Teaching and Learning with Moodle and STACK at the THB: Opportunities for Higher Education

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Agenda

• Thematic focus
• Setting
• Objectives
• Implementation
• Impact
• Lessons learned
• Questions and Discussion
Setting
Objectives
Objectives

increasing motivation by expanding teaching with digital tasks
Why digital tasks?

- practice
- repeat
- understand
- independent learning
- test your knowledge
Implementation
Learning Platform

Technische Hochschule Brandenburg - University of Applied Sciences

NAVIGATION
Startseite
Nachrichten der Website
Kurse

KURSBEREICHE
Fachbereich Informatik und Medien
Fachbereich Technik
Fachbereich Wirtschaft
Zentrum für Hochschulentwicklung und Qualität
Zentrum für Internationales und Sprachen
Hochschulverwaltung
Hochschule Allgemein
Hochschulbibliothek
Studierendenschaft

Nachrichten der Website
(Keine Ankündigungen im Forum)

Login
Anmeldename
Kennwort

KALENDER
Juni 2018
Mo Di Mi Do Fr Sa So

1 2 3
4 5 6 7 8 9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28 29 30

Login
Anmeldenamen merken
Kennwort vergessen?
Types of tasks:

- essays
- matchings
- multiple choice
- short answers
- numericals
- true/false-questions
- STACK
Task Type: STACK

**System for Teaching and Assessment using a Computer algebra Kernel**

→ training of mathematical skills (randomization)
Task Type: STACK – example 1

Given that:
\[
A = \begin{pmatrix}
-4 & 3 & 0 \\
12 & 4 & -1 \\
-3 & -6 & 18 \\
13 & 14 & 1
\end{pmatrix}
\]

What are the dimensions of the matrix \(A\)?

\(A\) is a \(4 \times 3\) matrix.

Which value has \(a_{21}\)?

\(a_{21} = 12\)

Find the transposed matrix \(A^T\):

\[
A^T = \begin{pmatrix}
-4 & 12 & -3 & 13 \\
3 & 4 & -6 & 14 \\
0 & -1 & 18 & 1
\end{pmatrix}
\]

Ihre letzte Antwort wurde folgendermaßen interpretiert:

\[
\begin{pmatrix}
-5 & 11 & 5 \\
1 & 6 & 13 \\
-7 & 25 & 24 \\
1 & -6 & 21 & 8
\end{pmatrix}
\]
**Task Type: STACK – example 2**

Bilden Sie die erste, zweite und dritte Ableitung der nachfolgenden Funktion:

\[ f(x) = 2x^3 - 5x^2 + x - 10 \]

**Erste Ableitung:**

\[ f'(x) = \]

**Zweite Ableitung:**

\[ f''(x) = \]

**Dritte Ableitung:**

\[ f'''(x) = \]
Task Type: STACK – example 2: Feedback tree

1. Is the first derivative correct?
   - yes
   - no

2. Is the second derivative correct?
   - yes
   - no

3. Is the third derivative correct?
   - yes
   - no

4. Does the second derivation correspond to the faulty first derivation?
   - yes
   - no

5. Does the third derivation correspond to the faulty second derivation?
   - yes
   - no
Usage Scenarios

1. • digital tasks as an additional exercise

2. • digital tasks for bonus points

3. • digital tasks as a part of the exam
Impact
Opportunities for professors

- overview of the performance of the students
- outsourcing of exercise units
- collection of tasks grows continuously
- examination preparation
- randomization: one task in a hundred variants
- quick evaluation
## Opportunities for students

- self-reflection
- continuous work
- additional exercise
- availability
- individual feedback
- personal responsibility
- independent working
- testing without pressure
- own pace of learning
Lessons Learned
Lessons Learned

- students took advantage of the offer
- a continuation was desired in the following semester
- the expansion is planned
- a concept for creating an optimized moodle course has been derived
Outlook: optimization

- videos
- scripts
- digital tasks
- gamification

moodle course
Questions and Discussion
Thank you for your attention