



STARPNOZARU IZGLĪTĪBAS
INOVĀCIJU CENTRS
LATVIJAS UNIVERSITĀTE



LATVIAN SCIENCE TEACHER EXPERIENCE IN LEARNING TEAM FOR IMPROVEMENT OF INQUIRY TEACHING PRACTICE

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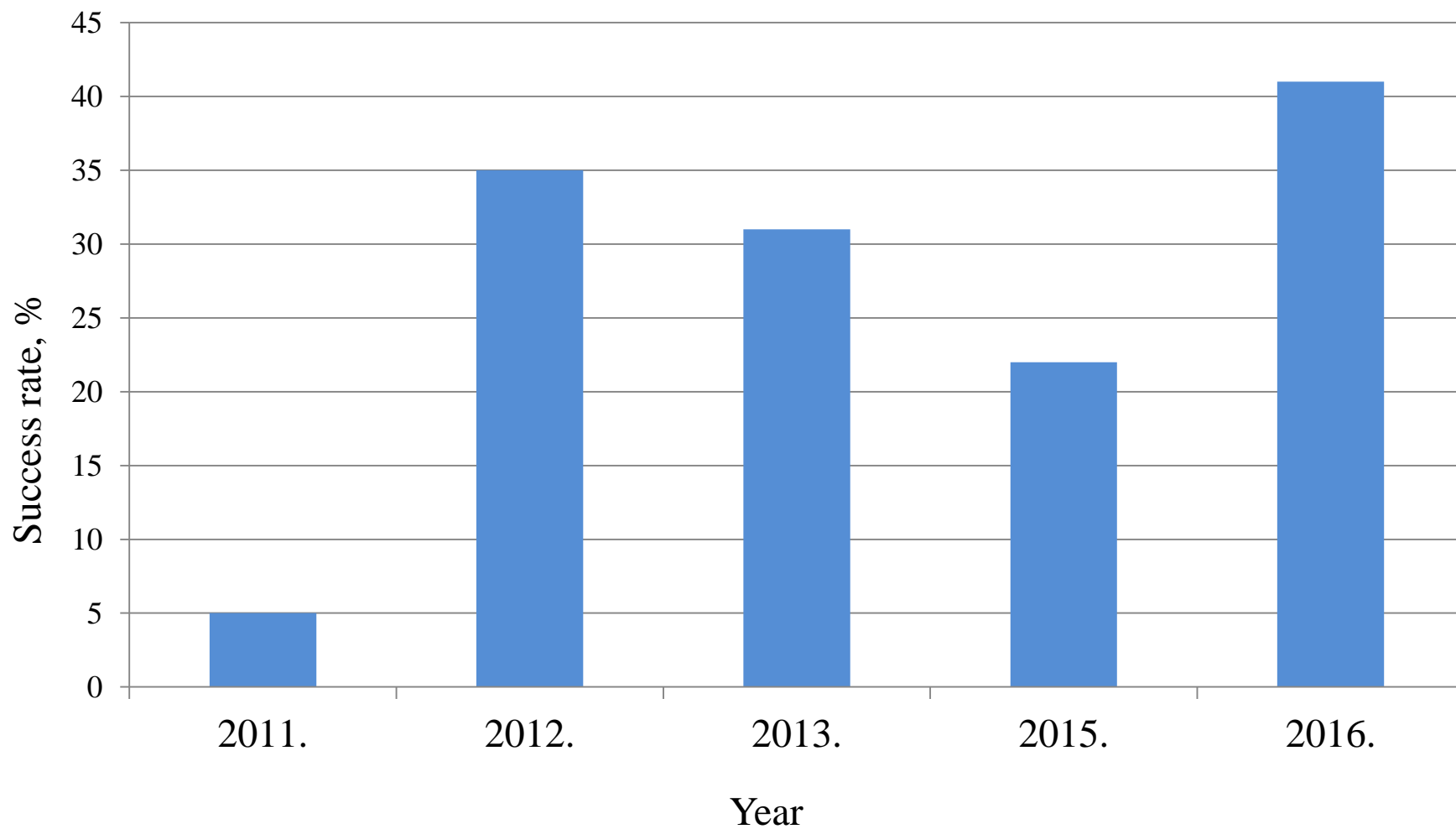
CONFERENCE "CHEMISTRY IN SCHOOL-2017"
Kaunas, 19th of April, 2017

Priorities of Contemporary Teaching and Learning Process in Science

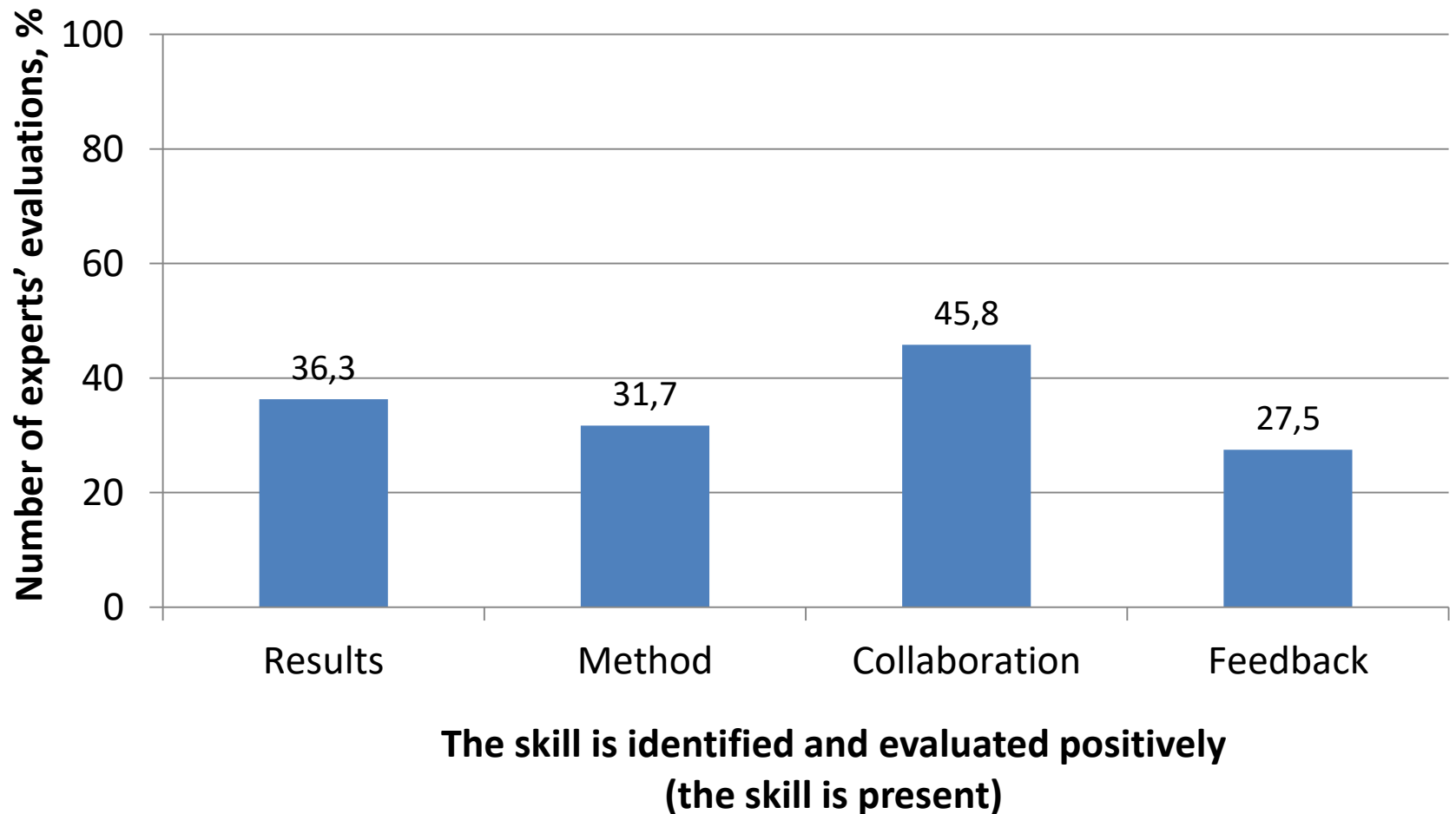
- Students understanding about science
- **Scientific inquiry**
- Link with real life
- Contemporary teaching and learning strategies
- ICT usage



Results of the Scientific Inquiry Task 3_3 of the CE in Chemistry



Teachers' skills to effectively organize scientific inquiry



Research question

- How does work of teachers in the learning team for action research facilitate improvement of their inquiry teaching practice and reflection?
- What are the factors that affect teacher work in the learning team for action research?

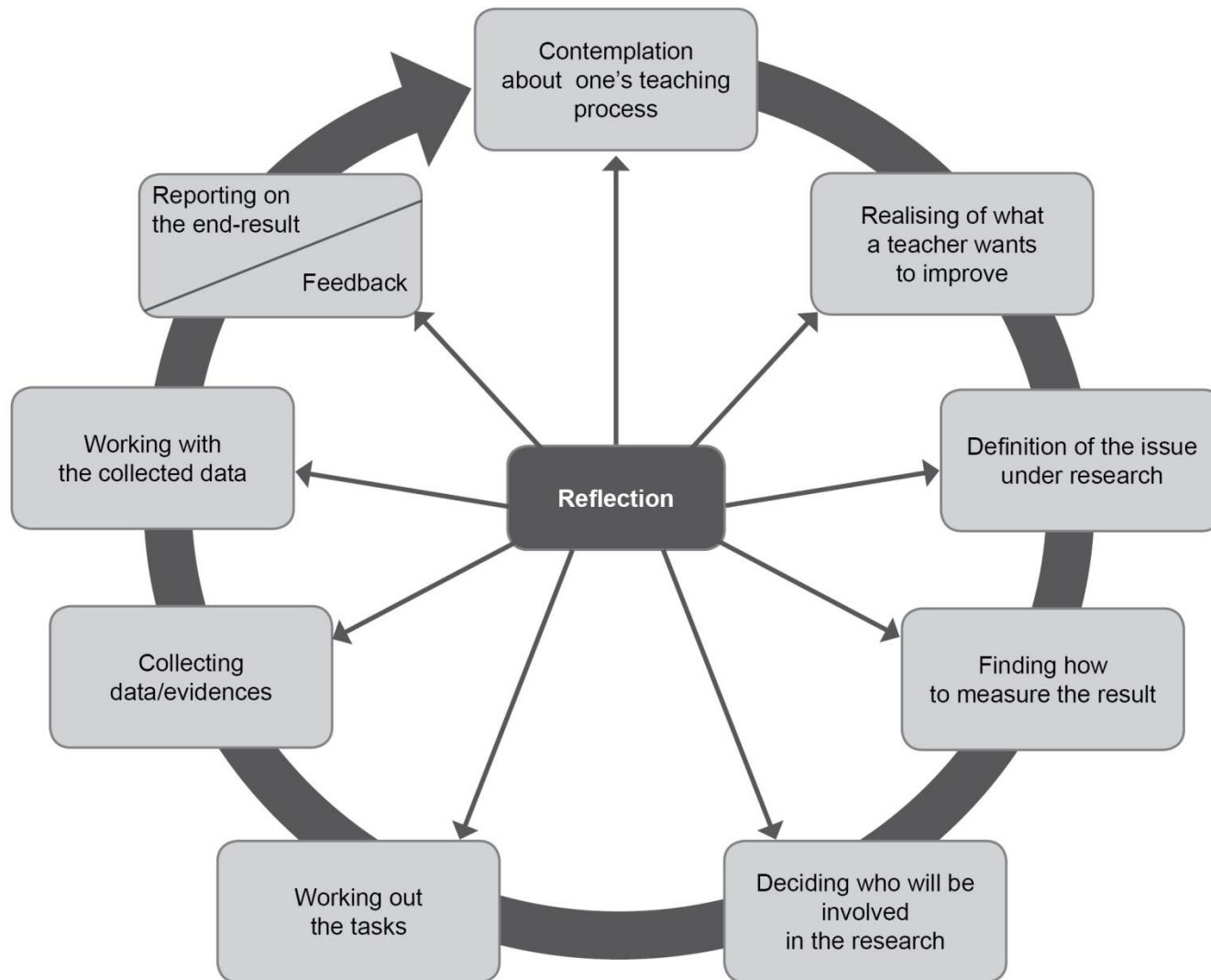
Description of research participants

| Criteria | Participants to the research | |
|---|--|-------------------------|
| | Group A teachers (N=12) | Group B teachers (N=10) |
| | 2011/2012 | 2012/2013 |
| Place of employment | Basic, Secondary school | Basic, Secondary school |
| Teaches subject | 6 Biology, 4 Physics, 2 Chemistry | Chemistry |
| Grades | Grades 7-12 | Grades 8-12 |
| Background | Mg.biol. – 6, Mg.phys. - 4, Mg.chem. - 2 | Mg.chem - 9 |
| Teaches second subject | 2 teachers | 4 teachers |
| Experience in organizing scientific inquiry before 2011 | 6 years | None |
| Experience in analyzing and reflecting on their professional performance, collaborating with others before 2011 | 6 years | None |

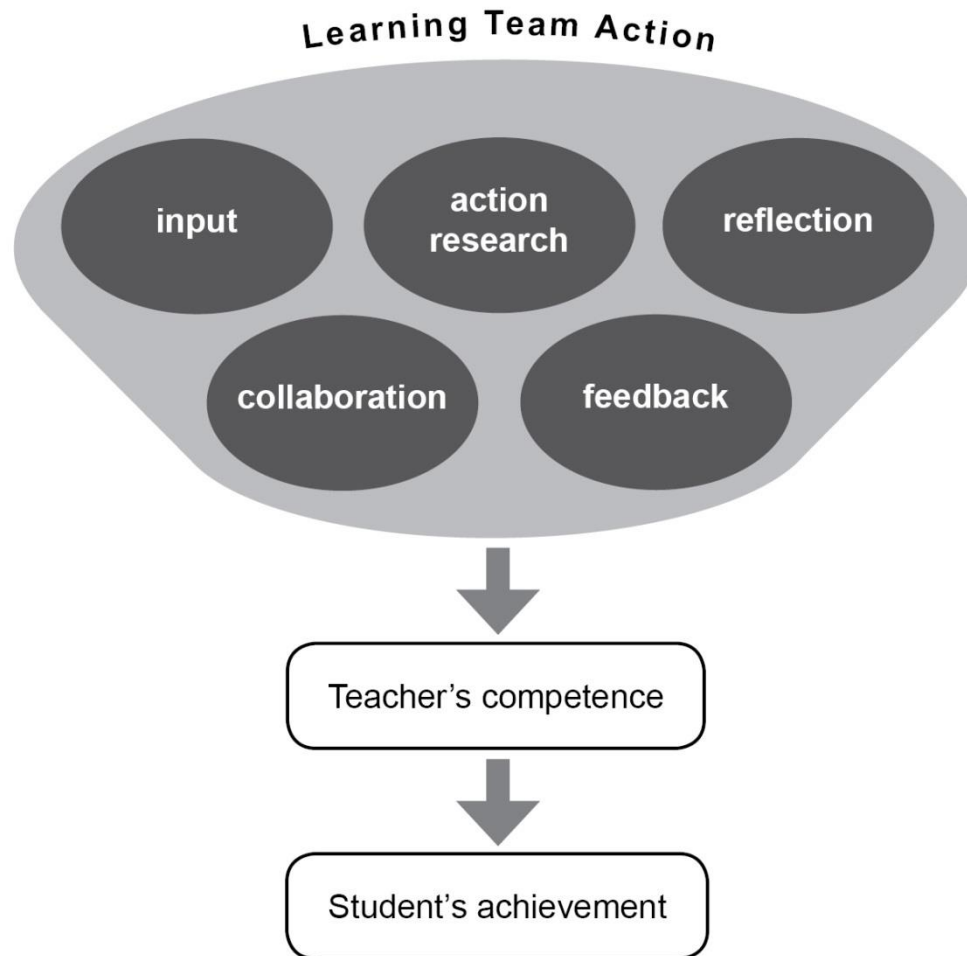
Data collection and analysis

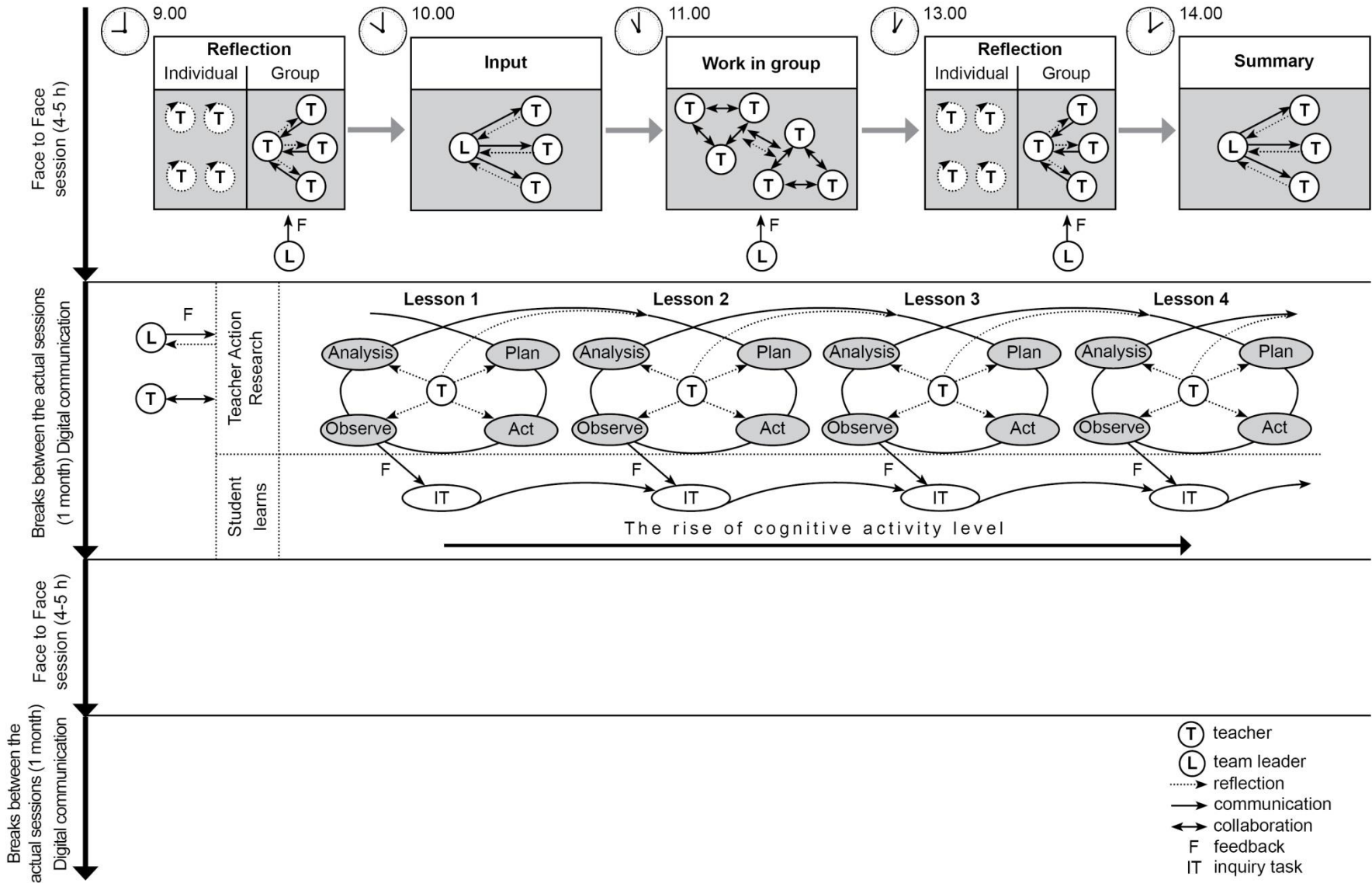
- Dictaphone recordings and transcripts of the sessions.
- Teacher pre and post surveys.
- Student improvement by evaluating inquiry tasks during the learning process and by evaluating student inquiry skills at the beginning and end of the school year.
- The group leaders notes after every session.
- The focus group discussions and in the final survey during the final conference.

Research cycle of teacher professional performance

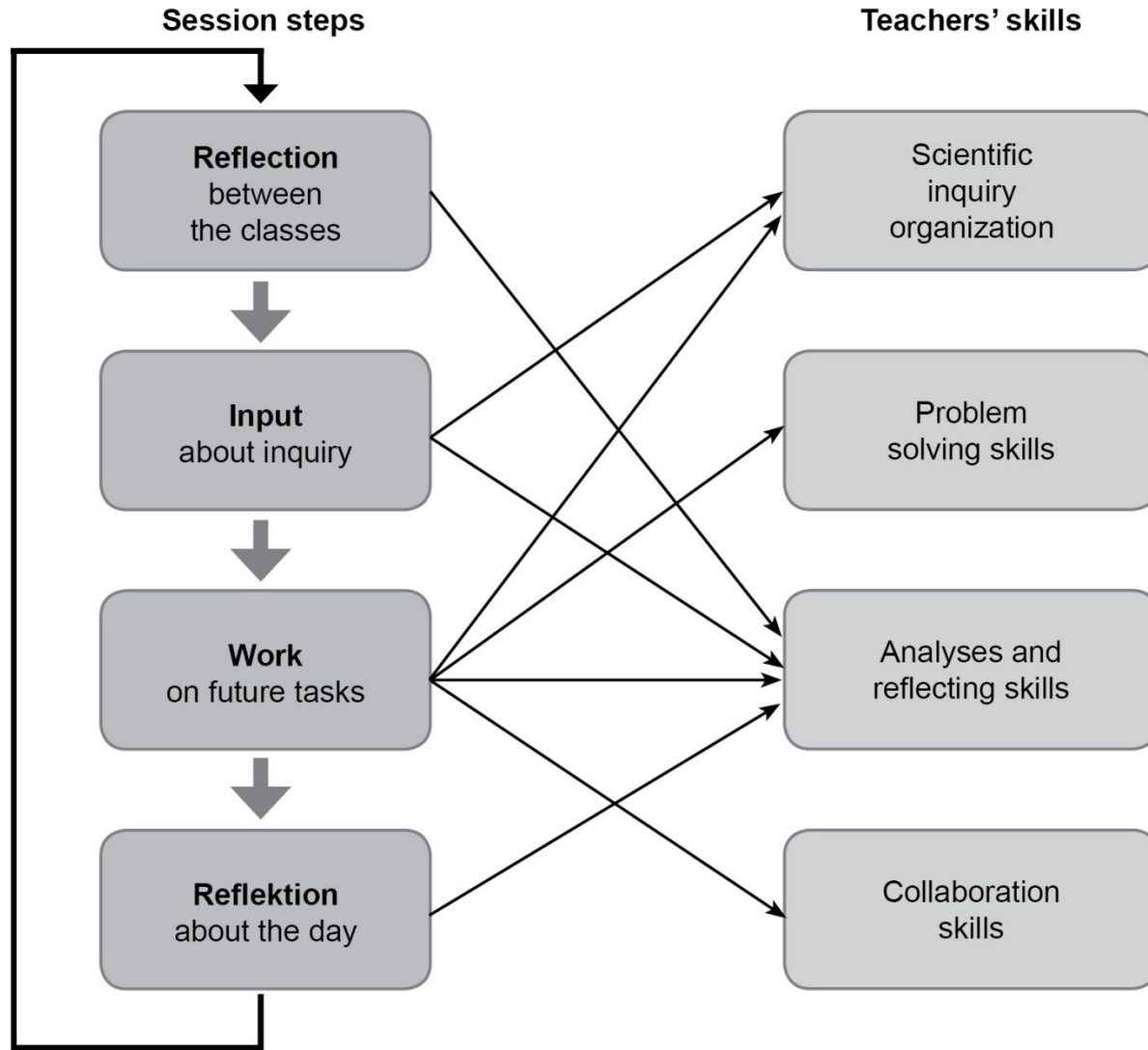


Structural elements of learning team for improvement model of inquiry teaching

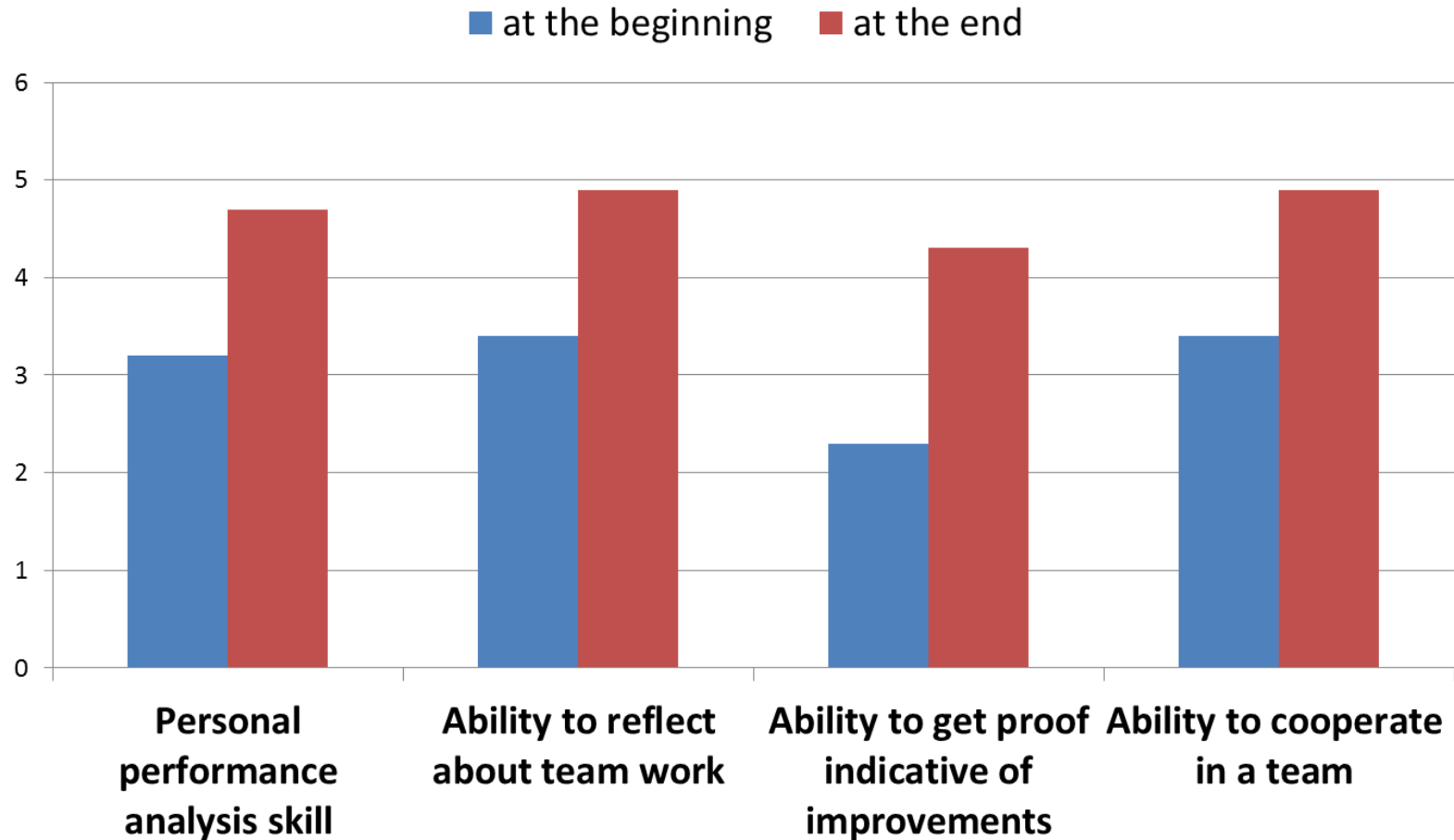




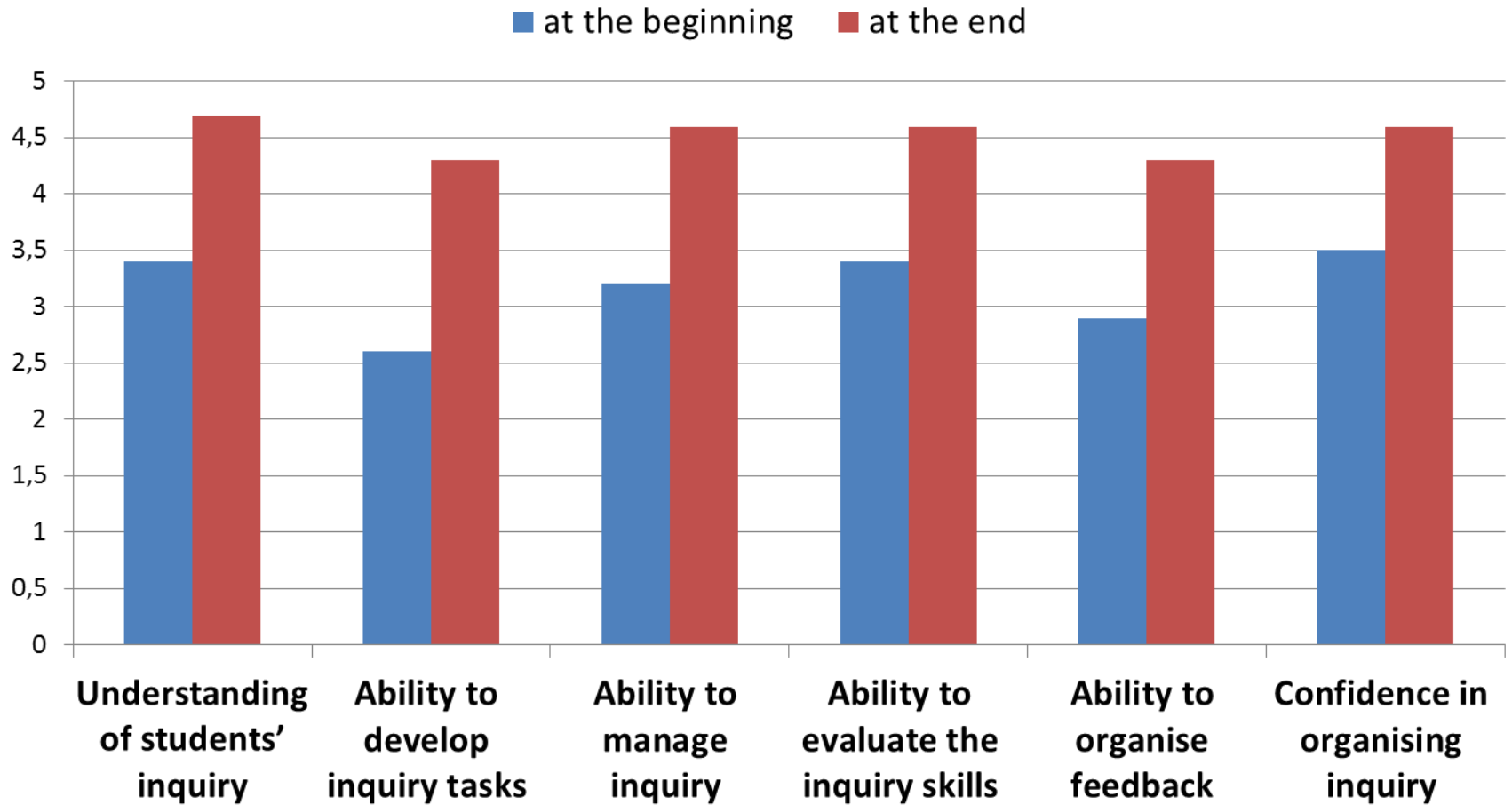
The structure of a learning team session



Teacher's benefits from the learning team (B group, 2012/2013)



Teacher's benefits from the learning team



Improvement of student scientific inquiry skills as a result of teacher personal professional performance research

| Teacher | A | B | C | D | E | F | G | L | M | N |
|--|----|----|----|----|----|----|----|----|----|----|
| Number of students | 21 | 21 | 24 | 24 | 18 | 18 | 24 | 6 | 23 | 21 |
| Average performance at the beginning % | 33 | 45 | 46 | 29 | 44 | 31 | 27 | 33 | 30 | 40 |
| Level of acquisition at the beginning | i | s | s | i | s | i | i | i | i | s |
| Average performance at the end % | 74 | 79 | 73 | 67 | 72 | 67 | 69 | 72 | 70 | 78 |
| Level of acquisition at the end | o | o | o | o | o | o | o | o | o | o |
| Improvement % | 41 | 34 | 27 | 38 | 28 | 36 | 42 | 39 | 40 | 38 |

Insufficient level (n) - performance 0 to 39%. Sufficient level (p) – performance 40% to 64%. Optimal level (o) - performance 65% to 84%.

Some examples from teacher feedback

- *My thinking was activated, there were many instances that I had never considered more deeply.*
- *My approach to teaching-learning changed.*
- *I feel the support from colleagues to my ideas.*
- *Student attitude toward the subject has changed – all are working, making efforts, also actively attending consultations after classes.*

Chemistry teachers on impact of different factors on research of professional performance participating in the learning team

| Most helpful factors in research of my performance | Percent of teachers evaluating the statement with 4 and 5 according to 5 level Likert scale |
|--|---|
| Support and ideas by other group participants | 90 |
| Group leader | 96 |
| My individual performance at school | 98 |
| Additional literature of interest on the topic | 45 |
| Possibility to exercise thinking during session and discuss important issues | 100 |
| Electronic communication with the group leader | 65 |

Conclusions

1. The teacher learning team model, which is based on teacher action research, is a successful teacher professional development form for improvement of teaching inquiry. However, the challenge for this CPD activity was that both the session leader and teachers were learners at the same time.



2. Teachers work on action research in the learning team facilitates improvement of their inquiry teaching practice:

The following teacher skills were improved:

- skills to organize student scientific inquiry;
- skills to analyze their personal performance;
- skills to reflect on their personal performance;
- skills to collaborate with colleagues from the group.

A tendency towards student progress improvement and positive attitude to inquiry was observed.

3. Teachers gave positive feedback about their participation in the learning team. They noted personal gains related to organization of student scientific inquiry, as well as changes in their thinking and approach to the learning process. Work in the learning team encouraged positive emotions, assurance and sense of security about their performance toward improvement of inquiry based learning.



4. Research of professional performance, while participating in the learning team, is reinforced by the following factors: exercise thinking and share important issues, individual work at school, colleagues' support and the team leader, who has a special role in the organization of successful work of the learning team.



Thanks for your attention!

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