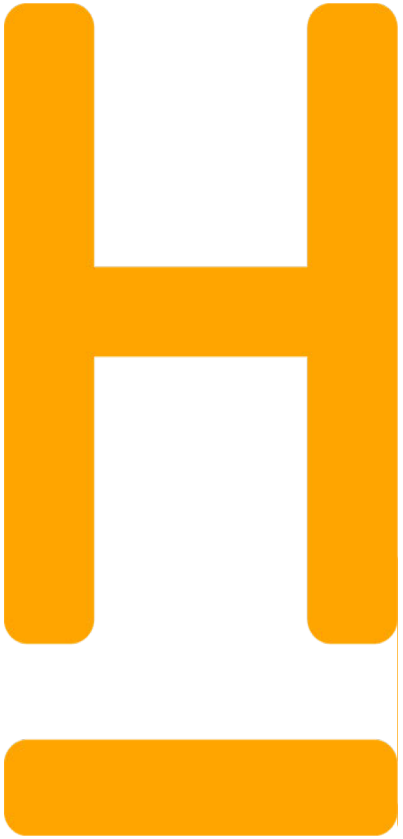
HOCHSCHULE
HANNOVER
UNIVERSITY OF
APPLIED SCIENCES
AND ARTS
–
Fakultät III
Medien, Information
und Design

Current Digital Media Challenges for Education

– High-Quality Content, Continuity, Focus and Aware Interaction for Learners –

Prof. Dr.-Ing. Monika Steinberg



Outline

- **Introduction:** overall goal *“what for?”*
  - *motivate to self-directed learning beyond study courses.*

- **Four missions to meet challenges of Digital Media in education:**
  1. high-quality content (*contentual, functional, visual*)
  2. continuity (*in learning, design, access*)
  3. focused “*tidy*” content (r*eduction of information overload*)
  4. aware “*well-dosed“ i*nteraction (*meaningful interactivity*).

- **Conclusion and Outlook**

Introduction: self-directed learning beyond courses

- **Self-directed Learning**
  - beyond study courses, online/offline, towards life-long learning
  - self management, focus and motivation needed.
- **Information overload**
  - dealing with complexity and focus
  - self control and *Digital Wellbeing needed.*
- **Motivation to learn**
  - how to trigger intrinsic motivation and attention?
  - how to handle low attention spans and distraction?
- Since Covid-19 ***more important than ever.***

Mission 1:
high-quality content

High-quality Content: Content is King

1 Substance and purpose

- contentwise significance „*senseful content*“ , added value, relevance

2 Technology and functionality

- reliability, standardization, usefulness, findability, compatibility, …
- „*24/7*“, „*Mobile User First*“, „*anytime, anyplace*“, „*Learning on Demand*“

3 Design and interactivity

- visually sophisticated user-centric design
  - User Experience Design (UXD) considering “*before, during and after*”
- mediality and interactivity:
  - increased value through multimedia
  - *Meaningful interaction*.

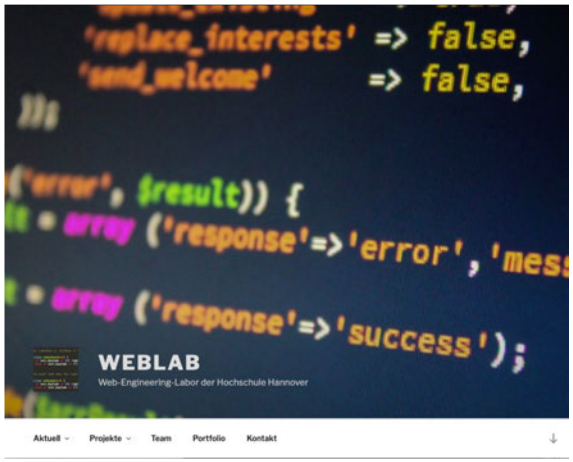
Mission 1 in practice: *high-quality content*

Example 1: Interactive video about search engine functionality

- Professional movie production enriched with H5P interaction (published on YouTube and in WordPress)

Developed by Gerrit Wucherpfennig and students in the QpLuS IM project.
For the interactive video please visit https://q-plus-im.wp.hs-hannover.de/einblick-in-die-suchmaschinen-welt-aus-duplo-steinen/

Example 2: tutorials and articles



10. NOVEMBER 2020 VON MONIKA STEINBERG

WebLab-Portfolio: Fachbeiträge zu IM-Themen

Im Rahmen von Kursen wie z.B. Content Management im dritten Semester unseres Studiengangs Informationsmanagement erstellen wir Fachbeiträge in WordPress zu Themen aus dem Informationsmanagement – von User Experience (UX) über Webentwicklung bis hin zu SEO oder Data Mining. Die besten Fachbeiträge zu IM-Themen haben wie hier für Euch gesammelt:

Tutorial: Prototype erstellen mit Figma – So funktioniert's!

Veröffentlicht: 10. November 2020

Autor*in: Anna Selitski und Anna-Lisa Voigt Einen Prototype in dem Designertool Figma zu erstellen ist eine sehr schnelle und einfache Sache. Vielleicht kennst du auch die Bezeichnung Klickdummy für

Um die Farbe bei einem Mouse-Over zu verändern, kann z.B. der folgende Code verwendet werden:

```
/* changing color while hovering*/

        .state:hover {

            fill: #004085;

            animation: zoominout 1s infinite;

        }
```

Diese Angabe gilt für alle Bundesländer, da diese zur Klasse "state" gehören. Wie und wo eine Klasse vergeben werden kann, zeigt der folgende Code:

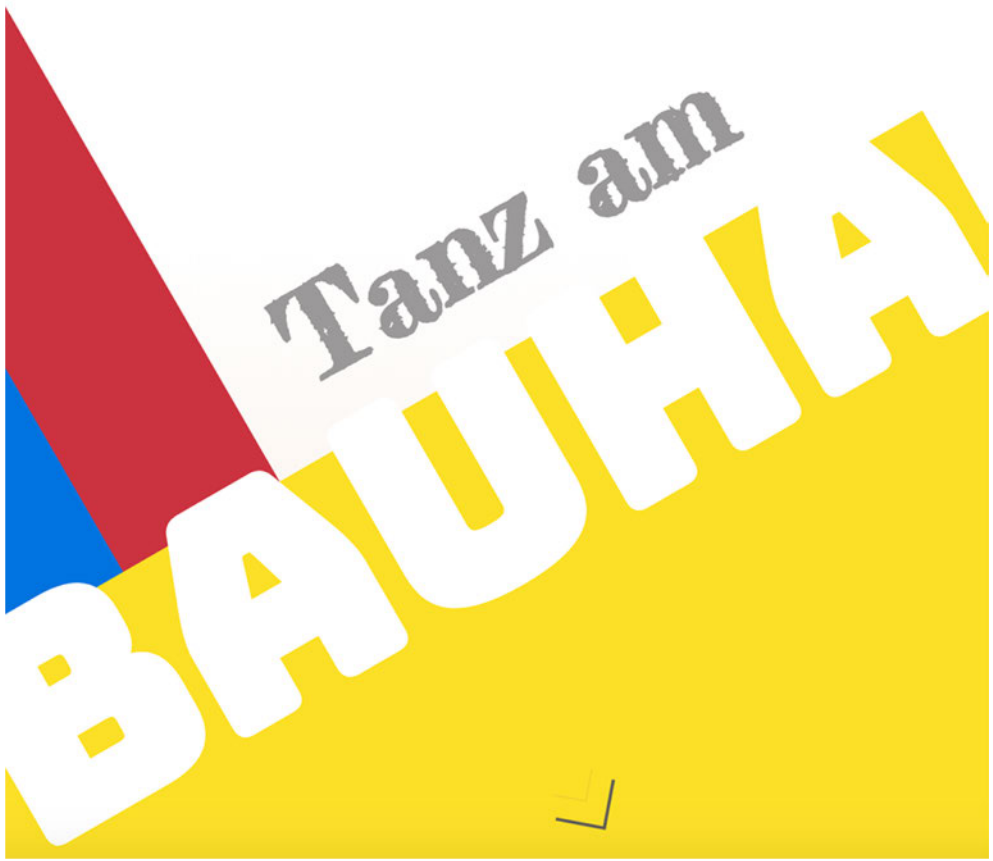
```
<path id="DE-BW" title="Baden-Württemberg" class="state" data-description="<ul><li>Stipendiaten: 1.375 </li><li>Frauen: 666</li><li>Männer: 709</li</ul>"
```

Developed by students in coding, multimedia development and content management courses.
For the web version please visit https://weblab.zwoeinsnull.de

Example 3: interactive animations and storytelling

Developed by students in coding and bachelor courses while learning HTML5, JavaScript, CSS.
For the interactive versions please visit https://weblab.zwoeinsnull.de/infoinmotion2019/

Example 3: interactive animations and storytelling



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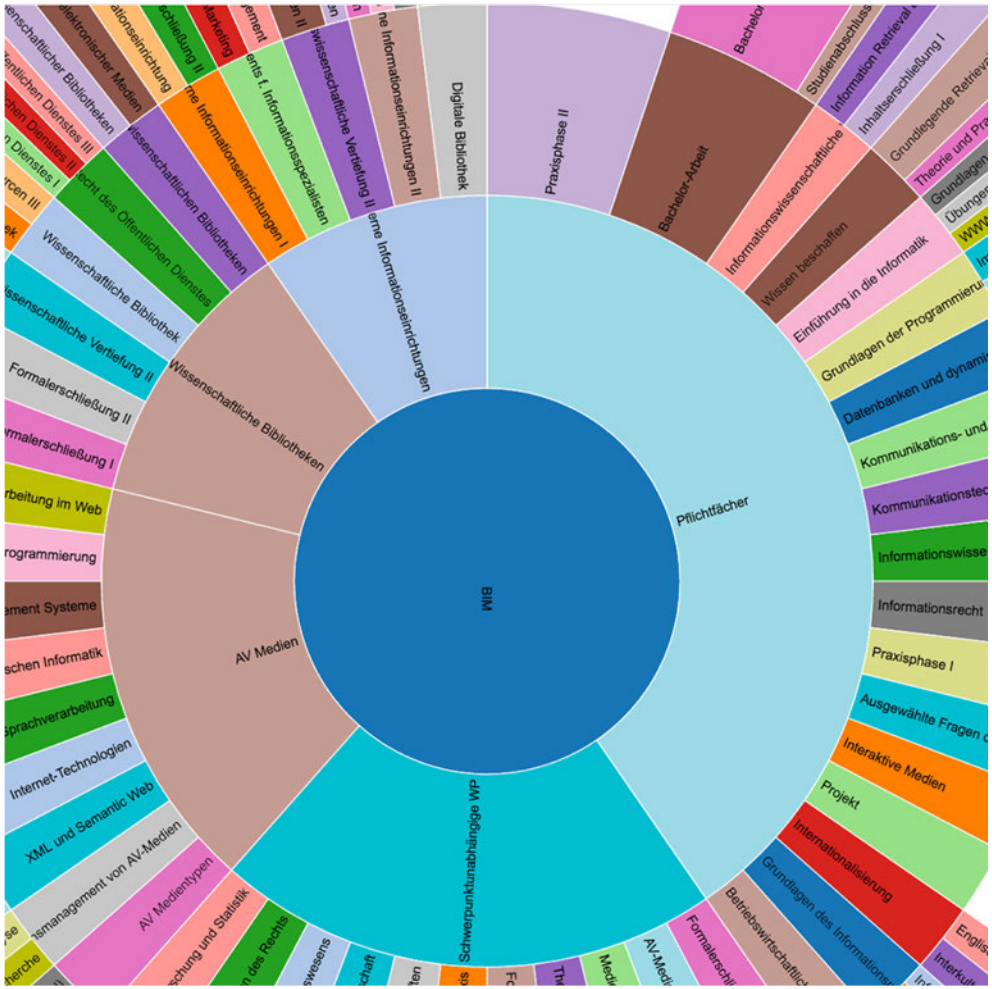

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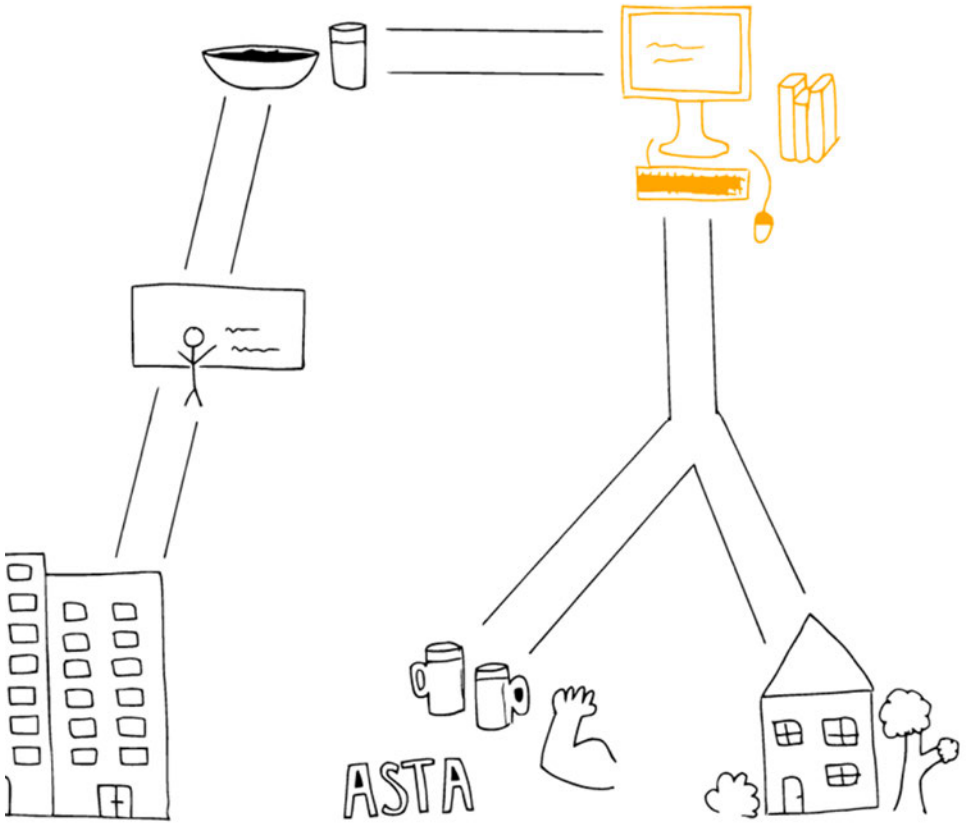

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Example mix of platforms and tools

moodle.org

obsproject.com

figma.com

opencast.org

h5p.org

adobe.com

mahara.org

youtube.com

wordpress.org

Mission 2:
continuity

Continuity: in learning, access and design

Continuous learning paths, goals and experiences

- integration of study, work and leisure time
- no login barriers or unintentional media breaks
- picking up learners where they are
  "*social media*", "*mobile first*", "*knowledge snacks*", "*mini lectures*".

Content openness

- starting "*small*" towards Open Educational Resources (OER), Open Access, Creative Commons.

Continuity: in learning, access and design

Continuous Design

- no knowledge silos or login walls where not neccessary (*anymore*)
- learning resources free to (re)use, embed, share

ePortfolios for students

- scientific and non-scientific, personalized, adaptive, flexible
- more visibility for student results, exploration and continuous learning paths.

The Big O: How to become opener?

- **Protected learning environment** next to **public representation** for learning design and iteration processes
  - personalized multi-stage development of learning content up to publication
    - first private, then access-protected, then public
    - staging necessary in practice to meet high demands of modern digital media
  - publish only when **quality is right**
  - always **several iterations necessary** (compare UX process).

Mission 2 in practice: *continuity*

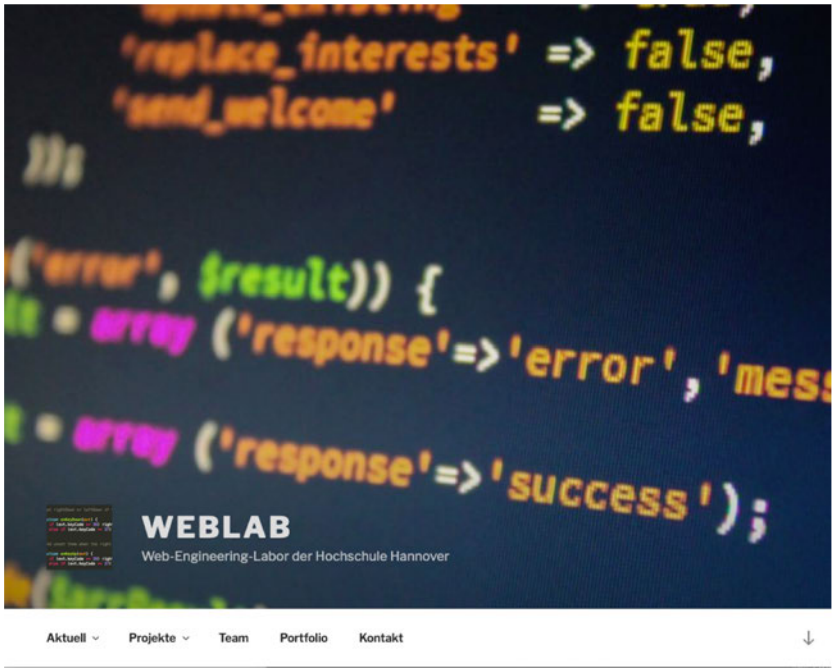
Example 1: open tools, standards and technologies

- Using freely available **standards**,
  (almost open source) **tools** and **platforms**:
  - e.g. HTML5, JavaScript, Python
  - AcademicCloud, WordPress, OpenCast, H5P, Moodle, GitHub, Codepen.io, …
- **Starting small** with e.g. *CreativeCommons* in own research work and lectures.

Example 2: WebLab - from shelf to web

Web-Engineering-Labor

- continuous since 2016
- in study program Information Management
- bundling, encouraging and further development of student results

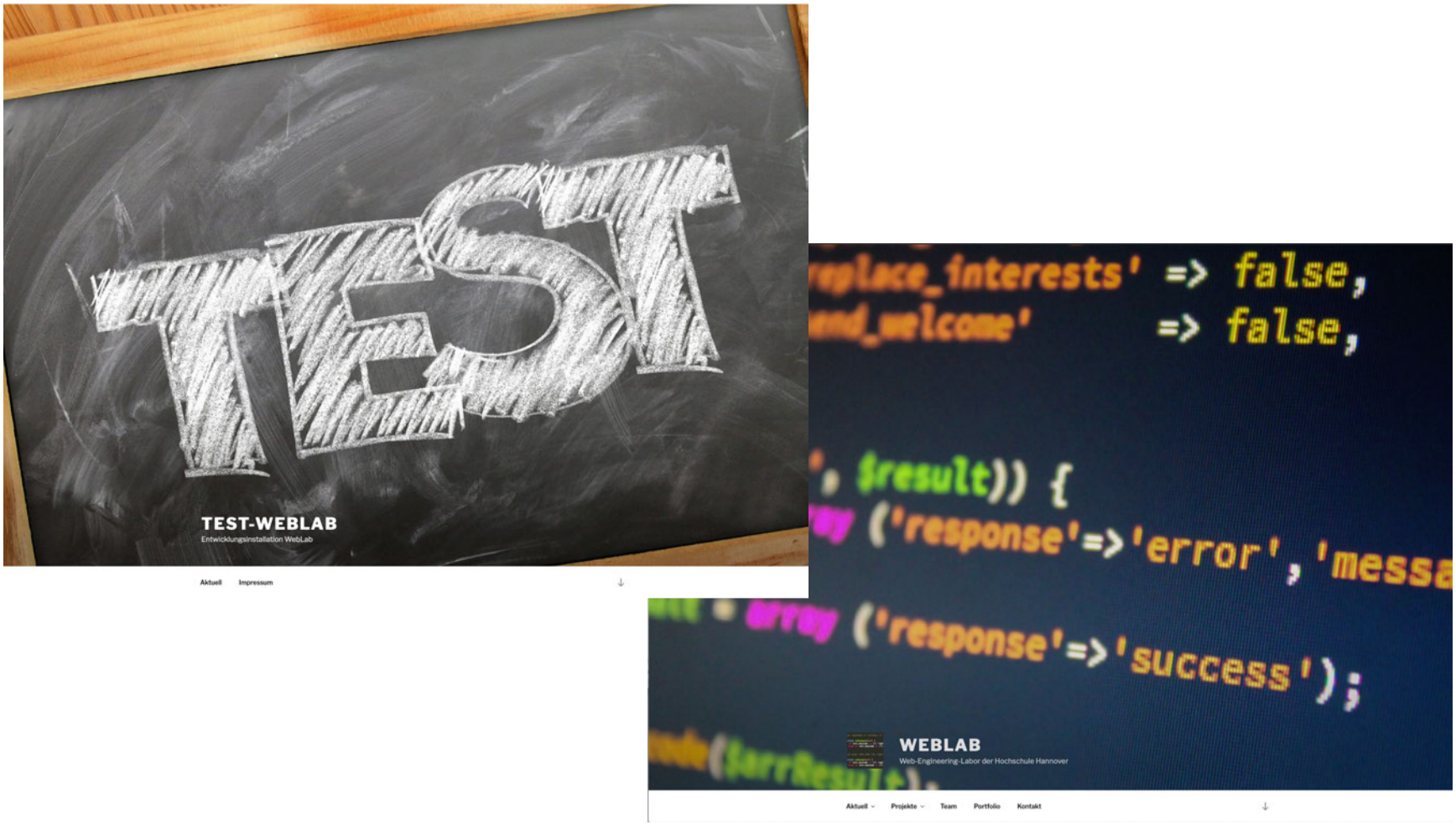


  - from and in courses, internships and theses
  - on web development and (media) computer science.

Example 3: stage model for publishing of learning resources

- **Multi stage model** for publishing process of learning resources:
  - like in Content Management Systems "*draft – review – publish workflow*"
  - iterative quality enhancement "*at your own pace*"
- Moodle as **intern protected environment** for lecturers
  - only if content good enough, publish outside of Moodle (e.g. YouTube)
  - evaluation, test "*live*" and continuously with students.
- Existing "*open*" platforms for **external publishing**:
  - OER communities and platforms, YouTube, WordPress, …

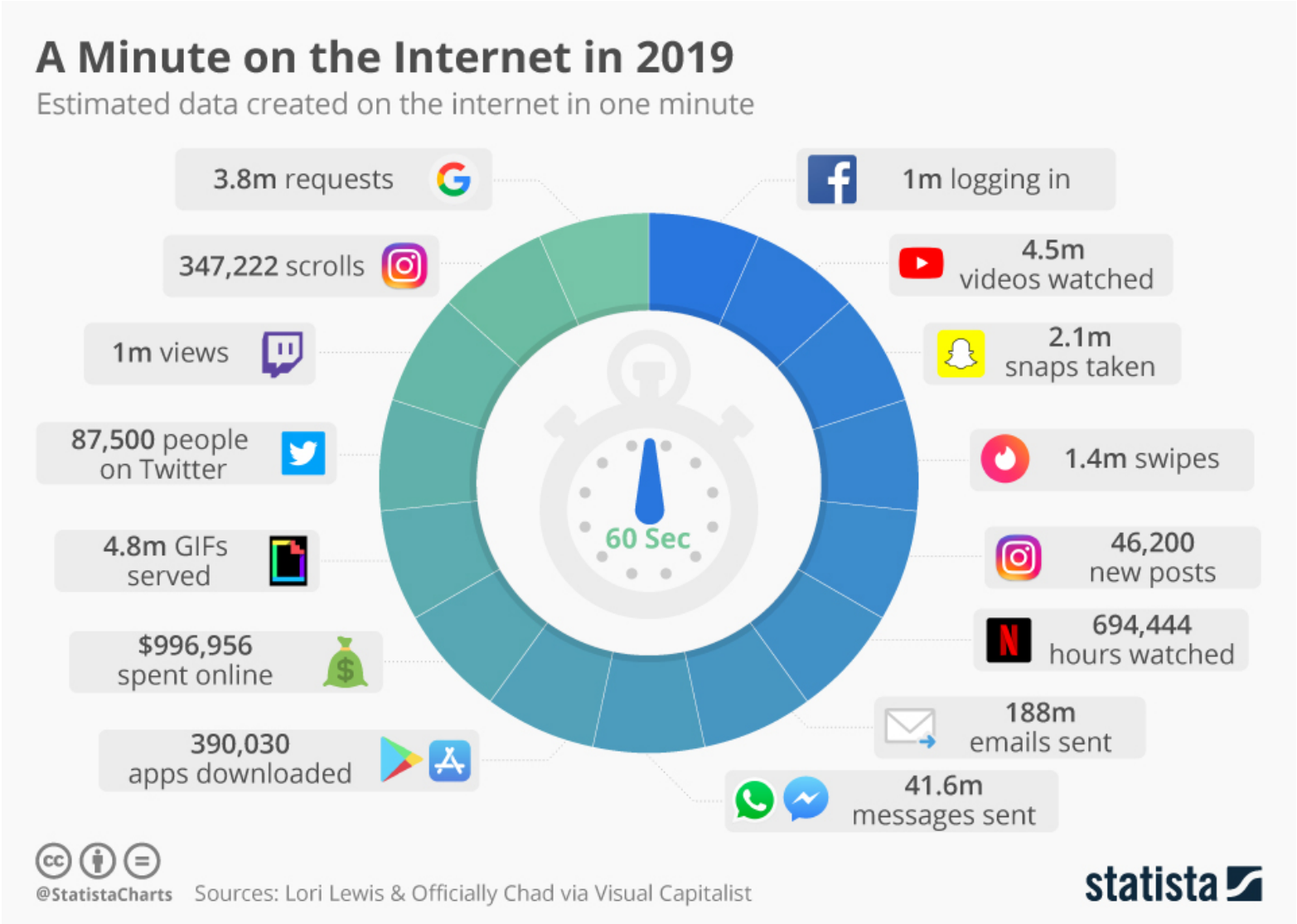
Example 3: stage model TestWebLab - WebLab



TestWebLab – WebLab: staging model successfully used in student projects as two independent WordPress installations. For web version please visit https://testweblab.wp.hs-hannover.de

Mission 3:
Focus and Reduction

Media and information overflow



Source: Statista, https://www.statista.com/chart/17518/internet-use-one-minute/, 2019

Tool and platform overflow

Production of Learning Content

Video Conference

LMS and Messaging

Collaboration

Reduction, Complexity and Digital Wellbeing

- Complexity as an ambivalent construct

"*the right amount of information in the right place at the right time (in the right representation).*"

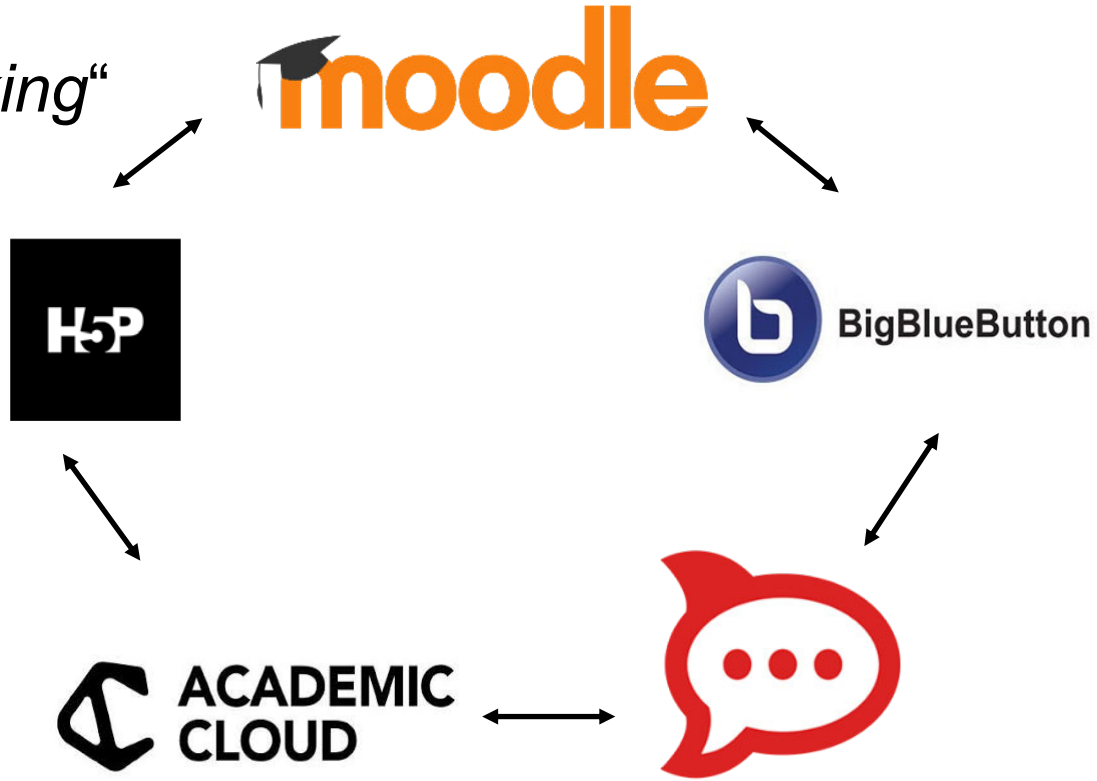
  - leveled, user centered, context sensitive construct
  - production of focused and reduced digital learning resources.

Start low level, end up self-directed and complex.

Mission 3 in practice:
Focus and Reduction

Example 1: Media didactic concept – tools and platforms

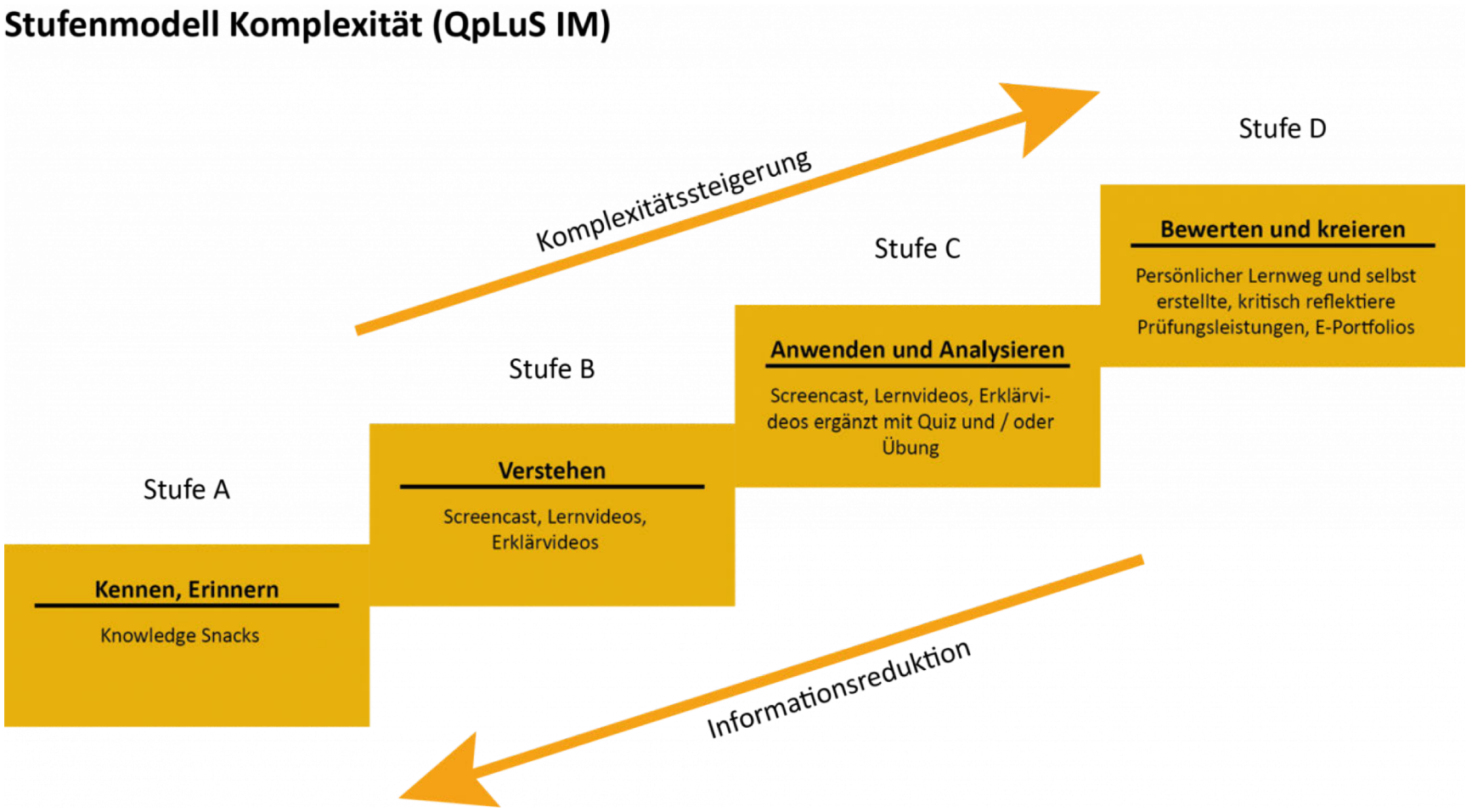
- Reduction and focus on a clear selection of tools and platforms
- meaningful "*interlocking*“
  - different depth of information
  - different learning targets.



Example 1: Media didactic concept – complexity level model

- A **media didactic concept** for opportunities and risks of:
  - information handling in digital (social) media
  - creation of innovative learning settings
    - (contentual) focus and (formal) reduction as a basis
    - enriching/engaging interactivity
      - with digital wellbeing in mind
    - e.g. basic functions and mechanisms of search engines via interactive video (compare slide 7)
      - prototype for new media didactic possibilities.

Example 1: complexity level model



Mission 4:
Aware Interaction

Aware Interaction: user == learner

- Aiming at *senseful* interaction
  - with learning purpose and knowledge transfer
  - reducing *distracting "senseless"* interactions
  - beneficial to personal development and wellbeing
- **User Experience Design (UXD)**, Instructional Design (ID) and **Learning Design**
  - e.g. constructive alignment and self-directed learning
    - what is the learners goal and how can it be achieved best?
    - not only the **learning process itself**, but also **the before and after** must be taken into account in conception and development of learning content
  - interactivity "*enriching and engaging*"
    "*why this kind of interaction?*" "*well-dosed*", "*meaningful*" "*reduced*".

Aware Interaction: Learner Experience Design (LXD)

- **Digital Learning and UX: a perfect match?**
  - Creating learning paths or experiences
  - enabling exploration of learning content with instructions when needed (on demand)
  - e.g. **micro interactions** for better user feedback in interface design or **functional animation** with a purpose "*not only for the look*"
  - interaction classification for better user overview "*good" and "bad" interactions (context/user specific) (work in progress)*
- adapting current concepts and tools in UX e.g. *onboarding*, *personas*, *emotional design/motivational design.*

Aware Interaction and Digital Wellbeing

"Digital Detox", "Nomophobia (No-Mobile-Phone-Phobia)", "Fear Of Missing Out (FOMO)" or "Cyberbulling-/mobbing“

- increasingly relevant in media thus in society and education
- currently determined by big technology companies Google, Facebook and Apple
  - limitation of screen or smartphone usage time to prevent smartphone addiction or "*digital distraction*"
    (Welledits, Schmidkonz & Kraft 2020)

- analysis of **human interactions and wellbeing** very promising
  (Hall & Merolla, 2020)
  - to make structured statements about **positive and negative consequences** of the use of digital technologies in the future.

Mission 4 in practice:
Aware Interaction

Example 1: UX tools for learning design

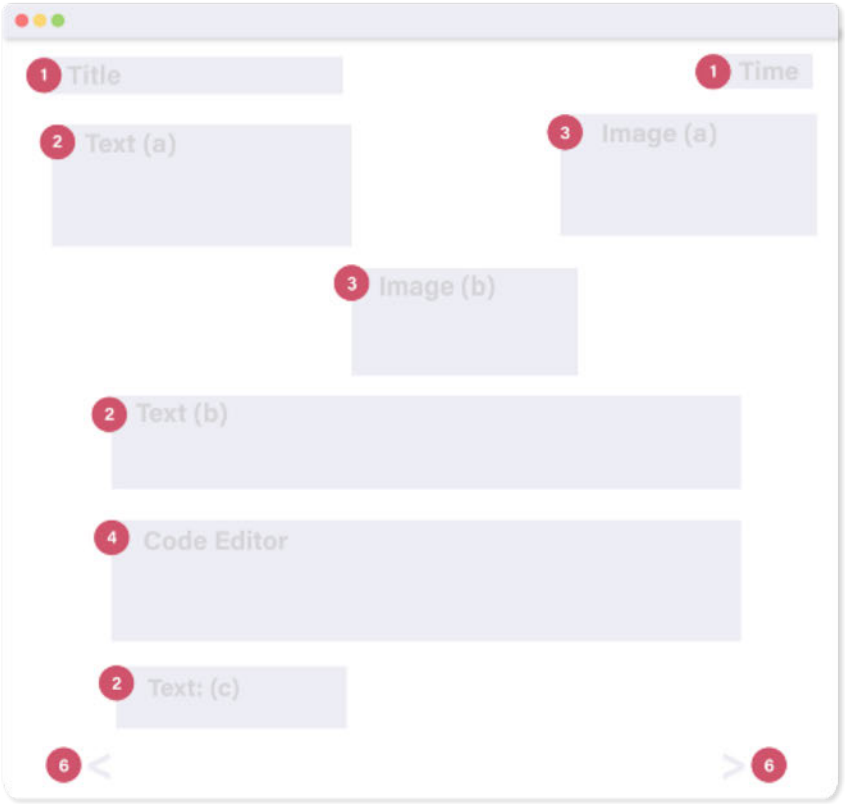
Storyboard

Topic	Objectives	Screen Elements	Activities (Practice Time)
Topic 2: What is a React component?	Learners write their first React component	**1. Title & Time** **2. Text** a. What is a React component? b. Component types c. Resources **3. Media** a. A picture that shows what a block means b. A picture that shows the structure of a React component **4. A code editor** **5. Navigation buttons**	**Activity:** Let's write a React component in the code editor below.

Job Aids

Resources: React elements and operations chart

Wireframe



(Dhaif, 2020)

Example 2: functional animation

Students results in the course “Development of Multimedia Systems” 2017
For the interactive web version please visit https://weblab.zwoeinsnull.de/mm-sys-2-best-of-sose-17/

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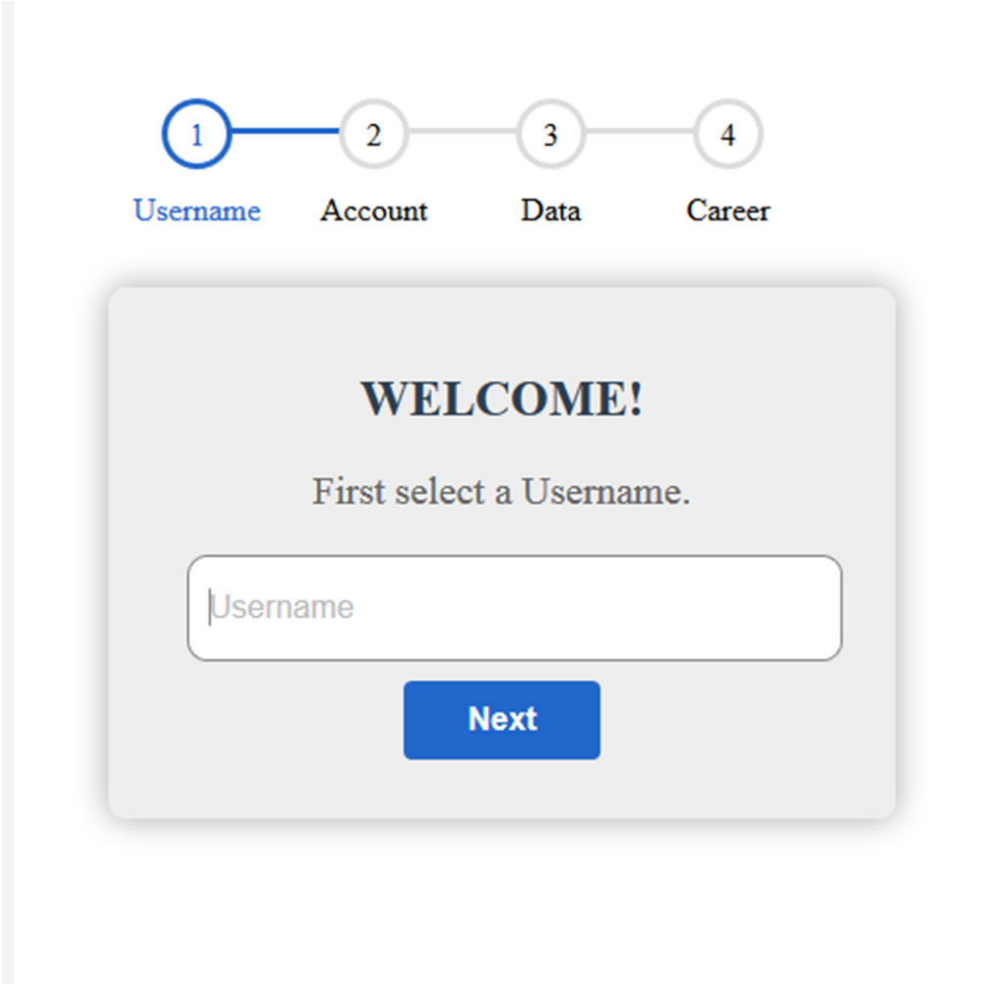

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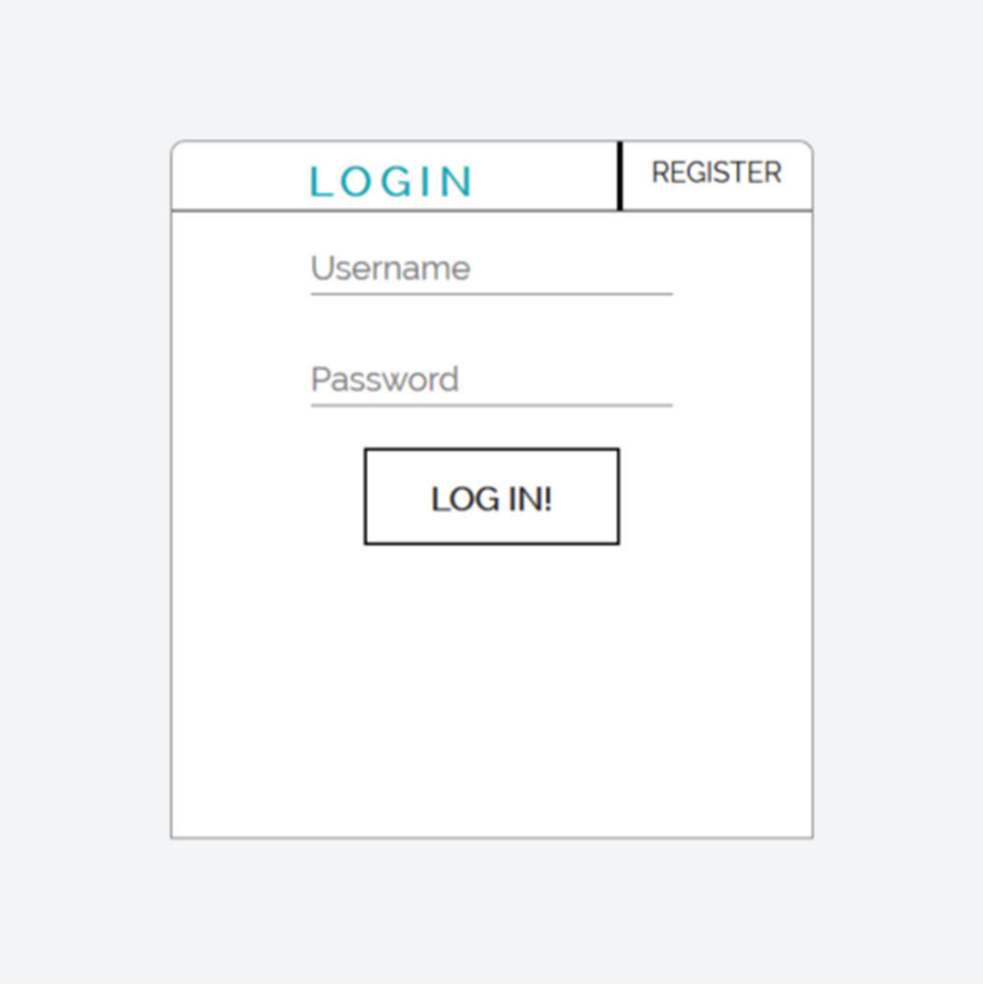

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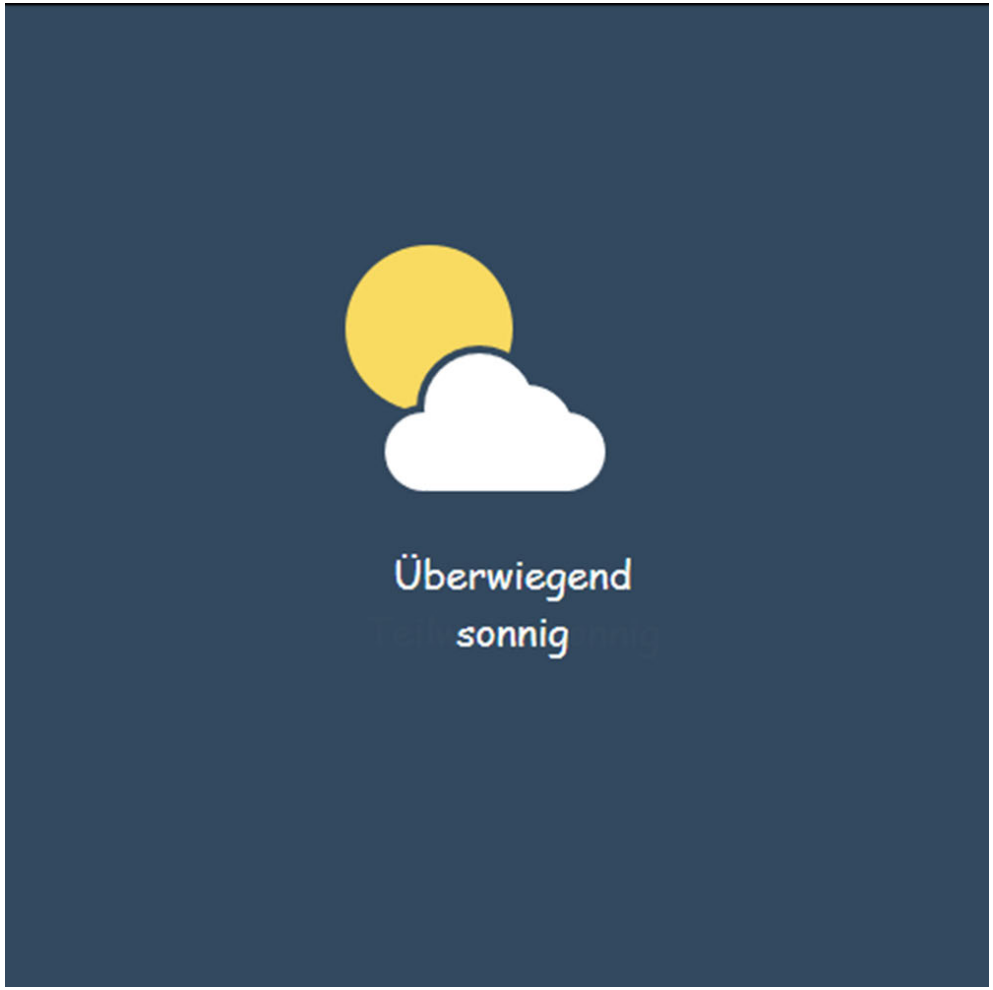

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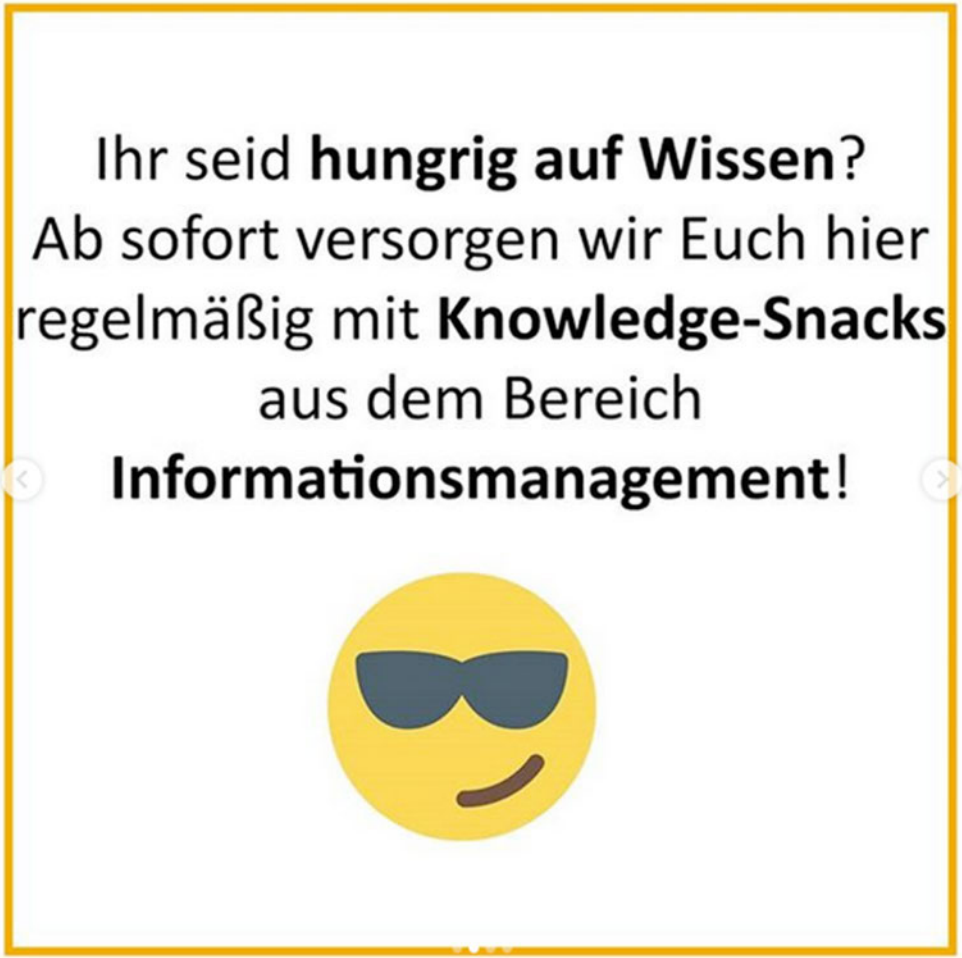
Example 3: IM glossary at Instagram

Glossary of information management terms at Instagram as a low-threshold introduction to specialized topics (work in progress).

Example 3: IM glossary at Instagram



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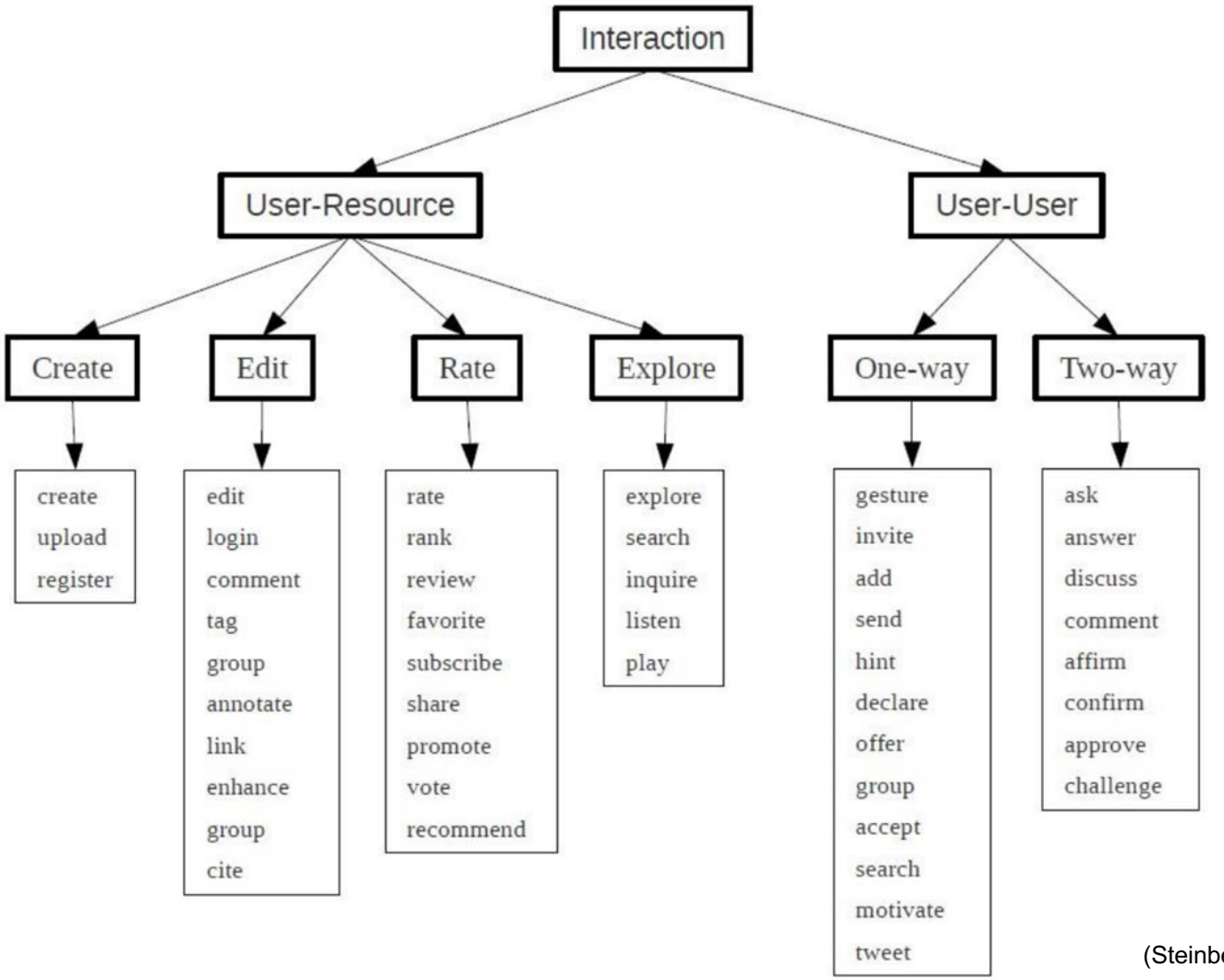
Example 4: refining social interaction taxonomy



(Steinberg et al., 2011)

Conclusion and Outlook

Conclusion: content and interactivity with a purpose

- **Four missions** to complete **digital media challenges for education** now and in future:
  - *high-quality content, continuity, focus and aware interaction*
  - *starting low level, ending up self-directed and complex.*
- **From students for students**: interactive content created by students in exams twice good (WebLab):
  - enhancing digital capability and self-directed learning
  - target group specific *best-practice* content for following students.

Conclusion: user as a learner

- **UX as a tool box for learning** design:

  „*understand, research, analyze, design, launch, analyze again*“

  - dynamic instead of static content
  - meaningful instead of trivial content and interaction
  - approaches from UX like Emotional Design/Motivational Design necessary for contemporary and sustainable learning design.

- **Analysis** in detail and **classification of human interaction and wellbeing** important

  - towards long-term valid statements about positive and negative consequences of digital technology.

„Information is only useful when it can be understood.“

Muriel Cooper
https://www.media.mit.edu/posts/muriel-cooper-lasting-imprint/

References

Batterbee, I. (2020, März 11). 5 predicted UX trends for 2020. Medium. https://uxdesign.cc/5-predicted-ux-trends-for-2020-51e3c4e3ca12.

Dhaif, A. (2020, Januar 15). *What it's like to be a learner experience designer (aka, a LX designer)*. Medium. https://medium.com/@asy.d/what-its-like-to-be-a-learner-experience-designer-aka-a-lx-designer-5052117f675d.

Ehlers, U.-D. (2020). Future Skills – Future Learning and Future Higher Education. Springer VS, Wiesbaden. https://doi.org/10.1007/978-3-658-29297-3_1.

European Commission. (2020). Resetting education and training for the digital age: Digital Education Action Plan 2021-2027—Communication From The Commission To The European Parliament, The Council, The European Economic And Social Committee And The Committee Of The Regions. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0624.

Kapros, E., & Koutsombogera, M. (Hrsg.). (2018). Designing for the User Experience in Learning Systems. Springer International Publishing. https://doi.org/10.1007/978-3-319-94794-5.

Peters, D., Calvo, R. A. & Ryan, R. M. (2018). Designing for Motivation, Engagement and Wellbeing in Digital Experience (METUX), https://doi.org/10.3389/fpsyg.2018.00797.

Schmidt, M., Tawfik, A. A., Jahnke, I., & Earnshaw, Y. (2020). Learner and User Experience Research. EdTech Books. https://edtechbooks.org/ux.

Shah, A. (2019). Defining digital wellbeing. Jisc Building Digital Capability Blog. https://digitalcapability.jiscinvolve.org/wp/2019/09/03/defining-digital-wellbeing/.

Steinberg, M., Ullmann, N., & Brehm, J. (2011). A Social Interaction Taxonomy: Classifying user interaction tasks in Web applications. *The Third International Conference on Mobile, Hybrid, and On-line Learning*, *23*, 25–30.

Themelis, C. & Sime, J.-A. (2019). Mapping the Field of Digital Wellbeing Education: A Compendium of Innovatie Practices and Open Educational Resources [Compendium of Best-Practice]. Lancaster University, UK. http://www.digital-wellbeing.eu/learning-portal/compendium-of-best-practice/.

Welledits, V., Schmidkonz, C. & Kraft, P. (2020): Digital Detox im Arbeitsleben. Methoden und Empfehlungen für einen gesunden Einsatz von Technologien. Springer Fachmedien. Wiesbaden.

Wucherpfennig, G., Steinberg, M., & Wittich, A. (2020). *Rethinking Self-directed Learning for Information Managers—A process model for self-learning materials regarding the degree of complexity* -. DigitalWorld 2020, The Twelfth International Conference on Mobile, Hybrid, and On-line Learning (eLmL), Valencia.

Wucherpfennig, G., Steinberg, M., & Wittich, A. (2020). *Mediendidaktisches Konzept für den Studiengang Informationsmanagement an der Hochschule Hannover (QpLuS-IM-Projekt)* [Konzeptpapier]. https://www.researchgate.net/publication/341900843_Mediendidaktisches_Konzept.