Improving the Peer Assessment Experience on MOOC Platforms

Thomas Staubitz, Dominic Petrick, Matthias Bauer, Jan Renz, Christoph Meinel
Hasso Plattner Institute, Potsdam
openHPI – Short Introduction

Course Production

226,000 enrollments worldwide

openSAP (940,000)
openhpi.cn, opensap.cn, mooc.house, cnmooc.house

Courses produced and offered by the HPI

Peer Assessment

Thomas Staubitz, openHPI

Chart 2
Overview – General Feedback
Peer Assessment on openHPI

- Extensive research on best practices and existing solutions
- Implementation incorporating the research results
- Key Features
  - Training Step
  - Distribution Mechanism
    - Preferring submissions of participants who already have reviewed their peers
  - Review Rating
    - Bonus points for reviews that have received good ratings
  - Bonus points for self-assessment

Peer Assessment
Thomas Staubitz, openHPI
Chart 4
About the Data - 4 Courses evaluated

- **OSAP1 - Introduction to SAP Fiori UX**
  - 18500 participants (course middle), Success rate ~20%
  - PA: 311 started, 149 final submissions
  - Bonus exercise (Create Fiori UX App, 30/360 credits)
  - Best results win a tablet → High extrinsic motivation

- **OSAP2 - Build Your Own SAP Fiori App in the Cloud**
  - 17900 participants (course middle), Success rate ~15%
  - PA: 1830 started, 1530 final submissions
  - Mandatory (Create Fiori UX App, 150/450 credits)
  - Best results win a laptop → Even higher extrinsic Motivation
About the Data - 4 Courses evaluated

- **OHPI1 - Java for Beginners**
  - 10900 participants (course middle), Success rate ~30%
  - PA: 1328 started, 337 final
  - Bonus exercise (OO Modeling, CRC Card to Class Diagram, 10/103 credits) → Low extrinsic motivation

- **OHPI2 - Web Technologies**
  - 10000 participants (course middle), Success rate ~12%
  - 2 Bonus exercises (HTML page, OO JavaScript Pong, 16/180 credits) → Low extrinsic motivation

- Data results from “End of course” surveys and from in platform data (submissions, points, etc.)
General Feedback

I’d rather not have such tasks in a course and stick to multiple choice

Peer assessment is quite ok but the process itself needs to be optimized

I appreciate the opportunity to work on more complex, practical tasks

(n=466 OHPI2)
General Feedback

Perceived learning impact of peer grading assignment compared to other assessment types

Learning by doing vs. Learning by reviewing

Pilot 1: I learned something by doing the assignment
Pilot 1: I learned something by reviewing my peers
Pilot 2: I learned something by doing the assignment
Pilot 2: I learned something by reviewing my peers

(OSAP1: n=54, OSAP2: n=463)
General Feedback

Comparing our results to Kulkarni’s results [16]

Peer Assessment
Thomas Staubitz, openHPI
Chart 9

(OSAP1: n=54, OSAP2: n=463)
Key Features – Training Step
The “learn to grade” phase helped me to understand the grading standard

(n=468 OSAP2)
Key Features – Distribution Mechanism
Distributing Submissions

1. Take highest priority submission with required reviews > 0
2. Decrement required reviews and priority counter of submission by one
3. Return submission to reviewer
4. Review submitted in 6 hours
5. Increment required reviews and priority counter of submission by one
6. Increase priority of reviewer submission by one

Peer Assessment
Thomas Staubitz, openHPI
Chart 13
Distributing Submissions

OHPI1: Java for Beginners

OHPI2: Webtech CSS

Webtech Pong

OSAP1: openSAP Pilot 1

OSAP2: openSAP Pilot 2

Peer Assessment
Thomas Staubitz, openHPI
Chart 14
Key Features – Review Rating
Review Rating

User1 submits an artefact. User2 reviews the artefact and rates it. The review is awarded bonus points. User1 rates User2's review. The review and the credits received by User1 are totalled.
Review Rating – Tit for Tat?

Points given vs. Feedback received

Peer Assessment
Thomas Staubitz,
openHPI

Chart 17
Review Rating – Tit for Tat?

OHPI1

Points given
Feedback received

OHPI2

Points given
Feedback received

CSS

OSAP1

Points given
Feedback received

OSAP2

Points given
Feedback received

Peer Assessment

Thomas Staubitz, openHPI

Chart 18
Review Rating – Word Count vs. Rating

OSAP2

Peer Assessment
Thomas Staubitz, openHPI

Chart 19
Review Rating – Word Count vs. Rating

Peer Assessment
Thomas Staubitz, openHPI
Chart 20
Future Work

- Evaluation of new data
  - openSAP – Fiori UX 2016
  - openHPI – Java IDE
  - openHPI – Social Media
- Improve completion rate in courses that rely heavily on peer assessment
- Team Peer Assessment
- Adding an automated grading step for coding assignments

Peer Assessment
Thomas Staubitz, openHPI
Chart 22
Conclusion

- Positive feedback from participants
- Good tool for additional open ended exercises
- Data supports most of our assumptions (e.g. avoiding tit-for-tat)
- Completion rates need to be improved
  - Too many users do not even start:
    - High workload?
    - Less convenient than Multiple Choice/Answer Quizzes?
    - Required commitment?
    - Not enough information about the inner workings of the system?
    - Unsatisfactory experiences with previous peer assessments?

Peer Assessment
Thomas Staubitz, openHPI
Chart 23
Questions?

Thomas.Staubitz@hpi.de

Thomas Staubitz
Research Associate
Hasso Plattner Institute