

Research Café

Delphi-Studien: Adaptives Lernen

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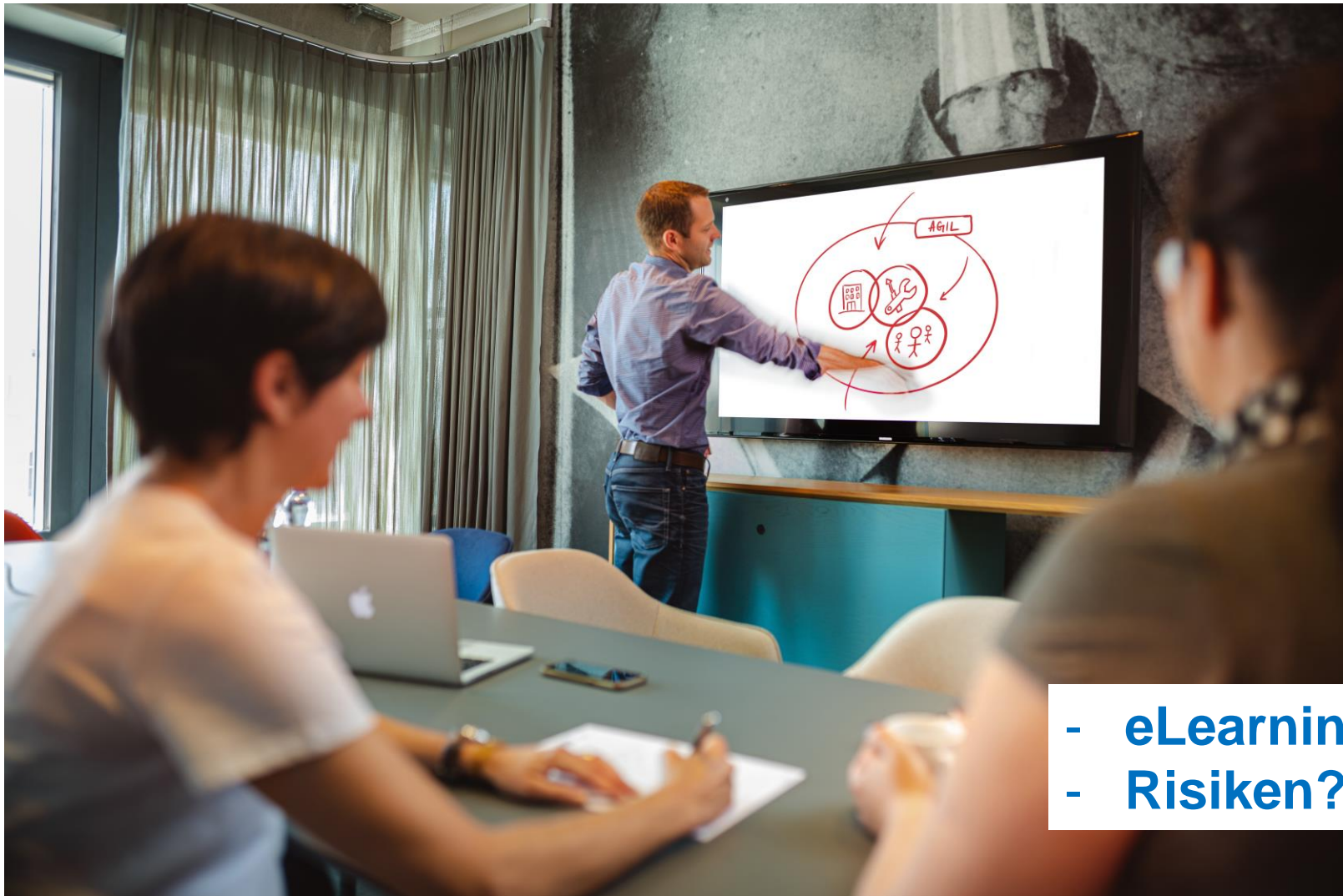
Dienstag, **24. November 2020** um 13:30 bis 14:30

Inhalt



- Was ist Delphi-Methode?
- Wie sieht ein typisches Delphi-Verfahren aus?
- Wann wird die Delphi-Methode angewendet?
- Delphi-Studien der FFHS

Komplexe Entscheidungen unter Unsicherheit



- eLearning Trends in 2022?
- Risiken?

Definition

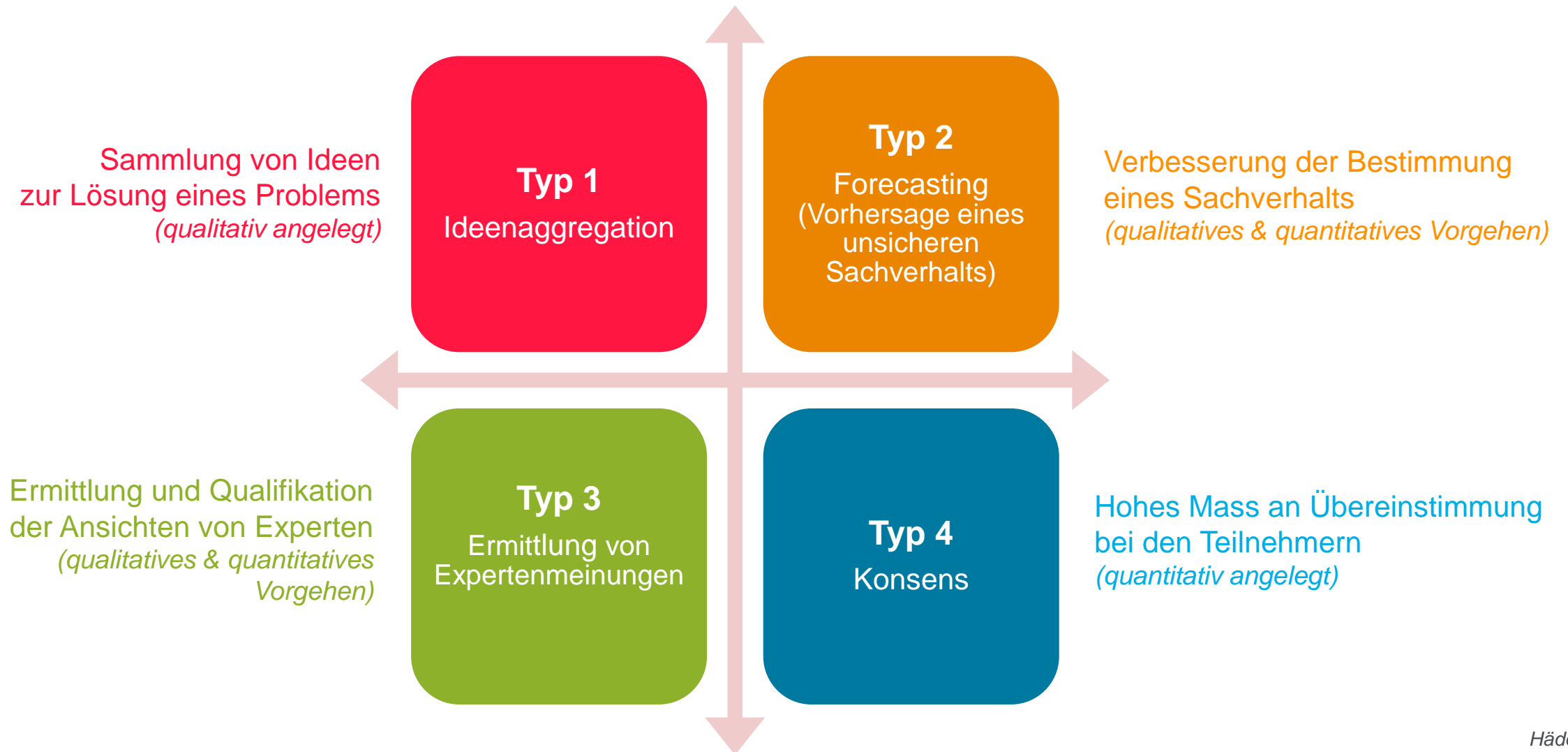


- Delphi-Methode ist eine mehrstufige schriftliche Experten-Befragung, bei der Experten in mehreren Befragungsrunden versuchen, zukünftige Ereignisse, Trends, technische Entwicklungen möglichst gut einzuschätzen, Lösungen für komplexe Problemen zu erarbeiten, oder Meinungen über einen unklaren Sachverhalt zu ermitteln.
- Für Strategiefragen eingesetzt
- Ab den 1950er zum Forecasting verwendet
- Charakteristische Merkmale
 - Die Befragung von Experten
 - Mehrstufige Wiederholung der Befragung
 - Die Anonymität der Einzelantworten
 - Die Ermittlung einer statistischen Gruppenantwort
 - Feedback Bericht



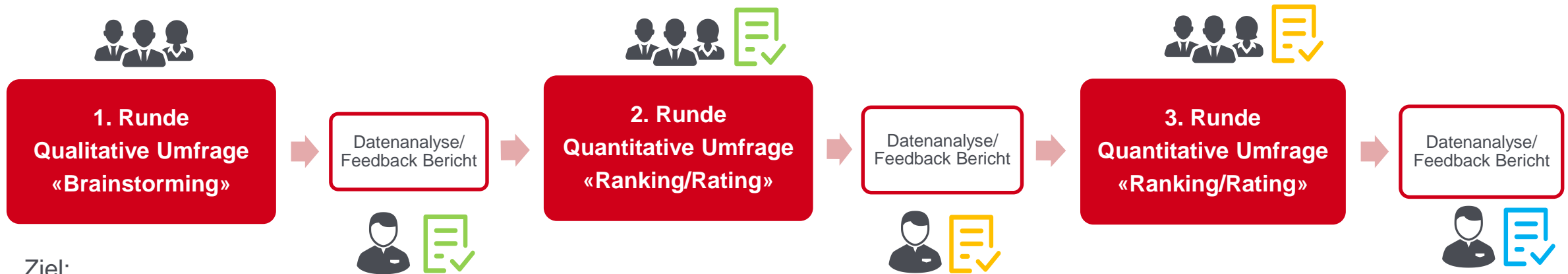
Orakel von Delphi, Wikipedia

4 Delphi-Typen und ihre Ziele



Häder (2014)

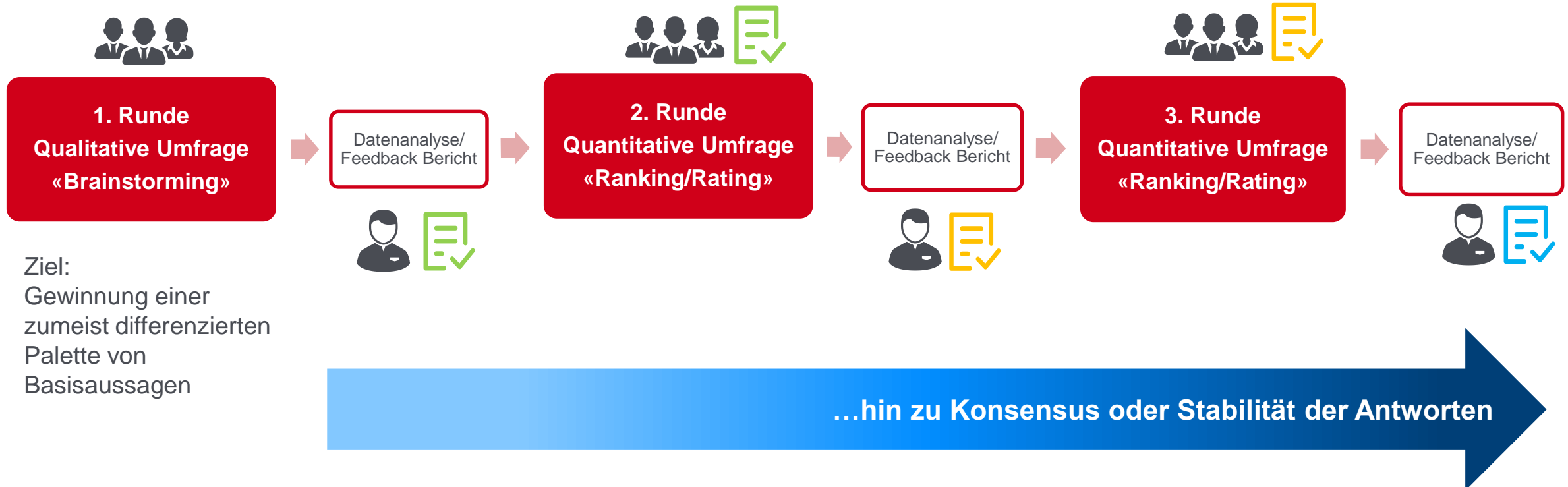
Klassischer Prozess



Ziel:
Gewinnung einer
zumeist differenzierten
Palette von
Basisaussagen

Wie viele Runden sind notwendig/ sinnvoll?

Klassischer Prozess



Delphi Studie der FFHS/ NWU: Adaptives Lernen



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International Journal of Educational
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RESEARCH ARTICLE

Open Access

Challenges and contexts in establishing adaptive learning in higher education: findings from a Delphi study



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Abstract

Higher education institutions are increasingly interested in using adaptive learning as an innovative data-driven approach to teaching. The actual use of adaptive learning in courses remains, however, low. This is despite positive attitudes of institutional leaders towards its adoption and promising results of early studies on its effectiveness.

This study examines the challenges that prevent higher education institutions from adopting adaptive learning concepts in teaching. We used a four-stage Delphi design to empirically identify, categorise, and prioritise the challenges of adaptive learning raised and rated by experts from two universities with different organisational and socioeconomic contexts, one from Switzerland and one from South Africa. Considering different contexts allowed us to include various perspectives on the research topic and thus broaden the view on the challenges of adaptive learning. Overall, three main dimensions related to technological, teaching and learning, and organisational challenges with eight corresponding categories were identified. Our findings revealed clear differences between the two universities regarding the emerged challenges and their rankings. These differences are linked to different socioeconomic backgrounds (South Africa and Switzerland) and organisational contexts (e.g., type of the university, teaching model, and implementation phase) of the universities. We conclude by proposing practical recommendations for institutional leaders and project implementers on the factors to be considered when implementing adaptive learning in higher education settings. These recommendations relate to the necessary infrastructure, institutional commitment, support and resources.

Typ 3

Ermittlung von
Expertenmeinungen

Ziele:

- Die Herausforderungen untersuchen, die die Hochschulen daran hindern, adaptive Lernkonzepte in der Lehre umfassend umzusetzen/ Herausforderungen kategorisieren.
- Zwei Universitäten mit unterschiedlichen Backgrounds miteinander vergleichen/ Rolle des Kontexts für adaptives Lernen bestimmen.
- Konkrete Empfehlungen für Entscheidungsträger zu den entscheidenden Faktoren vorschlagen.

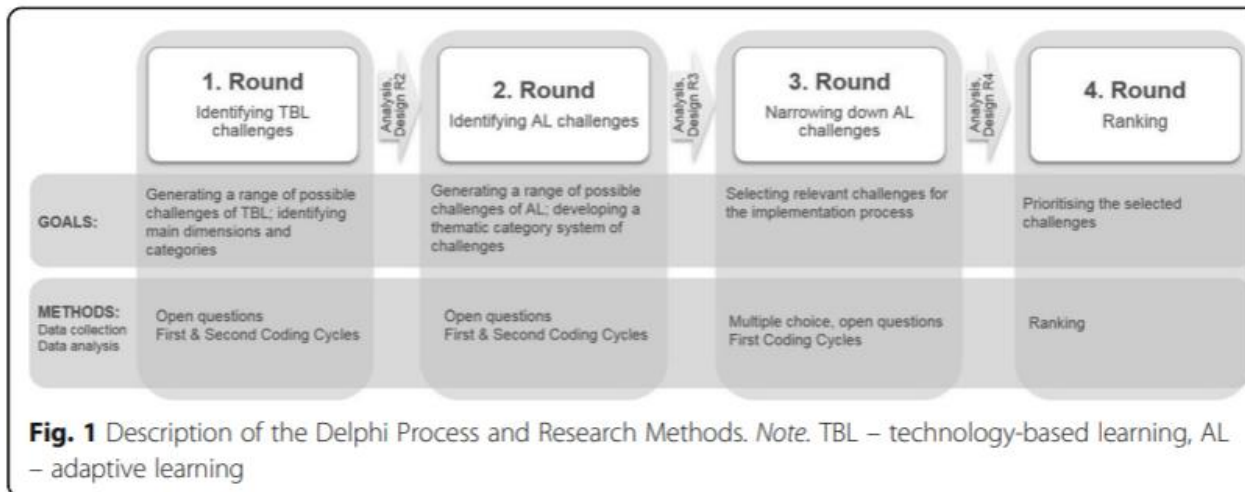
Delphi Studie der FFHS/ NWU: Adaptives Lernen Methodologie



Table 1 Participants' Occupations in Each Round of the Study

Expert panel	Round	n	Lecturer	Researcher	Lecturer and researcher	Other academic staff (e.g., technology advisor, analyst)	Management, administration
Swiss university	1	24	9	6		6	3
	2	22	9	4		6	3
	3	19	8	4		6	1
	4	19	9	4		5	1
South African university	1	20	8	3	3	4	2
	2	20	7	5	2	4	2
	3	10	3	1	1	4	1
	4	10	2	3	1	3	1

Sample: 27 NWU, 24 FFHS



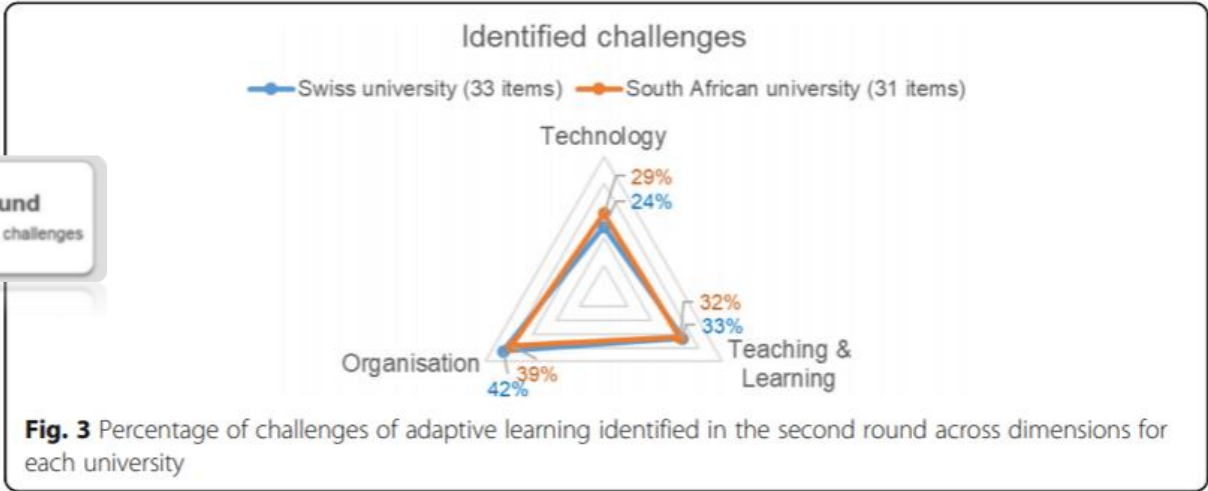
4-Runden Ranking Delphi Design

Daten Auswertung: induktives Kodieren (Miles, Michael Huberman, & Saldaña, 2014), MAXQDA- Software

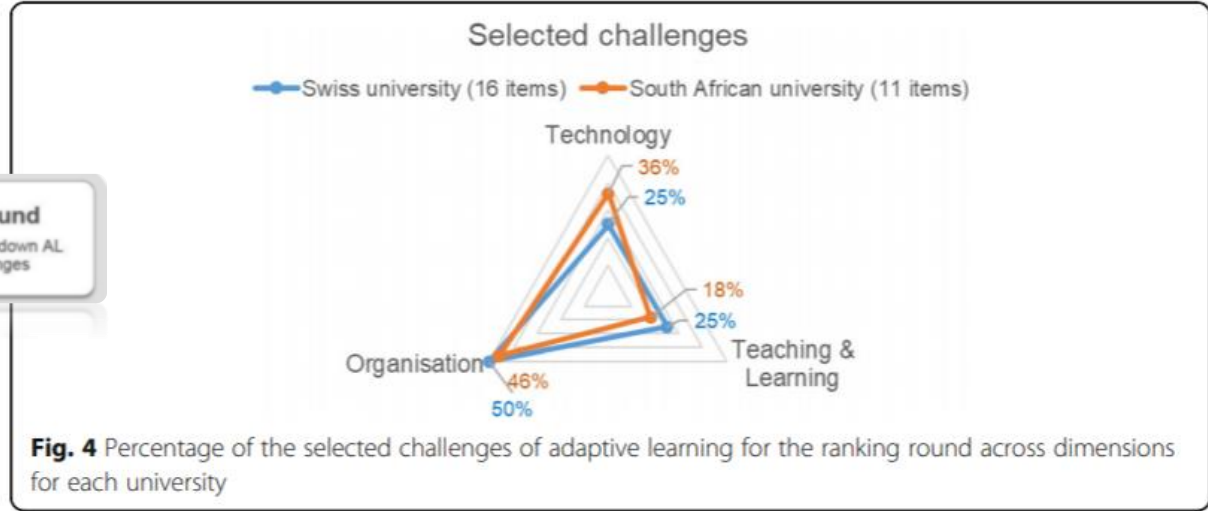
Delphi Studie der FFHS/ NWU: Ergebnisse



2. Round
Identifying AL challenges



3. Round
Narrowing down AL challenges



1. Drei Dimensionen mit den Kategorien von Herausforderungen

■ Technologie

- Infrastruktur, Hard- & Software
- Wahrnehmungen und Überzeugungen über adaptive Technologie

■ Lehre & Lernen (Pädagogik)

- Curriculum, Instruktionselemente
- Dozent/in Charakteristika
- Student/in Charakteristika

■ Organisation

- Institutionelle Strategien
- Management
- Ressourcen

2. Mehr Herausforderungen auf der Ebene der Organisation

Delphi Studie der FFHS/ NWU: Ergebnisse



4. Round Ranking

Herausforderungen nach ihrer Wichtigkeit für die Umsetzung des adaptiven Lernens.
(1=absolute wichtig; 11(16) =gar nicht wichtig)

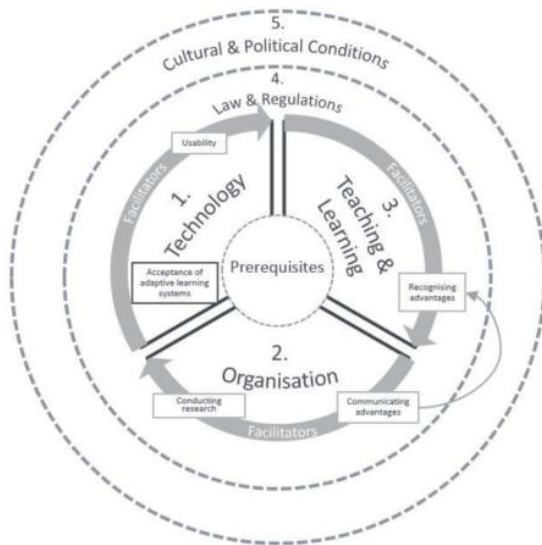
Table 3 Comparison of Swiss university and South African university Panels' Rankings of the Selected Challenges

Swiss university (19 participants, 16 items)							South African university (10 participants, 11 items)						
D	Category	Rank	Challenge Item	Mdn	M	SD	D	Category	Rank	Challenge Item	Mdn	M	SD
O	Management	1	forming required competences & expertise in staff	12	10.7	3.7	O	Institutional strategies	1	Institutional commitment to adaptive learning	9.5	7.9	3.4
O	Management	2	Providing personnel & financial resources	13	10.6	4.4	T	Perceptions & beliefs	2	Negative attitude towards technology	9.0	7.7	3.6
O	Institutional strategies	3	Institutional commitment to adaptive learning	11	10.5	4.3	T	Infrastructure, hard-& software	3	<u>Accessibility & availability of necessary technical/physical infrastructure</u>	8	7.6	2.9
T&L	Instructional & curriculum elements	4	(Re) designing instructional materials & courses	10	10.2	4.6	O	Management	4	<u>Providing technical & didactical support to lecturers</u>	7	6.7	2.4
T&L	Lecturer characteristics	5	<u>Need for professional development</u>	9	10.1	3.1	T	Infrastructure, hard-& software	5	Affordable private internet access	7.5	6.3	3.7
O	Institutional strategies	6	Further development of the "Distance University" strategy	12	10.0	5.8	O	Management	6	Providing personnel & financial resources	6.5	5.9	3.6
T	Perceptions & beliefs	7	Recognising advantages of adaptive learning	10	9.4	3.6	O	Management	7	<u>Participative implementation of adaptive learning</u>	3.5	5.2	2.9
T&L	Instructional and curriculum elements	8	Meaningful combination of classroom & online instructions in "blended learning" models	10	9.2	5.1	O	Management	8	Hiring instructional designers	4.5	5.0	3.0
T	Infrastructure, hard-& software	9	Usability	9	8.6	4.1	T&L	Learner characteristics	9	<u>Developing digital literacy & media skills</u>	5.5	5.0	3.1
T&L	Instructional and curriculum elements	10	<u>Shift to adaptive teaching & learning</u>	5	7.5	4.9	T&L	Lecturer characteristics	10	High staff-workload	5	4.8	2.1
T	Infrastructure, hard-& software	11	Robustness of adaptive learning systems	8	7.3	4.3	T	Infrastructure, hard-& software	11	Usability	4	3.9	2.4

Delphi Studien Ausblick: FFHS, NWU, OUT



■ Implementierungsmodell für adaptives Lernen



Mirata, V. & Bergamin, P. (2019). [Developing an Implementation Framework for Adaptive Learning: a Case Study Approach.](#)

Context awareness /analysis						
Implementation stage	Determinants Dimensions	Prerequisites (P)	Barriers (-), facilitators (+), neutral challenges (0), moderators (M)	Tailored strategies (at individual, institutional, national levels) to enhance acceptability, adoption and scaled implementation of adaptive learning	Proximal outcomes	Distal outcomes
AWARENESS/ EXPLORATION Assessing organisational readiness based on the implementation priorities (Mirata et al., 2020)	Technology	Internet access and its quality (e.g., speed, stability) (-)	Economic conditions (M)	Management runs initiatives with educational and economic sectors to support the availability, affordability of the internet for all students. Management invests in appropriate technological infrastructure (e.g., wifi) to ensure the internet quality.	Negative cost impact for institutions	Equity Scaled implementation
	Technology	Accessibility and availability of necessary technology (e.g., computers, notebooks)/ technical infrastructure (-)	Economic conditions (M)	Management invests in technical infrastructure on campus (software, hardware, licences). Management in cooperation with economic and educational sectors develops or changes policies and regulations home in on the support of students with the access to technology necessary for the use of adaptive learning at scale.	Negative cost impact for institutions	Prevention of increasing the digital divide between students Scaled implementation
	Teaching & learning	Redesign of curriculum and courses (e.g., recombination of classroom and online instructions) (0)	Available personnel and financial resources (M)	Management provides time, personnel, and financial resources as well as support services to course instructors for the curriculum and courses redesign. Management offers incentives to instructors for the course development.	Negative cost impact for institutions Instructors' motivation Acceptability/adoption	Scaled implementation

Mirata, V. & Bergamin, P. (in preparation). Empirically-based Implementation Framework for Adaptive Learning.

■ OUT Delphi: The future of technology-based learning at OUT



Fazit



- Das Ziel der Erstellung von Prognosen oftmals gar nicht in der Realisierung der vorausgesagten Situation, sondern **im Ableiten von Handlungs- und Entscheidungshilfen.**
- Delphi-Studien liefern nicht einfach das Bild der Zukunft, sondern **eine Informationsgrundlage für die Entscheidungen.**



Referenzen



- Mirata, V., Hirt, F., van der Westhuizen, C., & Bergamin, P. (2020). Challenges and Contexts in Establishing Adaptive Learning in Higher Education: Findings from a Delphi Study. *International Journal of Educational Technology in Higher Education*. <https://doi.org/10.1186/s41239-020-00209-y>
- Mirata, V. & Bergamin, P. (2019). [Developing an Implementation Framework for Adaptive Learning: a Case Study Approach](#). In: *Proceedings of the 18th European Conference on e-Learning*, Copenhagen, Denmark, 7-8 November 2019.
- Häder, H. (2014). *Delphi-Befragungen: Ein Arbeitsbuch* (3. Aufl.). Wiesbaden: Springer.