nexus-Jahrestagung - Kompetenzorientierung auf dem Prüfstand
28.03.2018

Prof. Holger Günzel & Henrike Martius
Learning Lab „Digital Technologies“

The learning lab …

- helps students to understand in an enjoyable way new digital technologies and digital architectures
- provides lecturer with a pre-developed, but customizable building block for their courses with a duration between 1 and 2,5 full workshop days
- has several streams with different digital technologies
- has low investment costs and can be used in regular teaching rooms (mobile lab setup)
Core Building Blocks

- Didactic Setting
- Stream Concept
- Assignment Repository
- Community
Didactic Setting I - Situation

- 91% nutzen Technik, ohne die Funktionsweisen, die unter der Nutzeroberfläche ablaufen, zu kennen
- 84,4% haben keine bis wenig Programmiererfahrungen
- 77,8% erachten es als wichtig oder sehr wichtig digitale Kompetenzen im Studium zu erwerben
Didactic Setting II - Idea

- Small students teams (3 students)
- Learning by doing with assignments sheets
- Haptic experience (no slides)
- Self-learning by student with retrospectives and lessons learned
- Lecturer as coach
- Specific teaching room setup
- Pre-set schedule
- Manifest
Didactic Setting III - Competences

ZUKUNFTSORIENTIERUNG
- Offenheit für Veränderungen
- Lernbereitschaft
- Experimentierfreude

SOZIALKOMPETENZ
- Kommunikationsfähigkeit
- Hilfsbereitschaft
- Kooperationsfähigkeit
- Teamfähigkeit

ALGORITHMISCHES DENKEN
- Systematisch-methodisches Vorgehen
- Analytische Fähigkeiten

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## Stream Concept: Current Streams

<table>
<thead>
<tr>
<th>Digital Technologies Essentials (DTE)</th>
<th>Learn to Code with COZMO (LC2)</th>
<th>360 VR Collab (360VR)</th>
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</thead>
<tbody>
<tr>
<td>Understand digital architectures</td>
<td>Learn programming basics</td>
<td>Understand VR</td>
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<table>
<thead>
<tr>
<th>Raspberry PI 3</th>
<th>COZMO</th>
<th>Gear 360 camera VR Glasses</th>
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<tbody>
<tr>
<td>SenseHat</td>
<td>Scratch and Python</td>
<td>VR Glasses</td>
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- Raspberry PI 3: 2.5 days, 23 assignments
- SenseHat: 1 or 2 days, ~10-20 assignments
- COZMO: 1 or 2 days, ~10-20 assignments
- Gear 360 camera VR Glasses: 1 day, ~12 assignments

- IoT, database, cloud
- agile development
- intern. project
Stream “Digital Technologies Essentials (DTE)”

Intro
- Digitalization:
  - Definition
  - Impact
  - Technological Evolution

Day 1 (fullday)
- RaspPi as standalone Computer
  - “Get it up & running”
- RaspPi as connected Computer
  - “Connect it”

Day 2 (fullday)
- RaspPi as Server
  - “Let it run”
- Database on RaspPi
  - “Data everywhere”
- IoT & Big Data with RaspPi
  - “Bring it all together”
Assignment Repository - Technology

<table>
<thead>
<tr>
<th>Lecturer / Community</th>
<th>Student</th>
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<tbody>
<tr>
<td>Assignments in Markdown</td>
<td>Printout of PDF file</td>
</tr>
<tr>
<td>Gitlab by LRZ (Source Code Mgt.)</td>
<td>HM cloud: code snippets</td>
</tr>
<tr>
<td>Slack (Communication)</td>
<td></td>
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Community

- Join and benefit
  - Proven didactic concept
  - Prepared lab structure
  - Assignments collection per stream
  - Bill of material and lots of hints
  - Profit from “Learning Lab” platform with branding, publications, presentations, etc.

- Contribute
  - Enhance student coverage
  - New assignments in existing streams
  - New streams
Publications

http://t1p.de/uosh
Next Steps

- Develop accompanying research
- Encourage exchange with other universities
  - On concept & technologies
  - On experience
  - Common visits
- Enhance functional coverage and depth
  - Cooperation for a set of technologies resp. within a stream
- Engage in common projects
Questions & Contact Data

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