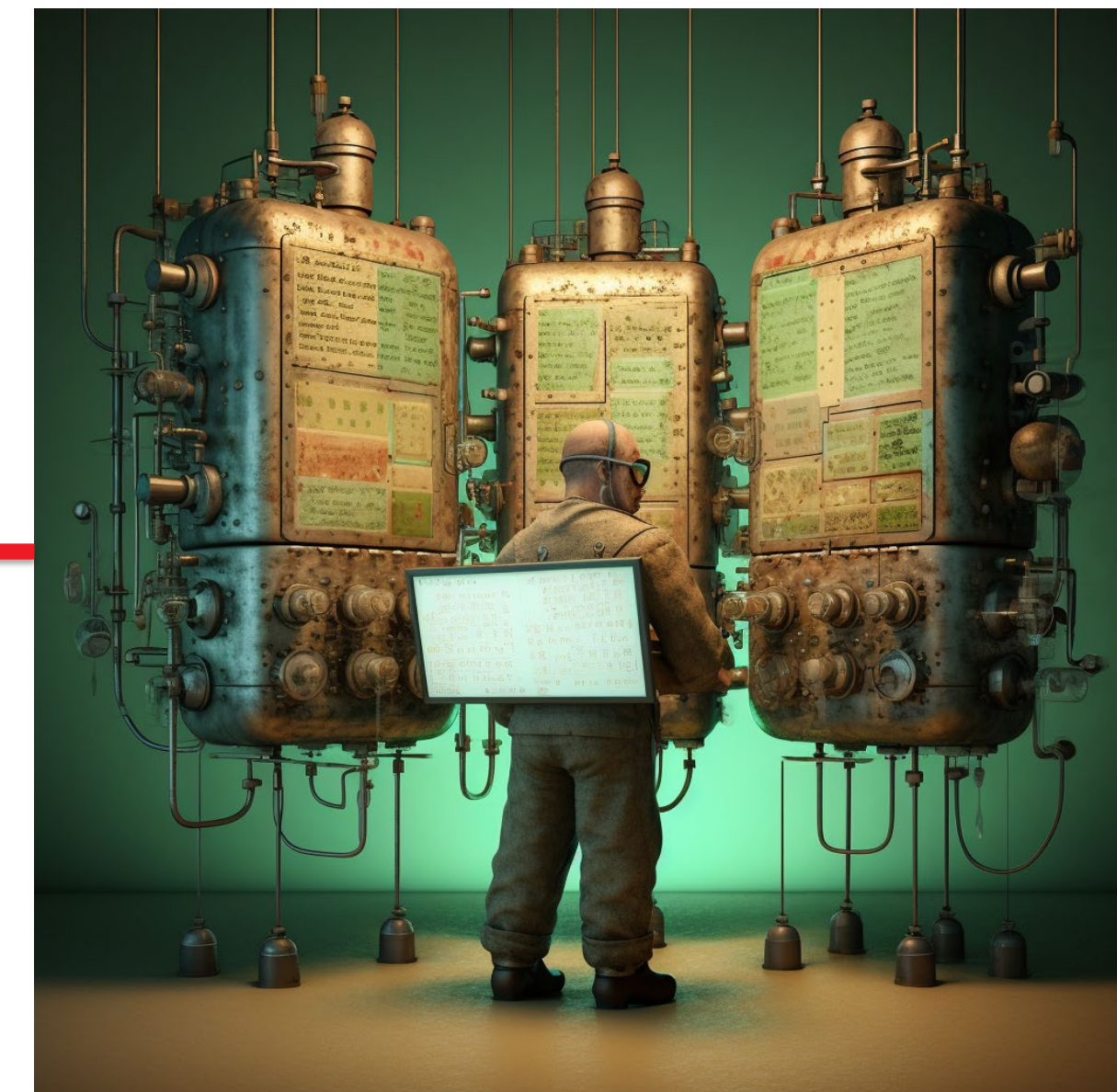
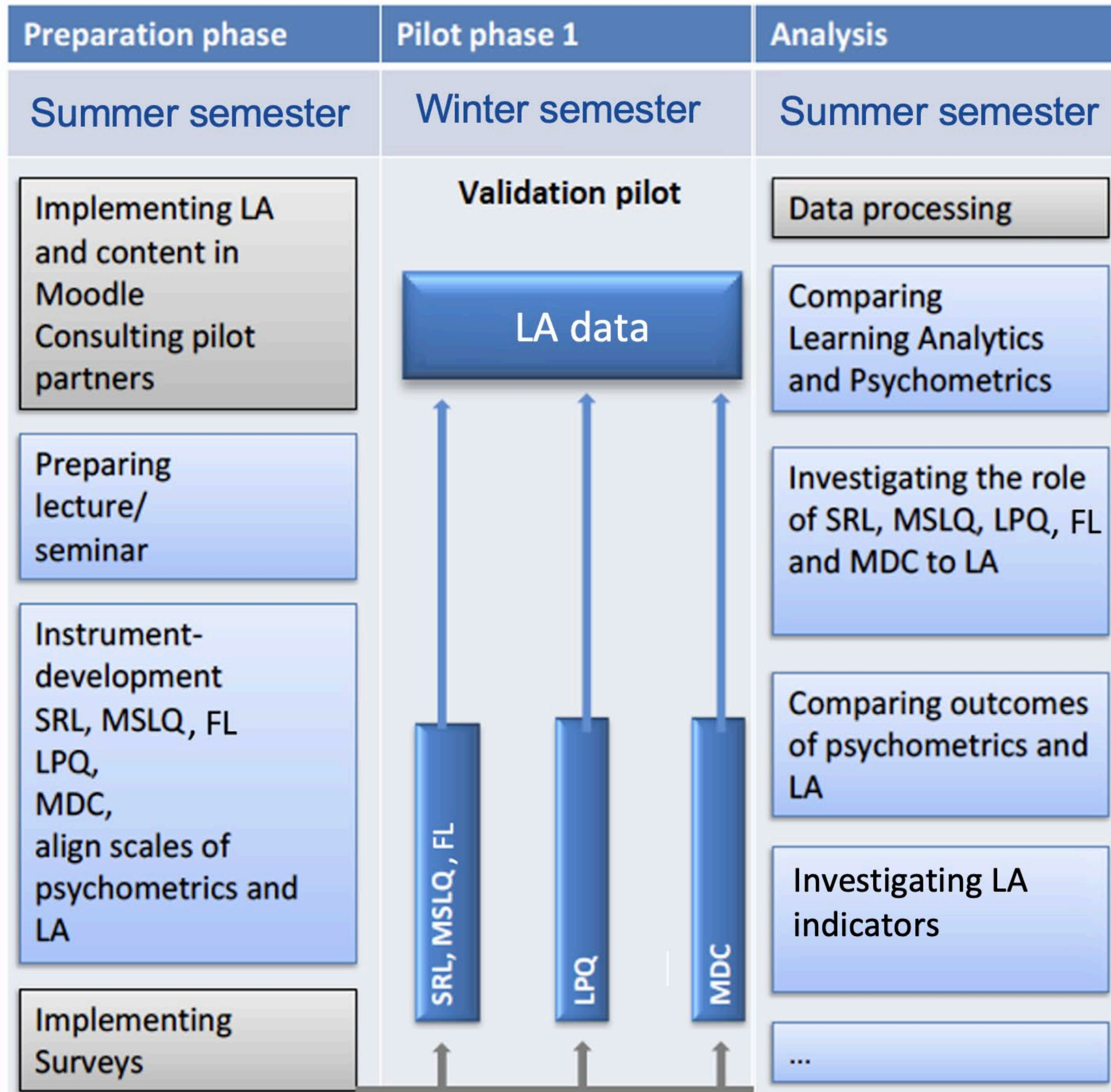
17.10.-24.10.22	24.10.-07.11.22	07.11.-21.11.22	21.11.-05.12.22	05.12.-19.12.22	19.12.22-16.01.23 <i>Winterpause!</i>	16.01.-23.01.2023	23.01.-06.02.23	06.02.-13.02.23
1 Woche	2 Wochen	2 Wochen	2 Wochen	2 Wochen	2 Wochen + Winterferien	1 Woche	2 Wochen	1 Woche
Prä	L1	LE2	LE3	LE4	LE5	Post	LE6	LE7
	5 Texte	3 Texte	5 Texte	Foliensatz	3 Texte		2 Texte	Aktuelle Forschung zu Themen des Seminars
		3 Videos		VL Aufz.	3 Videos		2 Videos	
		Forum	Concept-Map	Forum	Concept-Map		Activity-Annotation	TN an Studien



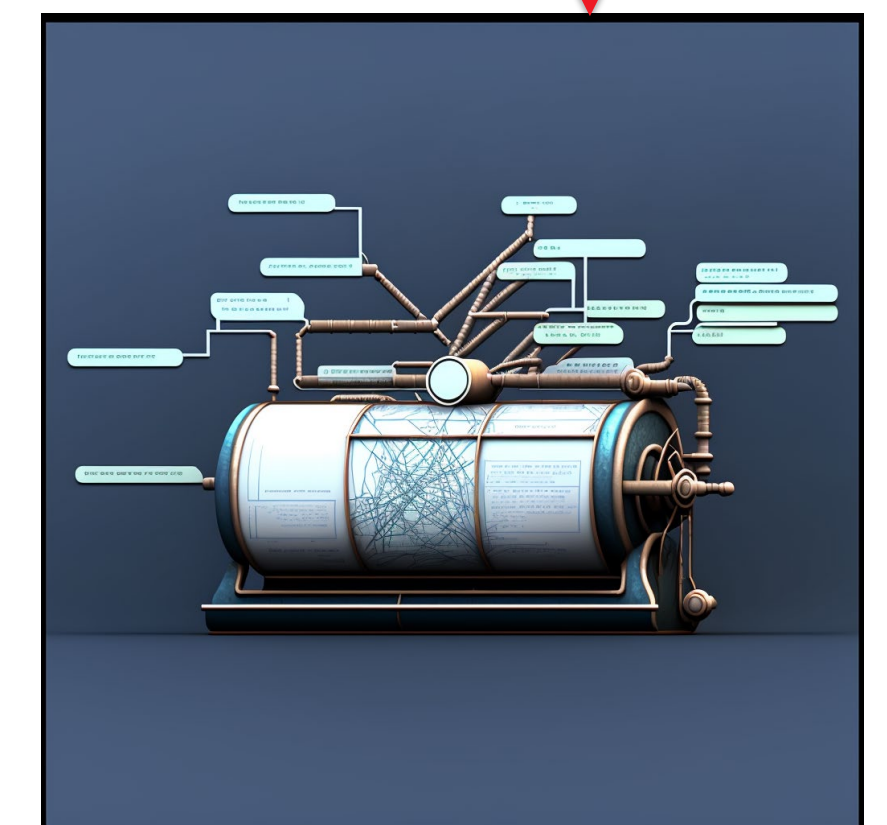
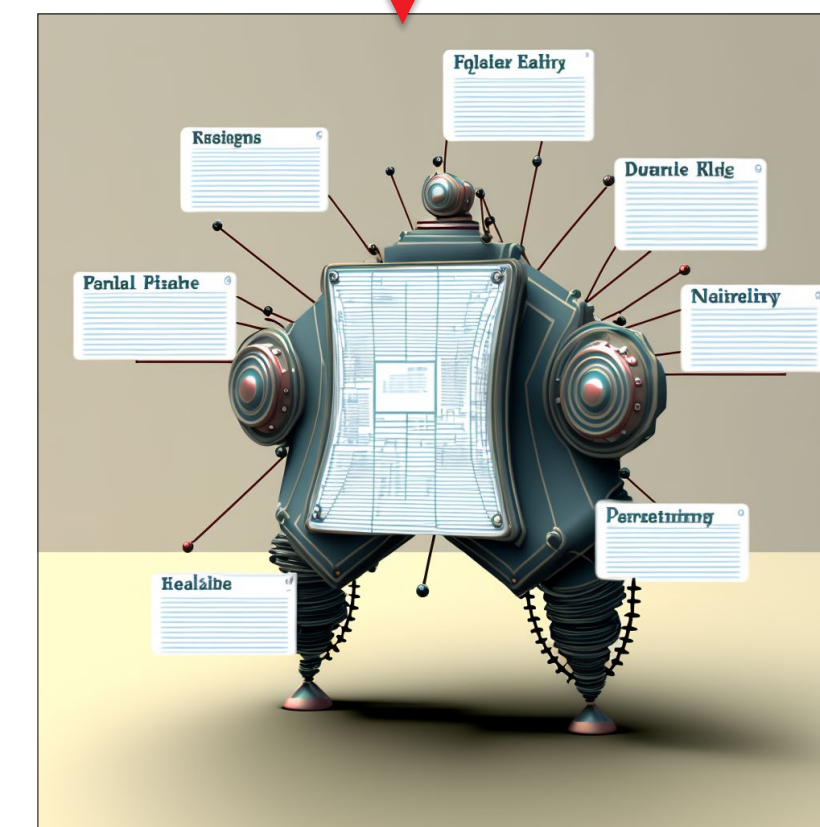


Data Collection

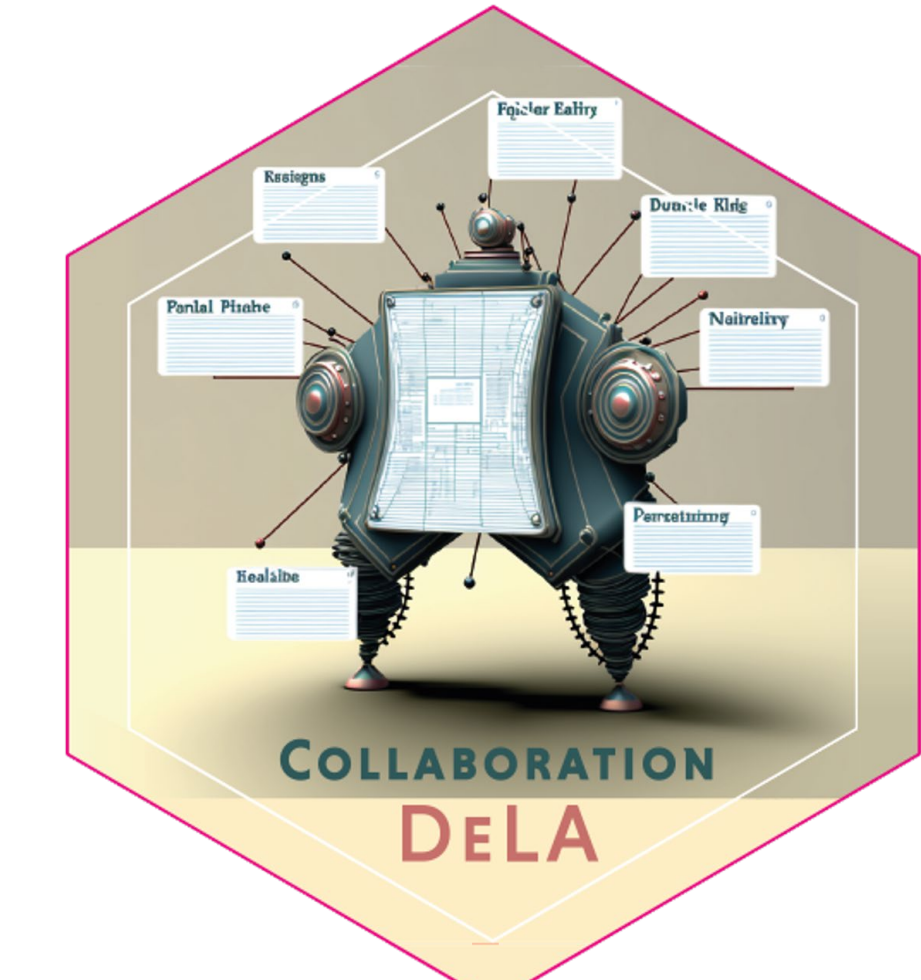
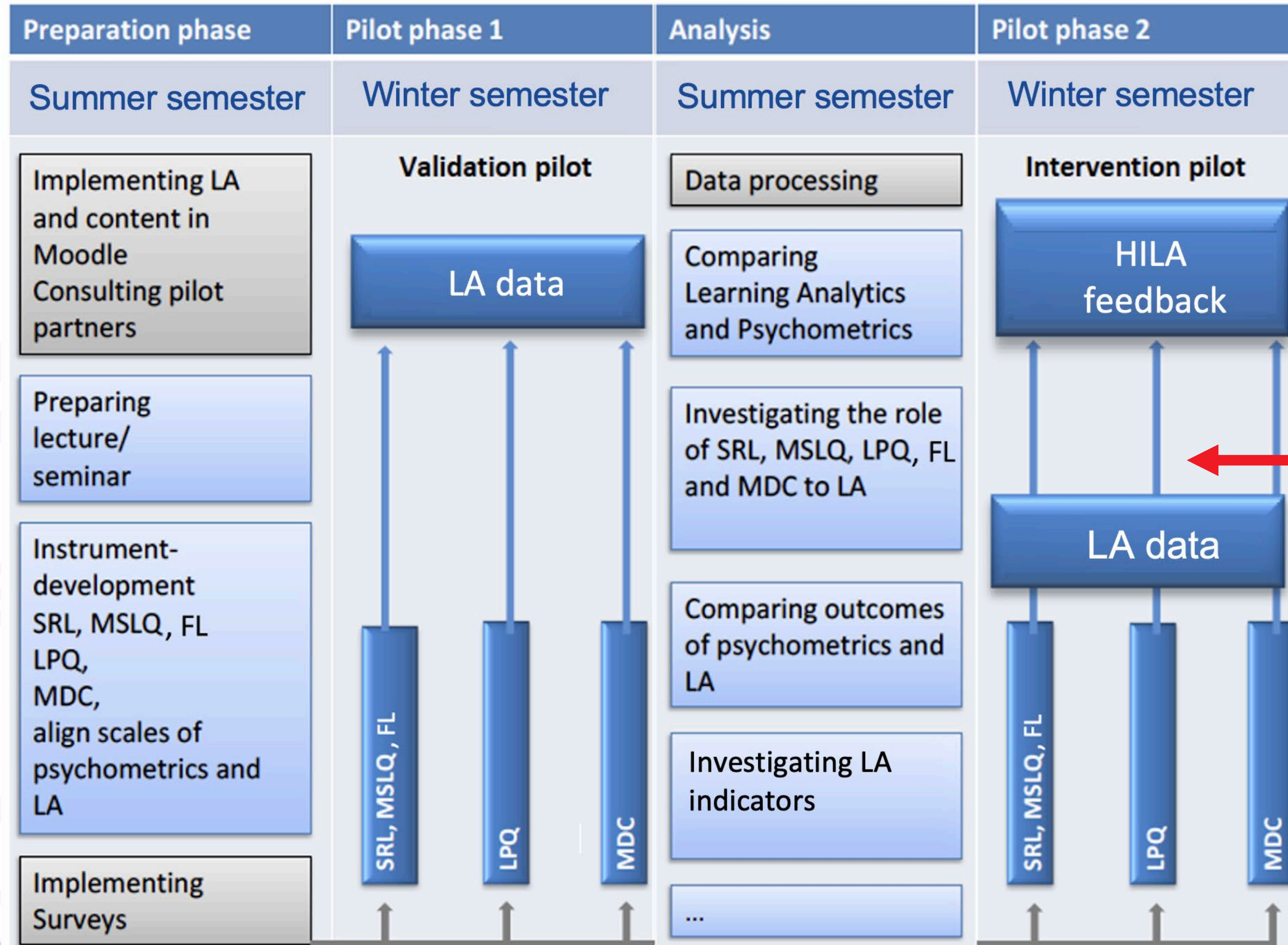




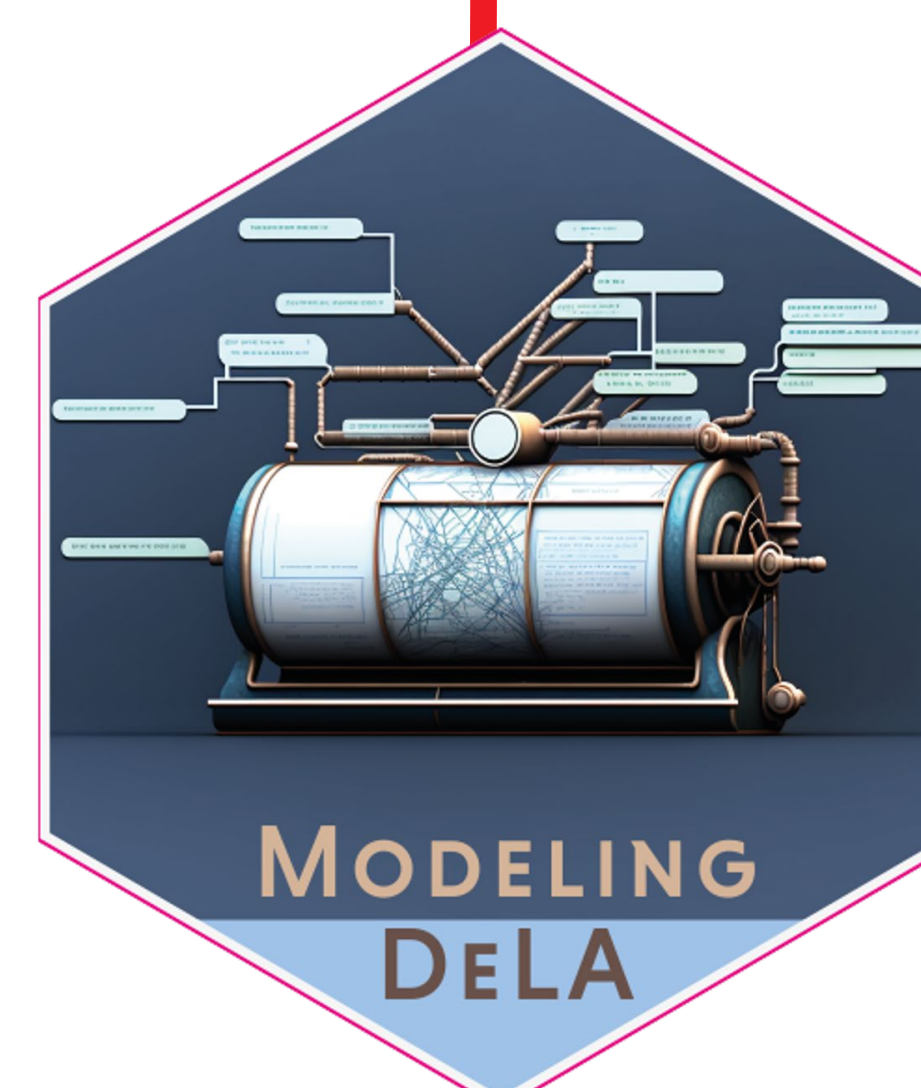
Training of AI



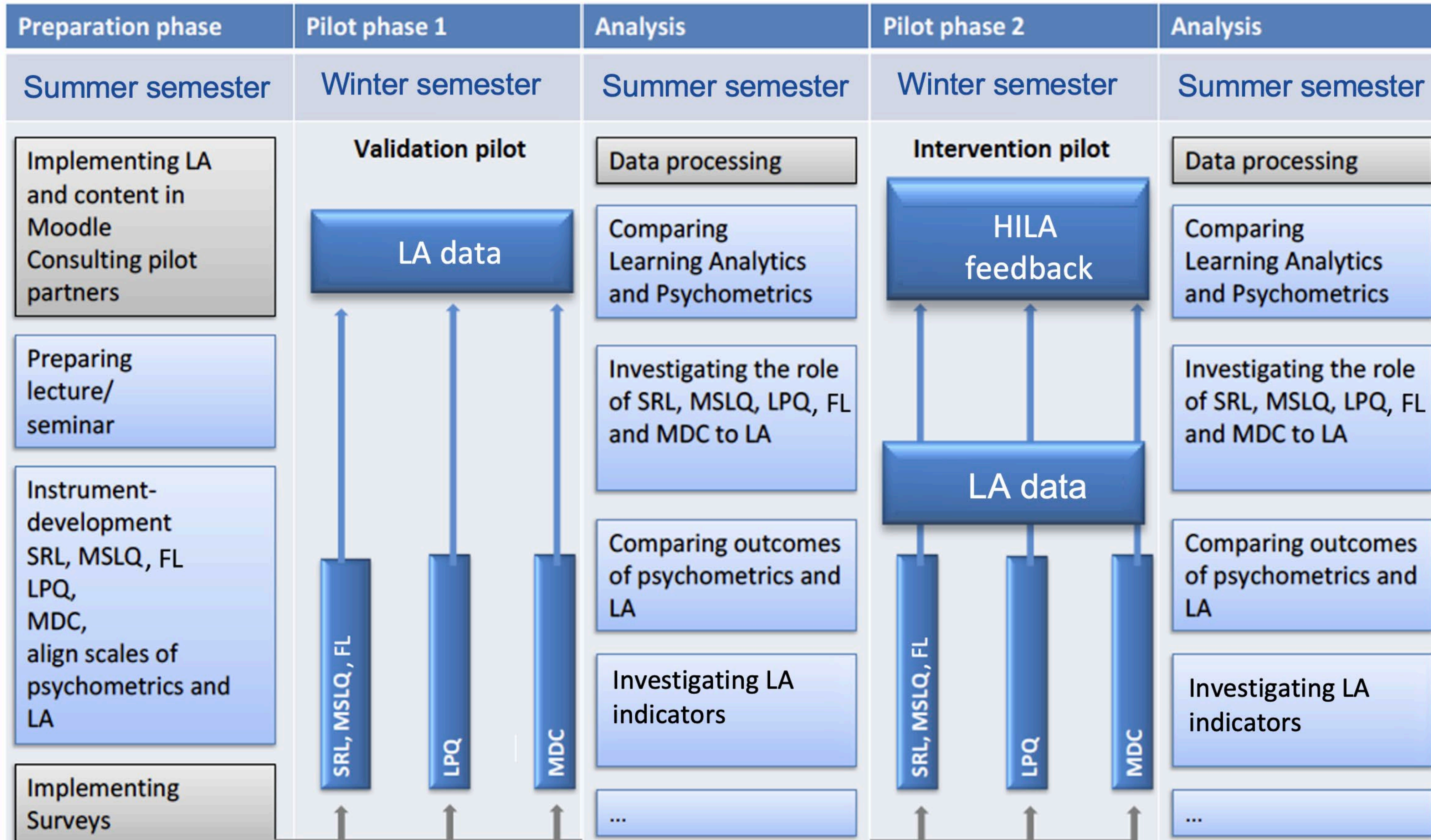
Research Design for HILA & DeLAs



Feedback



Research Design



Outline

1. Aims of the workshop
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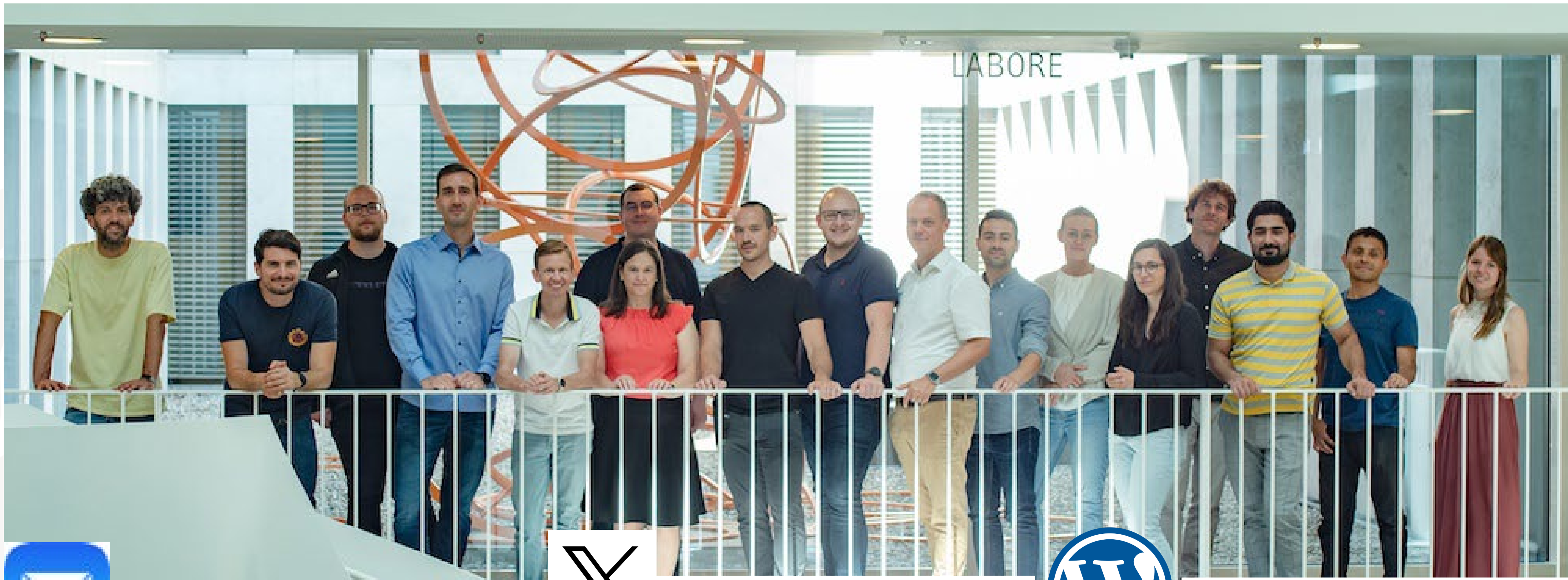




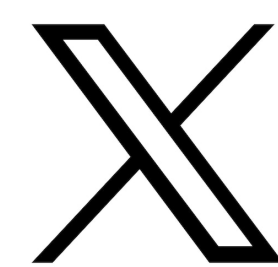
1. How can relevant data for the learner goals and outcomes of a course be extracted from digital learning environments?
=> Importance of constructive alignment (FoLA method), applying tailored DeLA that measure relevant data for learning goals in authentic environment.
2. What is the effect of different feedback types for assignment results, exam performance, and affective student variables?
=> Still building an empirical basis, quite promising study outcomes from RCT, need to be further generalised and evaluated in different settings and domains, gaining large data from authentic scenarios.
3. How does feedback literacy influence students' interpretation and reaction to the received feedback?
=> 1st psychometric scale on feedback literacy (Woitt et al., 2023), rich data collected from students analysis ongoing



Vielen Dank für Ihre Aufmerksamkeit.
Fragen jetzt oder später?



h.drachsler@dipf.de



[@hdrachsler](#)



[edutec.science](#)