

DESIGNING ONLINE EXAMINATIONS



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Definition



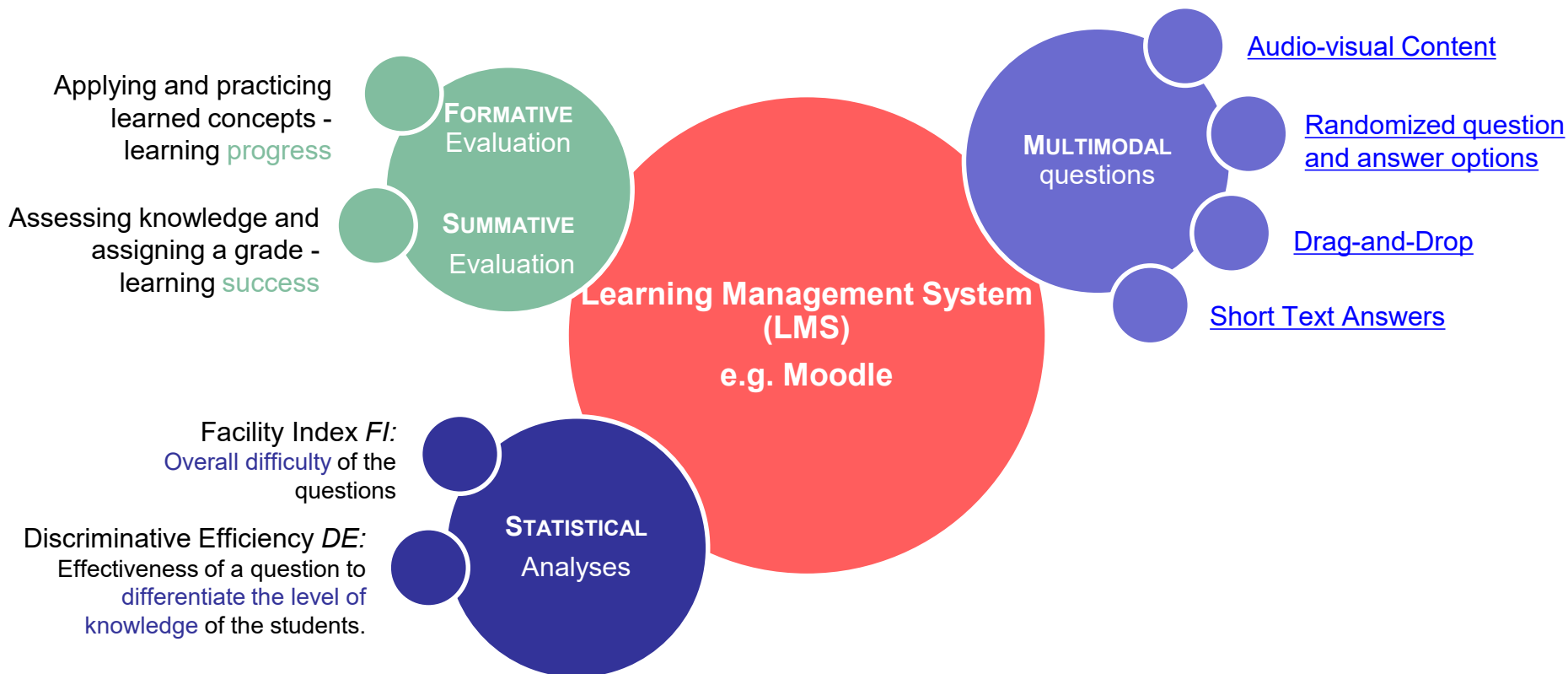
online
exam

- with/without supervision
- synchronous / asynchronous

electronic
exam

- under supervision, mostly in presence
- synchronous

Online Exams



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Audio-Visual Content

Question 1
Not yet answered
Marked out of 1.00

Welcher Umformprozess ist im nachfolgenden Video dargestellt?



Answer:

Syntax

*free*form*forging*

*massive*forming

forging

Beurteilung

100%

50%

50%

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Short Text Answers

Question 1

Answer saved

Marked out of 3.00

Nennen Sie je ein Beispiel für folgende physikalische Wirkprinzipien:

substance-to-substance bonding:

Kleben

frictional bonding:

Schrauben

interlocking bonding:

Nieten

Syntax

{1:SA:%100%*weld*~%100%*solder*~%100%*glue*}

{1:SA~%100%*press*~%100%*wedge*~%100%*screw*}

{1:SA:%100%*rivet*~%100%*key*}

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Randomized question and answer options

Question 1

Not yet
answered

Marked out of
4.00

Ordnen Sie den angegebenen Verfahren zur Änderung der Stoffeigenschaften durch Wärmebehandlung die entsprechenden Definitionen zu.

Härten	Choose...	⌵
Anlassen	Choose...	⌵
Vergüten	Choose...	⌵
Lösungsglühen	Choose...	⌵

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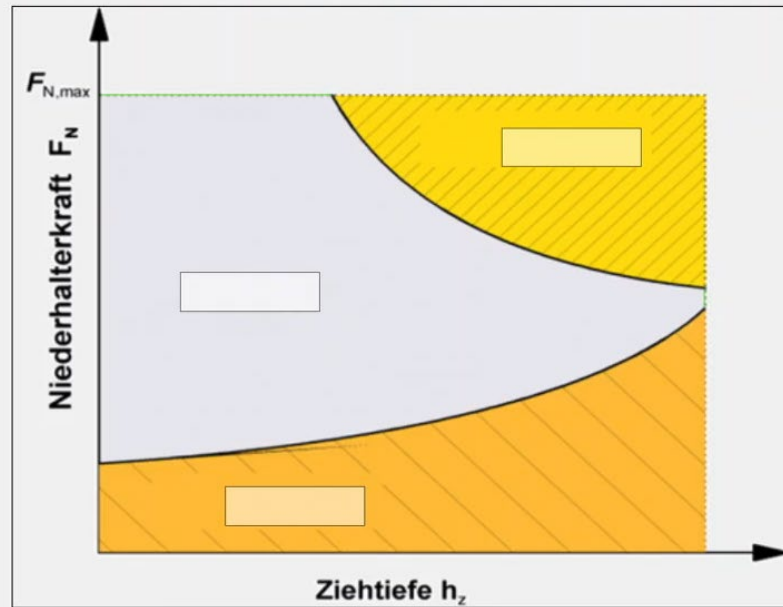
Drag-and-Drop onto image

Question 1

Not yet answered

Marked out of 3.00

In welchem Bereich des nachfolgenden Diagramms treten beim Tiefziehen Reißer und Falten auf? Wo befindet sich der Arbeitsbereich beim Tiefziehen?



Falten Reißer Arbeitsbereich

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Statistical Analysis

Q#			Question name	Attempts	Facility index	Standard deviation	Random guess score	Intended weight	Effective weight	Discrimination index	Discriminative efficiency
1	+	⚙	Masch03_Zuordnung	30	53.33%	37.26%	20.00%	3.97%	5.47%	51.73%	57.65%
2	📄	⚙	Besch01_Verfahren-Anwendungen	30	90.56%	12.90%	0.00%	2.38%	2.21%	46.83%	52.70%

Facility Index (FI):

The mean score of students on the item [1]

FI	Interpretation
<5%	Very difficult or wrong question
35%-65%	OK for the average student
>95%	Extremely easy

[1] „Quiz statistics calculations - MoodleDocs“. https://docs.moodle.org/dev/Quiz_statistics_calculations (zugegriffen Feb. 09, 2021).

Statistical Analysis

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Discrimination Index (DI):

indicates how effective the question is in differentiating between the individual performances of each student [1]

DI	Interpretation
>50%	Very good discrimination
30%-50%	Adequate discrimination
<30%	Weak discrimination

[1] „Quiz statistics calculations - MoodleDocs“. https://docs.moodle.org/dev/Quiz_statistics_calculations (zugegriffen Feb. 09, 2021).

Statistical Analysis

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DE Interpretation

>50% Good discrimination relative to difficulty

validity:

FI

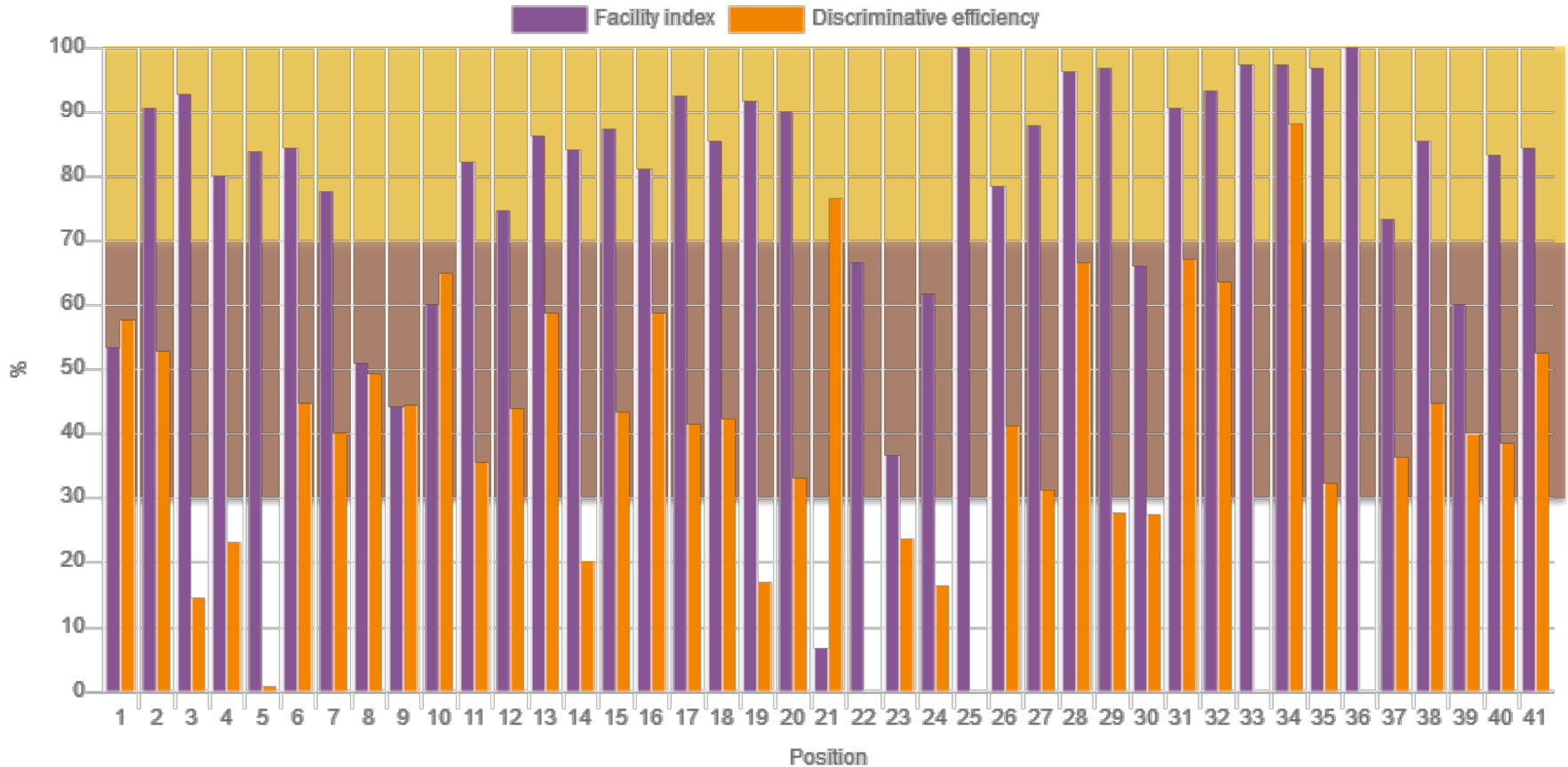
30%-70%

Discriminative Efficiency (DE):

how good is the discrimination index relative to the difficulty of the question [1]

[1] „Quiz statistics calculations - MoodleDocs“. https://docs.moodle.org/dev/Quiz_statistics_calculations (zugegriffen Feb. 09, 2021).

Facility Index / Discriminative Efficiency



Related Research

Gamage et.al. [2]:

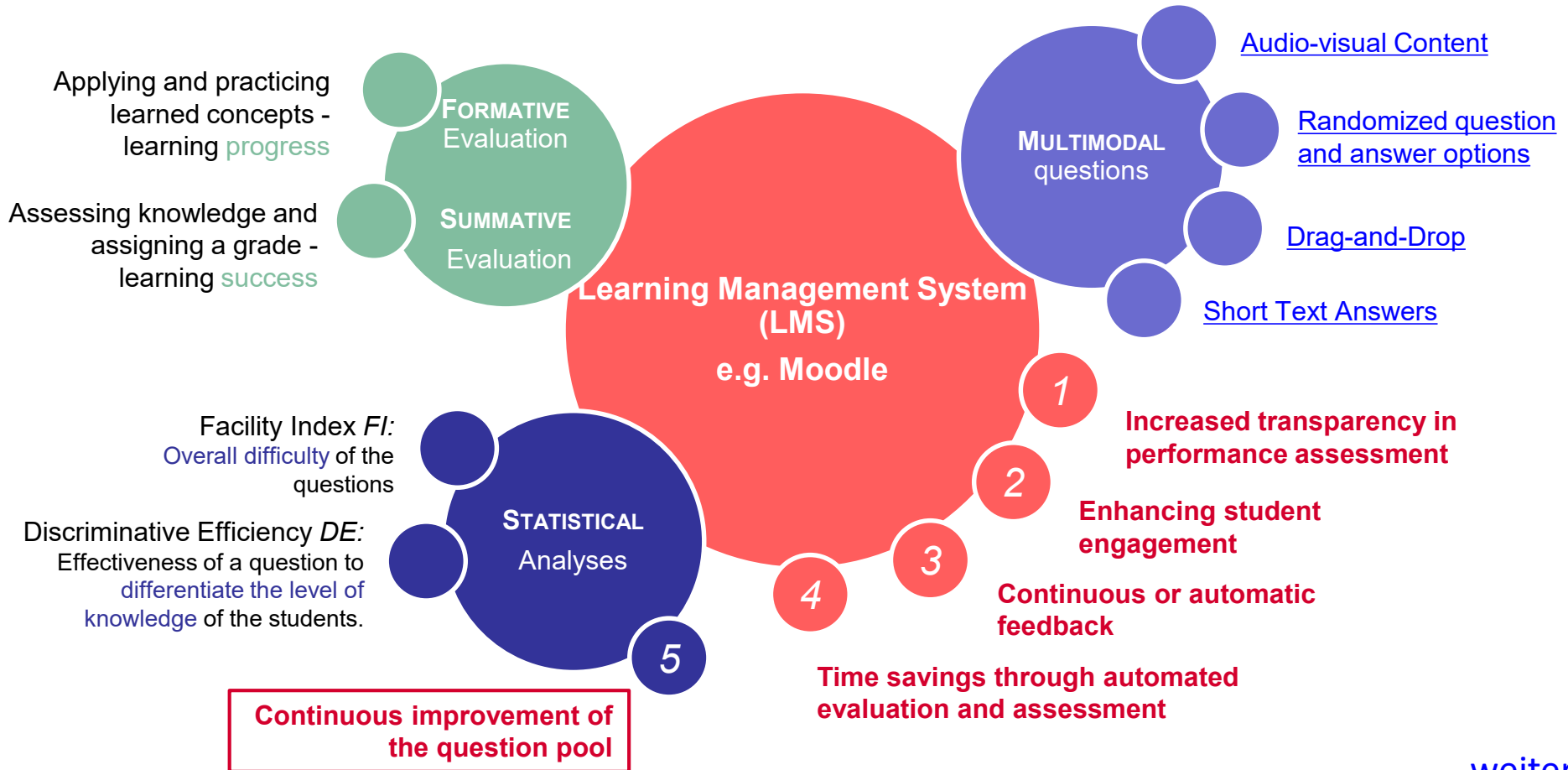
- statistical analysis in Moodle was used to evaluate the question quality in Moodle quizzes in mathematics

Findings:

- FI and DE can be used for the qualitative development of questionnaires
- FI and DE can make a contribution to increasing the effectiveness of examination questions

[2] S. H. P. W. Gamage, J. R. Ayres, M. B. Behrend, und E. J. Smith, „Optimising Moodle quizzes for online assessments“, *IJ STEM Ed*, Bd. 6, Nr. 1, S. 27, Dez. 2019, doi: [10.1186/s40594-019-0181-4](https://doi.org/10.1186/s40594-019-0181-4).

Online Exams





Thank you for your attention!

Wolfgang Weiß