Mobile Computing in Higher Education

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Scope

- Usecases for mobile computing in higher education

  - eLearning (incl. blended learning)
  - MOOC
  - Multimedia tutorials
  - Virtual classrooms

- New options in lectures enabled by tablet computing

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Tablet Computing on Mobile Devices

New educational Options in Lectures

- Development of Educational Media

- Tablet Computing

- Tablet Computing in Lectures

- Demonstrations*

*) Details concerning programs and apps used can be found in the proceedings

Blackboard

- Used since hundreds of years

- Assets
  - Interactive development
  - Content is not predefined

- Drawbacks
  - No rewind
  - Drawing sketches is difficult and time comsuming
  - Talking to the blackboard

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Overhead Projector

- Used since 60's

- Assets
  - Interactive development
  - Content can be predefined
  - Rewind
  - Talking to the audience

- Drawbacks
  - Handling of the slides
  - Almost gone

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Computer Presentation

- Used since late 90's

- Assets
  - Layout inkl. animation and multi media content
  - Rewind
  - Talking to the audience
  - Handling of the slides

- Drawbacks
  - No Interactive development of content
  - Everything is predefined (➜Power Point Karaoke)

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What is a Tablet Computer?

- Light wight computer that can be handled by a touch-screen

- Tablet-PC (Ultra Book)
    - Laptop with a touch screen (screen size 12" to 14")
    - Windows or Linux operating system
    - Office-Tools available

- Tablet
    - Light wight device (screen size 7" to 10")
    - Operating System derived from smartphones
    - Apps in stead of full functional programs (or program suites)

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Touch Screen Devices

- Capacitive (Reacting) Touch Screens
    - Handling with fingers or specific pen

- Inductive (Reacting) Touch Screens
    - Handling needs a specific pen
    - Two modes and „mouse button" possible
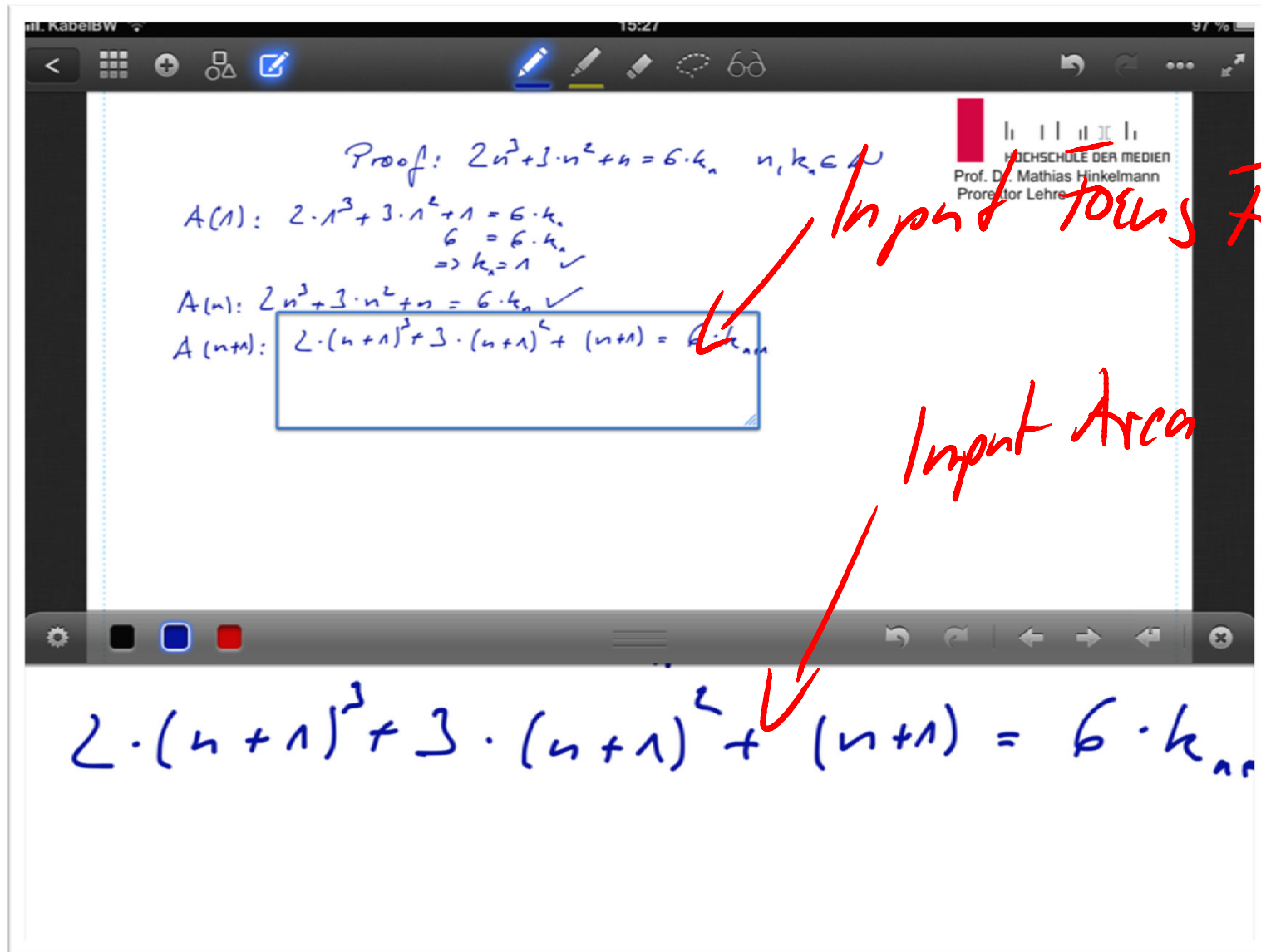   - Touching the screen does not launch any function

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Tablet Computing in Lectures

- **Regaining interaction that is lost in standard computer presentations**

- Annotated presentations e.g. in PowerPoint

- Electronic Blackboard (eBlackboard)

- Cloze derived from
    - Presentation
    - Textbook or lecture note

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eBlackboard

- Typical tool: Application to annotate PDF-Documents

- Toolbars and menus only visible for the lecturer

- Insertion of new pages

- Tools available to
  - Tablet-PC
  - Tablet

- Scaling has to be adressed

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IPad - Lectureres View

App: GoodNotes

IPad – Audience View

Proof: $2n^3 + 3 \cdot n^2 + n = 6 \cdot k_n$ $n, k_n \in \mathbb{N}$

$A(1):$ $2 \cdot 1^3 + 3 \cdot 1^2 + 1 = 6 \cdot k_1$
$6 = 6 \cdot k_1$
$\Rightarrow k_1 = 1$ ✓

$A(n):$ $2n^3 + 3 \cdot n^2 + n = 6 \cdot k_n$ ✓

$A(n+1):$ $2 \cdot (n+1)^3 + 3 \cdot (n+1)^2 + (n+1) = 6 \cdot k_{n+1}$

$2 \cdot (n^3 + 3n^2 + 3n + 1)$

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App: GoodNotes

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Cloze

- Based on eBlackboard environment

- Partial omitted text on slides or in textbook

- Options
    - Interactive development of the content
    - Real discussions on pros and cons

- Full / added text can be provided to the students

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  -
  -

Next Steps

- Wireless display environment
    - Apple TV
    - Intel WiDi

- Content generated by the students can be displayed and discussed

- Drawback: Specific hardware needed!

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