



Chemistry teachers' professional learning models: experience from Latvia

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Ecobalt



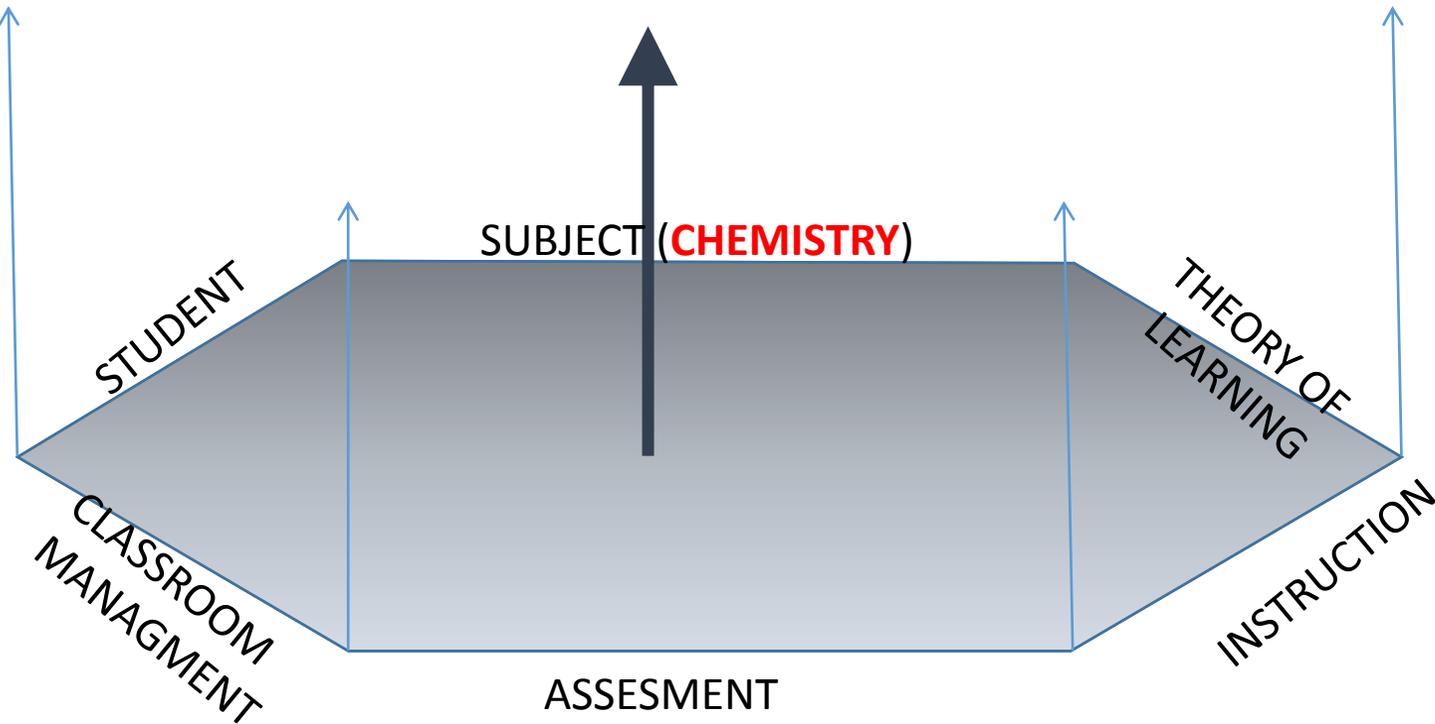
Background

The implementation of reforms in Science and Math education in Latvia 2005- 2011;

The Center for Science and Math education
University of Latvia; from the end of 2011

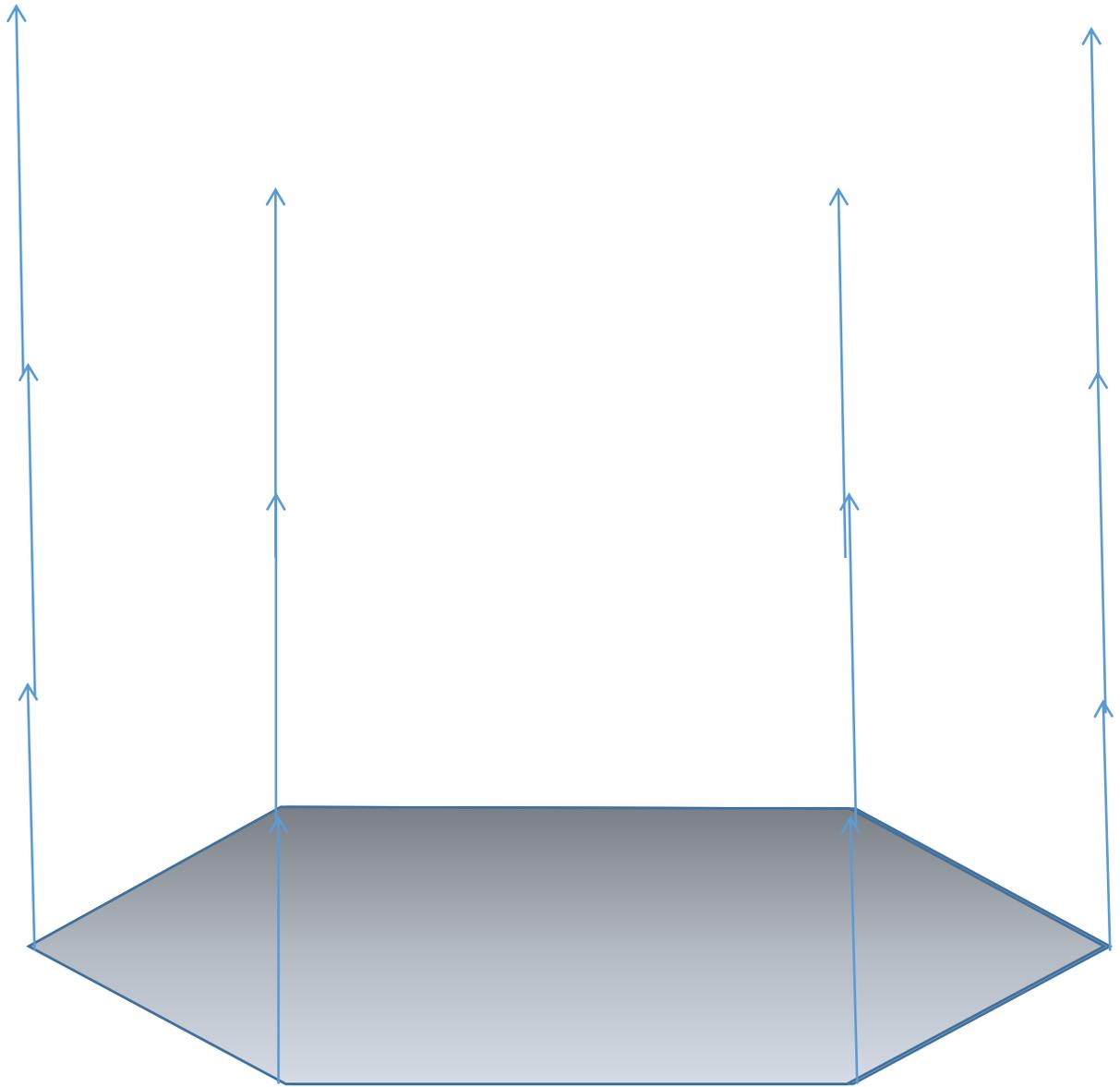
The observations of lessons (experts) show as the gaps to cross.

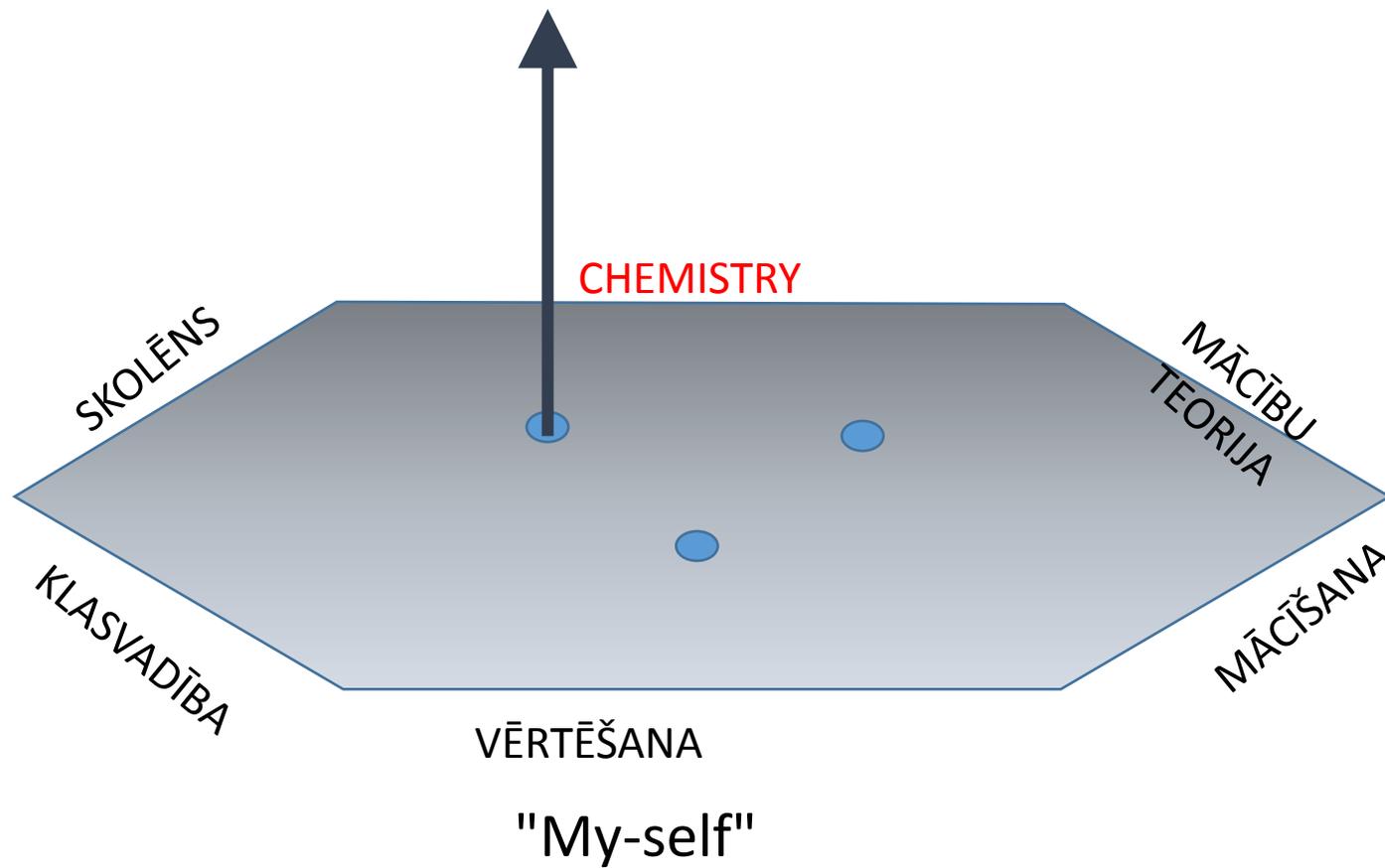
What is helpful to become a master?



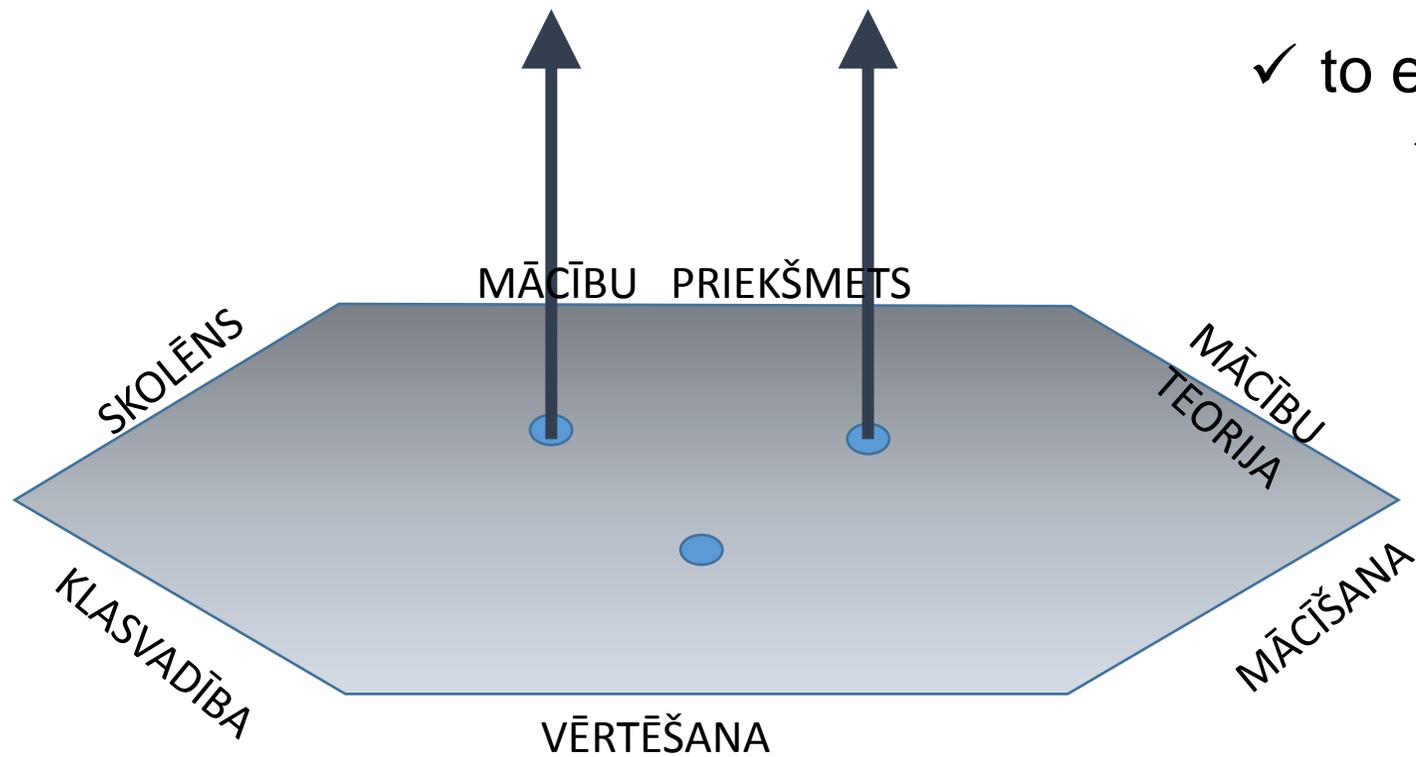
"I know – I do"

Expert
Professional
Basic
Novice





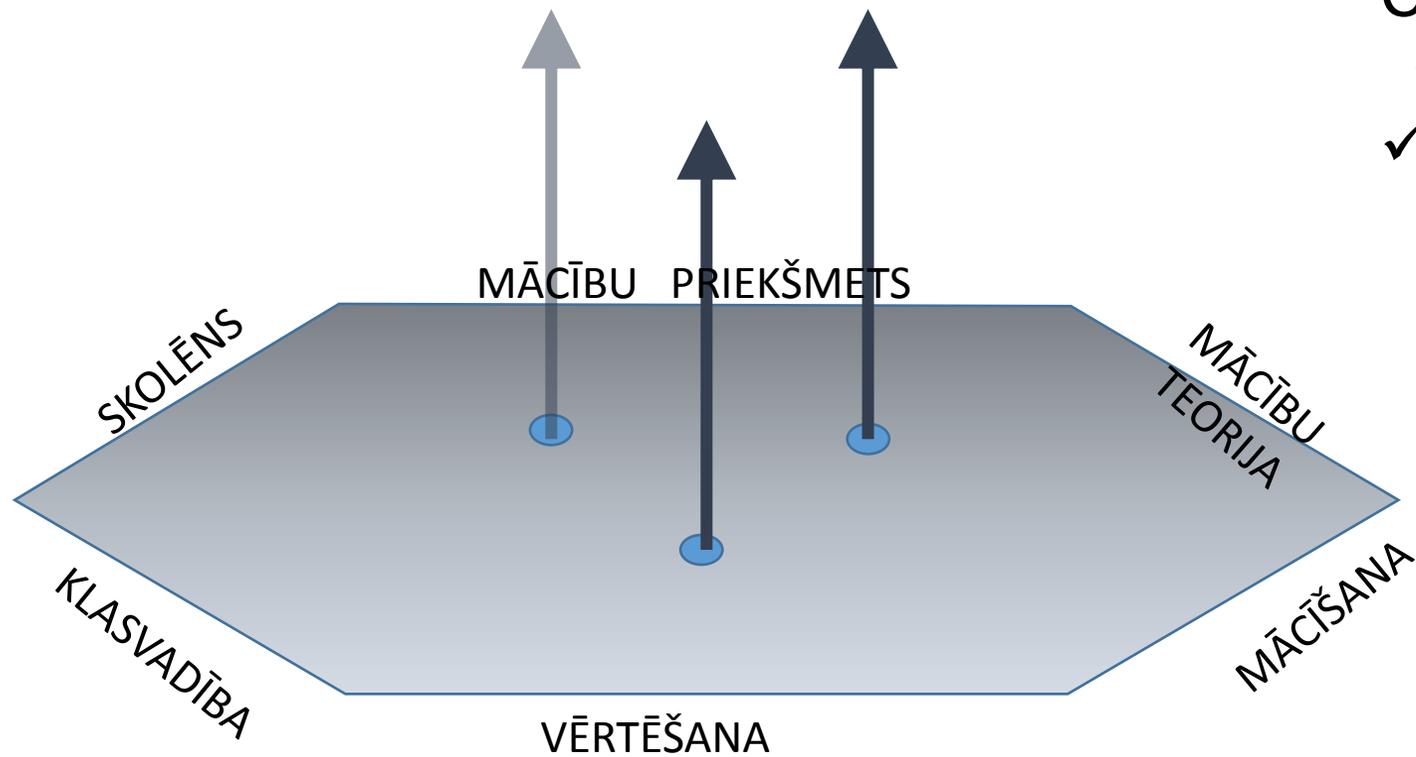
- ✓ abilities
- ✓ commitment
- ✓ values



“Professional GROWTH”

I learn:

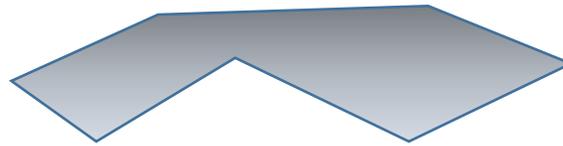
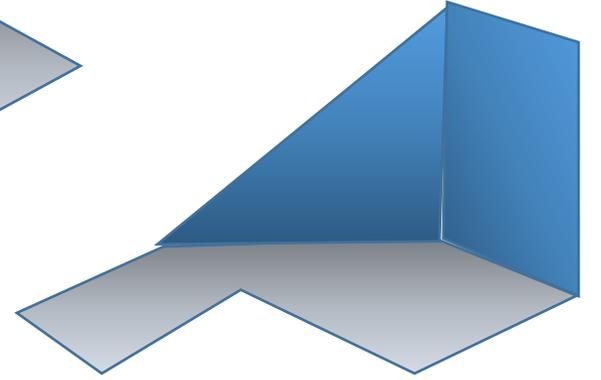
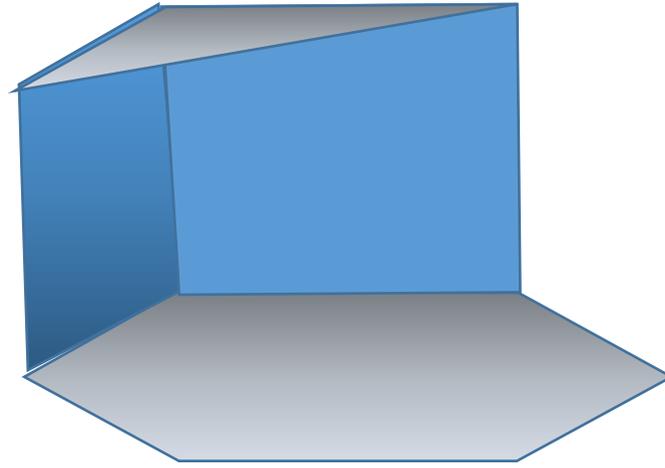
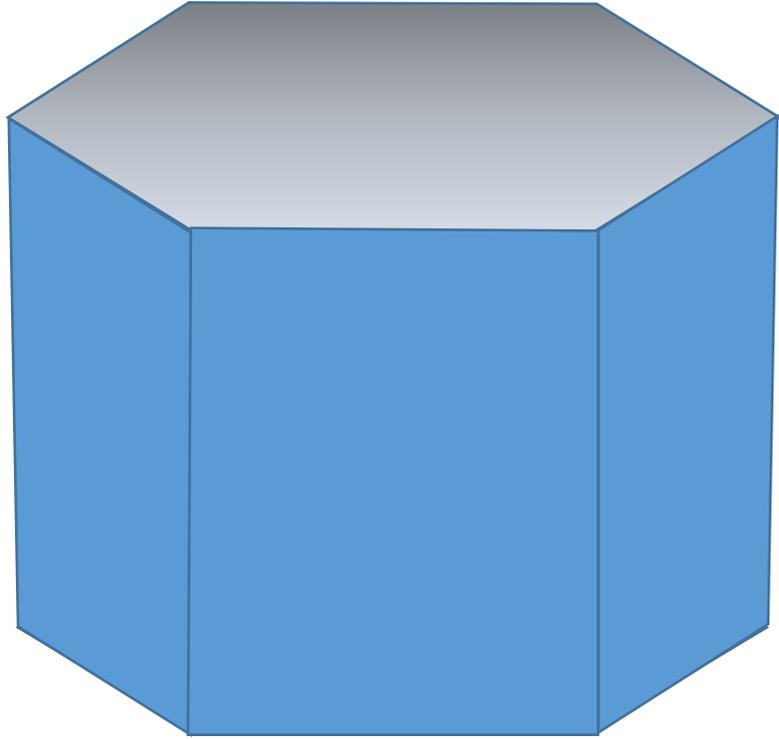
- ✓ to evaluate my work,
- ✓ to reflect,
- ✓ ...



“Collaboration”

Collaboration:

- ✓ students,
- ✓ colleagues,
- ✓ parents?
- ✓ ...



GAPS TO CROSS?

The gaps to cross

the gaps between:

- expectations for the education and historical background we have in our education systems;
- what teachers are doing in the classroom and what they think they do
(data - observing of lessons and discussions with teachers after lessons)

Teachers

*very strong need to improve reflection skills and
different teaching techniks*

(2011 oct, teacher needs questioniere)

How to develop the new model for TT?

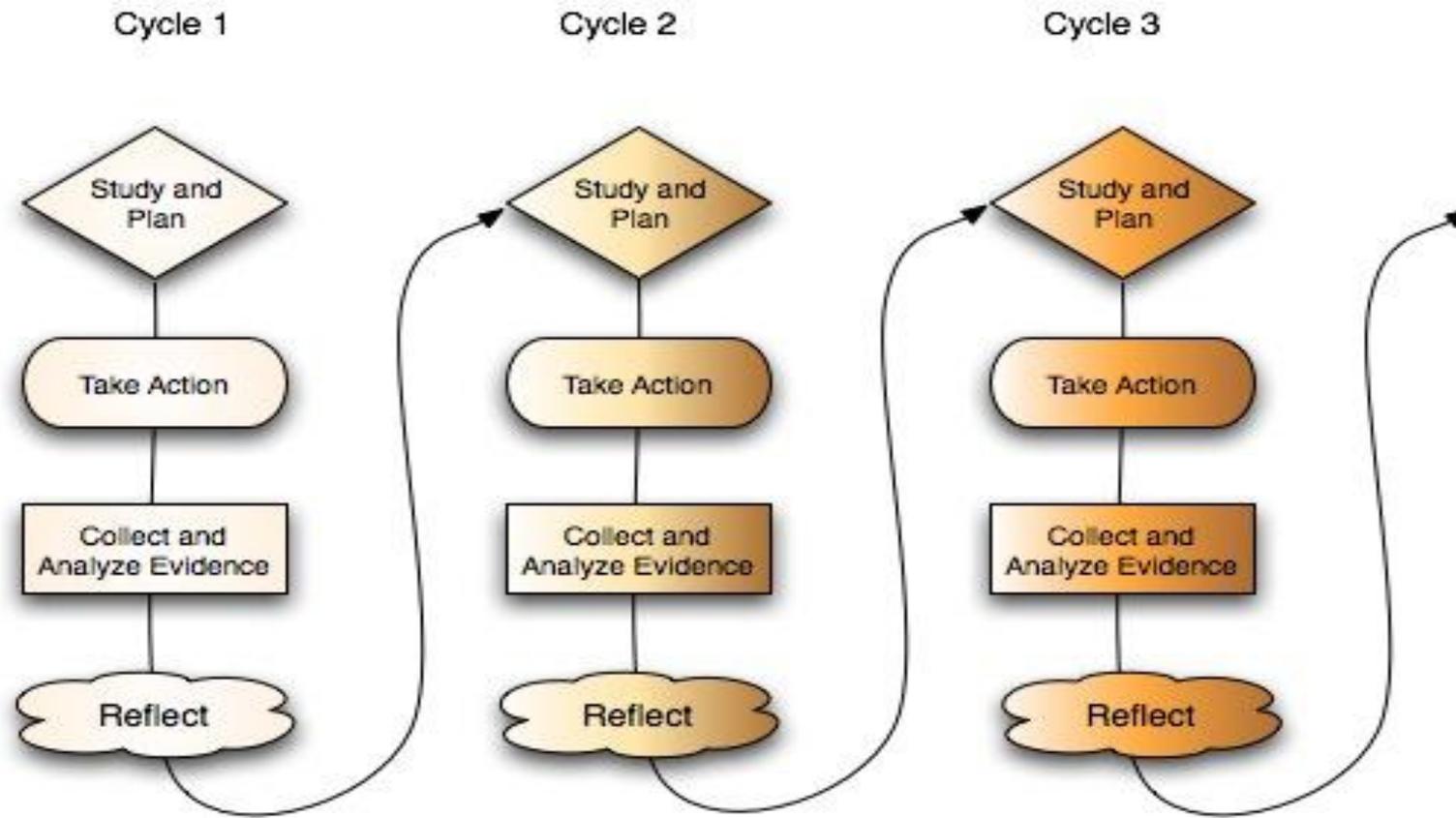
From literature

Well developed teamwork improves the quality of practices as teachers work and learn from each other (Fulan, 2011)

Very little teacher training takes place in the teachers own classroom, the place where it would be precise and relevant enough to be most effective» (Barber, Mourshed, 2007, 27)

... like a spiral of selfcontained cycles: planning a change, acting and observing... reflecting ...

/Kemmis R, Mc Taggart K., 2000/



Progressive Problem Solving with Action Research

<http://cadres.pepperdine.edu/ccar/define.html>

Criteria for teachers' professional learning model

- is based on real-life school (classroom) practice
- where teachers learn by collaboration and experience exchange
- where teachers feel their colleagues' support
- where teachers can learn how to analyse and reflect

Teachers' CPD

- Workshops
- Seminars
- On- line workshops
(Moodle)
- Conferences
- **Action research groups**
- **Networking**
**(based on school practice - jointly
observed lessons)**

- is based on real-life school practice when teachers learn particular methods, ideas, etc. from each other,
- - where teachers learn by collaboration and experience exchange,
- - where teachers feel their colleagues' support,
- - where teachers can learn how to reflect,
- - that is coordinated but not hierarchical,
- - where the activities are regularly performed





Benefits	Average result on a 5 point Likert scale	
	prior	final
Understanding of scientific inquiry	3.4	4.7
Ability to develop tasks and assignments	2.6	4.3
Ability to manage the students' scientific inquiry during a class	3.2	4.6
Ability to assess the scientific inquiry skills of students	3.4	4.6
Ability to give feedback about the students' inquiry	2.9	4.3
Confidence in organising students' scientific inquiry	3.5	4.6
Personal skills (analysis and reflection)	3.2	4.7
Ability to reflect about team work	3.4	4.9
Ability to get proof indicative of the result/improvements	2.3	4.3
Ability to cooperate in a team	3.4	4.9

- *My thinking activated, there were many moments I had never thought about deeper.*
- *That is a good experience. I am a practical person by nature. I can implement a ready-made idea. Now I have to generate and analyse the ideas myself.*
- *In the beginning, I was very inexperienced, because I am not teaching at upper-secondary school and I do not face research much. Now I can afford more, the next year I am planning to continue with other students. I had a great incomprehension about values myself. Now I feel good, I have no doubts. etc.*

Team leader about teachers' professional progress

At the beginning of the third session the teachers opened up; they actively asked questions, shared ideas, helped each other to find solutions. Because the teachers completely immersed into the problem question the reflection time was extended. At the end it was great to see how the teachers presented their achievements at the conference.

National network of innovative experience

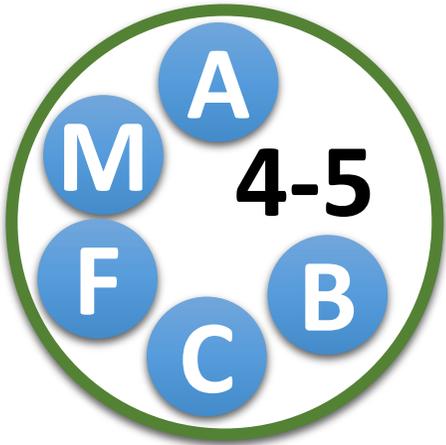
- To disseminate the innovative ideas of teaching science subjects and mathematics to other teachers
- The Center for Science and Math education UL
- National education center
- 19 municipalities
- 22 school teams (3-4 teachers and school leader)
- schools in municipality

School level

E X P E R T S



SCHOOL TEAM

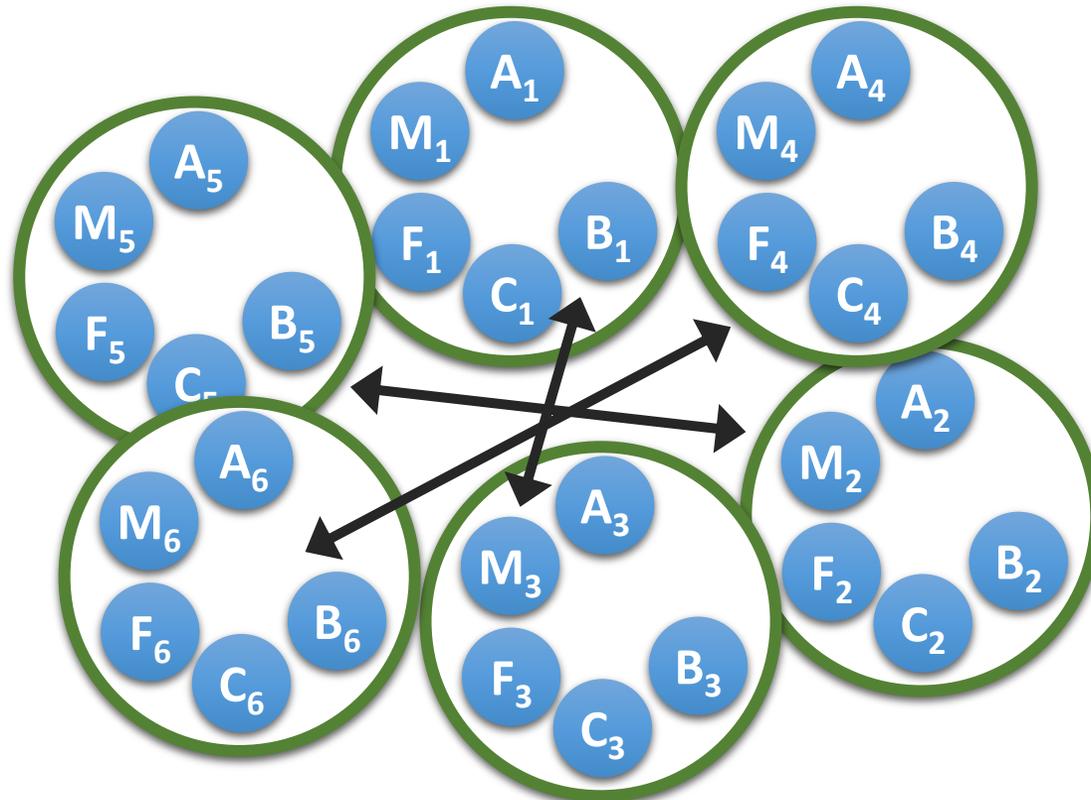


Regional level

E X P E R T S



REGIONAL GROUP OF NATIONAL NETWORK



[F₁, F₂, F₃ ... F₆]

[M₁, M₂, M₃ ... M₆]

[C₁...

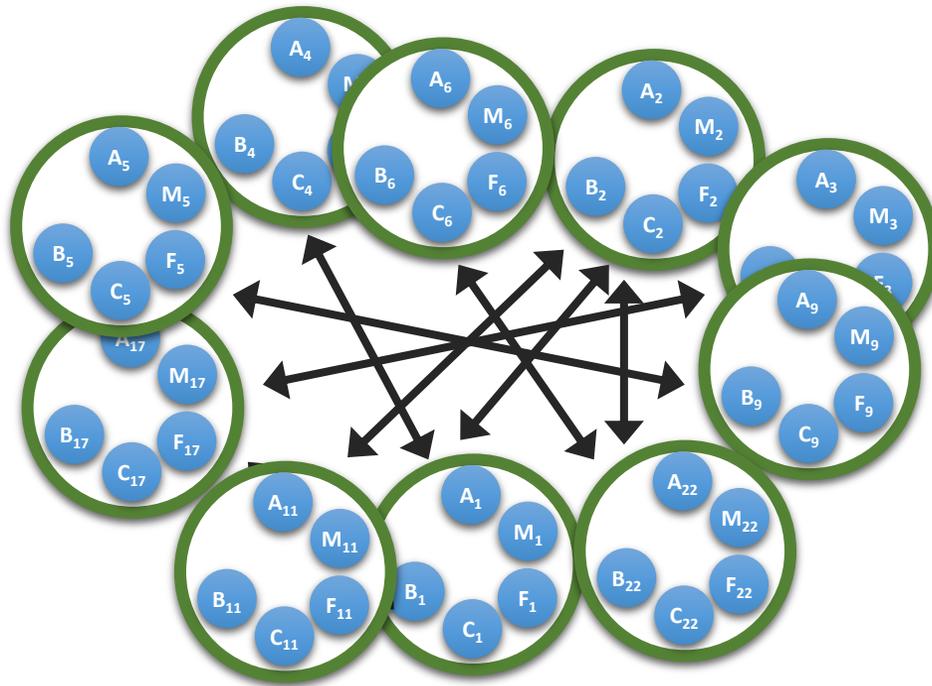
- A – school leadership
- M – Math teacher
- F - ...

Nation level

E X P E R T S



NATIONAL NETWORK



[F₁, F₂, F₃ ... F₂₂]
[M₁, M₂, M₃ ... M₂₂]
[C₁...

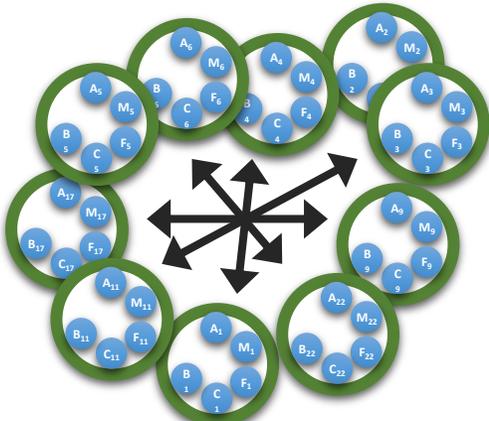
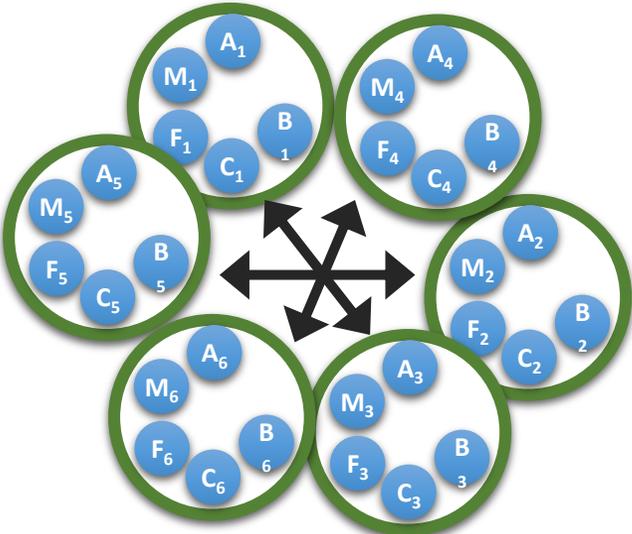
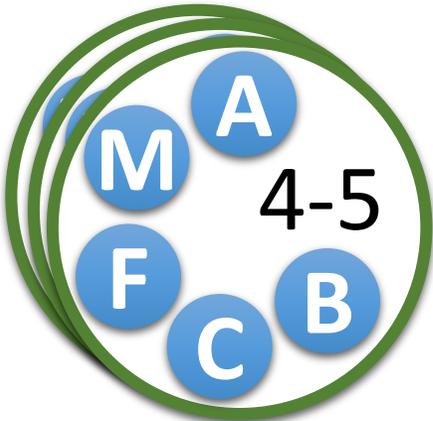
National networking

E X P E R T S

↕
SCHOOL
TEAM

↕
REGIONAL GROUP
OF NATIONAL NETWORK

↕
NATIONAL
NETWORK



School based workshop

- Teachers learn from other teachers in teachers own classroom
- Network of 5-6 schools in cooperation with experts
- Team from the school
- Observing and leading lessons
- Analysis and reflection about colleagues practice
- Reflection about own practice

School based workshop plan

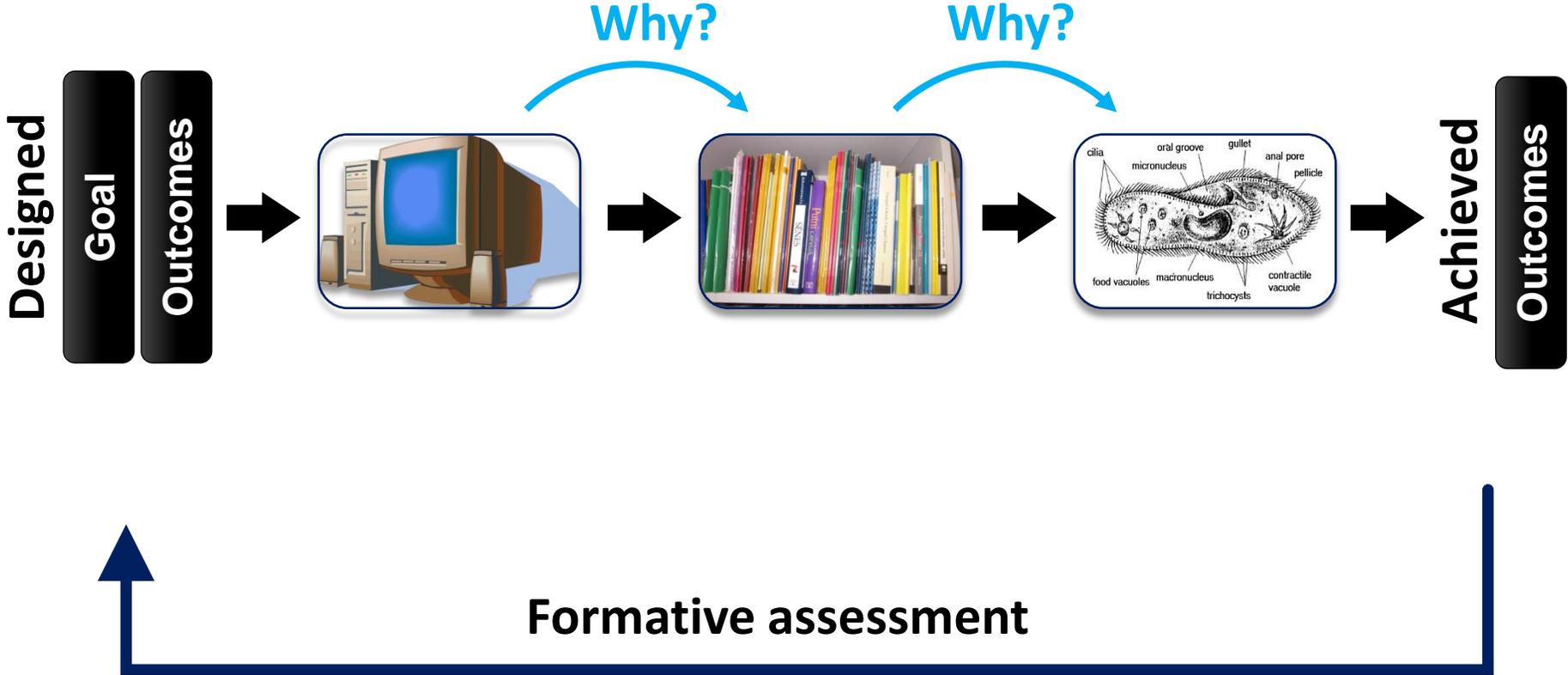
- Introduction. The goals. The procedure. The rules of work.
- Input about the focus of the workshop
- Observing of lessons (groups)
- Analysis and reflection about lessons
- Discussions
- *Analysis about analysis*
- Summary, conclusions, feedback



Lesson Observations



Effective lesson





The development of the reflection skills

based on idea on multiple activity cycle
performed during joint lesson analyses

Observe – reflect – write – discuss

During every workshop and cycle of workshops

Research question

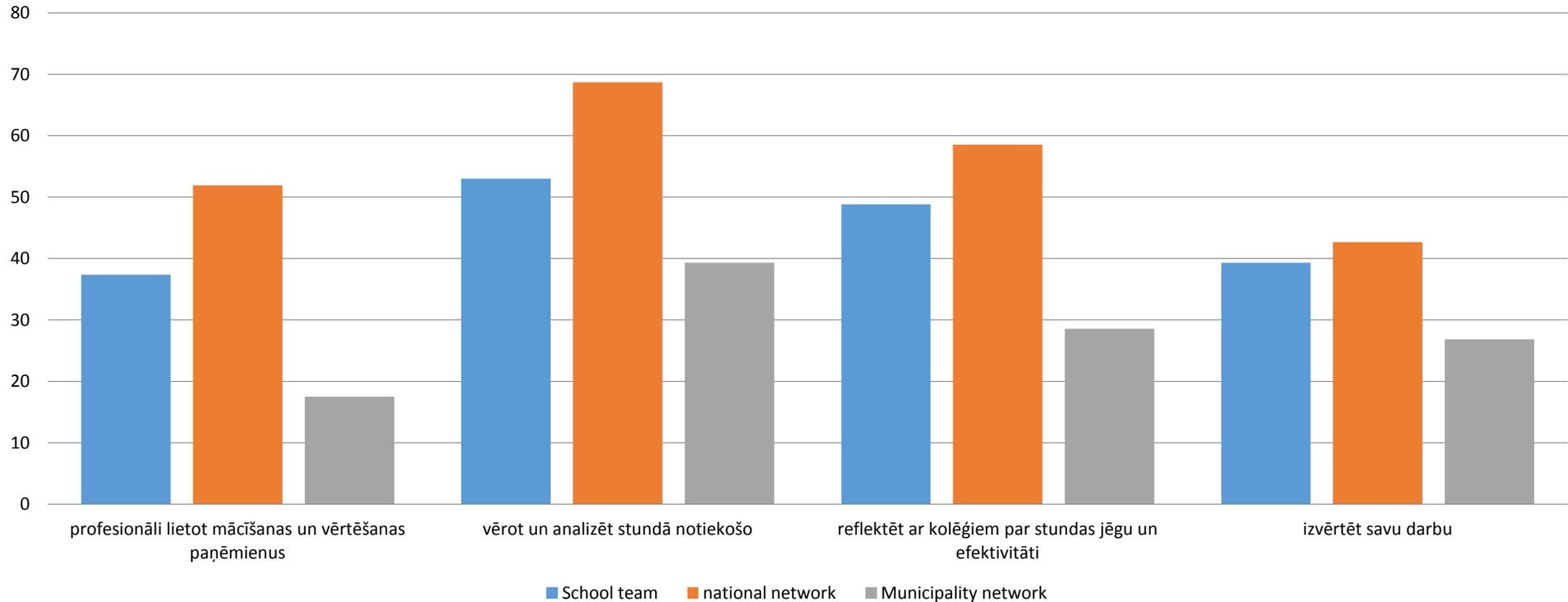
Does the implemented teachers' professional learning model facilitate development of teachers' reflection skills?

Research methods

- Teachers needs questioniere (92 respondents, 2011, PROFILES)
- Obersving of lessons (experts)
- Teachers questioniere (2012; 74 respondents, Likert scale 1-5)
- Teachers questioniere (2013; 85 respondents)
- Analysis of teachers feedback
- Experts focus group discussions

Results

In collaboration with colleagues I improve my skills (5- competely agree, 0-5)
2013, 85 respondents



From teachers feedback

What is the sense of getting so detailed?

We ran out of time!

It is all the same over and over again, it is getting boring and aren't we focusing on the same things too much?

We had no time to discuss everything we wanted!

- I've gained a skill to critically evaluate and analyse both the lessons conducted by myself and my colleagues, observe the positive and base on that.*
- I learnt to distinguish between what I really know and can and what I appear (I believe) to know.*
- Now I understand the importance of teachers' mutual cooperation at school. Teachers must not work alone, teaching is a teamwork.*

Experts: there are three levels

- To take particular elements from observed lessons and use them 1:1 in a similar situation
- Advance to seeking answers to the questions: what is happening, how and why it is happening in this lesson and how it incorporate in my practice
- Perform independently and analyse the effect of the implemented changes on their performance

Teachers gains

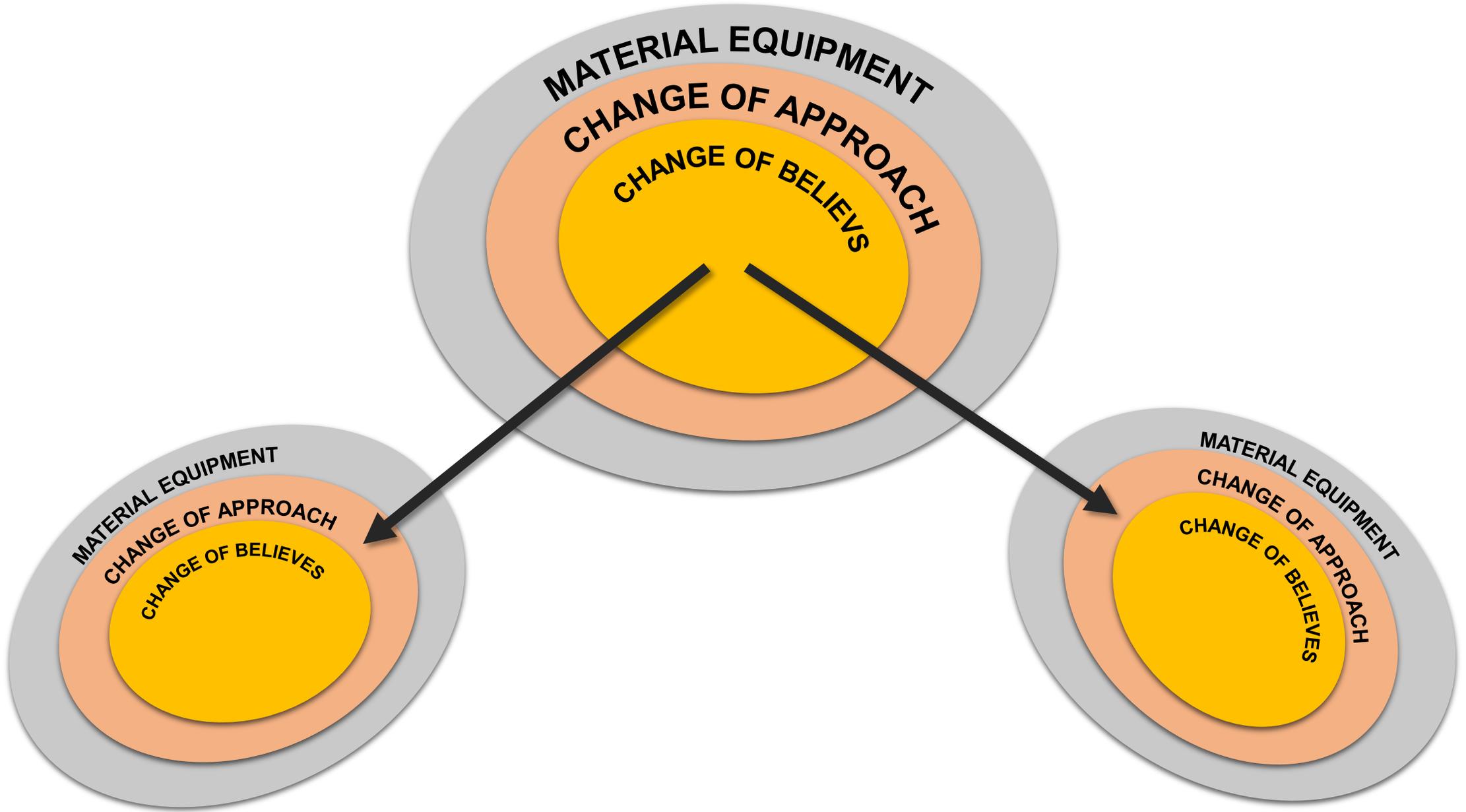
Solving of his/her **own** problem; analysing **own** work...based on evidence in their classroom

Improvement of skills – reflection, doing research in classroom - having the evidence ...

Colaboration and support in the group

Limitations

- Experienced and enthusiastic teachers
- Trust between teachers; teachers and experts
- Support from school leadership
- Compulsory – voluntary



References

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