Department Business
Berner Fachhochschule
Haute école spécialisée bernoise
Bern University of Applied Sciences

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Digital Peer Grading in Group Learning: Empirical Insights and Best Practices

Agenda:
- Context: Group Work (not only in Higher Education)
- Peer Grading and PGT Online Tool
- Experiences & Good Practice

Authors:
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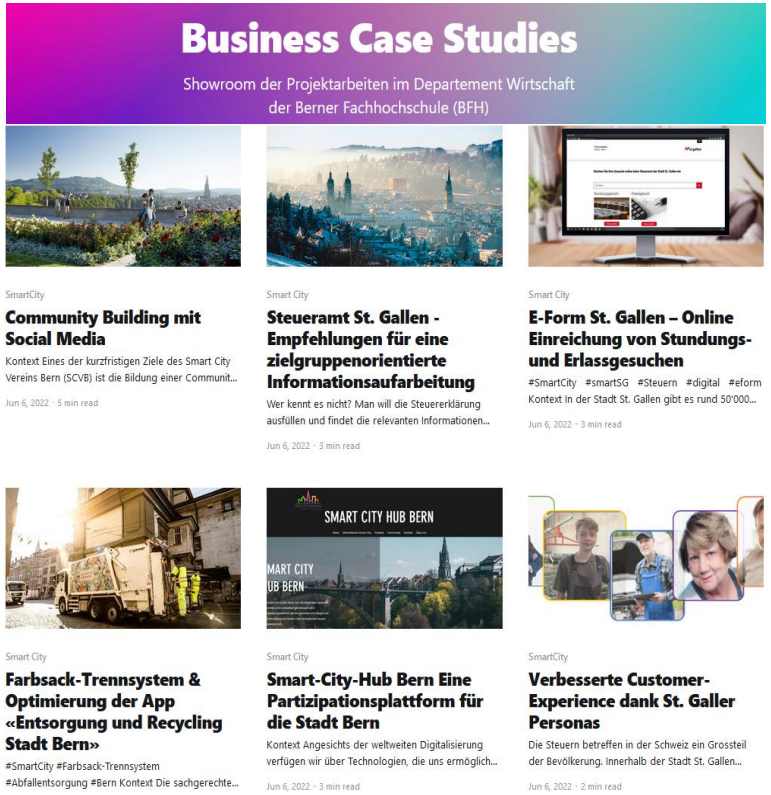
- Claus Noppeney

Initial Situation for Peer Grading

- Use of group work to enable problem-oriented learning and prepare for agile working environments.
- Students work in groups in a largely self-organized manner
- Lecturers provide support in a coaching role
- Free riding and overperformer as a challenge in group work (fair assessment, motivation in the group)
- Common group mark for deliverables as a rule with the option of individualization through Peer Grading results
- Peer Grading vs. Peer Assessment, Peer Rating, Peer Evaluation,…
- Peer Grading Tool PGT supports and facilitates collection of peer grades, calculations and communication of results

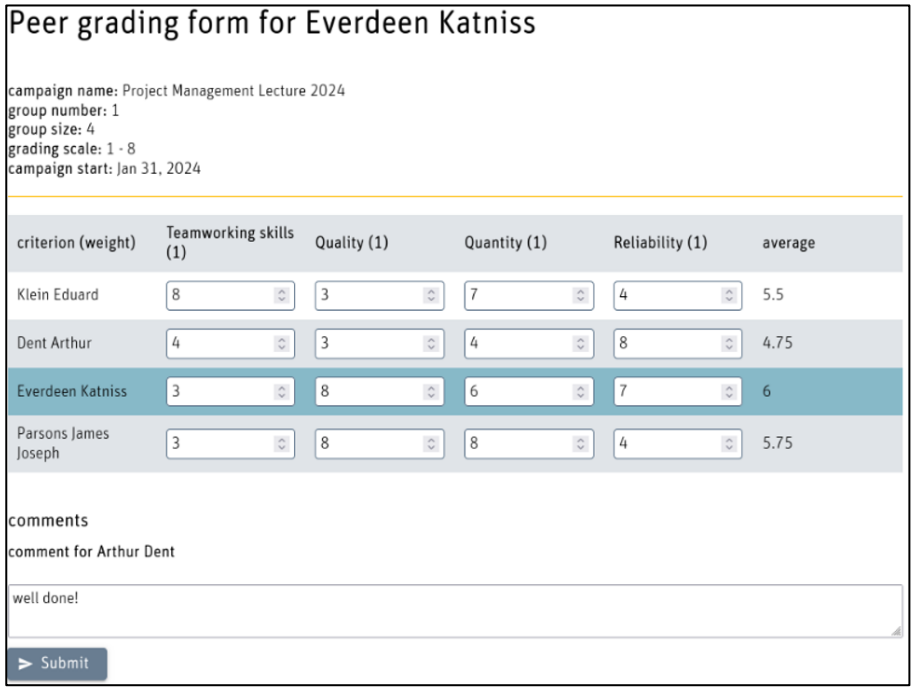
Application in Study Module:



https://showroom-bcs.digisus-lab.ch

Peer Grading Tool – PGT

- Developed and in use since January 2023 (implemented in *Angular*)
- Successor of Excel-based prototype (since 2021)



- participants receive an individualized link to the peer grading form via e-mail
- Set-up: Number, naming, and weighting of criteria initially definable
- Evaluation:
  - for each participant --> mail to student
  - for all groups --> mail to lecturer
- Choice: peer grading results can be used with or without influence on the students' marks

http://www.bfh.ch/peer-grading-tool

Open Source:
https://github.com/digital-sustainability-lab/peer-grading-tool-mirror

PGT Evaluations - example

Peer grading evaluation for Everdeen Katniss from Apr 2, 2024

campaign name: Project Management Lecture 2024
group number: 1
group size: 4
grading scale: 1 - 8
campaign period: Jan 31, 2024 - Feb 3, 2024

criteria (weighting):
Teamworking skills (1)
Quality (1)
Quantity (1)
Reliability (1)

	Teamworking skills (1)	Quality (1)	Quantity (1)	Reliability (1)	average
peer assessment	3.67	3.67	5	4.33	4.17
self assessment	3	8	6	7	6

4.17	4.81	-0.64
peer assessment	group average	deviation

comments recieved

author	comment
Arthur Dent	Working with you was great.
James Joseph Parsons	It was a pleasure.

Individual evaluation for each student

overview of group 1

grading from \ grading of	Klein Eduard	Dent Arthur	Everdeen Katniss	Parsons Jam
Klein Eduard	4.25	2	3	6.5
Dent Arthur	4.25	2.75	5.5	5.25
Everdeen Katniss	5.5	4.75	6	5.75
Parsons James Joseph	6	5.25	4	4.25
peer grading average:	5.25	4	4.17	5.83

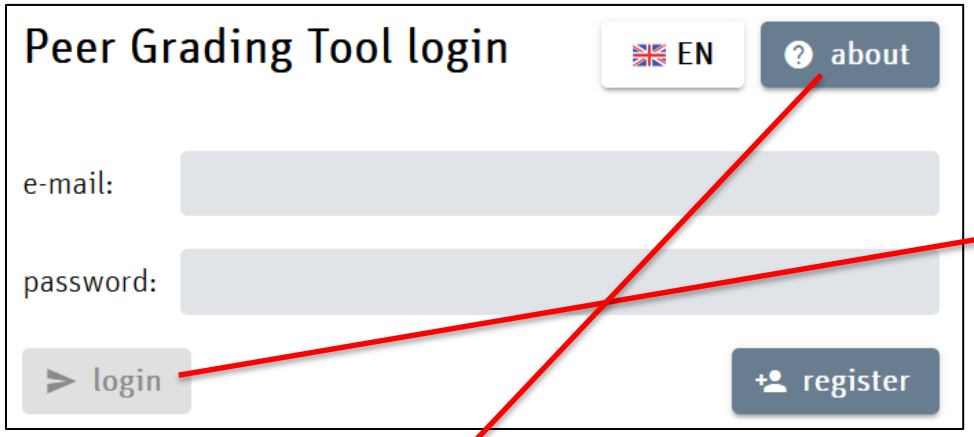
comments from Arthur Dent:
for Eduard Klein:
i was quite isolated in this group
for Katniss Everdeen:
Working with you was great.

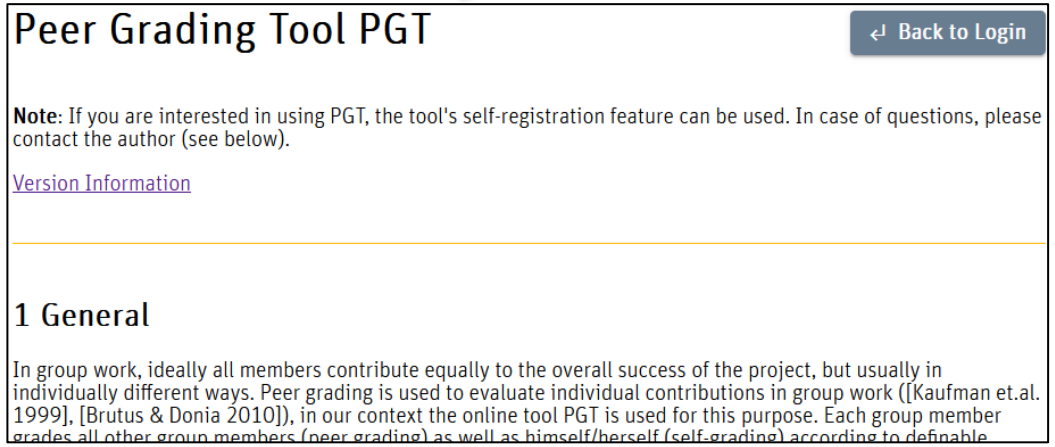
comments from Katniss Everdeen:
for Eduard Klein:
such a cool group!
for Arthur Dent:
well done!

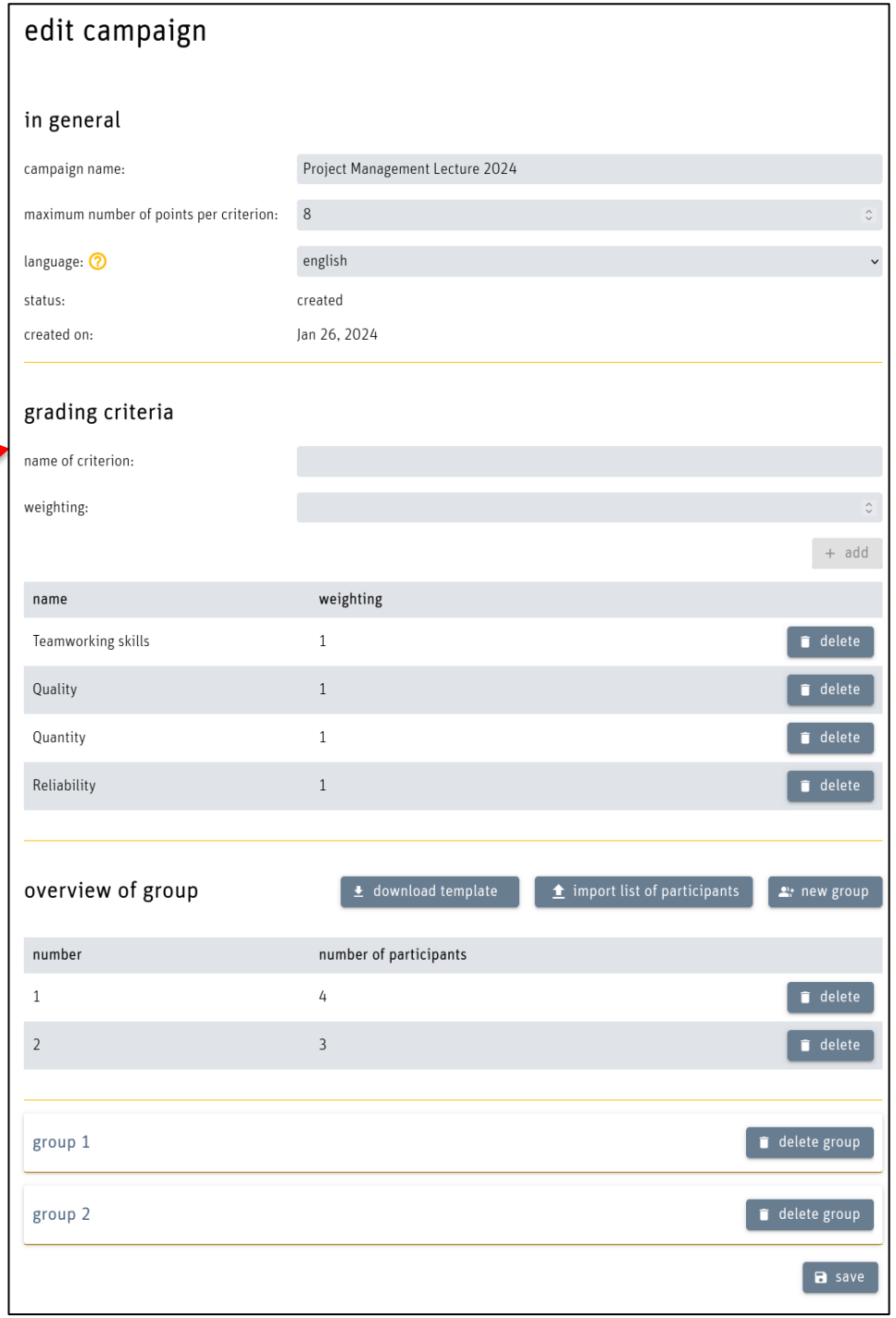
comments from James Joseph Parsons:
for Eduard Klein:
the team building pub crawl event was super cool!
for Katniss Everdeen:
It was a pleasure.

Overview per group for each lecturer

PGT – Kampagne erstellen







PGT – Importing Groups / Group Members

Name	Vorname	Matrikel-Nr.	Mail	Gruppe
Haller	Stephan	22-345-678	stephan.haller@bfh.ch	1
Harder	Deane	33-456-789	deane.harder@bfh.ch	1
Klein	Eduard	44-567-890	eduard.klein@bfh.ch	1
Noppeney	Claus	55-678-901	claus.noppeney@bfh.ch	2
Müller	Susan	66-789-012	susan.mueller@bfh.ch	2
Hillebrand	Kirsten	77-890-123	kirsten.hillebrand@bfh.ch	2
Jud	Reto	88-901-234	reto.jud@bfh.ch	1

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Name,Vorname,Matrikel-Nr.,Mail,Gruppe
Haller,Stephan,22-345-678,stephan.haller@bfh.ch,1
Harder,Deane,33-456-789,deane.harder@bfh.ch,1
Klein,Eduard,44-567-890,eduard.klein@bfh.ch,1
Noppeney,Claus,55-678-901,claus.noppeney@bfh.ch,2
Müller,Susan,66-789-012,susan.mueller@bfh.ch,2
Hillebrand,Kirsten,77-890-123,kirsten.hillebrand@bfh.ch,2
Jud,Reto,88-901-234,reto.jud@bfh.ch,1
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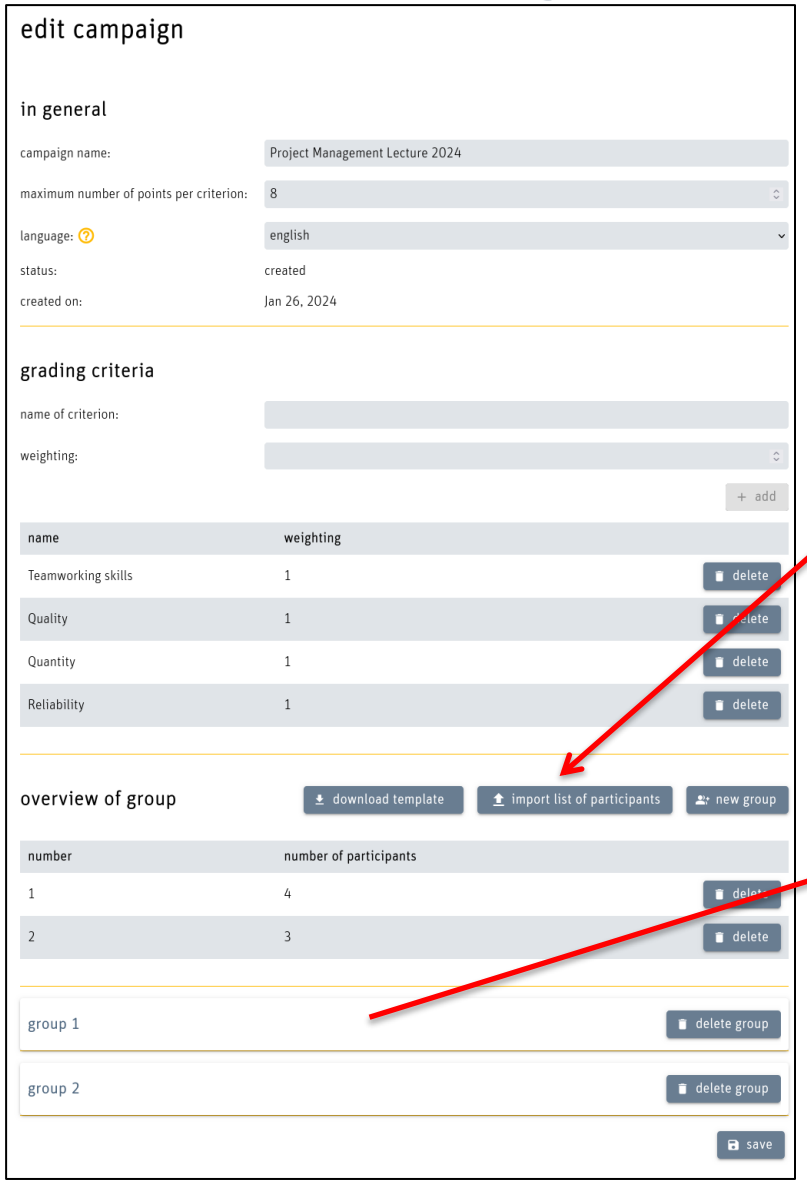
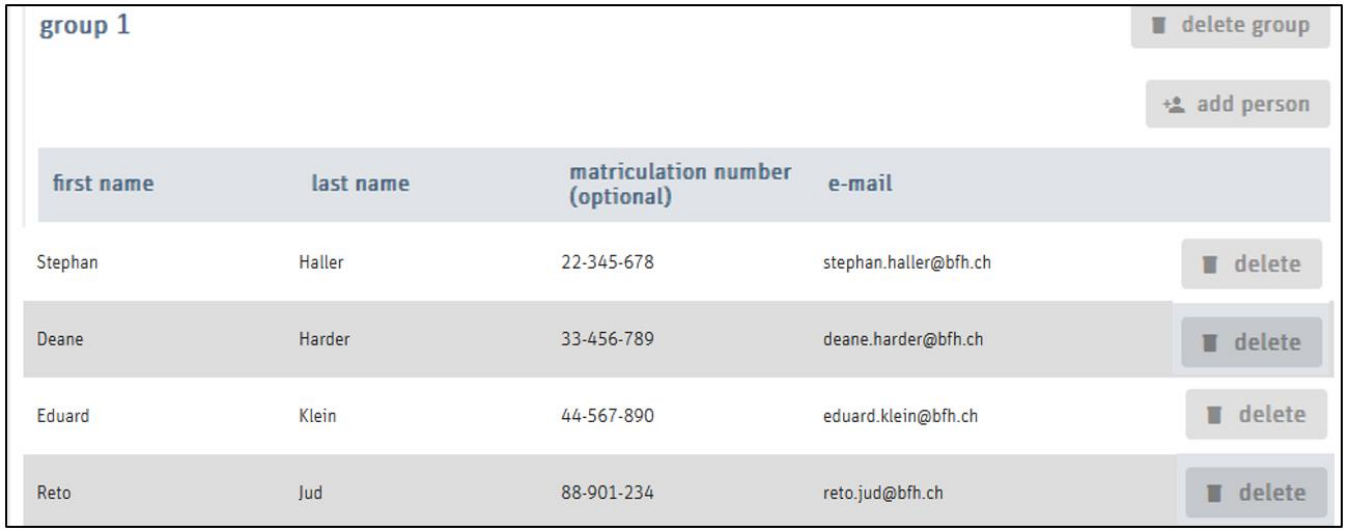
Save in CSV format (UTF-8)

Matrikel-Nr. is optional



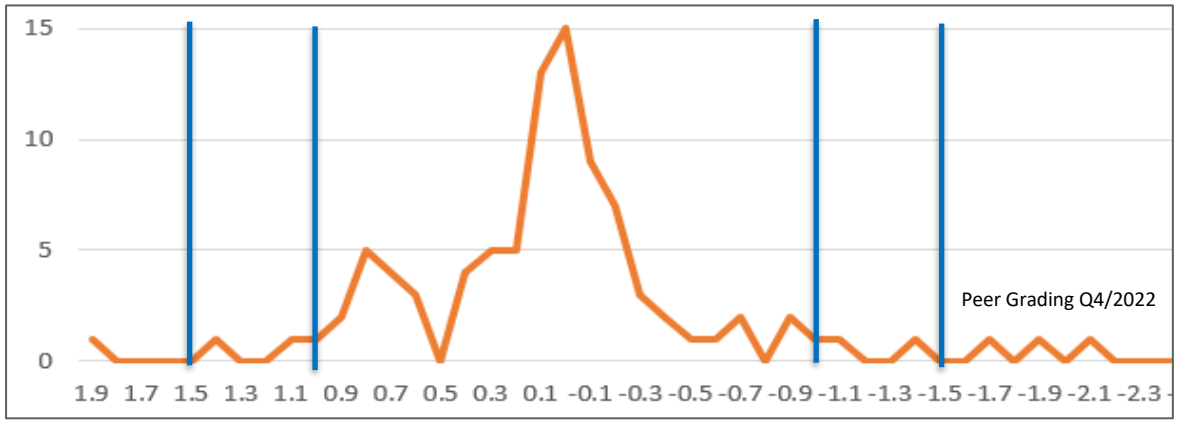


Peer Grading – Experiences / Study Course "Business Case Studies"

- Observation Period
  Q4/2021 – Q2/2023

	HS21	FS22	HS22	FS23
# students	62	122	94	149
# groups	12	24	19	30
# stud-per-grp	5.17	5.08	4.95	4.97

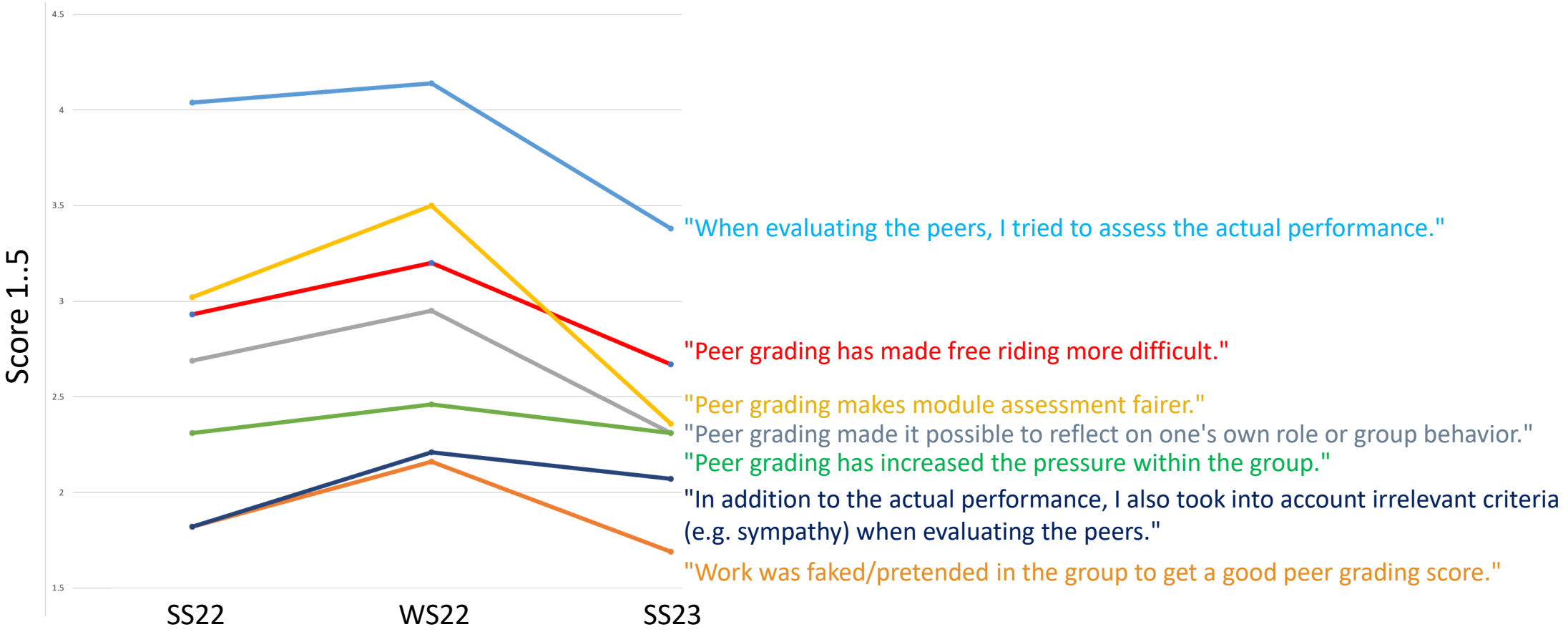
- Definition of threshold values,
  if relevant for students' marks



- Observations:
  - rarely: high individual deviations (below 5%)
  - No group-related discrimination (degree program, gender, study model)
  - Relevance for marks does not influence peer grading
  - Increased variance of individual deviations with full time study model
  - Partly group-internal agreements (identical evaluations)
  - Recommendation: Compare free rider evaluations with own (coach) impression!

Peer Grading – Follow Up Surveys with Students / Results

"Please indicate how much you agree with the following statements on peer grading":



Learnings from Follow Up Surveys

1. On average, group work with peer grading was judged to be comparable or even better than other group work at our university.

2. Students recognize that peer grading makes freeriding more difficult. However, this effect also mobilizes critical voices.

3. In the surveys, a hard core of approx. 10-25% reject any further use of peer grading, which can have an overall impact on the experience of the module.

4. In contrast, approx. 75-90% are in favor of the continued use of peer grading at our university. The distribution of the surveyed frequencies (rarely, occasionally, often, always) varies considerably depending on the study course.

5. 7-13% of students are in favor of using peer grading for all group work at our university.

Recommendations for the use of Peer Grading

- The context seems appropriate:
  - The larger the group
  - The less the group members know each other
  - The more heterogeneous the group
  - The less voluntarily the group is composed
  - The more intensively and self-organized the students are expected to work together
  - The stronger the feedback culture is lived in the degree program

- Pay Attention!
  - Without a feedback culture, peer grading can mobilize negative energies
  - Lecturers can be encouraged to give better grades in order to avoid critical discussions about the module grade

Project "DigiPeG" – Digital Peer Grading

- Research question: **"How can digital peer grading promote learning in group work?"**
- Accompanying scientific research
  - https://belearn.swiss/en/projekt/digipeg-digitales-peer-grading-fuer-lernfoerdernde-gruppenarbeiten/
- Evaluation catalog for participants and lecturers (Qualtrics Surveys)
- Derivation of recommendations for action (best practices)
- Use of "Peer Grading Tool" PGT
  - Publicly available online (implemented in Angular)
  - Open source (Github)

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Institut Innovation and Entrepreneurship
Study Program: Business & Economics

Use of Peer Grading Tool PGT

- Publicly available
  - http://www.bfh.ch/peer-grading-tool
- Self-registration possible
- "Help Desk" in tool use (eduard.klein@bfh.ch)
- Follow up survey available
- Open source
  - https://github.com/digital-sustainability-lab/peer-grading-tool-mirror

Questions ?