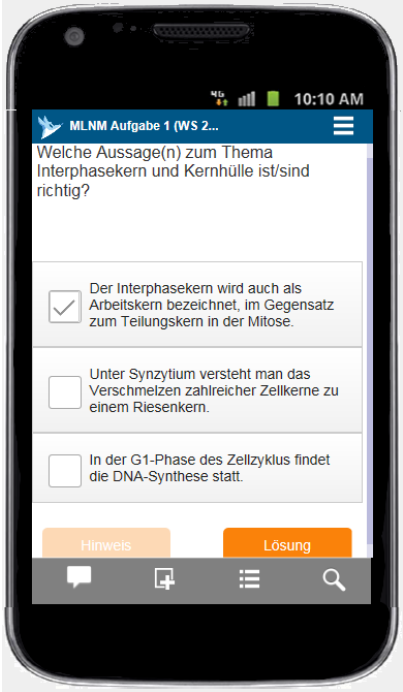
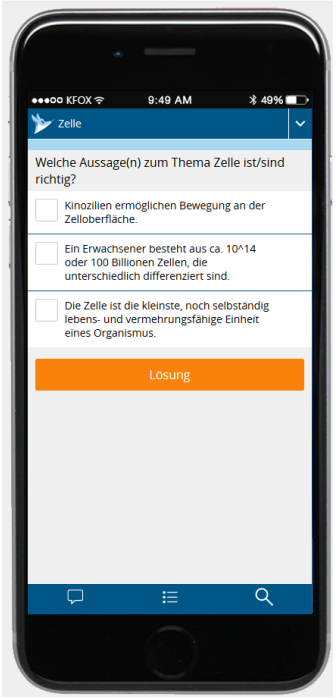
Microlearning at the Medical University of Graz



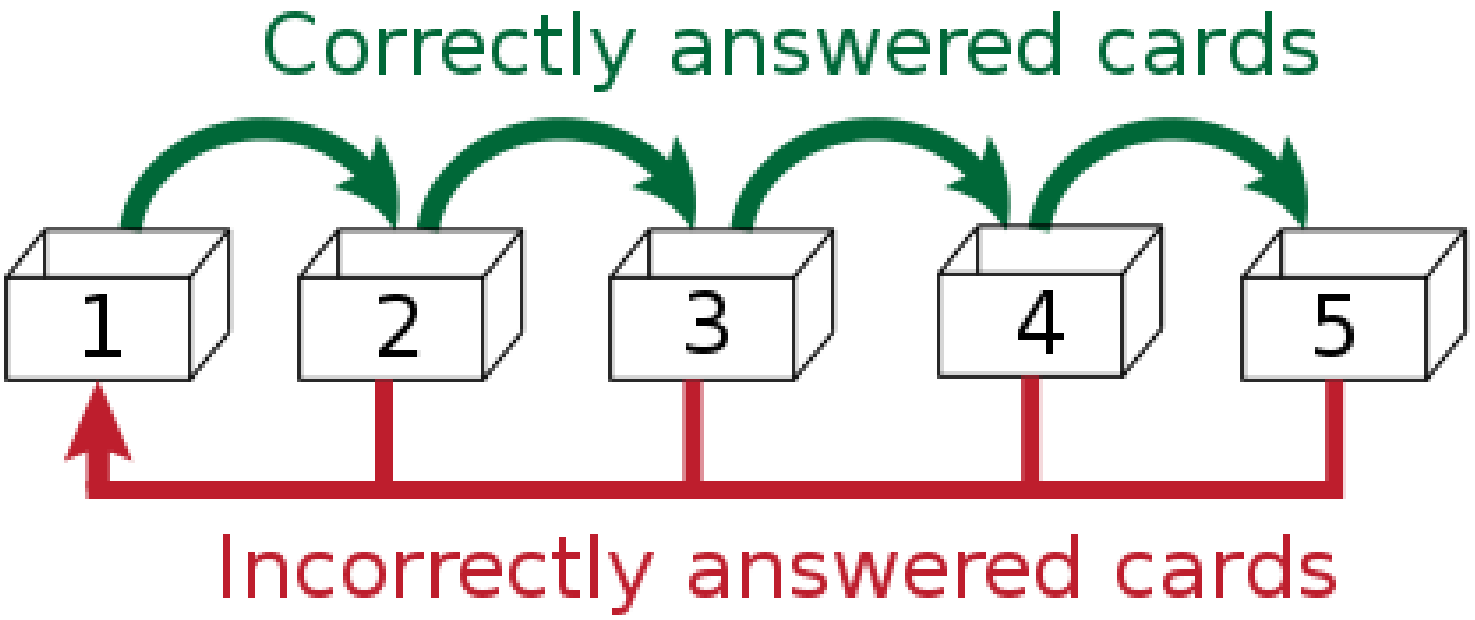
Josef Smolle
Herwig Rehatschek



Microlearning

- innovative e-learning method
- learning in small steps
- using mobile devices
- applying knowledge cards
  - flashcards with elaborating feedback
- utilization of the Leitner algorithm with
  - testing effect and
  - spacing effect

Leitner Algorithm



HRSM Research Project

Medical University of Graz

- „Microlearning in Medical Propedeutics“
- funded by the Federal Ministry of Education, Science and Research
- Partners:
  - Medical University of Graz (lead)
  - Medical Faculty of University of Linz
- KnowledgeFox® microlearning software
- Time schedule
  - March 2017: set-up of software, start of content creation
  - October 2017: rollout to the students
  - October 17 – February 18: first evaluation

Content Hierarchy of Knowledge fox

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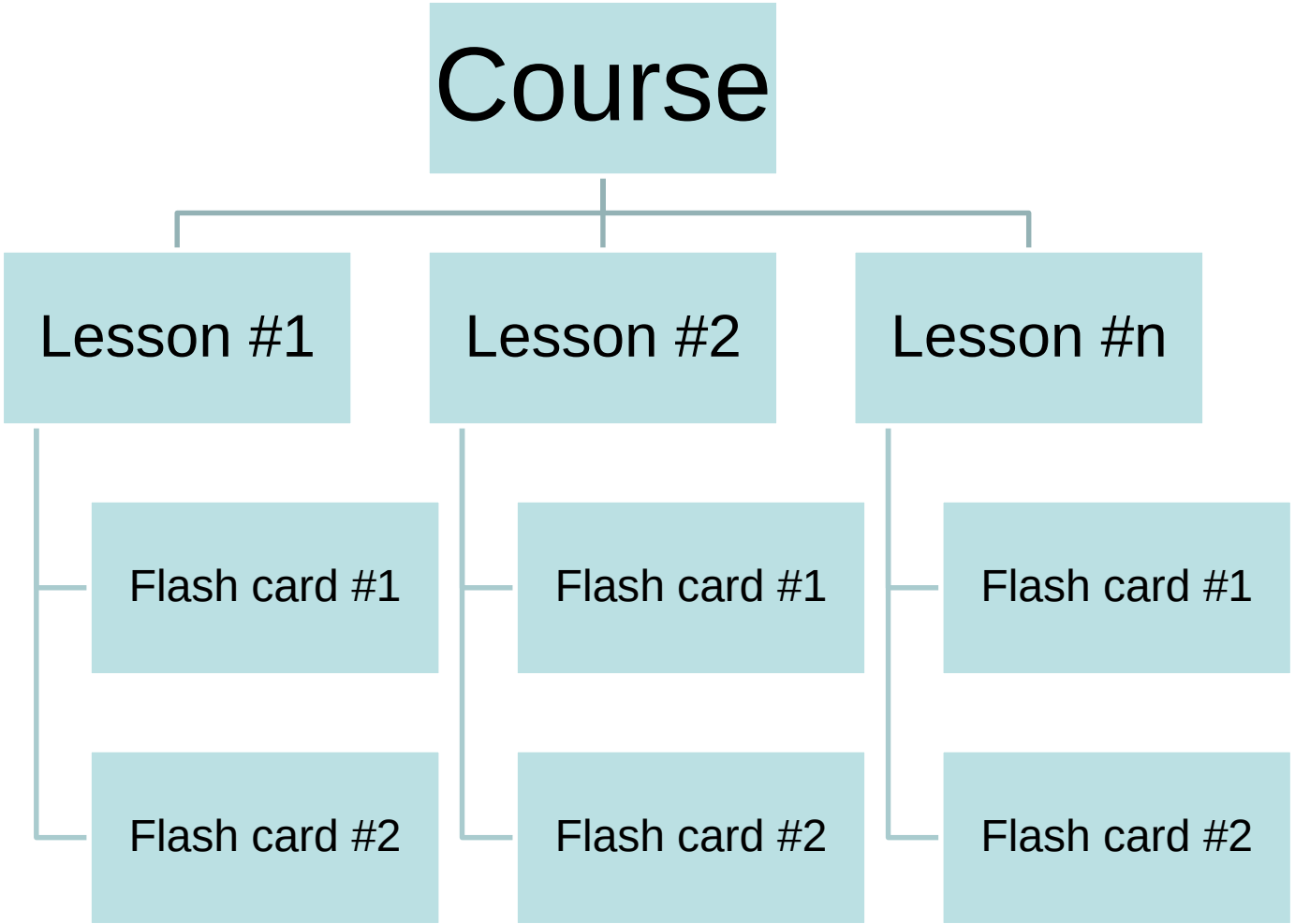

Number of Microlearning Lessons

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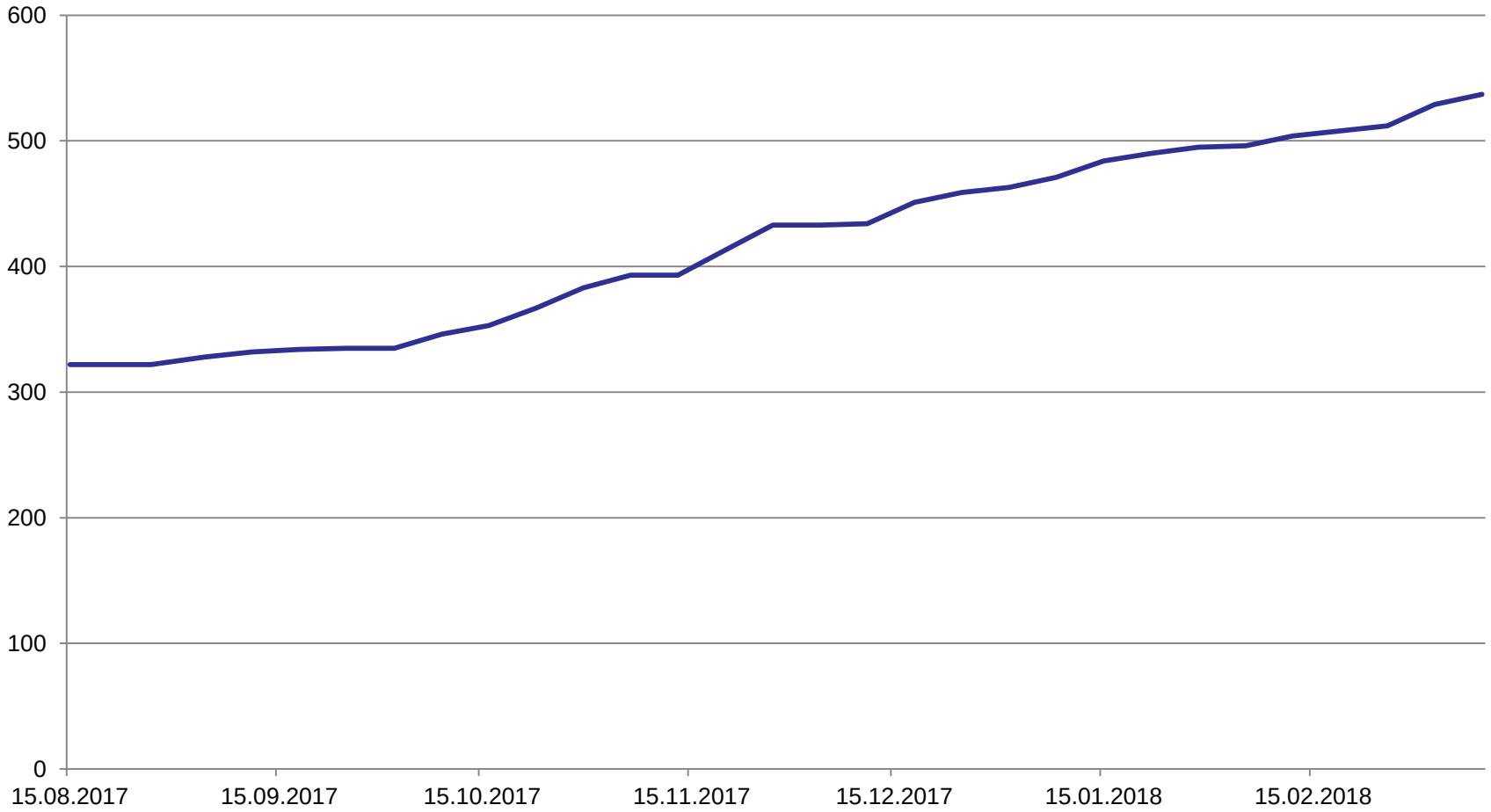

Number of Flashcards

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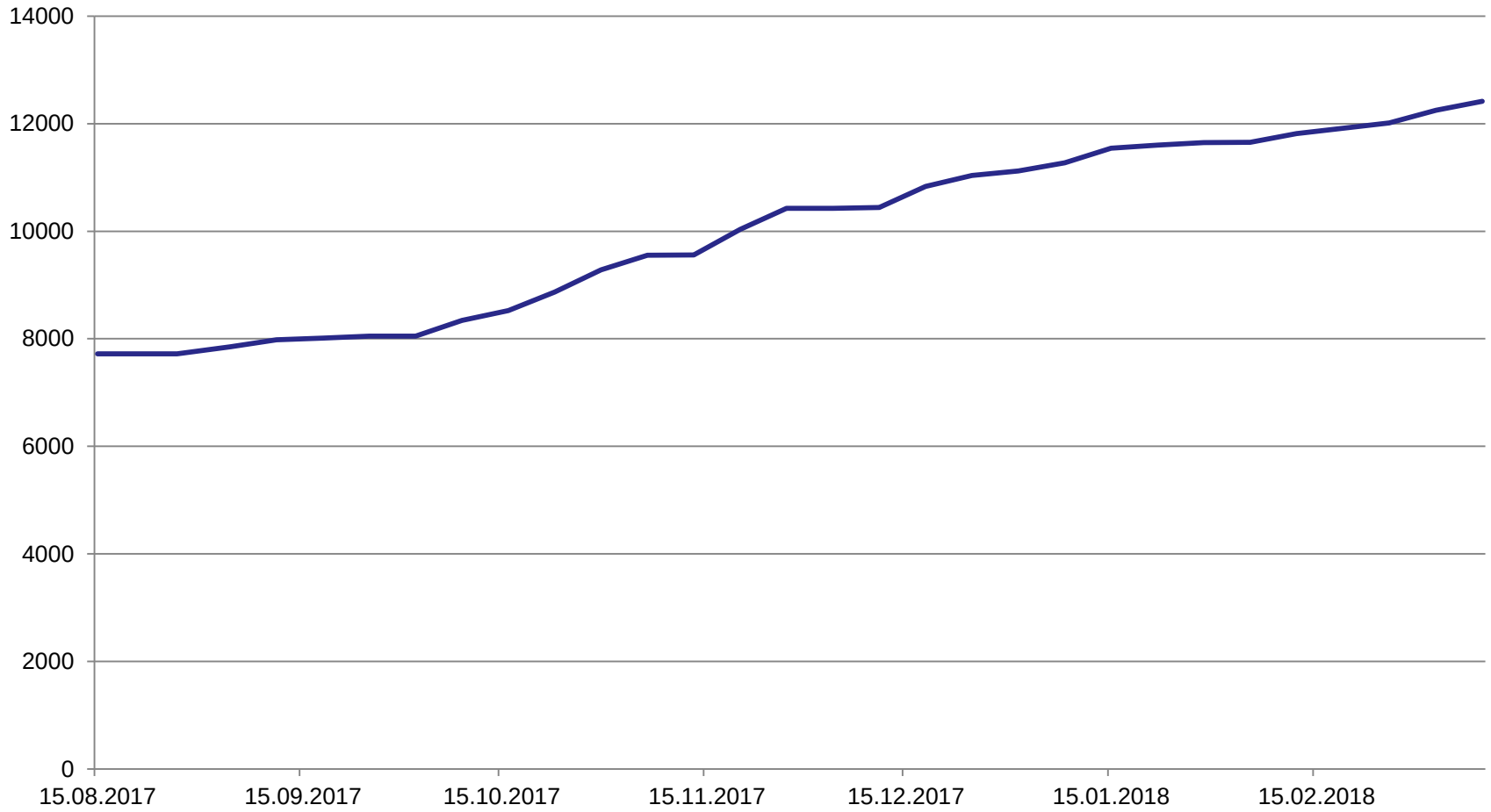

Active users

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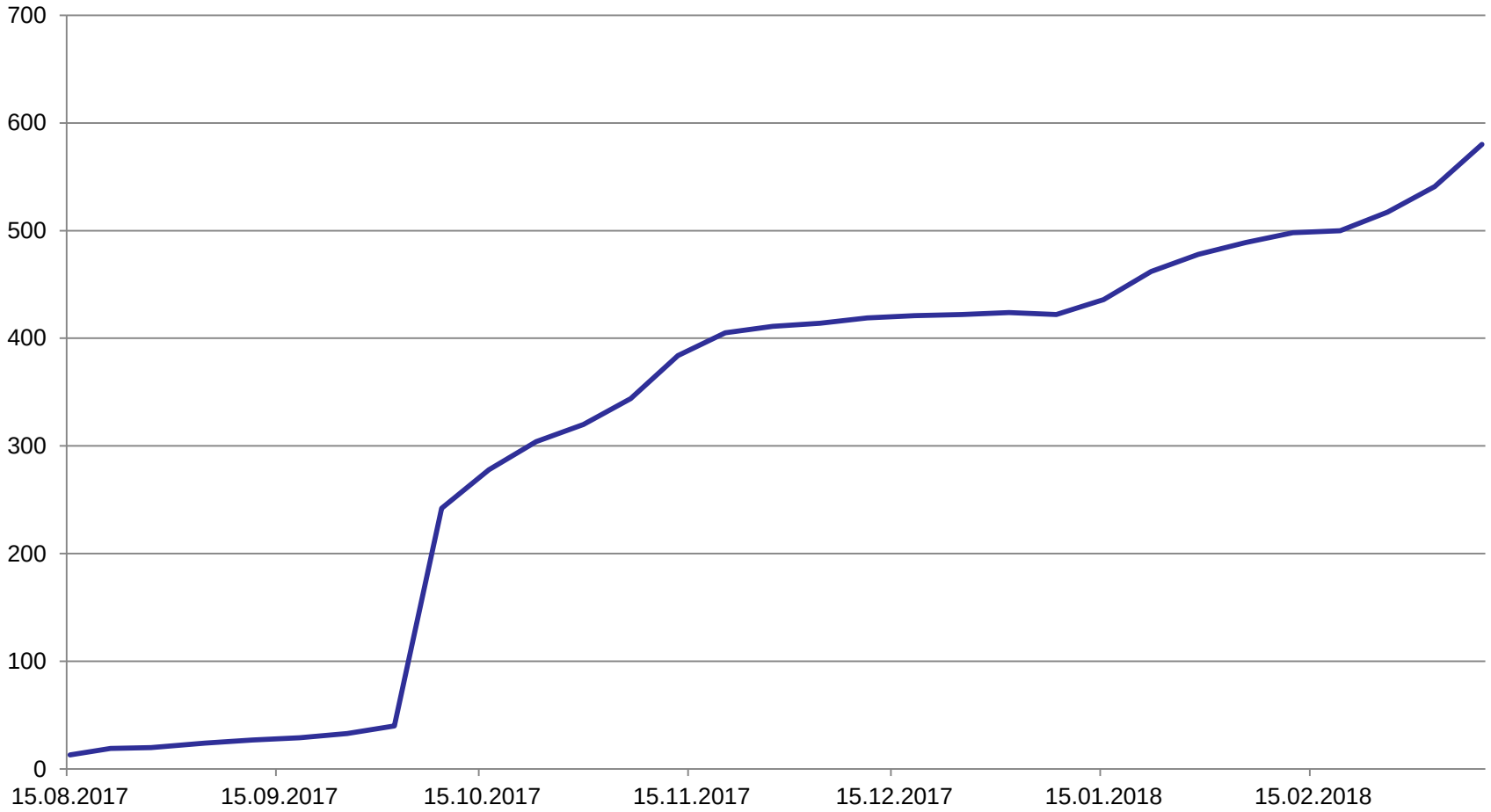

Learning steps

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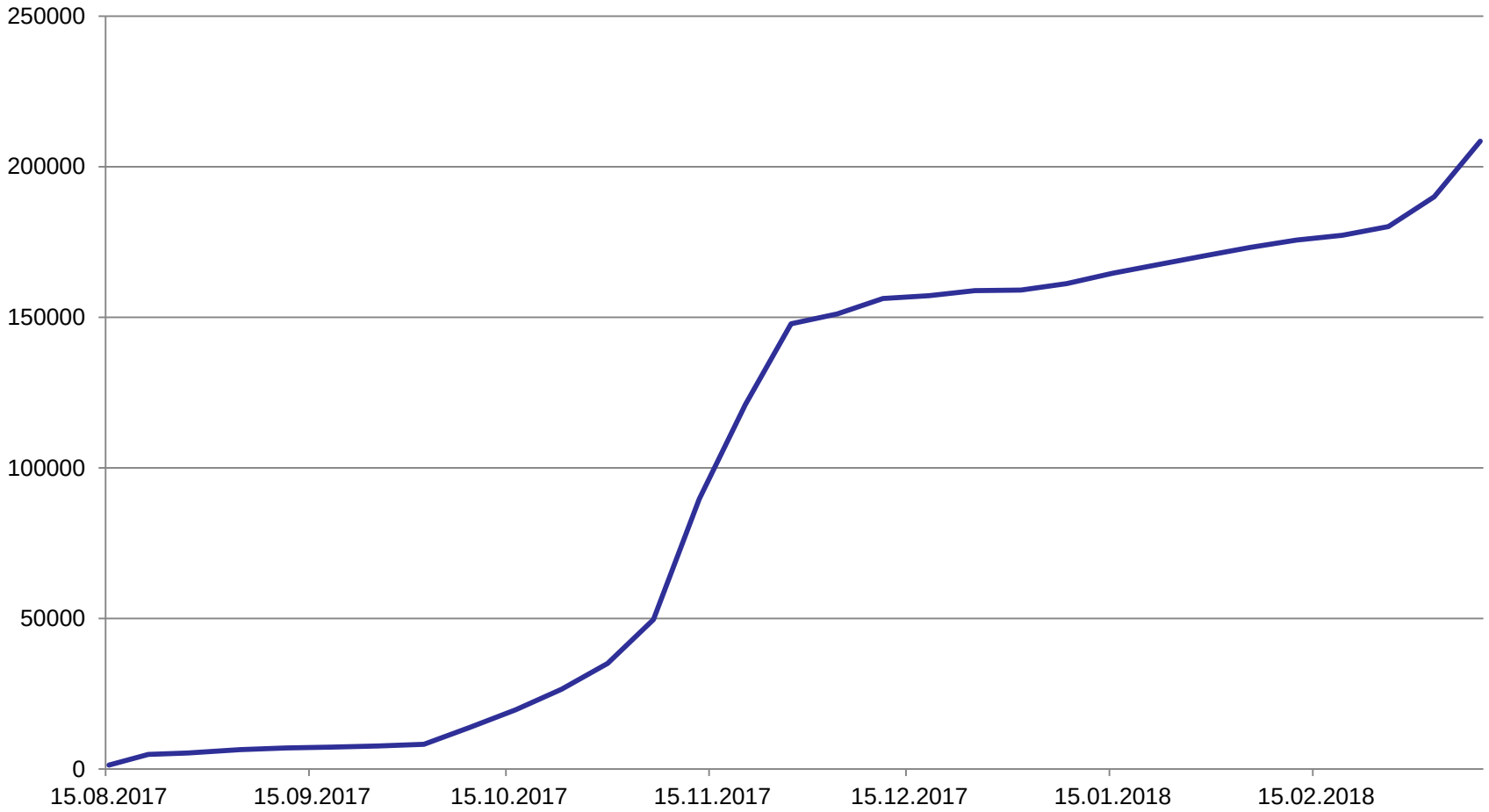

Education Research Study I

- Basic data
  - 54 students
  - topic: „cell nucleus“
  - propositional multiple true-false microlearning
  - one group pre-test / post-test design
- Results
  - pre-test: 41+-23%
  - post-test: 89+-14%
  - t-test: $p<0.001$; effect size $d=2.08$
- Results after 10 to 14 weeks
  - delayed test: 53+-25%
  - t-test: $p<0.01$; effect size $d=0.52$

Education Research Study II

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- Basic data
  - 57 students
  - multiple-choice flashcards
  - topic: „pharmacology of chemotherpeutic agents“
  - one group pre-test / post-test design

- Results
  - pre-test 40+-24%
  - post-test 96+-13%
  - t-test: $p<0.001$; effect size $d=2.33$

Education research study III

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- Basic data
  - 47 students
  - propositional multiple true-false knowledge cards
  - topic: „diuretic drugs“
  - contains 20 relevant propositions
  - students prepared short essays
  - content analysis
- Results
  - 8.5+-3.5 correct propositions per essay

Student feedback

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- „I consider microlearning as a good method“
  - 1.42 (5-point Likert scale)
- „Microlearning is a useful additional tool“
  - 1.35 (5-point Likert scale)
- „Microlearning should replace other teaching formats“
  - 2.69 (5-point Likert scale)
- „I would like to have more microlearning topics“
  - 1.67 (5-point Likert scale)

Conclusions

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- Well accepted by the students
- Microlearning facilitates knowledge acquisition due to small pieces
- Knowledge resides longer in memory (Leitner algorithm)
- Microlearning is a useful additional teaching and learning tool
- Can be easily used on mobile devices
  - time and location independent
  - high time flexibility due to very small learning pieces

Contact

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„I consider microlearning as a good method“

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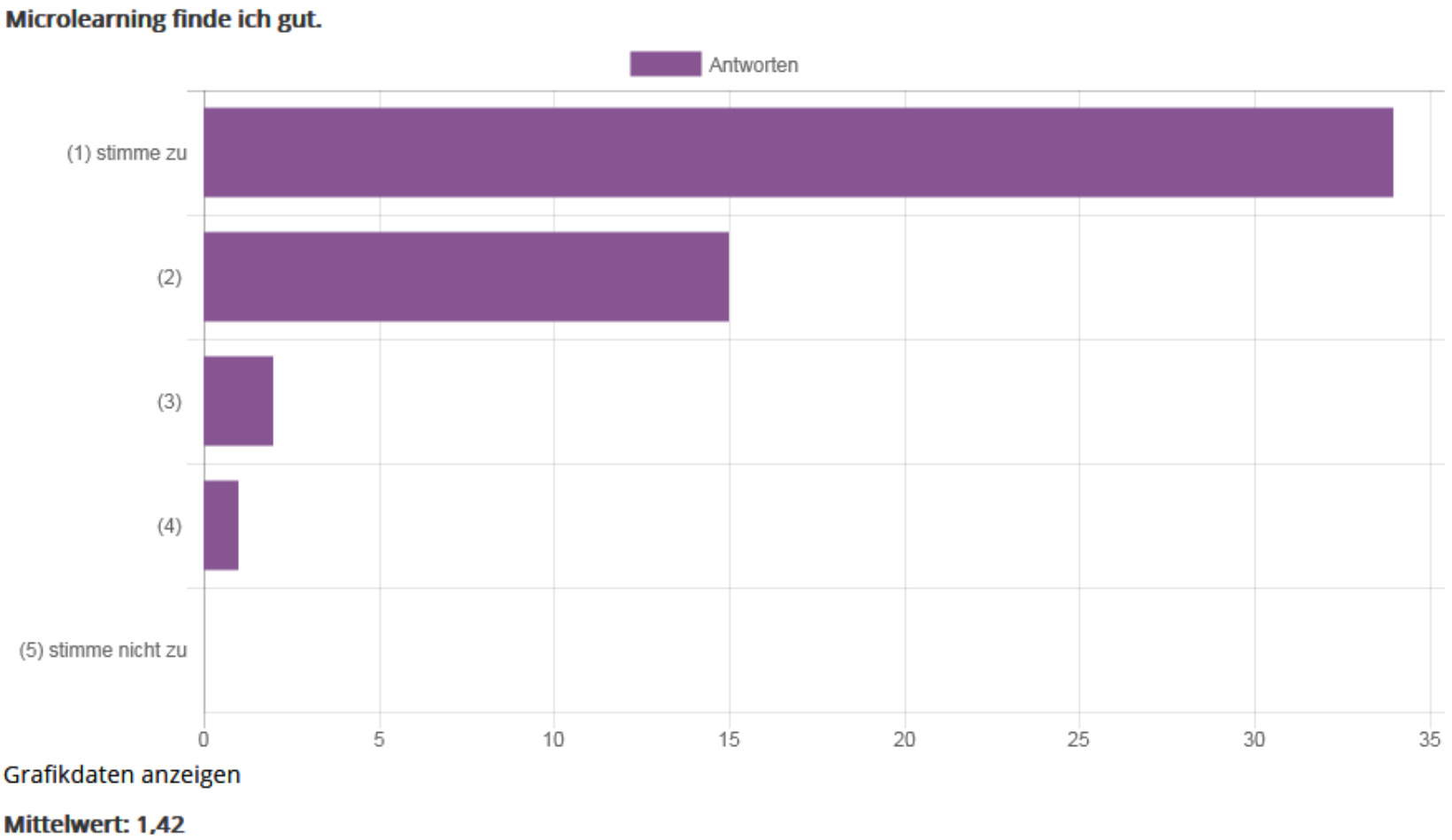

pre-test / post-test

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