ZEWK

Technische Universität Berlin

Wissenschaftliche Weiterbildung

LUNCH FÜR GUTE LEHRE 2019

DIENSTAGS 12:00-14:00 UHR

Schöne neue Technikwelt?
Komplexen Anforderungen mit innovativer Lehre begegnen

Maker Education

::

Maker-Centered Learning

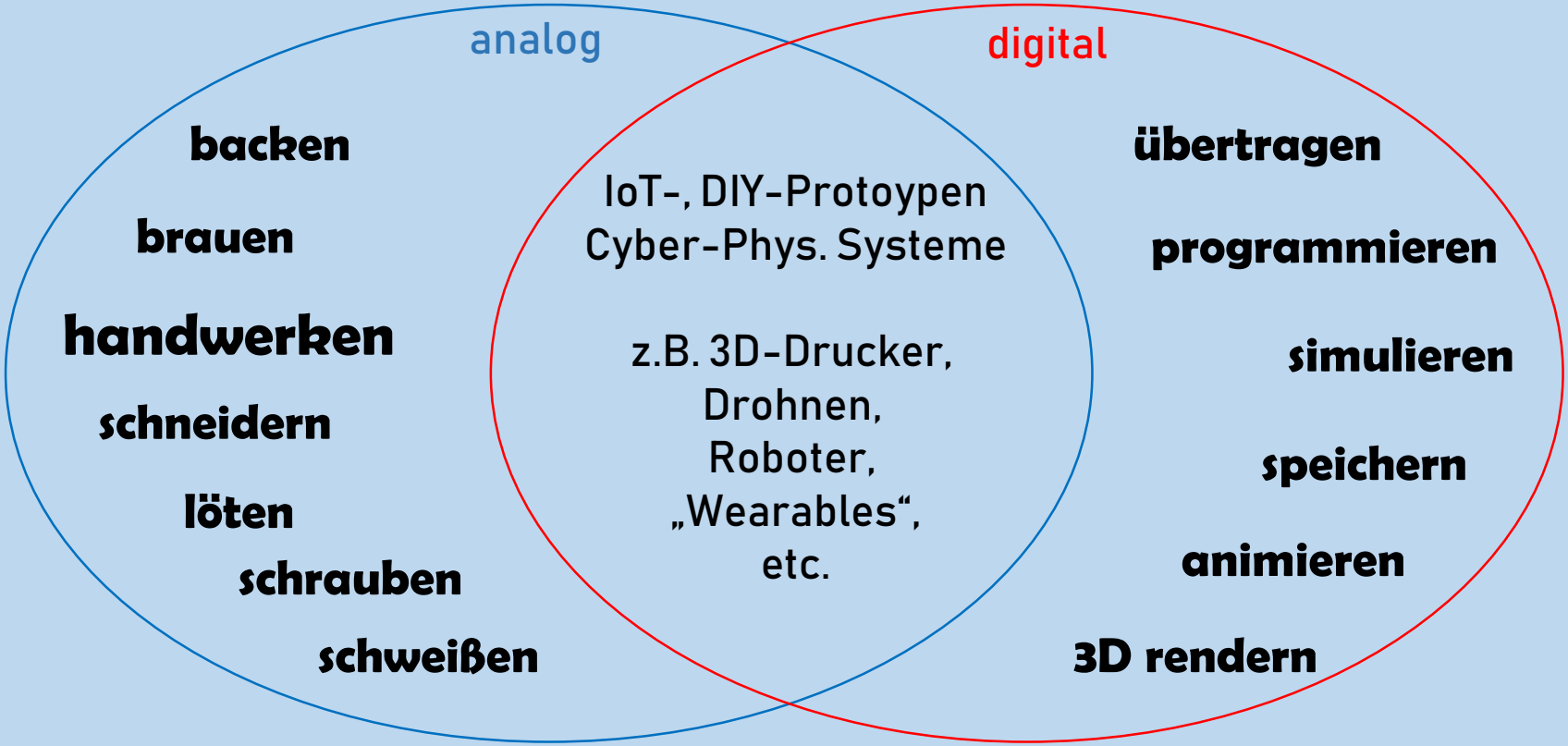
Martin Hieronymus

Maker-Centered Learning

Gliederung des Vortrags:

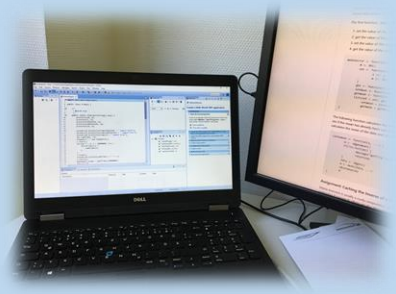
Wissen	Benennen der wesentlichen Bestandteile des Makertums.
Verstehen	Didaktische Relevanz des M.-C. Learning herausstellen
Anwenden	Integration des Maker-Centered Learning in die Lehre
Erschaffen	Maker Centered-learning ::: *Workshop im Anschluss*:::

Make

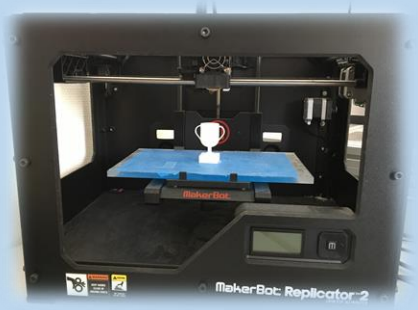

analog
digital
backen
brauen
handwerken
schneidern
löten
schrauben
schweißen
IoT-, DIY-Protoypen
Cyber-Phys. Systeme
z.B. 3D-Drucker,
Drohnen,
Roboter,
„Wearables“,
etc.
übertragen
programmieren
simulieren
speichern
animieren
3D rendern

Maker Tools

„Analoge“ Handwerkzeuge

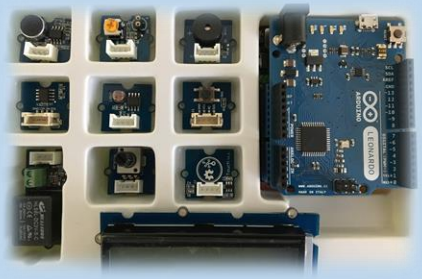


Softwareentwicklungsumgebung

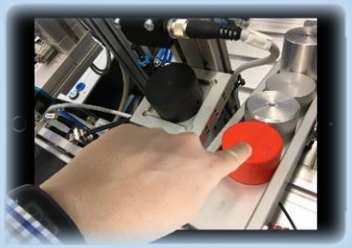


3D-Drucker

Roboter



Mikrocontroller und Peripherie



Smartphones und Apps

Maker Places

MakerSpace

- FabLab (Prototypenwerkstatt)
- RepairCafe
- TechShop
- (Open) Innovation Center
- HackerSpace

Maker Places

MakerEvents

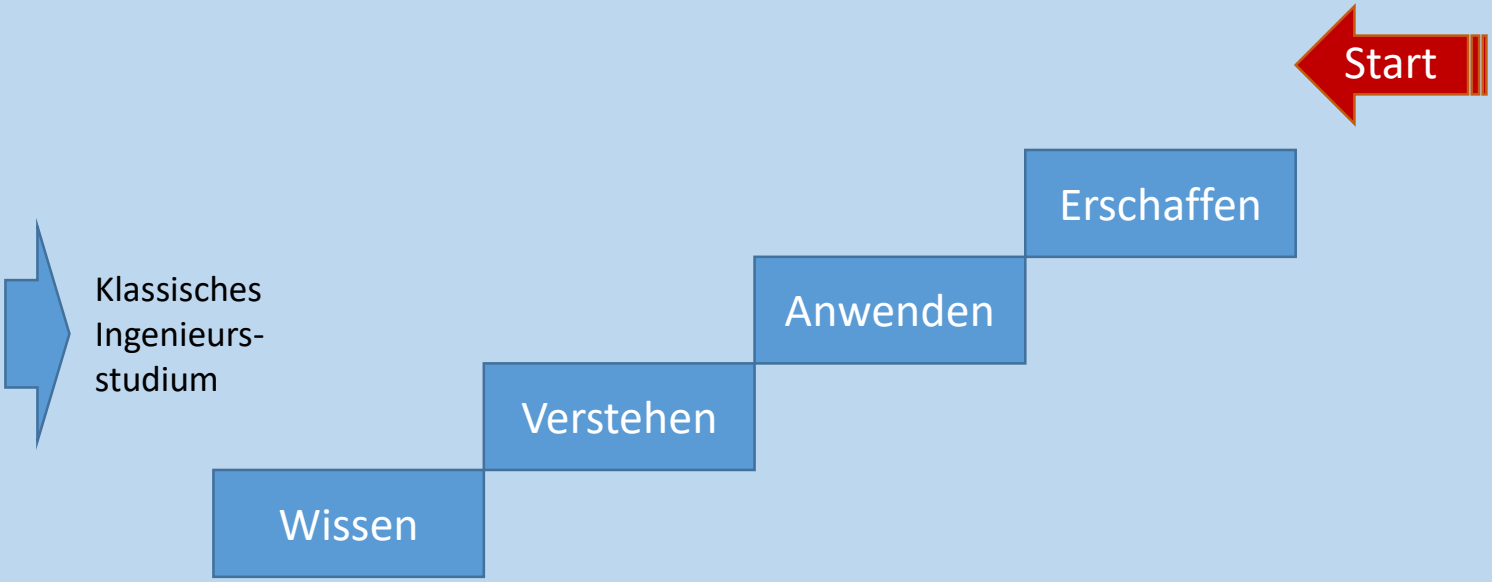
- (Mini) Maker Faires
- Hackathon

Programm:

- Vorträge
- Ausstellungen
- PosterSessions
- Workshops
- Challenges
- Shops

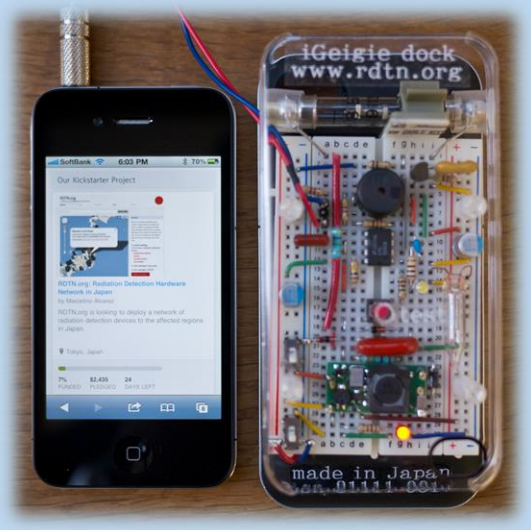
Maker Education

Maker [meɪkə] (engl. für ‚Schöpfer' oder ‚Hersteller')
Person, die neue Dinge selbst herstellt oder existierende umbaut, und dabei meist aktuelle Technik einsetzt.



Maker Education Philosophy

STUDENTS BECOME CREATORS,
NOT CONSUMERS.



(Maker-) Education Roots

John Dewey
1859 - 1952

Lew Wygotski
1896 - 1934

Jean-Pol Martin
1946

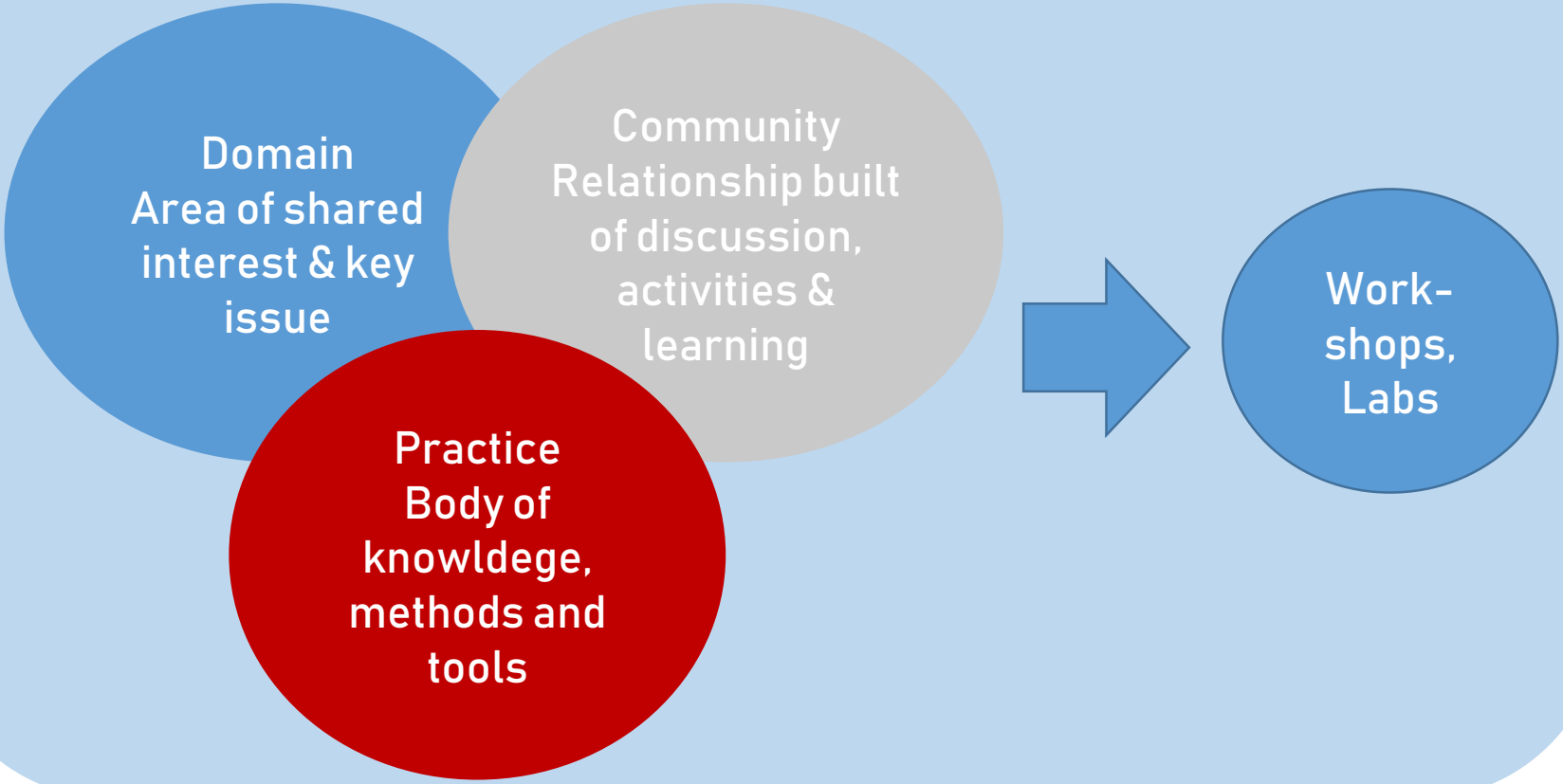
et al.

„Learning by Doing“
Aristoteles

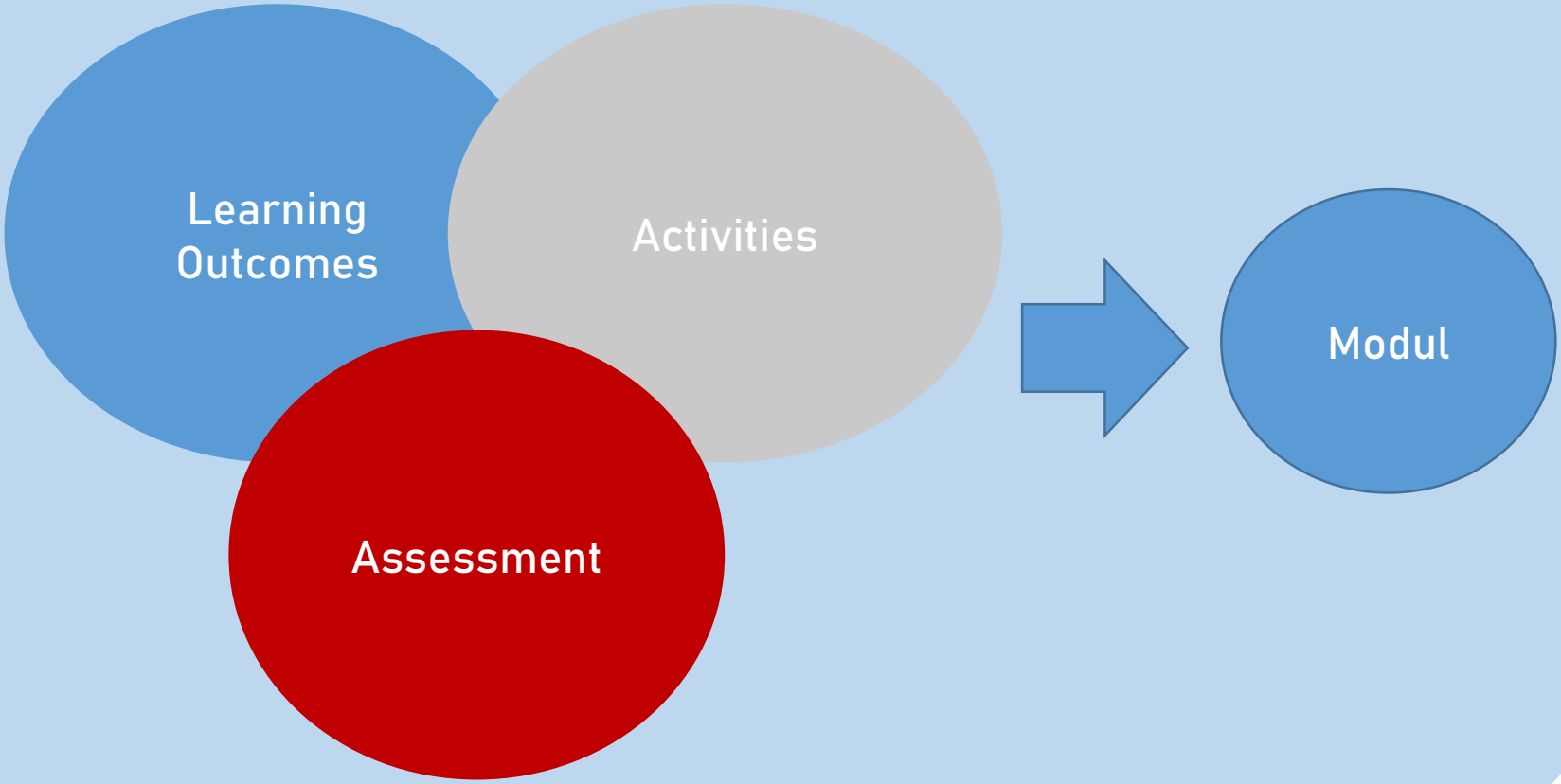
CONSTRUCTIVISM

Maker-Centered Szenario

Außercurriculare Community of Practice

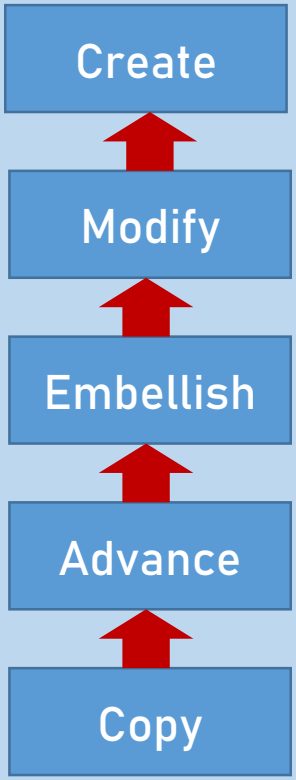


Constructive Alignement



Assessing in Maker-Projects

Assessment



Create something new, different than what has been created before

Take what others have done. Modify or morph it into something new.

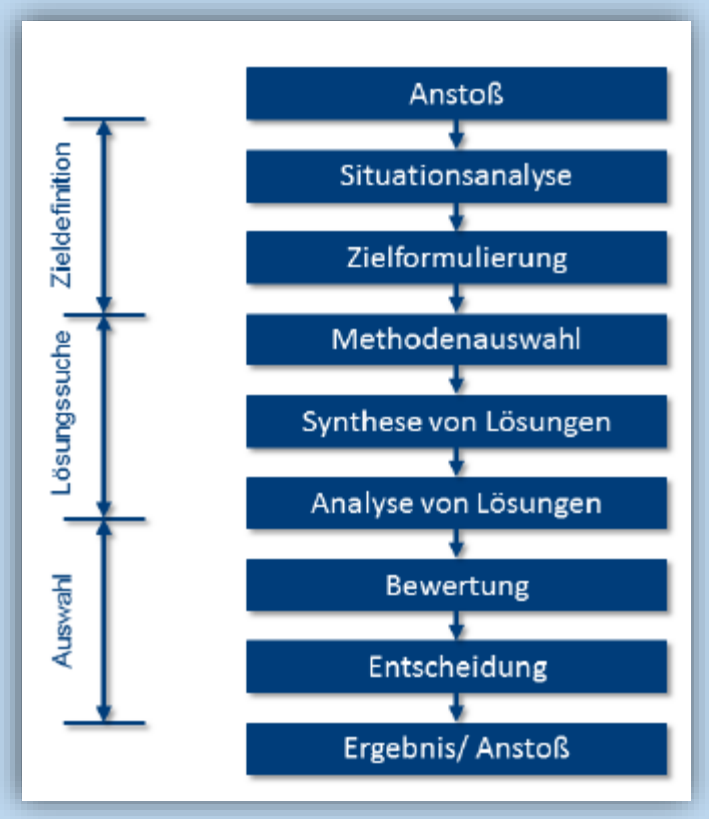
Add something to that which has been done.

Gain more advanced knowledge and skills by doing similar projects

Make something as exactly as someone else has done

Problem-based Learning (PBL)

John Dewey
1859 - 1952



Ahrens 2014, S.48

B.Sc. WING - Modul PQM

Problemfeld: Getriebemontage
Wissensgebiete: Maschinenbau, Zeitwirtschaft, Ergonomie, Projekt- und Qualitätsmanagement
Methoden: Design Thinking, Prototypenentwicklung, Cardboard Engineering

Empfehlung:
Die Ideen und Methoden aus der Maker-Education im Rahmen von Projekt- oder Problemorientierter Lehre nutzen.

Ressources

Ahrens, V. 2014: Abschlussarbeiten richtig gliedern in Naturwissenschaften, Technik und Wirtschaft. v/d/f-Hochschulverlag (UTB), Zürich

Clapp, E. et al. 2017: Maker-Centered Learning: Empowering Young People to Shape Their Worlds. Jossey-Bass, Harvard.