A Systematic Review of Peer Assessment Approaches to Evaluation of Open-Ended Student Assignments

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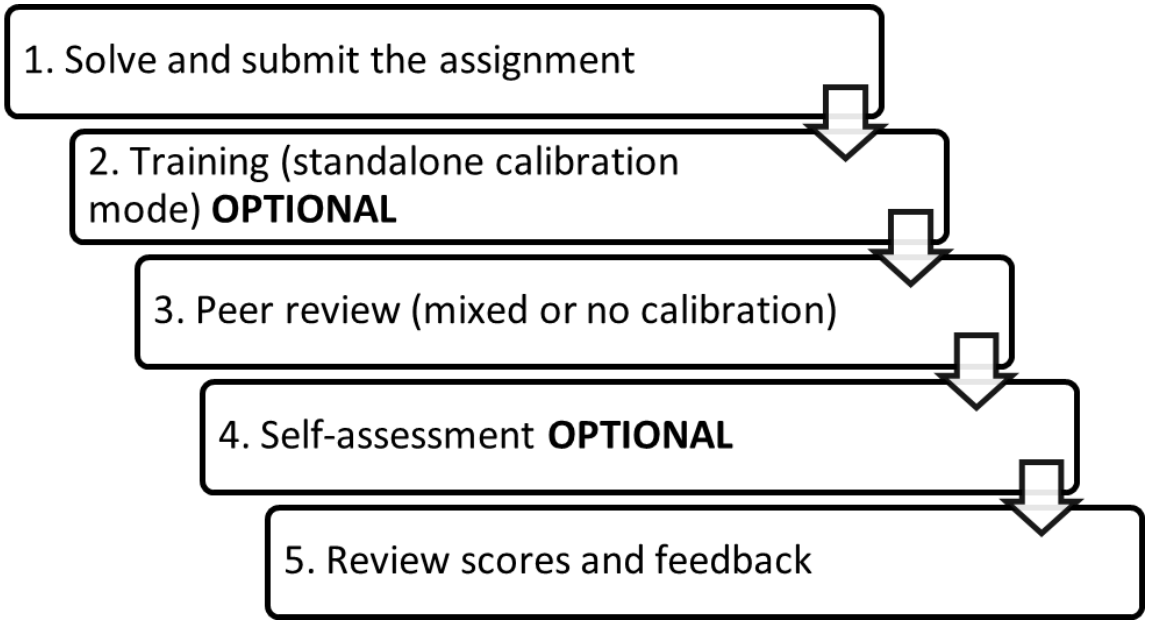
Outline

- Introduction
- Types of assignments in peer assessment
- Use of calibration in peer assessment
- Self-assessment
- Rubrics
- Skill, credibility, and accuracy
- Feedback
- Popularity of peer assessment
- Peer assessment process comparison
- Suggestions for peer assessment improvement found in research
- Conclusion

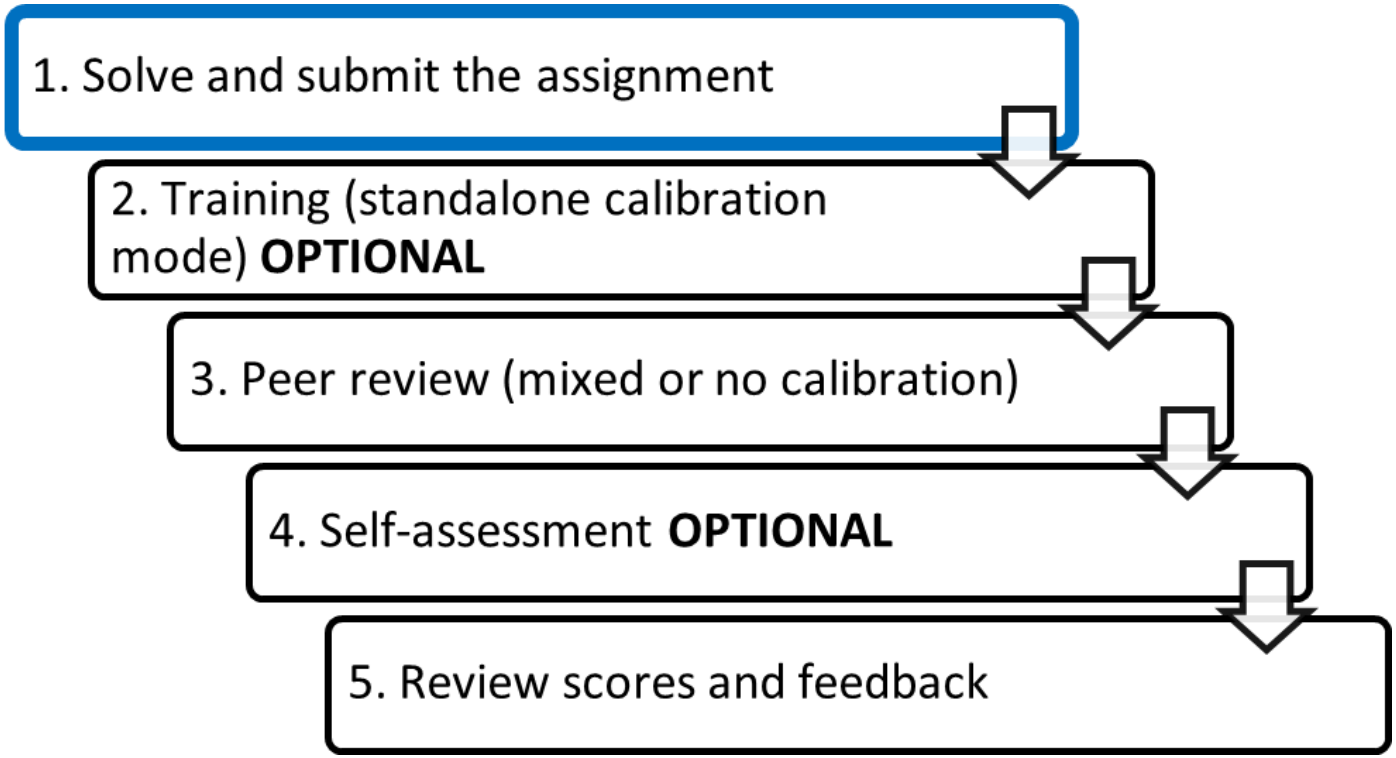
Introduction

- Open-ended vs closed-ended assignments
- Decreasing teachers' workload
- Peer assessment (PA)
- PA process and phases



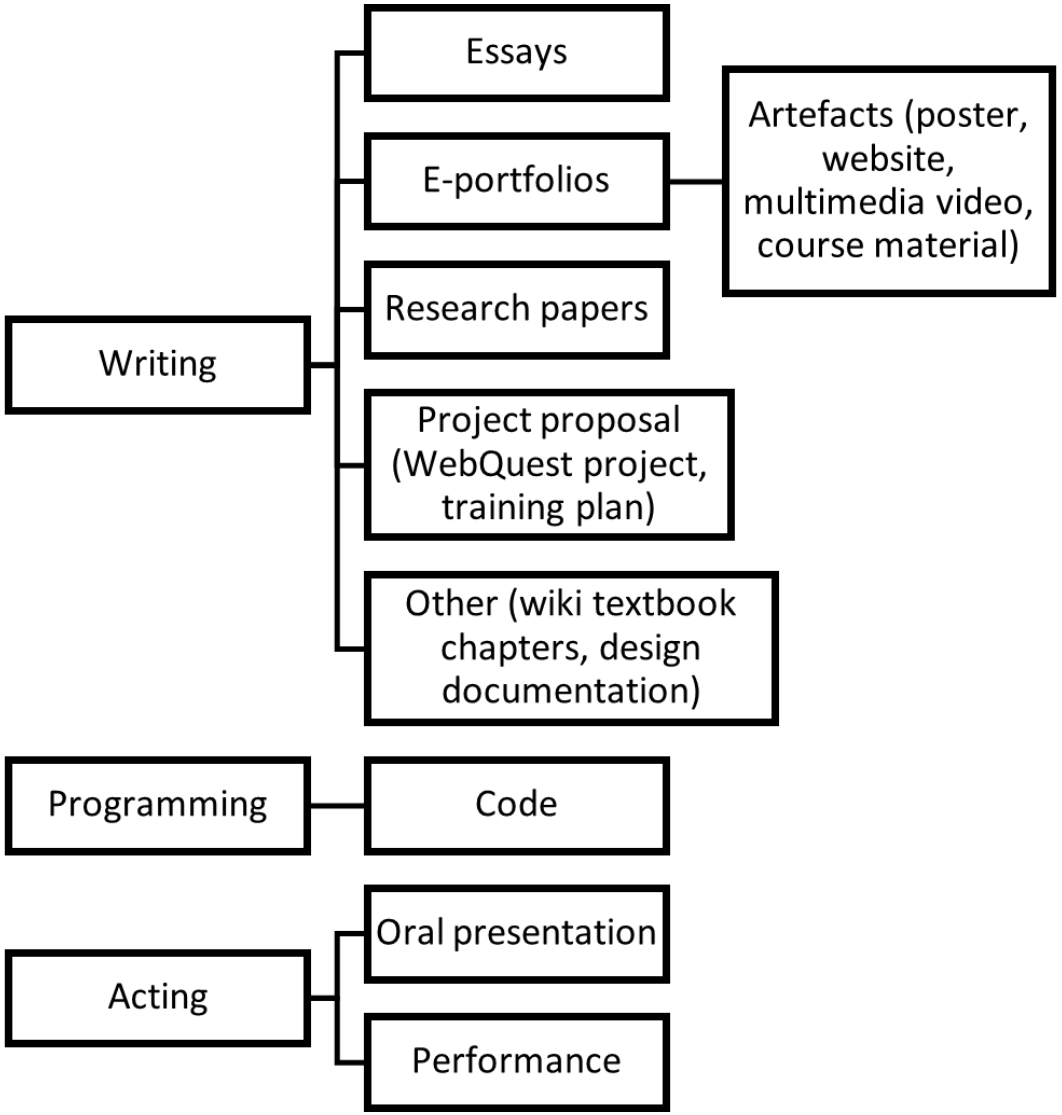
Types of assignments in PA (1)

- Different categorizations observed in
  - a study conducted in undergraduate courses
  - *Expertiza* system
  - A systematic review of PA research



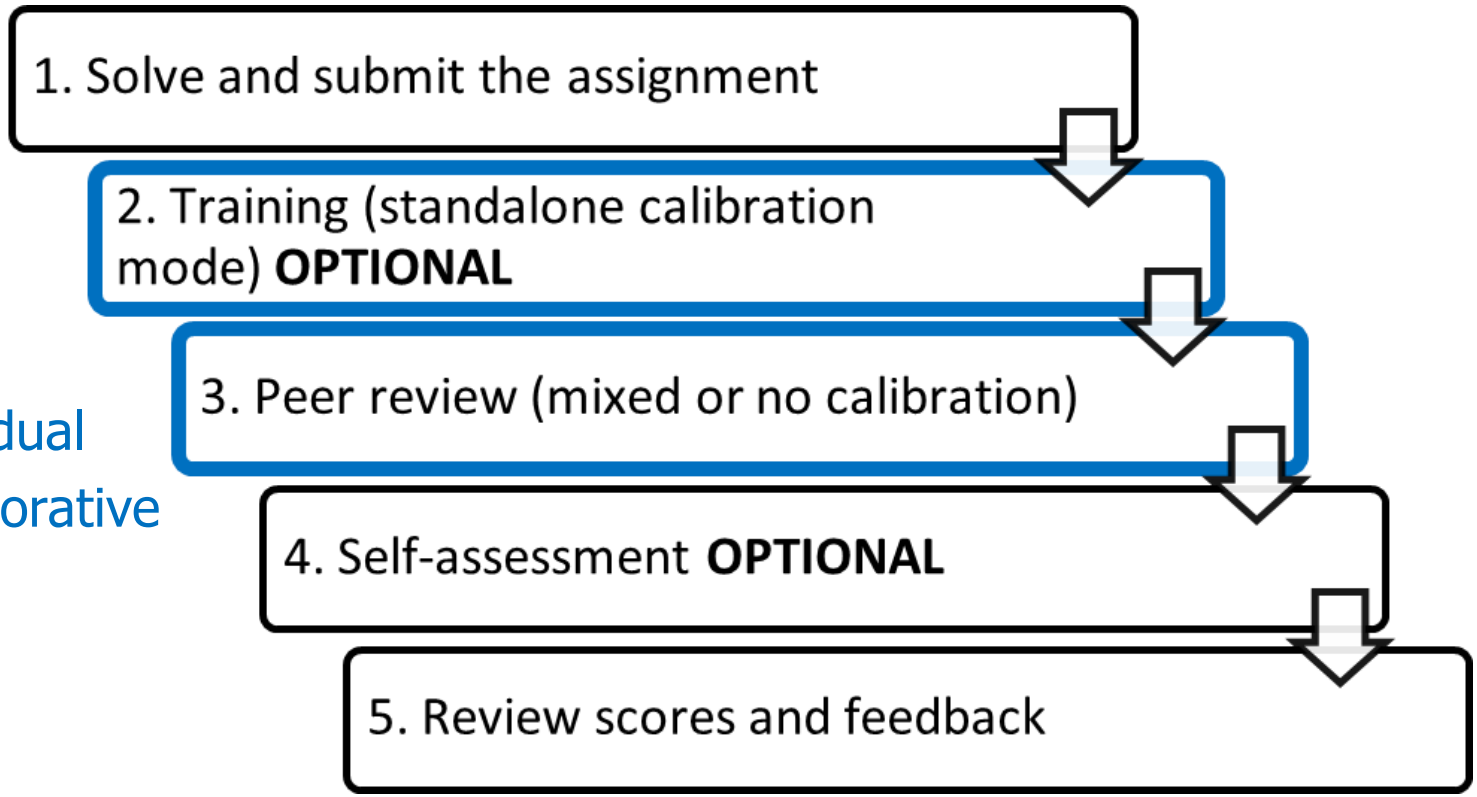
Types of assignments in PA (2)

- We define:



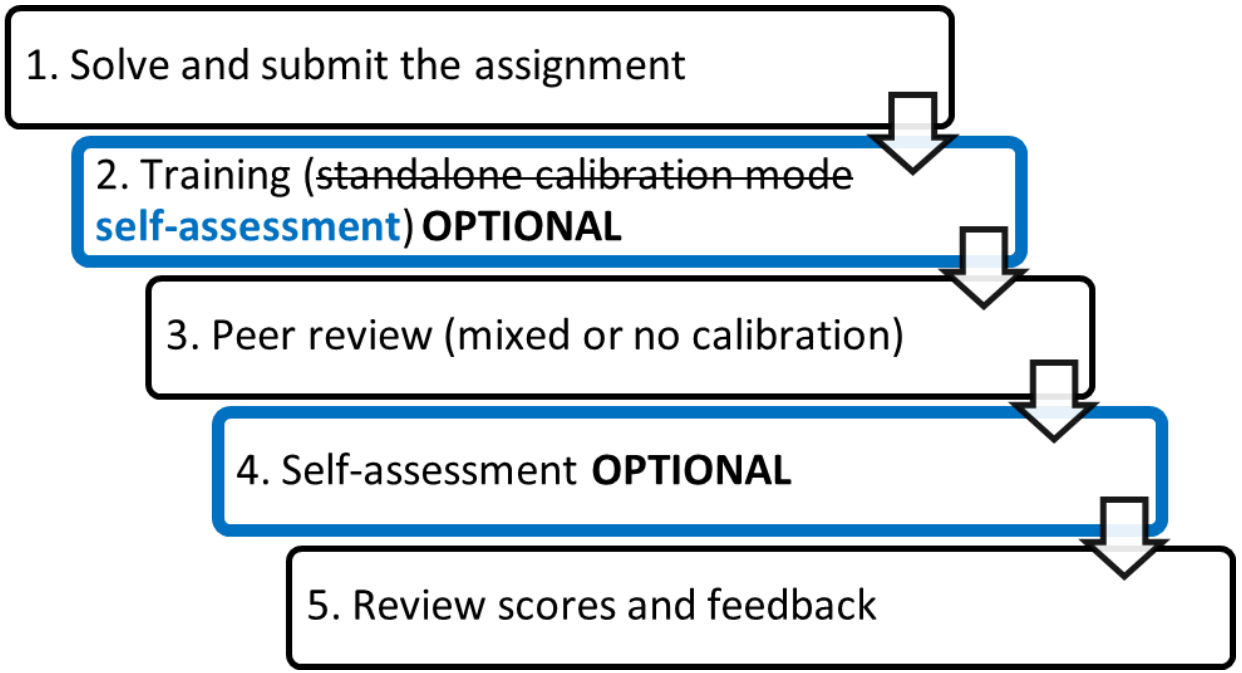
Use of calibration in PA

- Calibration modes
  - Standalone
  - Mixed
- PA
  - Individual
  - Collaborative



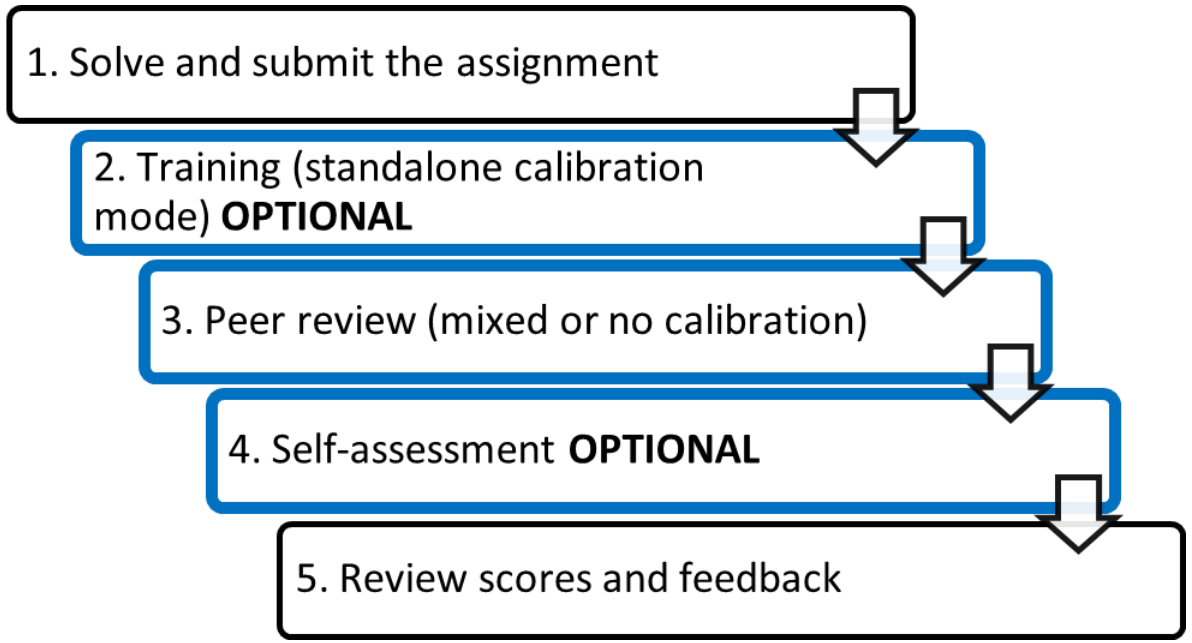
Self-assessment As..

- ..training e.g., using the Merlin system, an e-learning system developed at the Center for e-learning of the University Computing Center, University of Zagreb
  - Adaptive mode
  - Interactive mode
- .. OR the last stage of PA e.g., using The Calibrated Peer Review (CPR), a web-based software



Rubrics

- Scoring guidelines using
  - Descriptive scales, e.g.:
    - "Followed the Assignment's Directions/ Inadequate - The paper has no apparent relation to the directions of the assignment…."
  - Numeric scales, e.g.:
    - "…numeric scale from 0 (worst) to 10 (best)"
  - Likert
- Can be used:

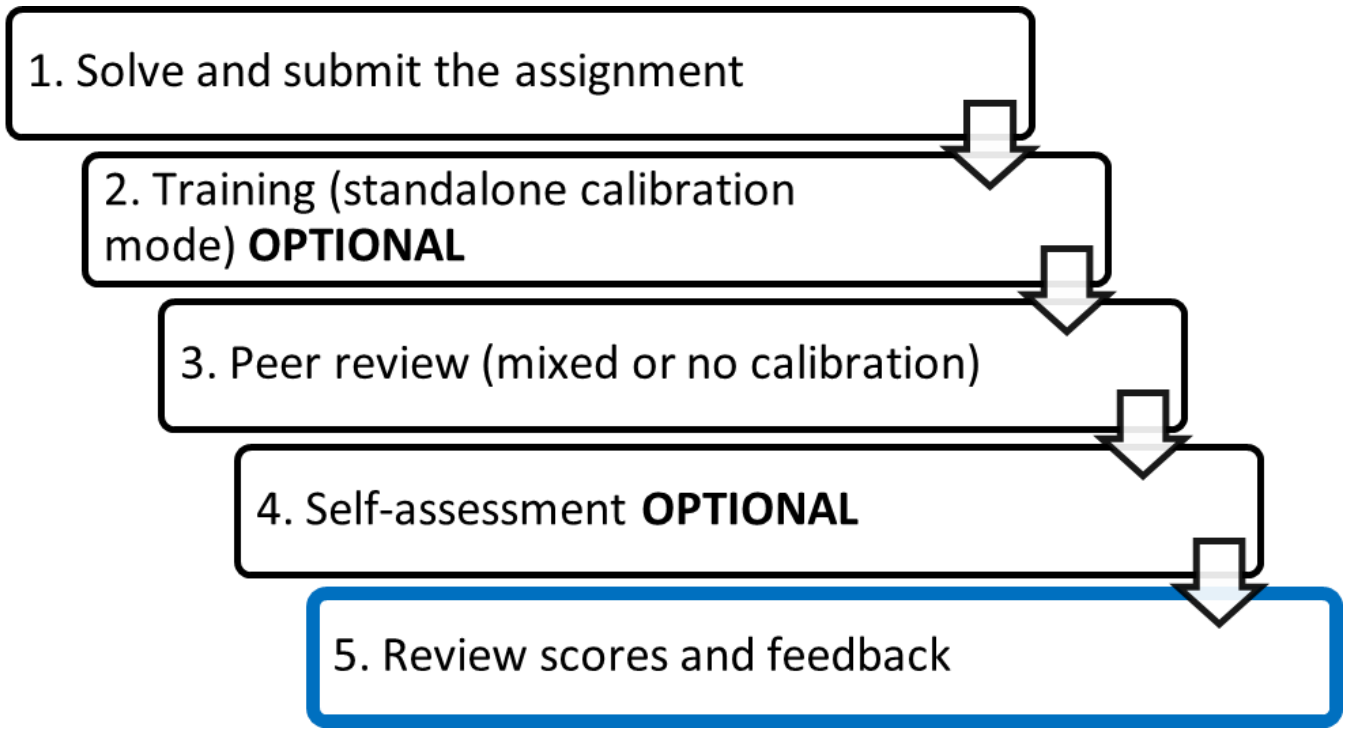


Skill, credibility, and accuracy

- „Rogue” vs „non-rogue” behaviour
- Training peer rating
- Credibility/ (Reviewer) Competency Index
- Improving peer assessment accuracy
- Metrics
  - Calibration
  - Rubric quality

Feedback (1)

- Formative, summative
- Quantitative, qualitative



Feedback (2)

- Peer assessment of essay type questions
- E.g., the Merlin system

closed-ended assignments	open-ended assignments
Feedback	
General (always shown)	Written
Response (correct/ incorrect)	Audio
Combined (correct, partially, incorrect)	Video

Popularity of peer assessment

- Increasing number of students studying computer science
- Research studies in courses using PA
  - (Under)graduate
  - Computer-related
  - Science fields
  - 500 students enrolled per course – teacher's workload
- Major survey still relevant (Topping)
  - Area/subject matter
  - Weight of the review and assignment
  - Participant anonymity
  - Group formation of reviewers

PA process comparison (1)

- Analysis of PA in MOOCs
  - Write an essay
  - Self-assessment (rubric)
  - Peer review
- The Calibrated Peer Review program
  - Write an essay
  - Training (calibration tests, rubric)
  - Reviewer competency index is assigned
  - Optional re-calibration
  - Self-assessment (rubric)
- Typical process
  - Solve the assignment
  - Peer review
  - Scores and feedback

PA process comparison (2)

- Proposed process
  - Solve the assignment
  - Training with calibration
  - Re-calibration
  - Self-assessment
  - Calculating credibility index for each student
  - Group formation or random distribution of reviews
  - Peer review
  - Evaluating final scores using weights
- "rogue" reviewers
  - Ignoring outliers or
  - Minimizing scores using weights

PA future work

- Rubrics quality prediction model
  - predict rubrics quality before they are used
- Students' profiling and prediction of „rogue" behaviour
  - detect possible deviations
- Reward system
  - that motivates students
- Determine which reviewer is best for reviewing a specific assignment
- Gamification of reviewing
- Detection of inconsistency between grades and comments

Conclusions

- PA, teachers' workload and learning benefits
- Summary and review of published solutions
- Emphasis on iterative
- Rubrics, credibility indices, weights analysis
  - During and after the course completion
- Solving potential problems or miscalculations before the enrollment of new students

- Questions?