

# Abschlussbericht des Forschungsfreisemester im Sommersemester 2023

## Student Group

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## Table of Contents

|                                                                                                   |   |
|---------------------------------------------------------------------------------------------------|---|
| <b>Abschlussbericht des Forschungsfreisemester im Sommersemester 2023</b>                         | 3 |
| <b><i>Teilnahme an der Konferenz "Eyes on TAMK"</i></b>                                           | 3 |
| 19.03.2023, 14:00 Never Mind the Competencies, Here's the Punk Pedagogy                           | 3 |
| Wednesday (22.03.2023)                                                                            | 3 |
| 09.15 Interdisciplinarity in proactive design processes                                           | 3 |
| 10.00 For a better future – the role of Living Labs                                               | 3 |
| 11:00 Panel discussion about the future of higher education                                       | 4 |
| 12.00 The future of internationalization                                                          | 6 |
| 14.00 Workshop: Rise of the Robots: How Might We Deal with the Increasing Use of AI in Education? | 6 |
| 21.03.2023, 15:00-16:00 Presentation: Bot as an Education Tool                                    | 6 |
| Wednesday (22.03.2023)                                                                            | 6 |
| 09.00 General and Human Centric Illumination for Electricity and Construction Students            | 6 |
| 10.00 Workshop: Effective Use of Digital Tools and Resources in STEM Subjects                     | 7 |
| 12.00 Chemification: A New Gaming Tool for Student Learning in Natural Sciences                   | 7 |
| General overview                                                                                  | 7 |
| <b>Wissenschaft</b>                                                                               | 7 |
| Entwicklung eines EEG/EKG Sensors                                                                 | 7 |
| Austausch                                                                                         | 8 |
| <b>Lehre</b>                                                                                      | 8 |
| MEXLE-Wiki                                                                                        | 8 |
| Einarbeitung der technischen Vorgaben                                                             | 8 |
| Entwicklung und Nutzung von Plugins                                                               | 8 |
| Update der verwendeten DokuWiki Version                                                           | 9 |
| weitere                                                                                           | 9 |

|                                                 |   |
|-------------------------------------------------|---|
| ILIAS .....                                     | 9 |
| Erstellen von Fragenkatalogen für EE1/EE2 ..... | 9 |
| Tools .....                                     | 9 |
| Einarbeitung in Arduino-Umgebung .....          | 9 |
| Einarbeitung in KiCAD .....                     | 9 |
| Einarbeitung in Maxima .....                    | 9 |

# Abschlussbericht des Forschungsfreisemesters im Sommersemester 2023

Dieser Bericht liefert eine kompakte Übersicht meines Forschungsfreisemesters im Zeitraum 01.02.2023 bis 31.08.2023 an der [Univertisät Tampere](#).

Der angegebene Zeitraum wurden für verschiedene Tätigkeiten genutzt:

1. Teilnahme an der Konferenz "Eyes on TAMK"
2. Entwicklung einer Elektronik für EEG/EKG Sensoren
3. Einarbeitung in neue Werkzeuge für die Lehre der Elektronik
4. Erstellung von ILIAS Übungen

## Teilnahme an der Konferenz "Eyes on TAMK"

Um den Austausch mit der Tampere University of Applied Sciences ([TAMK](#)) und ihres Netzwerks habe ich an der Konferenz [Eyes on TAMK](#) im Zeitraum vom 20.03.2023 bis 24.03.2023 teilgenommen. Im Folgenden soll auf einige der gehörten Vorträge eingegangen werden

### 19.03.2023, 14:00 Never Mind the Competencies, Here's the Punk Pedagogy

Mark Curcher von der TAMK zeigte, dass Kompetenzen "nett" sind, aber nicht im Fokus der Lehre sein sollten. Er verweist auch auf seinen eigenen Artikel [The Pseudo Uni](#), in dem er bereits 2022 auf eine

### Wednesday (22.03.2023)

#### 09.15 Interdisciplinarity in proactive design processes

Prof. Erich Schöls, Dean, Faculty of Design, Technical University of Applied Sciences Würzburg-Schweinfurt, Germany

- Würzburg: Design students have to take 25% of their study beyond design
- Ahead of the Customer (Feedback) there should be a look a broader view
- storytelling and the way to present the ideas are important (students cannot read 5 pages of a textbook but Harry Potter)
- universities shall be for science not only for practices needed in the industry
- problems are work

#### 10.00 For a better future - the role of Living Labs

- Participation of the "common people"
- Not only enabling sensors but with a change in focus
- Example: people in a Chinese city were "not only" measuring the air quality, but also driving the politics in only allowing electric cars in the inner city.
- <https://enoll.org/>

## 11:00 Panel discussion about the future of higher education

- Dr. Silja Kostia, Principal Lecturer, School of Built Environment and Bio-Economy, TAMK;
- Prof. Dr. Marco Rimkus, Vice President for Studies and Teaching at Hochschule Emden/Leer;
- Mrs. Marietta Muhonen, Director of the School of Education at Hanze University of Applied Sciences, Groningen; (deeper in Sports)
- Mr. Shane Wilson, Principal of Marble Bar Primary School, Western Australia; (small school "in the distance", diverse in culture, language, and background)
- Mr. Zhang Mi, Chairman of Poling Education Management Group, China ("full-path school": from kindergarten to university)
- ([more info](#))

### Outlook in Edu?

- Wilson: preservation and explicitly preserving the endangered local Indigenous language, Nyamal
- Kostia: staying competitive as a country
  - more possibilities for learners: e.g. education more in small chunks
  - collaboration: between universities and companies (also up-to-now not existing ones)
  - educational products
- Rimkus:
  - increase the market share of private universities --> learning point
    - focussed target groups
    - clear profile
    - your investment will get you to the working goal
  - increase flexibility for students, e.g. part-time studies
- Muhonen:
  - "Where is sit competition"
  - less teachers --> more educational designer
    - what is a good question for a 2nd semester BA student?
    - Design thinking
  - Collaboration
    - with companies: what to teach?
  - leadership on "every level": from primary school to university
    - The learning culture in the organization "university" will spread to the student
- Mi: Thinking of "whole human race"
  - too much time is wasted while competing (China in school in uni). afterward, collaboration is needed
  - seeing and emphasizing the advantages of the different cultures and countries
- How to involve the "end-users" in designing?

### Opportunities of networks?

- Wilson:
  - Marble Bar is far out --> was an advantage in the COVID time
  - virtual teacher education as an immersive experience as an avatar in VR.
  - virtual networking and connecting digitally (esp. linguistically diverse groups)
  - Master is 3 weeks in Finland and after this online worldwide
- Muhonen
  - The university has international buddies for students
  - students can learn how to act in an intercultural world
  - Netherlands: are there too many international students?

- Rimkus
  - learning online
  - exchange helps foster the change the mindset, e.g. in changing structures and curricula: It's working already somewhere!
- Kostia
  - creating new ideas and projects sometimes is easier than in-house
  - power in networks as a platform for lobbying ideas
  - needs (re)sources from the university
- Mi
  - China: The COVID situation created more of an intranet than an internet.
  - creating working experiences by exchange
  - Exchange has a history in China (e.g. Christian schools) --> hybrid Western + China is better

good practice for international networking:

- Wilson:
  - 4-year journey of building Marble Bar virtual world
  - oriental and Western ways of curriculum
  - more aboriginal culture and astronomy in VR
- Muhonen
  - Erasmus program: 5 countries for intercultural competence program --> now implemented in the curriculum
- Rimkus
  - enabling PhDs for students by a collab with universities
  - double degree programs
- Mi: Chinese cooking course (only for 20 students)
  - cooking is a language
  - collab with kitchen lab in NY: exchange online --> In the end it produces a book
  - outcome visible in chemistry marks
- Kostia
  - making and eating food is a good starter and sustainer for networking
  - sharing ideas and contacts

what single part would you change in global education?

- Rimkus: Flexibility
  - flexibility in the organization and in the mind of the people
  - flexibility for new approaches to education
- Kostia: KISS!
  - user-oriented mindset
  - also in politics in order to increase the flexibility of the universities
- Wilson: guiding the cultural responsibility of the teachers
- Muhonen: trust and space
  - not only having the traditional classroom
  - many countries have a lack of teachers --> Fun and space should be more visible
- Mi:
  - stand up in class --> harder to sleep
  - activate more senses for memorizing the specialties in the curriculum
  - teacher as a fitness trainer: e.g. let's make the students give the class

Teaching is the most important profession in the world.

## Q&A:

- How to get students to go abroad?
  - structured in curricula for exchange from Germany but not to Germany
  - Australia is opening borders to foreign students.

## 12.00 The future of internationalization

- less cost-intensive, less mobility-driven, but with more focus on improving the education
- cultural understanding
- why does the learner come to classes --> Attractivity, trustworthiness

## 14.00 Workshop: Rise of the Robots: How Might We Deal with the Increasing Use of AI in Education?

- Focus on language generators
- Image generators
- [The Pseudo Uni](#): machines are emulating humans for machines emulating humans.
- not AI not AGI, but GAI
- The industry provides test generators and, in parallel, test generator checkers --> It seems like a rat race
- anthropomorphism: It lies
- Is AI as a discipline based on deceit? Or the illusion of intelligence?
- Arthur C Clarke: "Any teacher can be replaced by a machine should be!" --> "Any assessment that can be completed by a generative AI should be (substituted by something different)"
- Writing as a metric for learning? --> But is writing thinking? Or do we write to focus our thinking?
- TAMK encourages use, but students are responsible for cheating. --> Isn't it giving the rope but don't hang yourself!

## 21.03.2023, 15:00-16:00 Presentation: Bot as an Education Tool

MELES "Bot" for Entrepreneurship: <https://bot.science4people.eu/>

## Wednesday (22.03.2023)

## 09.00 General and Human Centric Illumination for Electricity and Construction Students

- Koen Malfait
  - Physicist (Astronomy)
  - in Vives University
  - Automotive tech, electromechanics, construction, electronics, aviation, design and production, care-tech, biotech
- Tech
  - LED found by chance when working on diodes --> It lights up!
  - Comparison between LED and light bulb in spectra --> Light bulbs are 99% producing heat
  - why do we see RGB? It's all about the sun...
  - Melatonin is produced in the lower part of the eye --> detects blue sky --> improves concentration

## 10.00 Workshop: Effective Use of Digital Tools and Resources in STEM Subjects

- polling: <https://pollev.com/home>
- ChatGPT
  - Compare the outcomes of ChatGPT with the textbooks
- Tools
  - <https://edu.flinga.fi/s/E5Bdehq>
  - <https://edu.flinga.fi/s/ew7sf3w>
  - EDUscrum: <https://eduscrum.org/>
    - points for success --> into final mark
    - one leader (wechselnd) 5 sprints
  - Infomarket:
    - finally: the presentation of posters
    - with a pre-deadline: check whether the posters are ok
  - 40%/60% or 20%/80% point distribution exercises to exam
  - hybrid: automated multiple-choice plus pen and paper
    - short answer grading
    - hypothetical grading --> all about the reasoning...
  - parameterized tasks (included in mark)
  - less is more:
    - Prof has to focus on the topics/books
- <https://www.sefi.be/>
- DigiSTEM (2021-1-FI01-KA220-HED-000027535)
  - Daniela Velichova (AIS STU) --> Math exams (connection to Peter Hubinsky?)

## 12.00 Chemification: A New Gaming Tool for Student Learning in Natural Sciences

- Game
  - Escaperoom about Whistleblower
  - 3-4 Players: Journalist, Boss, Colleagues, Lawyer
  - 3-4 "Acts"
    - Application
    - Discoveries, Meeting Lawyer, Investigations
      - Students have to investigate and analyze texts
    - Publication with the outcome
  - Joker cards are available (Games masters)
- Results
  - Gaming groups are / will be learner groups
  - Students "had to" read papers (here: "Do PFAS be a thing?")
- H5P --> [h.sander@ostfalia.de](mailto:h.sander@ostfalia.de)

## General overview

- Konferenz-"Light drawer"
- viele Personen aus dem Bereich Entrepreneurship, Internationalisierung
- viele Personen aus Dänemark und Niederlanden

## Wissenschaft

### Entwicklung eines EEG/EKG Sensors

- Inbetriebnahme vorhandener Hardware (microE EEG click Board am Arduino)

## Persönlicher Outcome:

- Kenntnisse in Messung von Strömen im Picoampere-Bereich
- Platinen selbst ätzen
- Arbeit im Reinraum

## Austausch

- Teilnahme an TAMK
- Austausch mit Forschungsgruppe
- Aufbau des [Professors Guide to Sabbatical](#)

## Lehre

### MEXLE-Wiki

#### Einarbeitung der technischen Vorgaben

- Nomenklatur von physikalischen Größen, vgl. [Formelsatz](#)
- Korrektur der englischen Rechtschreibung und Wortwahl mit KI Unterstützung

#### Entwicklung und Nutzung von Plugins

- Entwicklung eines Plugins in JS und Php mit KI Unterstützung
- Verwendung und Anpassen von vorhandenen Plugins für leichteren Workflow
  - "Stift"
  - Einfügen von Aufgaben
  - [TextInsert](#) Plugin
    - Macht Macros Text austauschbar, ähnlich zu String-Variablen in Programmiersprachen
    - Pflege der Makroliste als Admin über Adminkonsole
    - z.B. Kann nun statt

```
<button size="xs" type="link" collapse="eindeutigeID_xxx">
{{icon>eye}} ButtonText
</button>
<collapse id="eindeutigeID_xxx" collapsed="true">
...
</collapse>
```

die folgende, kürzere Variante geschrieben werden:

```
#@HiddenBegin_HTML~1,ButtonText~@#
...
#@HiddenEnd_HTML~1,ButtonText~@#
```

Beides erzeugt folgende Ausgabe

ButtonText

...

- Durch die übersichtlichere Darstellung in der Syntax wird das Erstellen und die Pflege von Aufgaben im Wiki erleichtert

## Update der verwendeten DokuWiki Version

### weitere

- Erstellen von Animationen für Magnetkreise
- Erstellen von durchgerechneten Aufgaben

## ILIAS

### Erstellen von Fragenkatalogen für EE1/EE2

- Übersetzung und Anpassung des vorhandenen Fragenkatalogs unter Verwendung [geeigneter ILIAS Fragevarianten](#)
- Es wurde die Verwendung des [ILIAS Test Generators](#) in Betracht gezogen, aber schließlich doch Formelfragen genutzt.
- Formelfragen
- Bilder wurden mit [drawIO](#) erstellt und zunächst [im Wiki](#) abgelegt. Diese sind in die erstellten ILIAS-Aufgaben eingebettet.
- STACK
  - [Einführung in maxima in STACK](#),
  - Online Manual zu [Maxima](#) vom Entwickler,
  - Online Manual zu [Maxima](#) von Anwendern,
  - [STACK Documentation](#),
  - [MAOAM](#) als Beispiel einer Anwendung von STACK für große Studierendengruppen,

## Tools

### Einarbeitung in Arduino-Umgebung

### Einarbeitung in KiCAD

### Einarbeitung in Maxima

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