The Inverted Classroom in Workplace Learning

Digital Transformation and the Connection of New Learning-spaces
Agenda

1. The challenge
2. The digital media solution
3. In depth view – learning scenario in VET – hygiene specialists an example
4. Lessons learned
5. Summary
6. Discussion
The challenge: Societal context of project

**Labor shortage in healthcare sector:**

German state of NRW alone had a ratio of only 44 applicants for 100 job vacancies in 2018, showing the negative ratio.

- **Effect:** rationalize processes and make them more effective
- **Effect:** boost job attractiveness / corporate branding and increase efforts in labor force retention
- **Effect:** debate on wages for certain professions
- **Effect:** qualify through more agile training formats to accelerate deployment of new staff and increase productivity

Source: bbraun.ch
The challenge: Societal context of project

Conclusions for healthcare qualification:

- Modernize learning culture away from static classroom training and expand traditional learning formats/spaces
- Align training offerings better with individual living conditions (mobile, flexible and individualized offerings)
- Integrate theory and practice better and focus on competency
- Increase self-paced and digital learning competency

Outcome:

- Research project “Integrated Digital Training” (InDigiTrain) (funded by the Federal Ministry of Education and Research)
- Development and evaluation of integrated learning and digital training in healthcare sector [https://indigitrain.fernuni-hagen.de/](https://indigitrain.fernuni-hagen.de/)
The project and the players

- **Project Partner**
  - FernUniversität in Hagen
  - BiG - Bildungsinstitut im Gesundheitswesen Gemeinsatzige GmbH
  - AWO
  - Schülke & Mayr GmbH
  - MIT: member of eee group

- **Management, Coordination, Scientific Supervision**
  - Hygiene Specialists
  - Speech Therapists

- **Consultant Facilitator Sustainability**
  - verdi Bundesverband
  - Deutsches Krankenhaus-institut (DKI)
  - Bundesverband AWO

- **Contracting Party**
  - Tricast
  - Video production Training

- **Academic Advisory Council**
  - MIT: member of eee group

- **Expertise in Profession**
  - Provision of target group

- **Software Development**

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Distance University

Founded in 1974 by the State Parliament of North Rhine-Westphalia

The only distance learning university for the German-speaking language community in the world

Germany's largest university with around 77,000 students

Only university in Germany whose entire degree programs (Bachelor and Master) can be studied in part-time mode alongside work and family commitments
M.I.T e-Solutions in a nutshell

- **1970**: Founded in Frankfurt / Germany
- **e-Learning pioneer**: one of the first German CBT and computer-controlled analog video productions
- **Staff**: 40 employees incl. instructional designers, programmers, graphic designers, project managers
- **Full service provider**: One-stop-shop for e-Learning technology tools and content
- **Investment security**: All products owned, no reselling
- **Experience**: over 2,000 projects and customer loyalty of up to 30 years
- **Innovator**: Participant in research oriented projects on adaptive learning, workplace assistance systems, learning analytics, mixed reality or flipped classroom
Practice partners

Nationwide Educational Institution for employees in public health

School for Speech Therapists of a Workers Welfare Association (AWO)

Contractual partner

Video production company
The Digital Media Solution

- **Selection and digitalization** of content
- **Over 100** educational **videos**
- **Two learning platforms** including individual **learning tools**
The Inverted Classroom Model

Before the lesson

1. Initial problem and video

2. Problem definition

3. Brainstorming

4. Review of ideas

5. Identify educational objectives

6. Individual study

7. Integrate learning results

After the lesson

Digital and face-to-face educational activities

During the lesson

Mobile learning platform

„Siebensprung“
The seven steps of problem-oriented learning (Reusser, 2009)
Mobile Learning Platform Frontend

Forum / Blog

Authoring Tool

Flowchart Editor

Learning Platform Backend
Gestaltung von Lernsituationen

Wie erstelle ich einen Praktikumsbericht?

Praktikumsbericht – formale und inhaltliche Kriterien.
Was gehört in einen Praktikumsbericht?
Der Aufbau und die formale Gestaltung

- Gestaltung Titelblatt/Dekoklap
- Inhaltsverzeichnis
- Abbildungs-/Tabellenverzeichnis
- Abkürzungsverzeichnis
- Sonderschreibungen
- Einführung
- Quelle, Quellen
- Quellen- und Literaturverzeichnis
- Eigenschaftsbildung

Wenn Sie mehr Detailinformationen erhöhen, klicken Sie bitte auf die einzelnen Punkte.
Gestaltung von Lernsituationen

Übung zu Lernzielen

1. Formulieren Sie zum Thema „hygienisches Arbeiten bei Injektionen“ jeweils ein kognitives, ein affektives und ein psychomotorisches Lernziel.

2. Operationalisieren Sie diese Lernziele!

3. Geben Sie die Kriterien für die Überprüfung an.

Bitte notieren Sie sich Ihre Überlegungen. Tauschen Sie sich bei Bedarf mit ihren Kollegen aus und bringen Sie Ergebnisse mit in den nächsten Präsenzunterricht.
DGSM zur Einstufung von Medizinprodukten

Kritisches Medizinprodukt (1/3)

1. Sind Holzträne oder schwer zugängliche Teile vorhanden? (Ja) und/oder
   Sind Funktion und Sicherheit des MP beeinflussende Effekte der Aufbereitung vorhanden? und/oder
   Ist die Anzahl der Aufbereitungzyklen begrenzt?

   - Ja
     - Kritisch C
       - mit besonderen hohen Anforderungen an die Aufbereitung

   - Nein
     - Kritisch B
       - mit erhöhten Anforderungen an die Aufbereitung

2. Dampfsterilisation möglich?

   - Nein
     - Nicht flüchtende Verunreinigung bei Enddef.
       - mit erhöhten Anforderungen an die Aufbereitung

   - Ja
     - Kritisch B
       - mit erhöhten Anforderungen an die Aufbereitung

Finden Sie auf der nächsten Seite die Fortsetzung dieses Flussdiagramms.
In depth view – Learning scenario in VET

Everyday life
- deliver learning-task
- ubiquitous access with multiple devices

Classroom
- deepening knowledge discussions and exchange

LMS
- collect questions, misunderstandings and unclear facts in the forum or blog
- practice with digital tools

Workplace
- state and collect experiences, problems and situations work process related

ICM
- learning content (ex. Video) on demand, flexible

Christina Gloerfeld, Jessica Felgentreu, & Onno Reiners
Dear Learner,

This week we start with a new and very basic topic, which is crucial in hospital hygiene. Please watch the following video in preparations for the next lesson.

https://youtu.be/VK2vpOh5wws

Take notes on transmission paths of pathogens. Think about further transmission paths in your everyday life or at work and take pictures of crucial situations. Post your ideas in the forum using the thread hand hygiene – transmission paths. If you have any questions use the forum as usual.

I have to think about a subject and learning task for next lesson. I guess here is an interesting video. I have to prepare the news!
Dear Learner,

This week we start with a new and very basic topic, which is crucial in hospital hygiene.

Please watch the following video in preparations for the next lesson.

https://youtu.be/VK2vpOh5wws

Take notes on transmission paths of pathogens.
Think about further transmission paths in your everyday life or at work and take pictures of crucial situations.
Post your ideas in the forum using the thread hand hygiene – transmission paths.
If you have any questions use the forum as usual.
Ok, I found some spots at my work, where germs might be transmitted, but I wonder how long these spots stay contagious?
Learner and teacher perspective

Classroom

1. Discuss current issues
2. Critical points of transmission paths?
3. Work out a special action plan!
Learner and teacher perspective

Classroom

For next lesson:
Watch the video microbiology „Clostridium difficile“ on the platform and take a look at the procedure of the interactive flow chart!

I have to create a **flow chart on** the subject of clostridium difficile and transmission path with drag and drop **for practice!** Access on the mobile learning platform.
Dear Colleagues,

Thank you very much for joining me this morning. I’d like to give you a brief overview about transmission paths of pathogens and instructions how to avoid spreading infections with some easy means of hand hygiene.
Lessons Learned
Empirical Findings

- Growing **competencies** in different areas
- Increasing **acceptance** of digital media for teaching and learning
- More **flexibility** and **autonomy**
- **Struggle** to create added value, if the ICM is not put into action in total
- Successful linkage between **theoretical knowledge and practical application**
- **Modernization** in teaching and learning structures
- **Stimulus to expand digitalization** in the institution
Obstacles

- Additional effort required to implement ICM
- Adjustment effort to new roles and processes with ICM
- Roll out of ICM as mainstream teaching method
- Organizational, personnel, (infra-)structural problems
Starting Points and recommendations for sustainable change

- Involve all stakeholders
- Use authentic educational videos
- Meet the needs of target groups
- Apply the ICM and the digital media solution in a flexible way
- Deliver blueprints to support and facilitate ICM implementation
To sum it up we...

- Developed a **digital concept of the Inverted Classroom Model** for hygiene specialists and speech therapists with an LMS and over **100 videos and lectures, learning programs and tools**.
- Increased **acceptance** and application of **new teaching and learning possibilities**.
- **Continuously involved** teachers and leaners in the project and helped them identify with the whole concept.
- Created **added values**: flexibility, more time for exchange in the classroom, modernization, better understanding of theoretical knowledge.
- **Integrated** the new concept into **existing structures** and established formats.
... any questions left?

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