How to Fill the Gap between Practice and Higher Education: Performing eduScrum with Real World Problems in Virtual Distance Teaching

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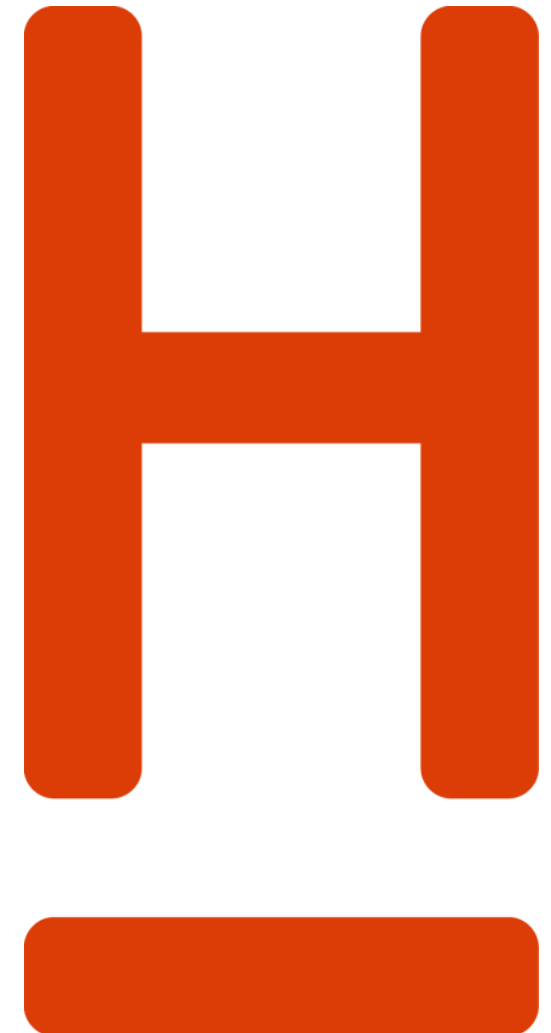
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Introduction of the presenter

Michael Neumann – Administrative professor – Business Information Systems

Short resume:
- Since 2016: Working at Hochschule Hannover
- 2007 – 2016: IT-Project Management, agile software development in several companies

Research topics:
- Influencing and success factors of agile methods
- Formalization of agile methods
- Agile methods in higher education

Agenda

1. Introduction

2. Course overview and the adapted eduScrum approach

3. Results

4. Lessons learned

5. Conclusion and future work

1- Introduction

- Agile methods originated in the area of software development in the mid-1990s

- Agile methods like Scrum or Extreme Programming became state of the art in practice [1]

- Over the past years we see an increasing usage of agile methods in education [2,3,4]

  - Integration of Scrum in higher educational contexts [5,6,7]

  - Adapting and using eduScrum in higher educational contexts [8]

1- Introduction
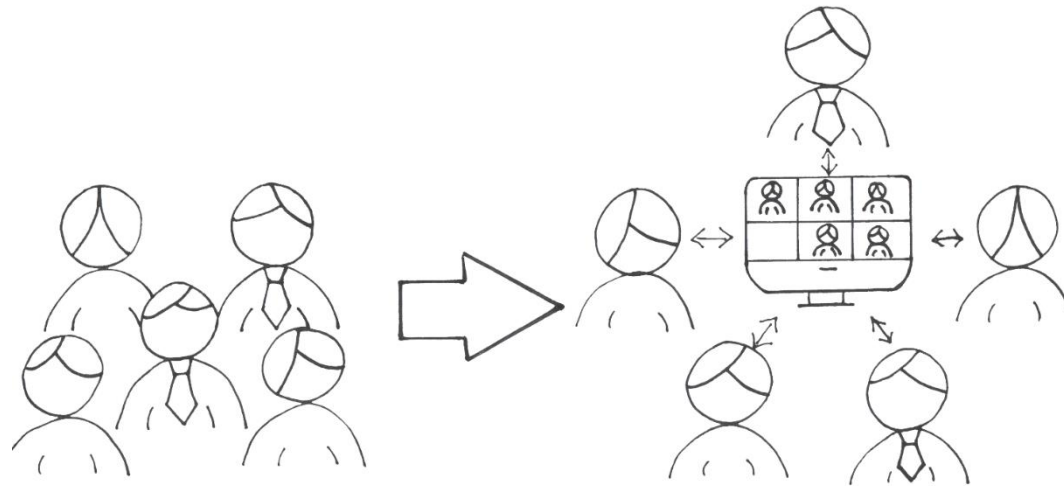
Before March 2020:	Since April 2020:
Onsite Teaching	**Virtual Distance Teaching**

- Adhoc switch to virtual distance teaching in summer term 2020

- Need for adapting our didactical approach to virtudal distance teaching

1-Introduction: Research Questions

- **RQ 1:** How can we perform eduScrum integrating real world problems in higher education in a virtual teaching environment?

- **RQ 2:** How do the students value the work with eduScrum in a virtual distance teaching environment?
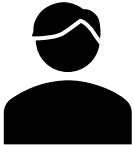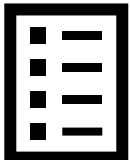
2- Course information

- Master of Science program „Digital Transformation"

- Department of Business Computing

- Student groups of 25 persons

- Course: Innovative Methods of Project Management

2-Adapted eduScrum to higher educational contexts

Roles	Practices	Artifacts
Agile Coach (Lecturer)	Sprint Planning	Product backlog
Product Owner (Practitioner)	Sprint Review	Sprint backlog
eduScrum Master (Student)	Sprint Retrospective	Product increment
Students team	Refinement	

2-Timeline

2-Outline of the projects in summer term 2021

Company A	We want to understand how a 4-day workweek and a remote work setting influences the use of agile methods in software development.
Company B	Analyze if a reduced workload leads to a higher quality of work. We assume that the teams outcome can be maintained with a reduced workload. What measures are there to recude the workload? How is the quality of work related?
Company B	We want to understand if and how self-direction and self-organization became more important and maybe a critical skill for work success during the remote work.

2- RD: Data collection
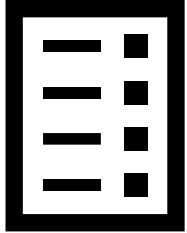
Standardized teaching evaluation survey

Informal talks with the student teams and product owners

Observation of the eduScrum practices

3- Results: RQ 1 – How can we perform eduScrum integrating real world problems in a virtual distance teaching environment?

Adaptions due to virtual distance teaching

- Optimize the self-optimization of the students teams by:

    - Providing professional support from the companies

    - Increase the feedback and optimization cycle by running retrospectives regularly

- Avoid video call fatigue by setting timeboxes to max. 60 minutes per team event

- Kick-off and introduction event at the first lecture

3- Results: RQ 1 – How can we perform eduScrum integrating real world problems in a virtual distance teaching environment?

Challenges:

- Higher effort of preparing and organizing the course.

- The coaching and support of the eduScrum Teams took more time

Opportunities:

- Integrating companies from other cities and/or areas of Germany

- Gained experience of remote work on students, lecturer and company sides

Results from the survey show, that our approach comes with advantages on a students perspective:

„*The commitment of the lecturer is great! The lecturer is always available and takes a lot of time for the group work.*"

3- Results: RQ 2 – How do the students value the work with eduScrum in a virtual distance teaching environment?

| Survey item	Avg. score (1st survey)	Avg. score (2nd survey)
Overall, I rate the content of the course positive.	1.7	1
The course content was conveyed clearly.	2	1
The lecturer explains in a way that is easy to understand.	1.8	1
The students actively contributed to the success of the course.	1.6	1
There is a pleasant atmosphere between students and lecturers.	1.6	1
I was encouraged for independent thinking.	1.6	1
I had the opportunity to actively participate.	1.7	1

Overview of the survey answers per closed question

3- Results: RQ 2 – How do the students value the work with eduScrum in a virtual distance teaching environment?

„*Excellent example of how an online event works.*"
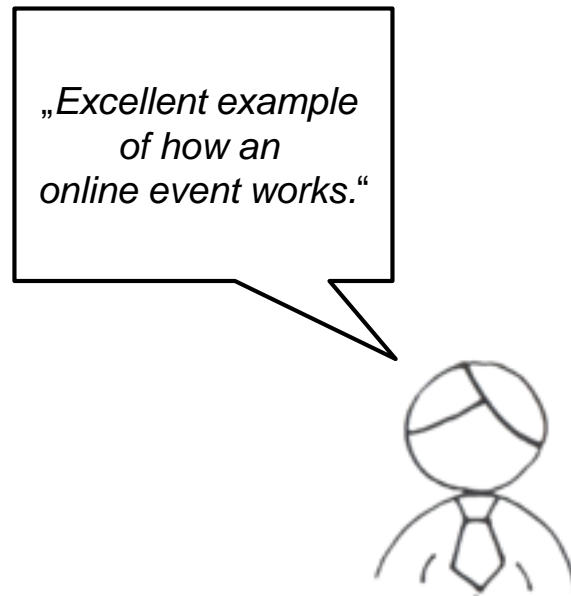
Example of the students comments

4-Lessons Learned

We provide six recommendations for other lecturers:

1. Overcome the social distancing in virtual classroom settings

2. Increase the focus of students in virtual classroom settings

3. Impacting the motivation of students in virtual classroom settings through the term

4. Increase the opportunities to support the students in virtual distance teaching

5. Increase the collaboration with companies and integrate real world problems into higher education

6. Engage the students for publishing their research

5- Conclusions & Future Work

- We adapted our eduScrum approach for higher education in virtual distance teaching settings

- The students value working with eduScrum and real world problems in a virtual distance teaching setting

- We strongly recommend the integration of agile methods to higher education in virtual distance teaching settings and provided six recommendations

- For the future, we are planning to put more focus on the research characteristics

- Consolidate the cooperation with the companies and evaluate how to integrate such didactic approaches in undergraduate courses

Any questions?

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[3] T. F. Otero, R. T. Barwaldt, L. O. Topin, S. Vieira Menezes, M. J. Ramos Torres, and A. L. de Castro Freitas. Agile methodologies at an educational context: a systematic review. In 2020 IEEE Frontiers in Education Conference (FIE), pages 1–5, 2020

[4] P. Salza, P. Musmarra, and F. Ferrucci. Agile methodologies in education: A review. In Agile and Lean Concepts for Teaching and Learning, pages 25–45. Springer, 2019

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[8] Michael Neumann and Lars Baumann. Agile Methods in Higher Education: Adapting and Using eduScrum with Real World Projects. IEEE Frontiers in Education 2020.