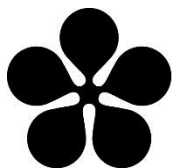


STUDENTS' ATTITUDES TO PEER-ASSESSMENT IN INQUIRY-BASED TASKS IN BIOLOGY LESSONS AT LOWER SECONDARY LEVEL

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SEVENTH FRAMEWORK
PROGRAMME



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University of South Bohemia



- Convenient location on the border of three countries
 - 100 km to Linz
 - 130 km to Passau
 - 150 km to Prague
 - 200 km to Vienna
 - 300 km to Munich



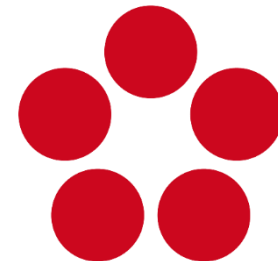


ASSISTME

University of South Bohemia



- founded in 1991
- 8 faculties
- 220 study programs
- 13 000 students
- 1 800 employees



Project ASSIST-ME



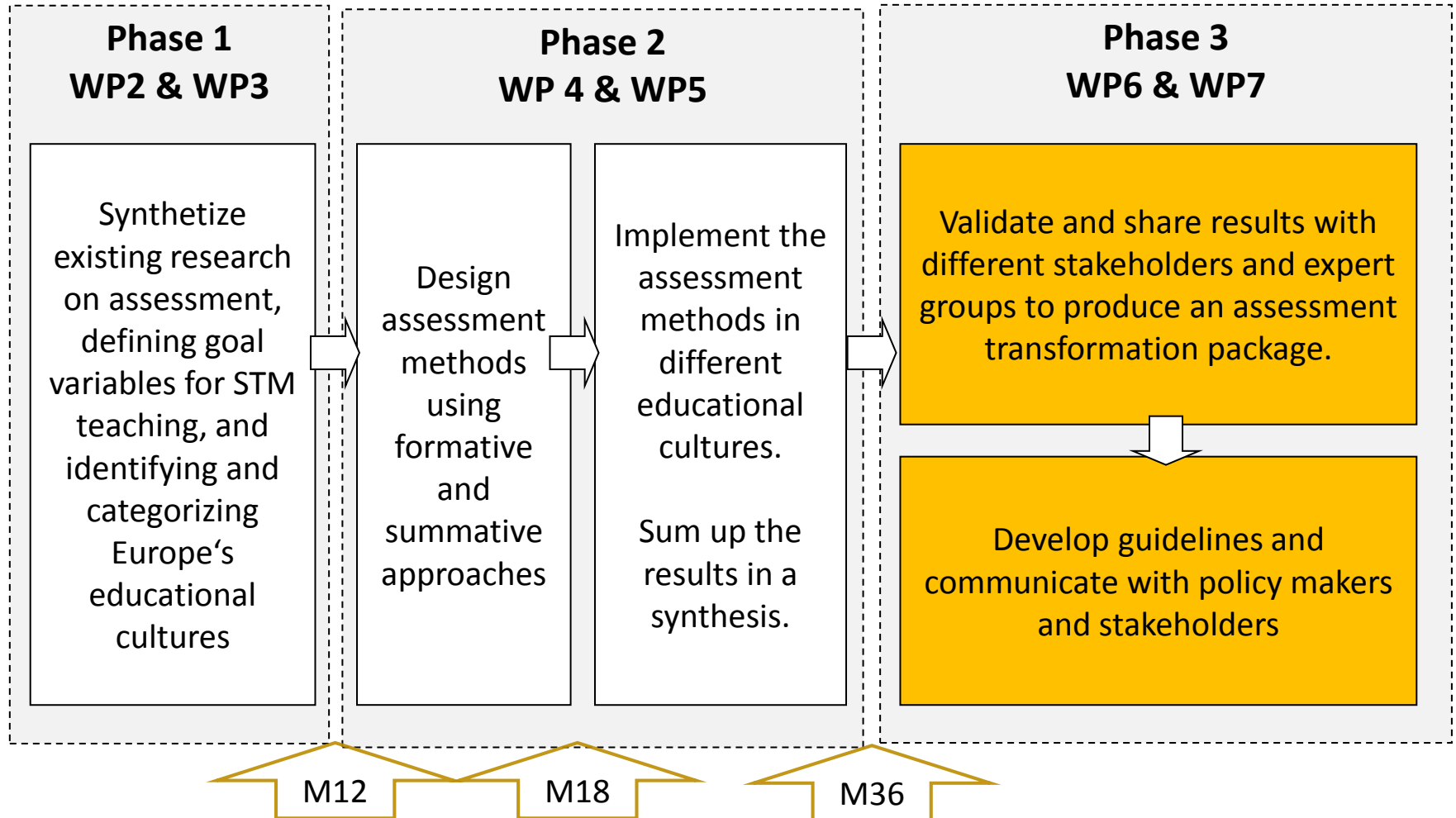
- *Assess Inquiry in Science, Technology and Mathematics Education*
- international research project (European Union 7 FP)
- 8 European countries, 10 research and education institutions
 - England, Czech Republic, Denmark, Finland, France, Cyprus, Germany, Switzerland
- focused on formative assessment in the inquiry-based education
- the overall aim of ASSIST-ME project is to provide a research base on effective uptake of formative and summative assessment for inquiry-based, competence oriented Science, Technology and Mathematics (STM) education



Establishing a foundation

Finding results

Influencing and dissemination





LWG (Local Working Group)

- each LWG contains 6 teachers and 2 researchers
- in total 3 round of implementation
 - 1st round – November – December 2014
 - 2nd round – March – May 2015
 - 3rd round – October – December 2015

LWG	Subject	Level	Competence
1	Integrated science	Primary	Investigating in science
2	Biology	Lower secondary	Investigating in science
3	Mathematics	Primary	Problem solving (Modeling)



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Research design



LWG2 (Biology, lower secondary level)

- students' age: 12 – 15
- 3 rounds of implementation (different students and teachers)
 - in total 160 students (different grades and schools)
 - one long-term study (same students and same teacher)
- **Implementation**
 - topic of empirical investigation:
 - What factors can influence the breathing frequency? (*human physiology*)
 - What factors can influence the germination? (*plant physiology*)
 - **experimental group:** students assessed by their peers
 - 85 students
 - **control group:** students assessed by their teacher
 - 75 students
 - „double-blind experiment“

Inquiry activity 1

- Students design their experiment (containing hypothesis, tools, procedure and discussion of factors which have influence on the results) related to selected topic and practicable in school conditions.

Teacher's assessment

- The teacher assesses all students' protocols, assessment is written directly into the computer; researcher controls the protocols and makes copies.

Peer assessment

- Each student of experimental group receives protocol from his/her peer and writes assessment on his/her experiment design to the same kind of form as teacher wrote. Control group has different work not-related with the research

Correction & Evaluation

- Students get back their protocols and assessment form and based on it they correct their design of experiment. The teacher evaluate quality of peer feedback and level of acceptance of suggested changes.

Inquiry activity 2

- Students perform the experiment according to standardized methodology, then they fill in acquired data, interpret them and write a conclusion.

Teacher's assessment 2

- The teacher assesses all students' protocols, assessment is written direct into the computer; researcher controls the protocols and makes copies.

Peer assessment 2

- Each student of experimental group receives protocol from his/her peer and writes assessment on experiment performance to the same kind of form as teacher wrote.

Correction & Evaluation 2

- Students get back copy of their protocols and assessment form and based on it they correct their results and conclusions.

Final analysis

- The teacher and the researcher evaluate the whole process of peer assessment – level of acceptance of suggested changes, students' involvement in the process etc.



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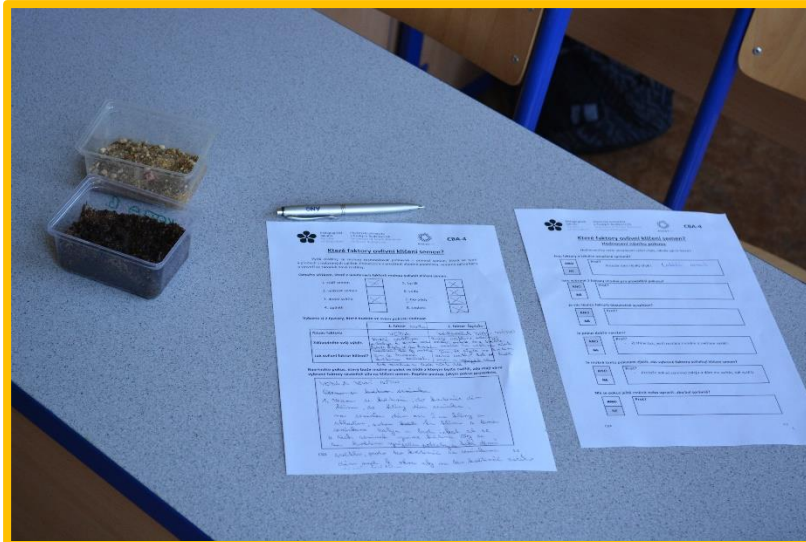
Students' investigation





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Students' investigation





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Data collection



- **Semi-structured interviews with students**

- **5 key questions**

- each question had 4 to 6 sub-questions
 - related to 2 main fields:
 - 1) inquiry-based education in biology lessons
 - students' personal experience with this approach
 - students' opinion on inquiry and personal findings
 - 2) formative assessment (peer assessment)
 - personal opinion and experience with assessing process
 - difficulties with providing the feedback
 - acceptance of peer-assessment
 - students' preferences about the feedback



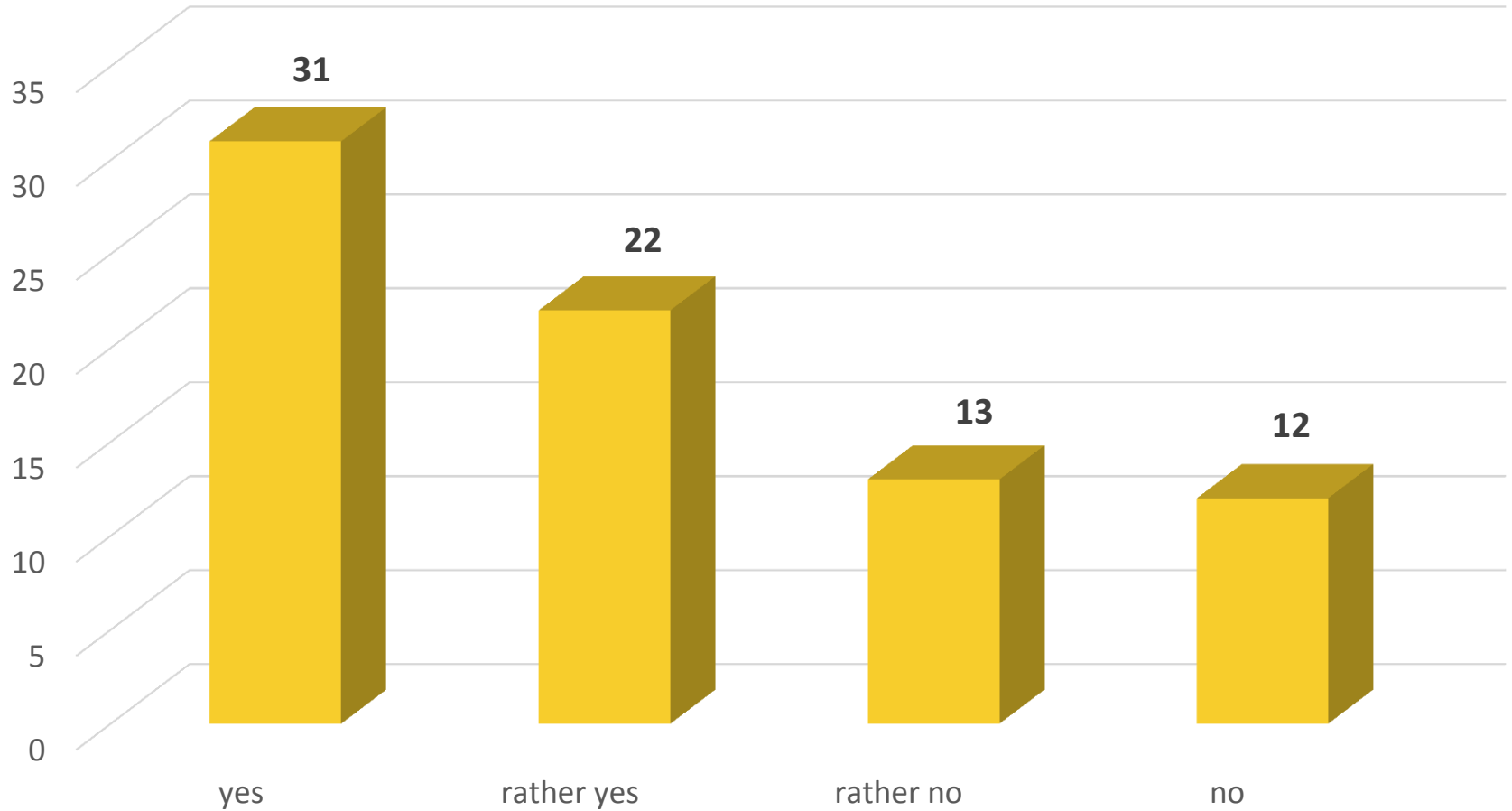


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Results



Did you do well in assessing your peer?



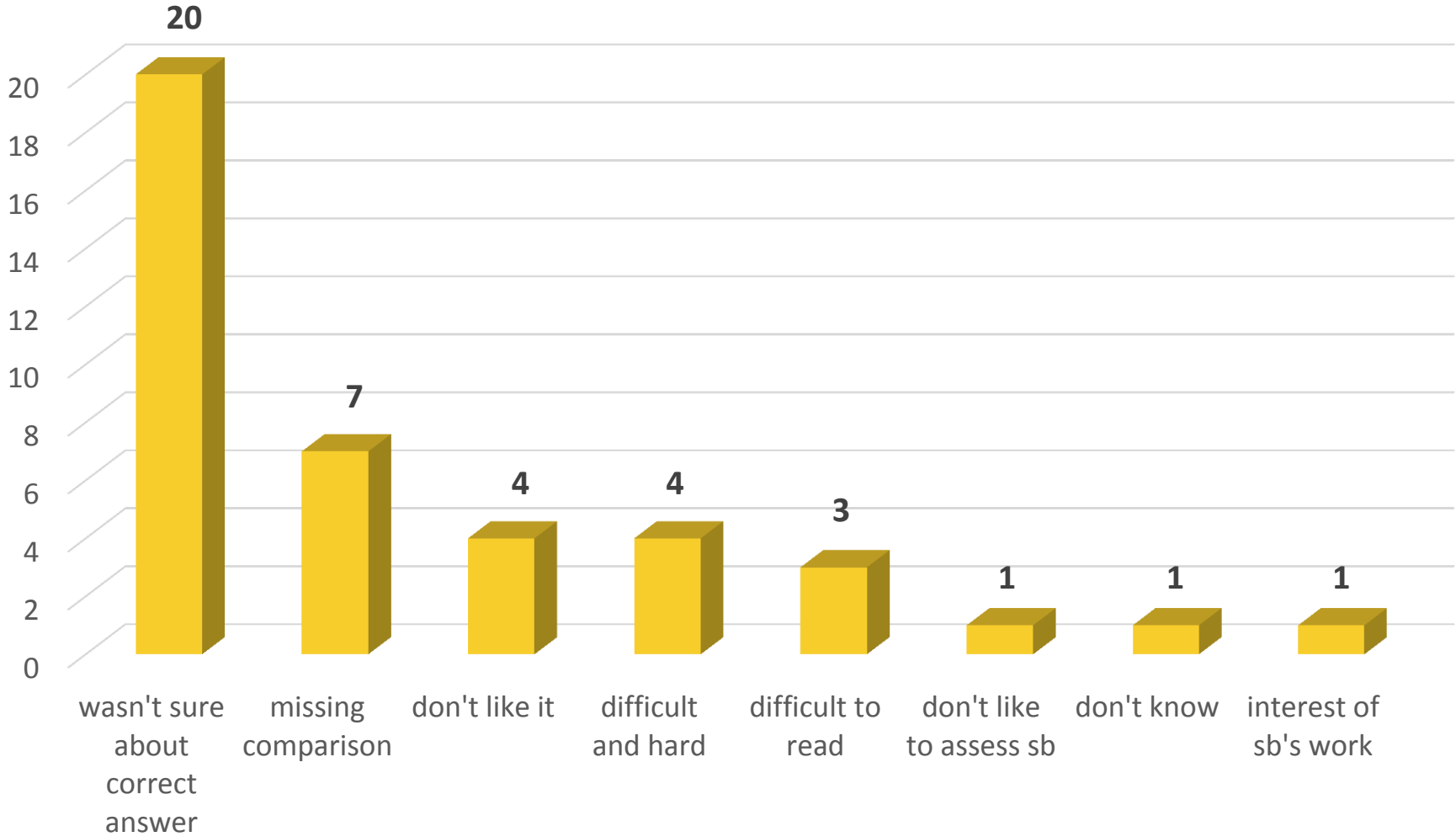
N = 78



Results

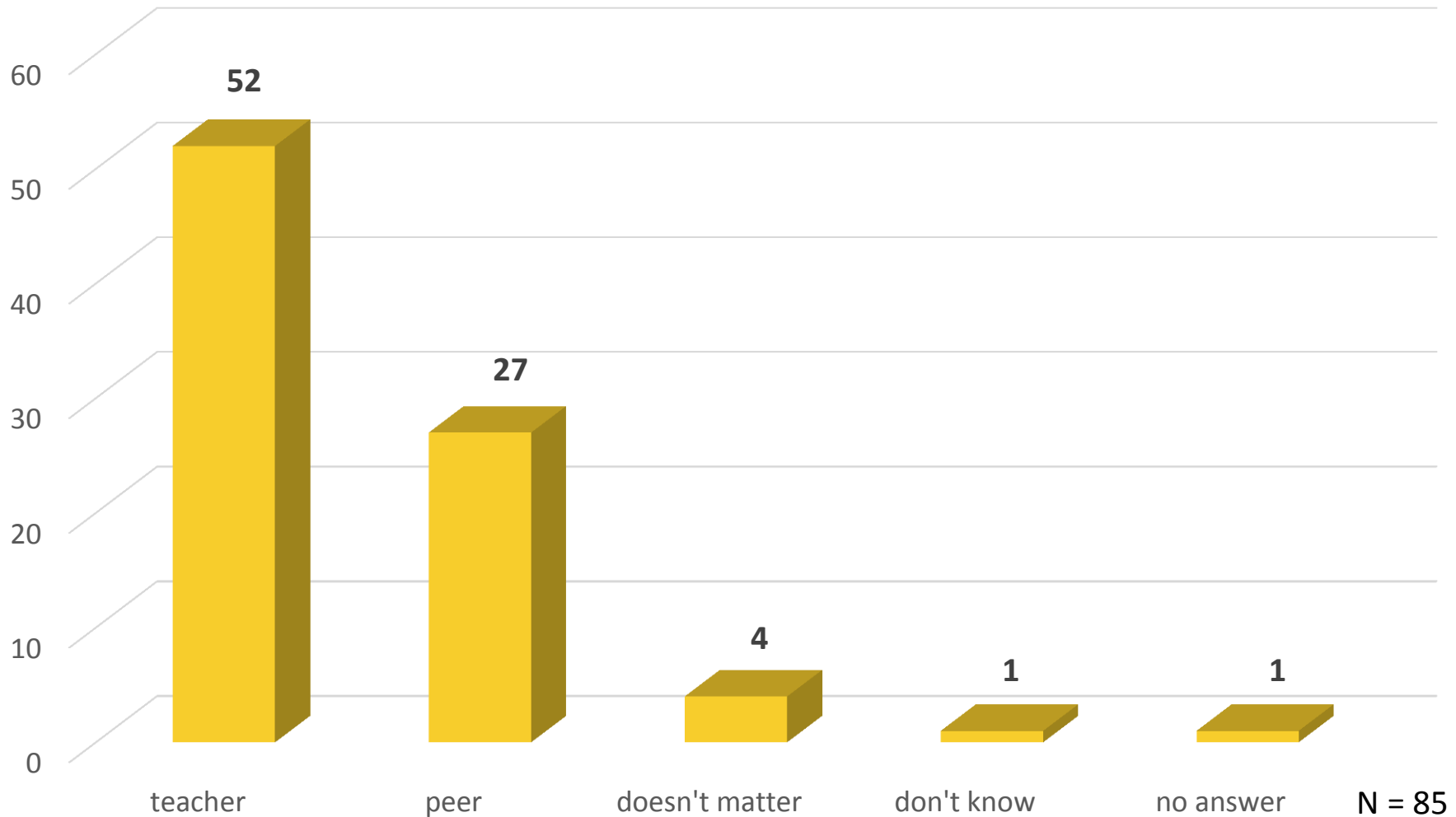


Did you have any problem during providing of feedback?





Would you prefer to receive the feedback from peer or teacher?

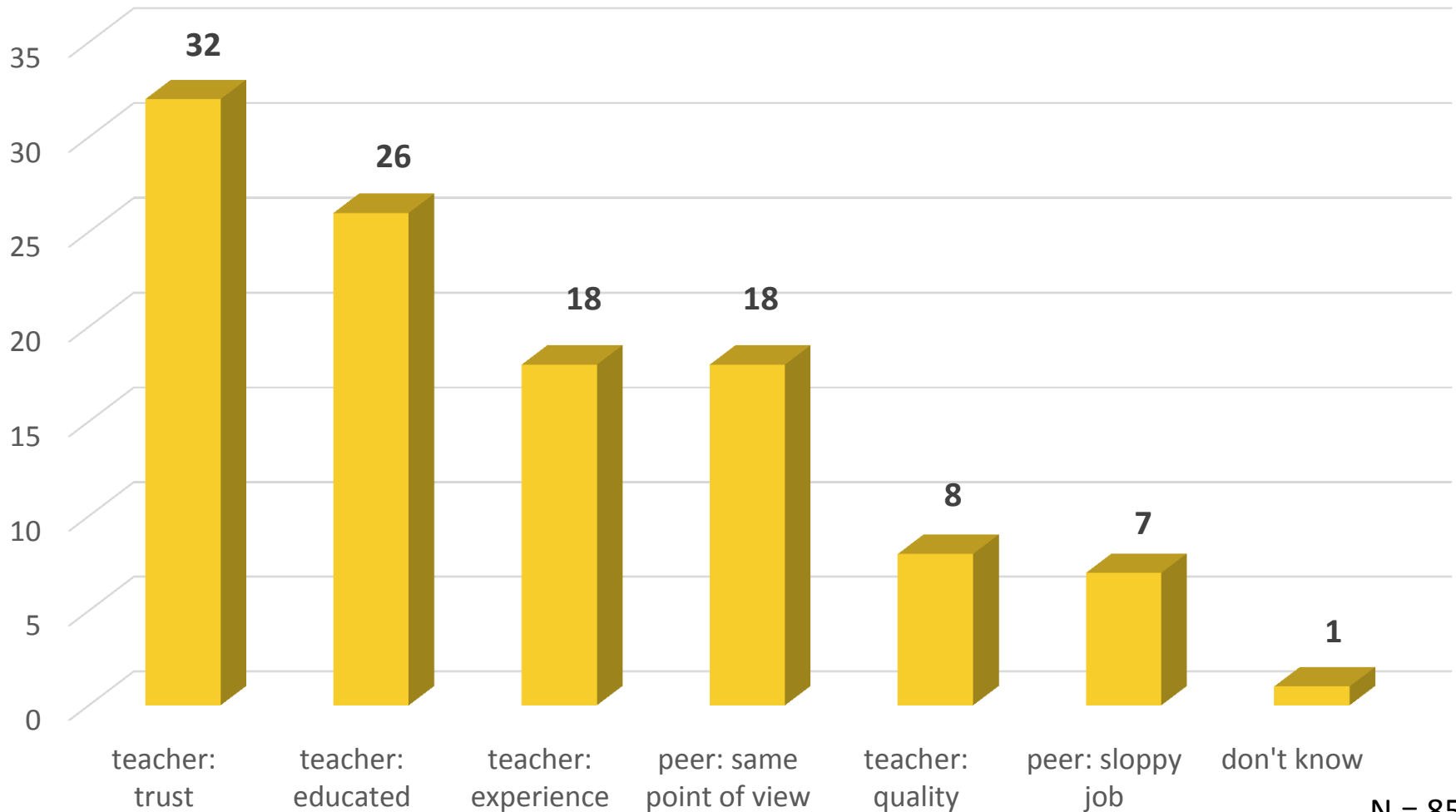




Results

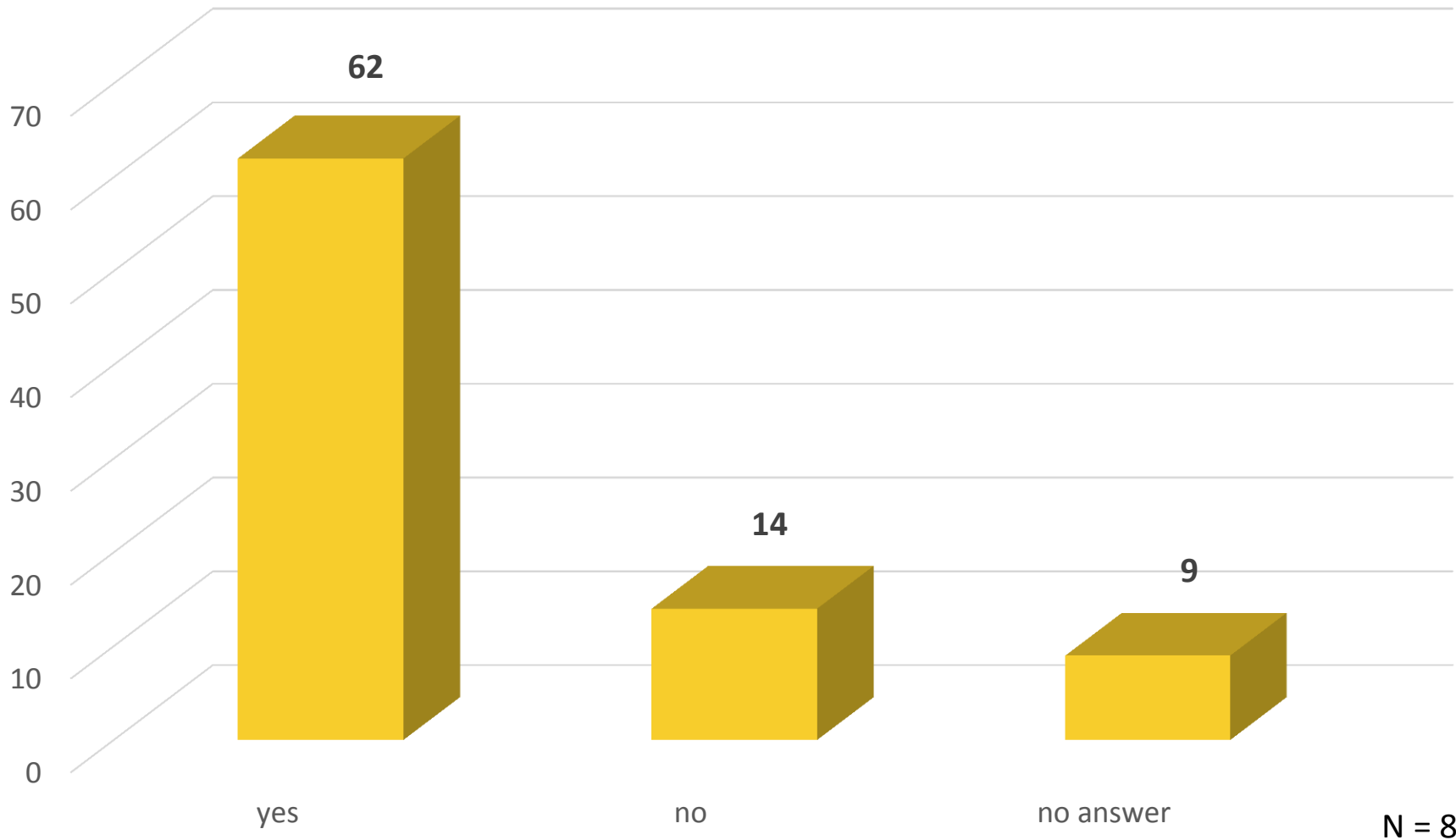


Why do you prefer teacher's/peer's assessment?





Do the assessment from teacher and from peer differs?

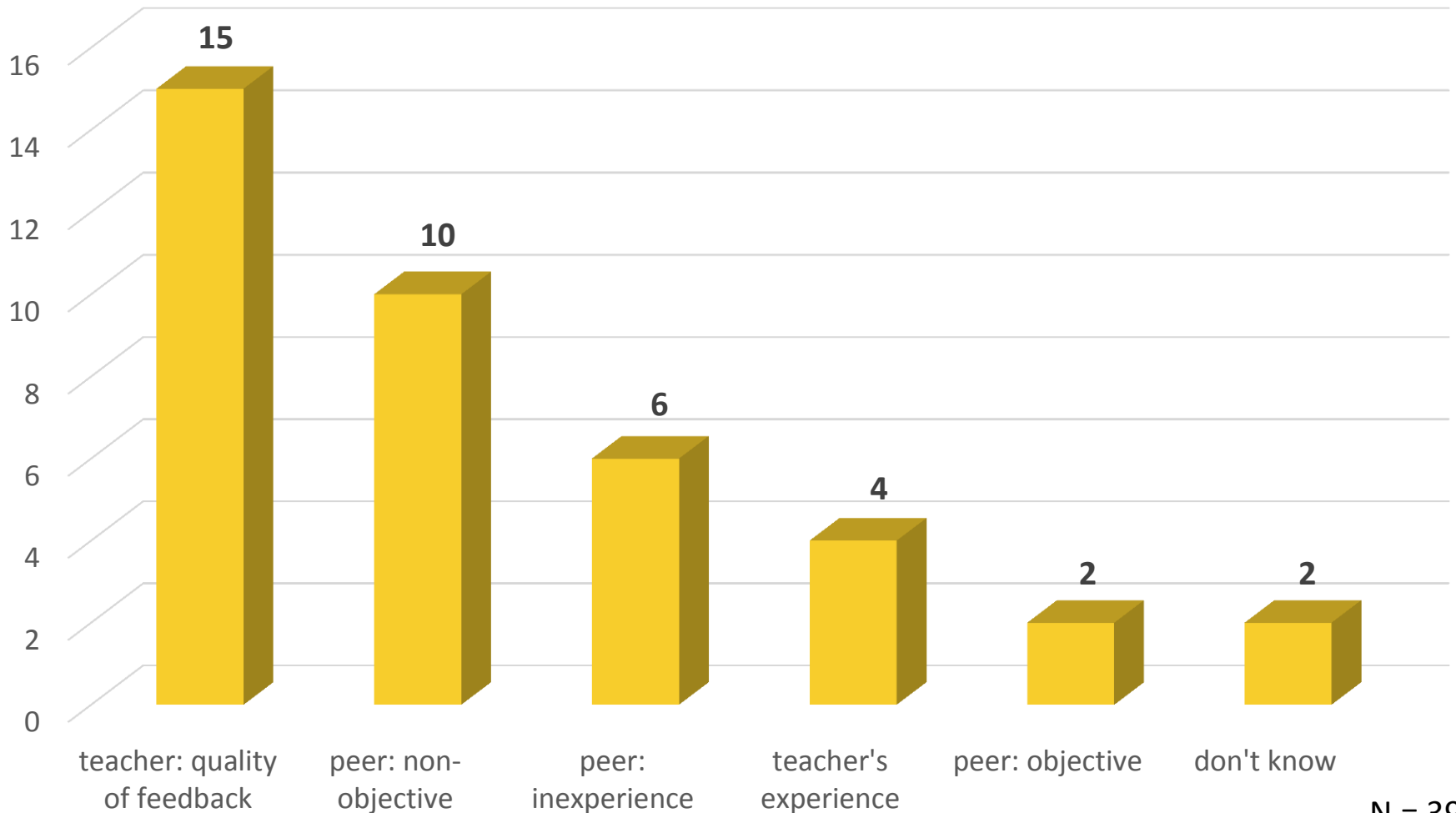




Results



What is the difference between teacher's and peer's assessment?

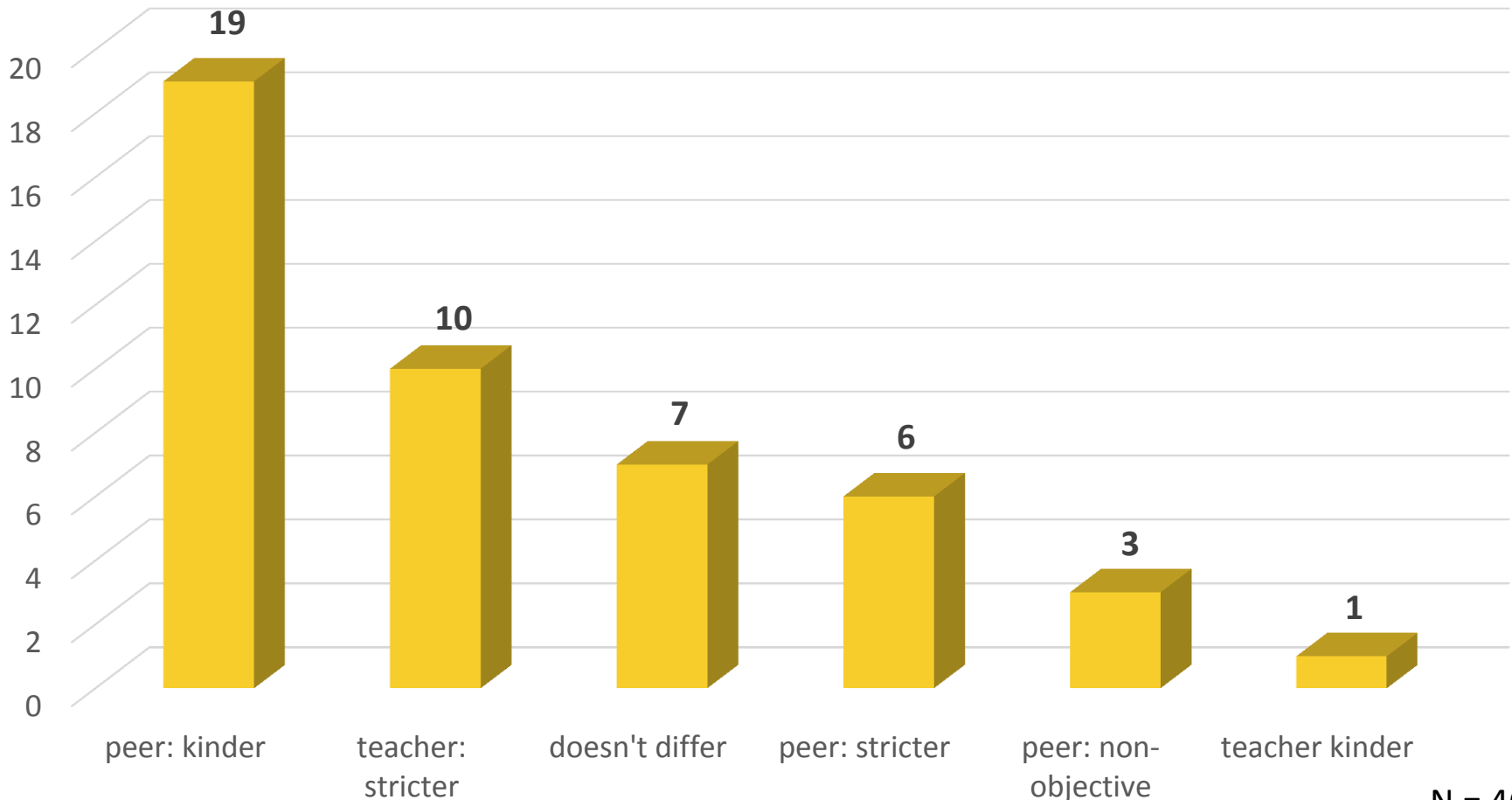




Results



Do you think that the teacher's and peer's feedback differ in the strictness?

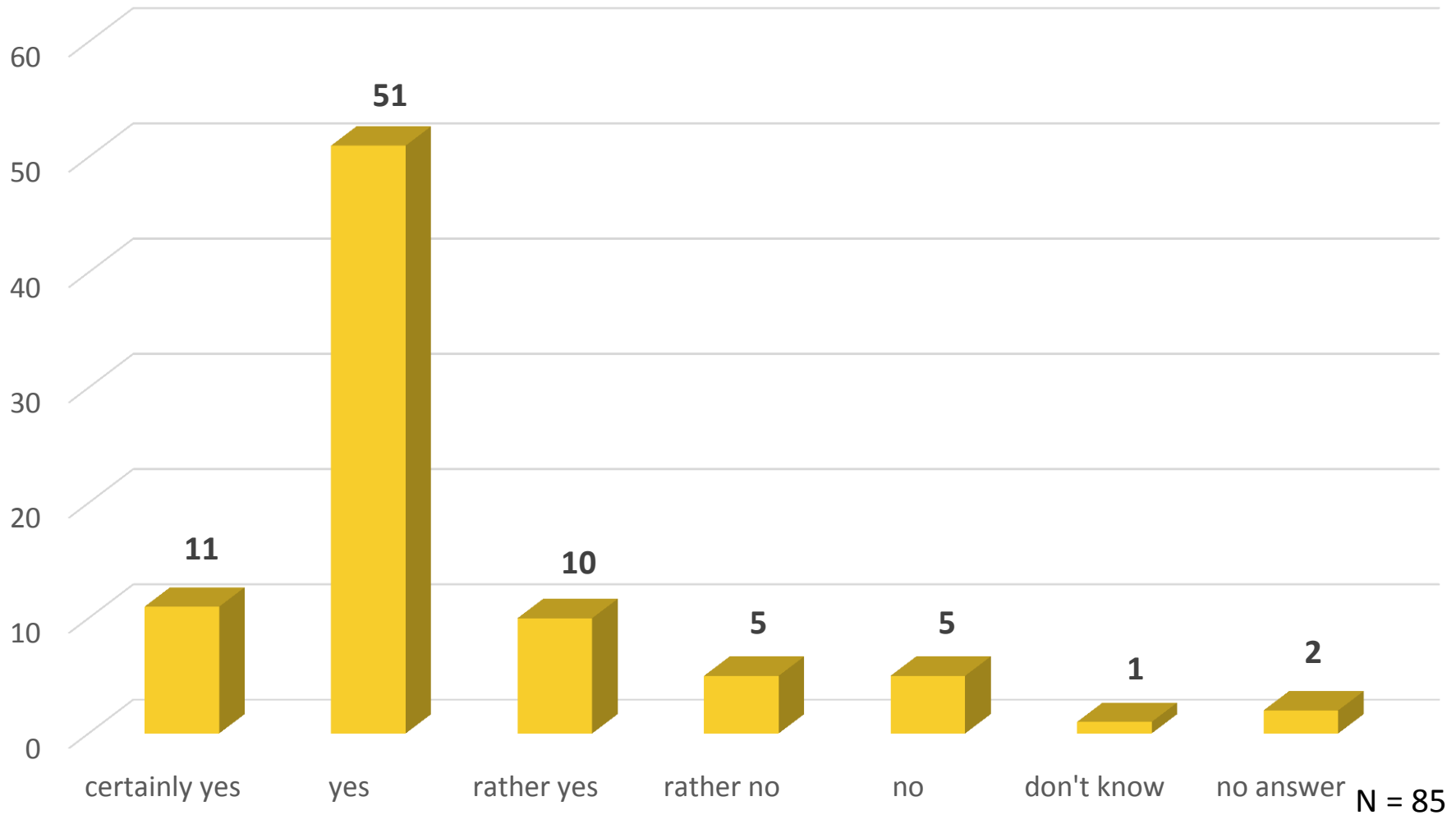




Results

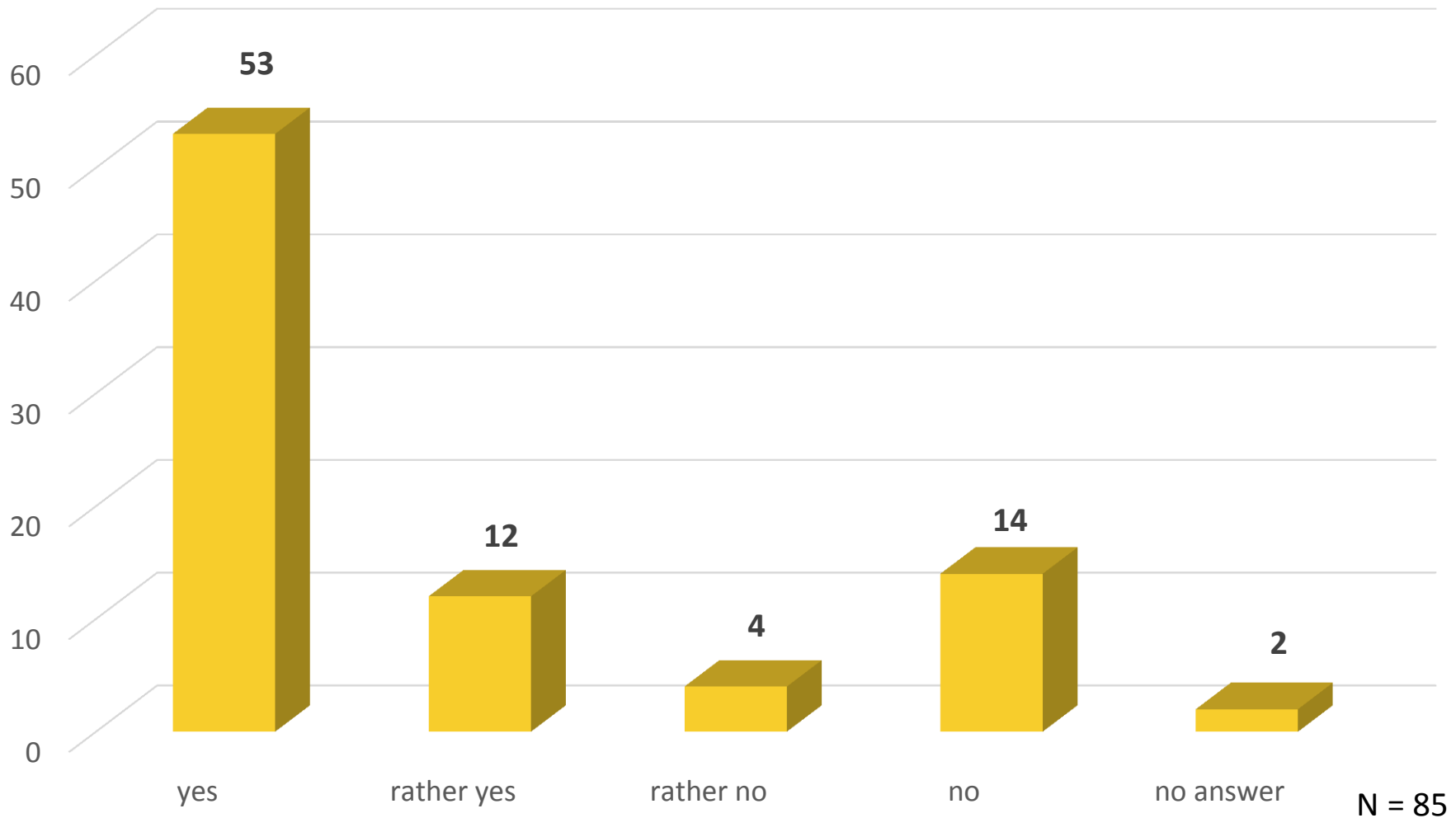


Did the feedback from your peer help you in the solving the task?



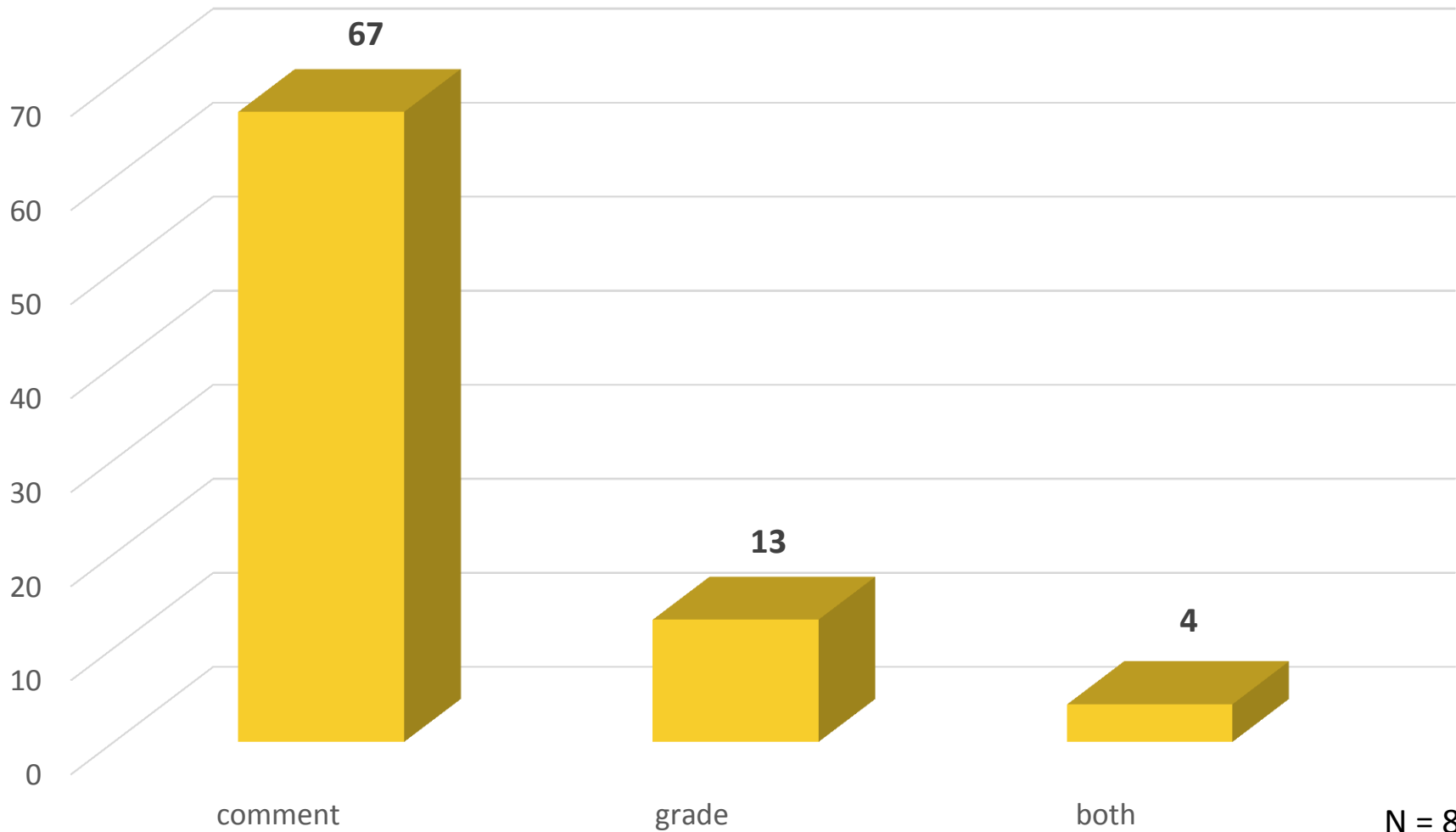


Did you correct something according to the peer's feedback?





What did you prefer in the feedback – commentaries or final grade?





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Conclusions



- The peer-assessment seems to be a perspective method for assessing students in the inquiry based lessons in integrated science at primary level and biology at lower secondary level. This assessment method enables to express students' performance in all steps of inquiry tasks.
- Students preferred commentaries in the written feedback instead of the final grade. Three quarters of students chose the commentaries as most useful part of the feedback. After that they added these commentaries are better understandable for them and they know what to improve in their next work.
- They also stated that the feedback help them to improve their product (independently on the provider of feedback). Both groups, experimental and control, found the written commentaries more helpful than classical grades.



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Conclusions



- During the experiment there were no boycotting of the peer feedback but most of students would prefer the teacher's assessment. In the additional question they quoted that their teachers are educated, more responsible, trustworthy so they trust them more than their peers.
- In the long-term study it was found that students are able to improve their assessing competences and provide better feedback when they got more experience with this formative assessment. After that they also trust more in the feedback from their peers.
- On the other hand, the main problems are still insufficient word power and low level of students' and teachers' personal experience with inquiry-based education.

Thank you for your attention.



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