

Report on the Results gathered from the Evaluation Questionnaire for Science Teachers (RO)

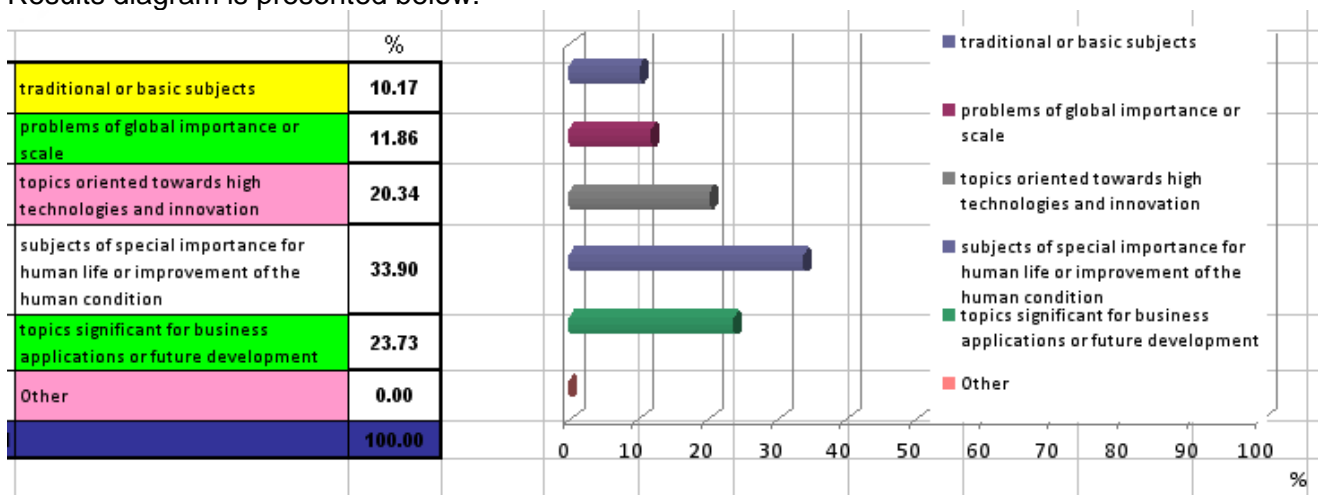
Number of questioned Science teachers: 35 – lower and upper secondary school Science teachers (Chemistry, Physics and Biology) – May/June 2011.

Questionnaire data processed by: Laura Monica GORGHIU and Gabriel GORGHIU (Valahia University Targoviste, Romania) - June/July 2011.

Question no. 1:

- Which kind of topics in Science education would you consider to be more appealing for students?

Results diagram is presented below:

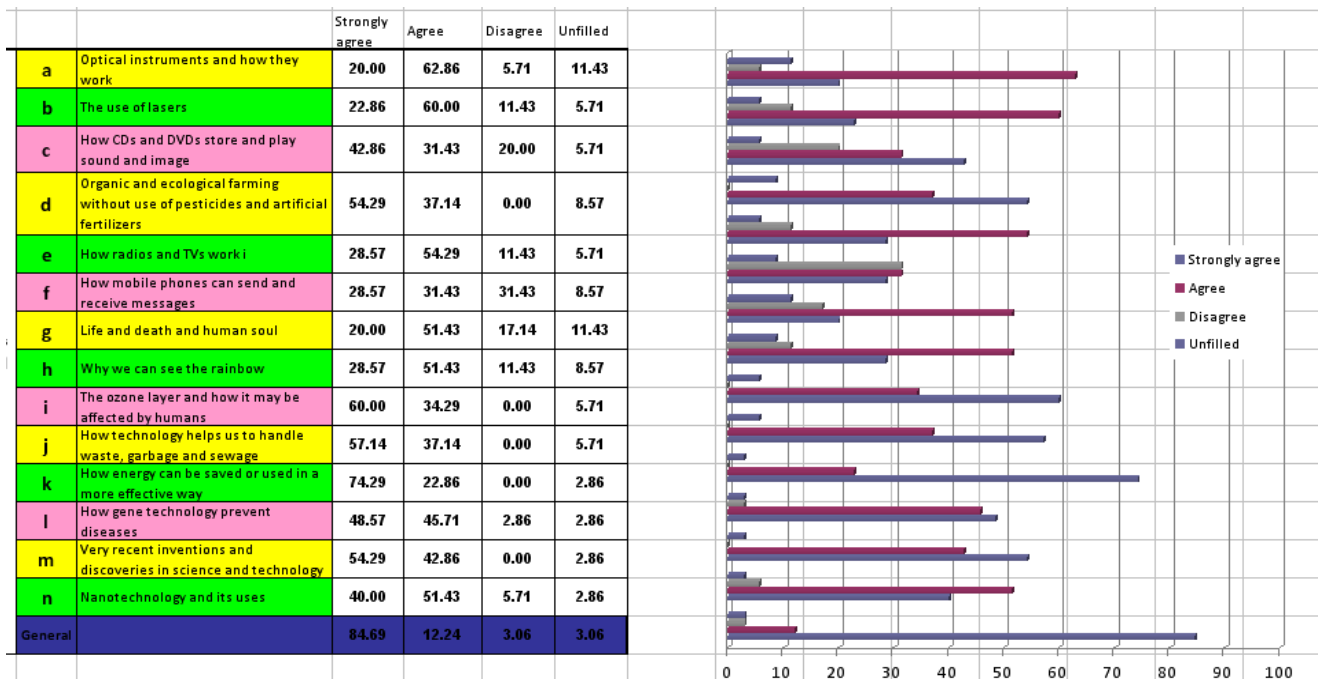


- 33.90% of Science teachers consider that subjects related to special importance for human life or subjects related to the improvement of the human condition are more appealing for students.
- just 10.17% and 11.86% of Science teachers consider that traditional / basic subjects and also problems of global importance or scale are appealing for students.

Question no. 2:

- Which of the extracurricular topics should be integrated with Science topics?

Results diagram is presented below:

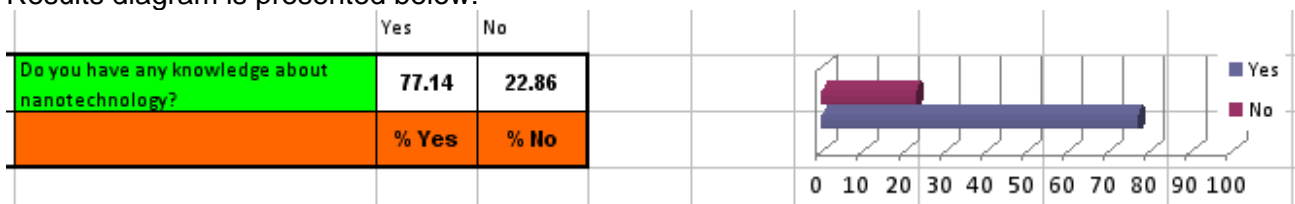


- 74.29% of Science teachers strongly agree that topics related to how energy can be saved or used in a more effective way should be integrated with Science topics.
- also 60.00% of Science teachers strongly agree that topics related to the ozone layer and how it may be affected by humans should be integrated with Science topics.
- just 20.00% of Science teachers strongly agree that optical instruments and how they work and also life, death and human soul should be integrated with Science topics.

Question no. 3a:

- Do you have any knowledge about Nanotechnology?

Results diagram is presented below:

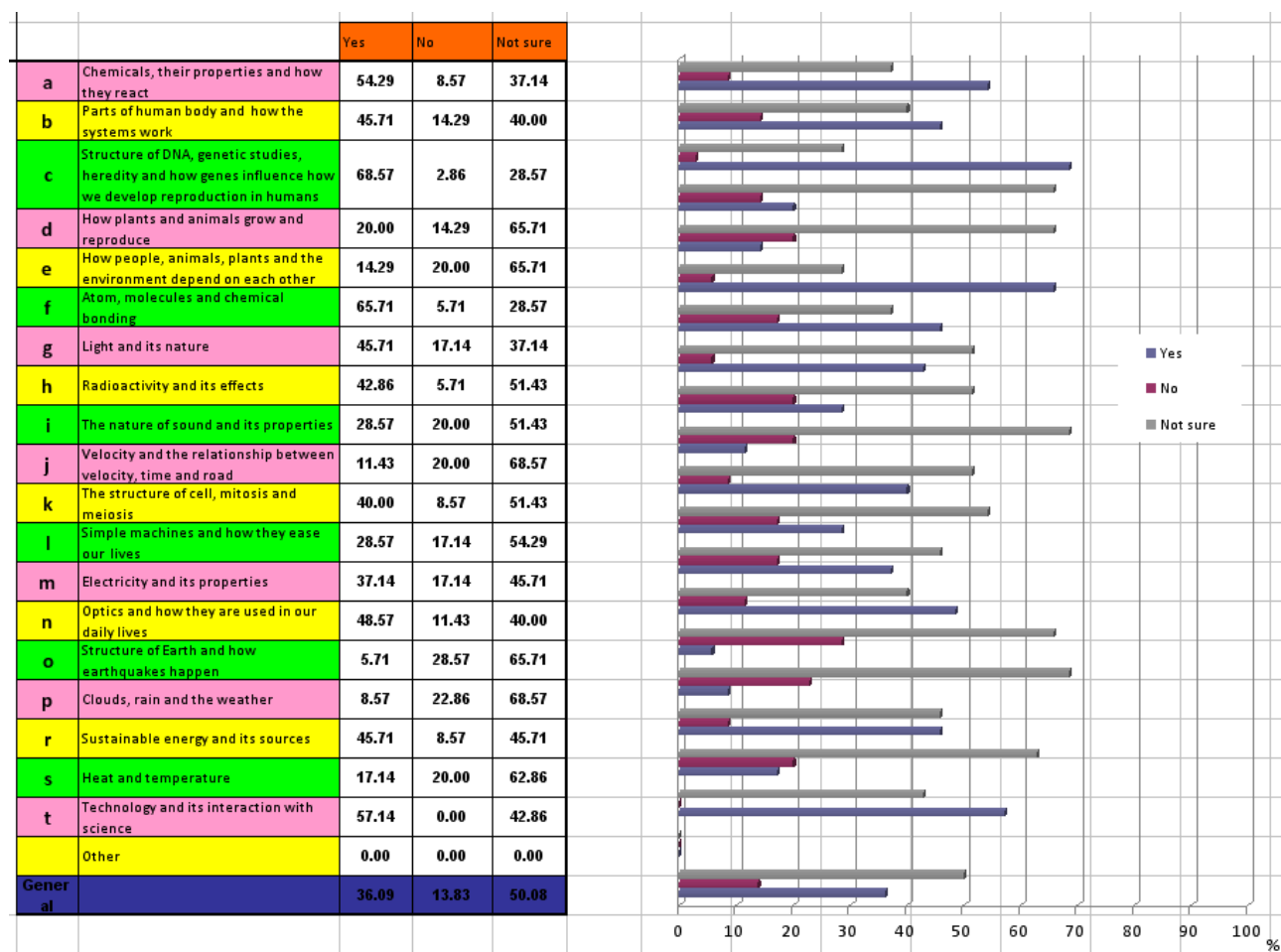


- 77.14% of Science teachers declare they have knowledge about Nanotechnology.

Question no. 3b:

- If yes, which of the curriculum topics are related with Nanotechnology?

Results diagram is presented below:



- 68.57% of Science teachers mention that structure of DNA, genetic studies, heredity and how genes influence how we develop reproduction in humans represent a topic suitable for Nanotechnology curricula.

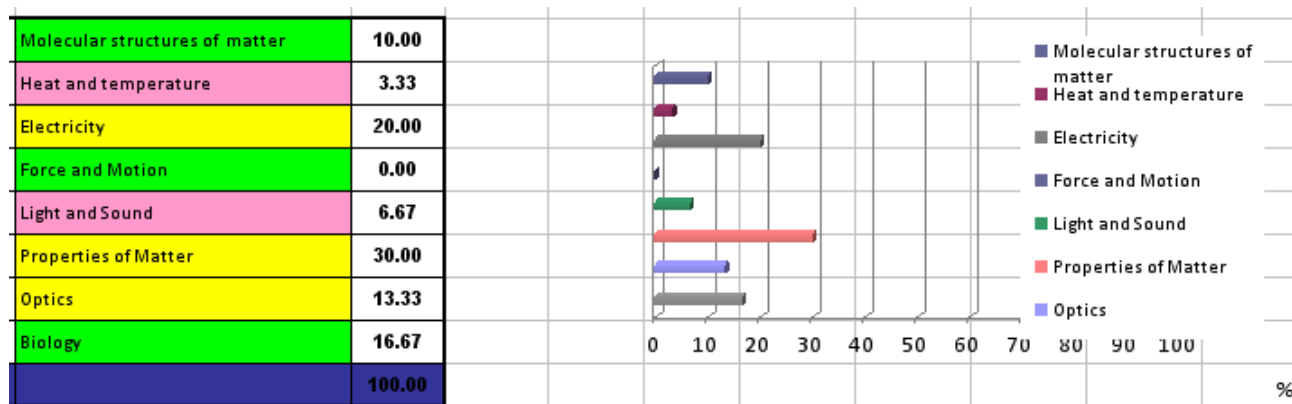
- also 65.71% of Science teachers mention that atom, molecules and chemical bonding represent a topic suitable for Nanotechnology curricula.

- just 5.71% of Science teachers mention that Structure of Earth and how earthquakes happen represent a topic suitable for Nanotechnology curricula.

Question no. 4:

- Which Science topics do you think that should be supported with experiments for a meaningful and permanent learning?

Results diagram is presented below:



- 30.00% of Science teachers consider that subjects related to Properties of Matters should be supported with experiments for a meaningful and permanent learning.
- No one of Science teachers consider that subjects related to Force and Motion should be supported with experiments for a meaningful and permanent learning.

Question no. 5:

- Science education should involve the following...

Results diagram is presented below:



- 65.71% of Science teachers strongly agree that *making pupils aware of the unlimited aspects of Science and being able to demonstrate experiments* are topics needed to be involved in Science education.

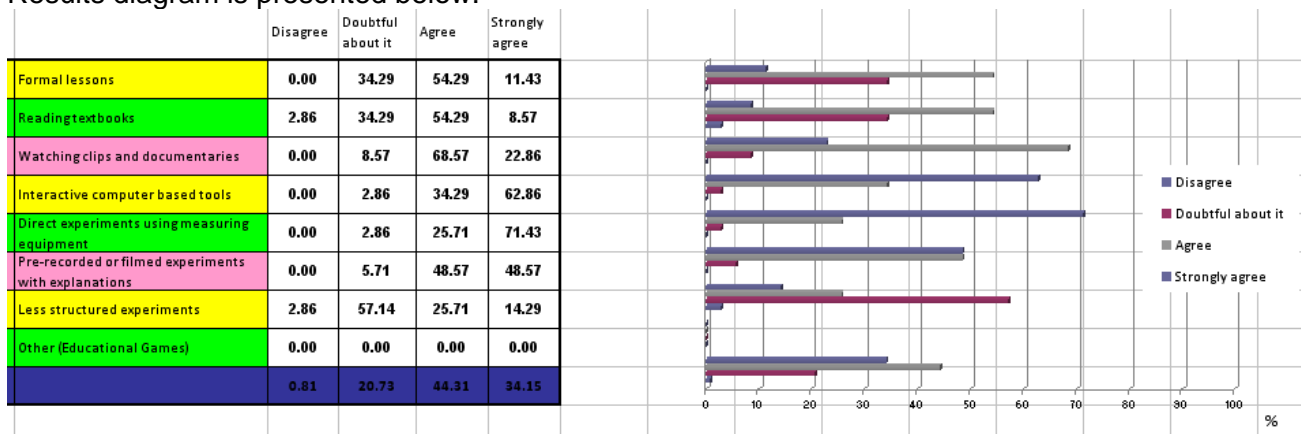
- also 62.86% of Science teachers strongly agree that *using Information Technology* is an important topic needed to be involved in Science education.

- just 28.57% of Science teachers strongly agree that *offering short reports on modern achievements in Science at the micro- and nano-level to be added to every learning unit* is an important topic needed to be involved in Science education.

Question no. 6:

- The most effective ways to teach a particular scientific topic in a modern way generally would be...

Results diagram is presented below:



- 71.43% of Science teachers strongly agree that *direct experiments using measuring equipment* represent a most effective way to teach a particular scientific topic.

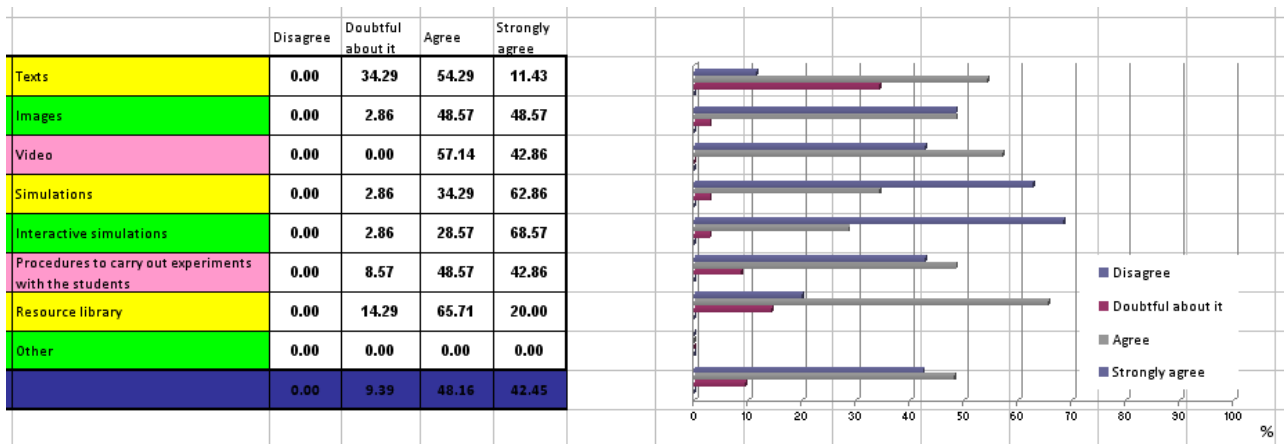
- also 62.86% of Science teachers strongly agree that using *interactive computer based tools* represent a most effective way to teach a particular scientific topic.

- just 8.57% of Science teachers strongly agree that *reading text/books* represent a most effective way to teach a particular scientific topic.

Question no. 7:

- Do you think the following tools are important for an on-line Virtual Lab?

Results diagram is presented below:

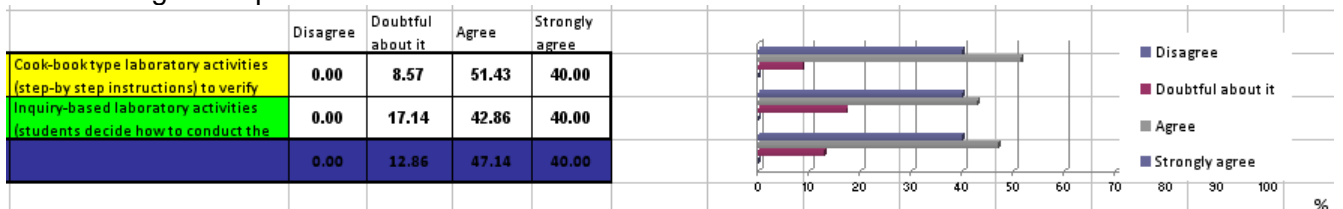


- 68.57% of Science teachers strongly agree that interactive simulations are important for an on-line Virtual Lab.
- also 62.86% of Science teachers strongly agree that simulations are important for an on-line Virtual Lab.
- just 11.43% of Science teachers strongly agree that texts are important for an on-line Virtual Lab

Question no. 8:

- Which type of Lab approach do you think is better?

Results diagram is presented below:

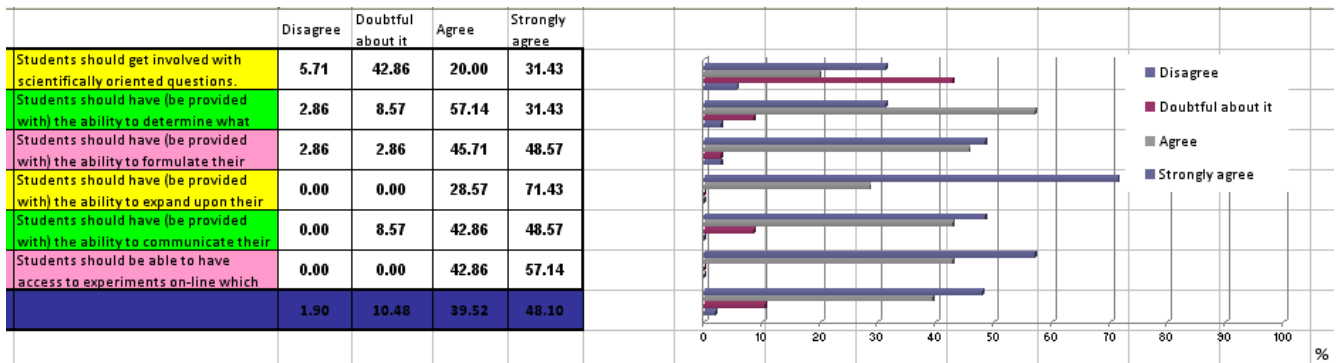


- 40.00% of Science teachers strongly agree that inquiry-based laboratory activities (where students decide how to conduct the activity, and have to explore in order to figure out how the world works) are the best approach for an on-line Virtual Lab.
- also 40.00% of Science teachers strongly agree that cook-book type laboratory activities (step-by step instructions - to verify scientific facts) represent a proper option for an on-line Virtual Lab.

Question no. 9:

- The appropriate activities in a laboratory would be...

Results diagram is presented below:

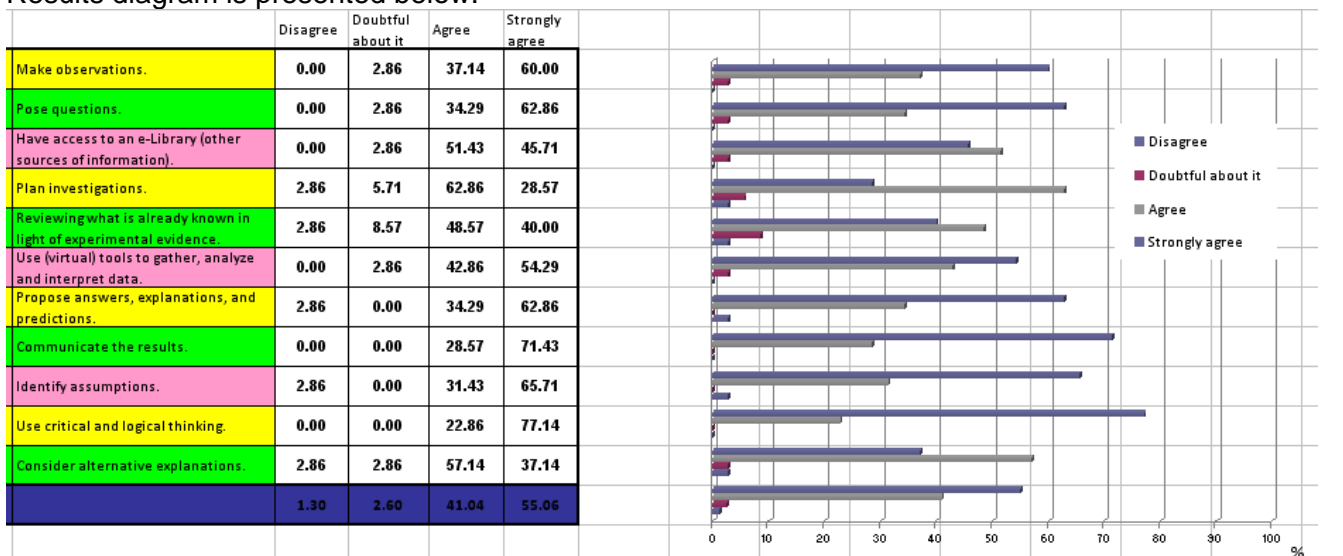


- 71.43% of Science teachers strongly agree that students should have (be provided with) the ability to expand upon their findings and relate those findings to similar situations.
- just 31.43% of Science teachers strongly agree that students should get involved with scientifically oriented questions and should have (be provided with) the ability to determine what data allows them to develop and evaluate scientific explanations.

Question no. 10:

- If you were to create your own laboratory, the students should be able to...

Results diagram is presented below:

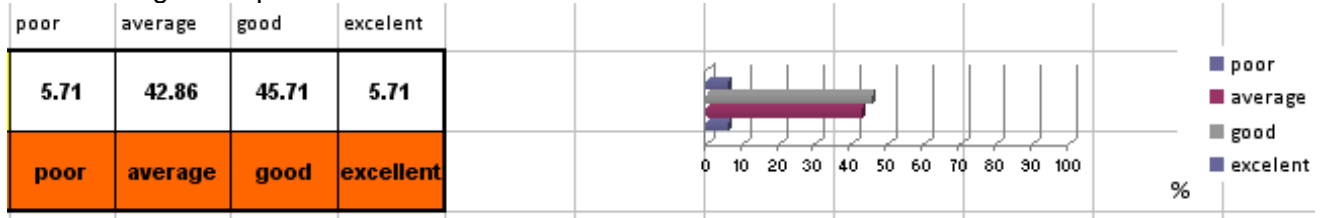


- 77.14% of Science teachers strongly agree that students should be able to use critical and logical thinking during lab activities.
- also 71.43% of Science teachers strongly agree that students should be able to communicate the experimental results during lab activities.
- just 28.57% of Science teachers strongly agree that students should be able to plan investigations during lab activities.

Question no. 11:

- How well are you able to manage with using ICT tools for teaching Science topics?

Results diagram is presented below:

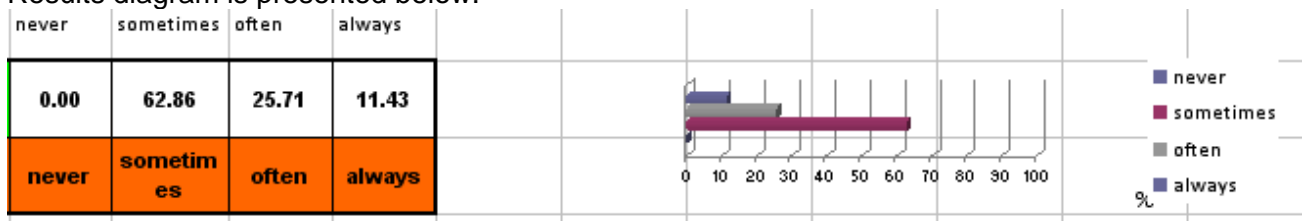


- generally, the results are balanced: 45.71% of Science teachers are good in managing on using ICT tools for teaching Science topics, 42.86% of Science are at medium level in managing on using ICT tools for teaching Science topics.
- at the same time, 5.71% of Science teachers have - on the one hand - poor expertise and - on the other hand - excellent expertise in managing on using ICT tools for teaching Science topics.

Question no. 12:

- To what extent do you implement ready-made ICT tools for teaching Science topics?

Results diagram is presented below:

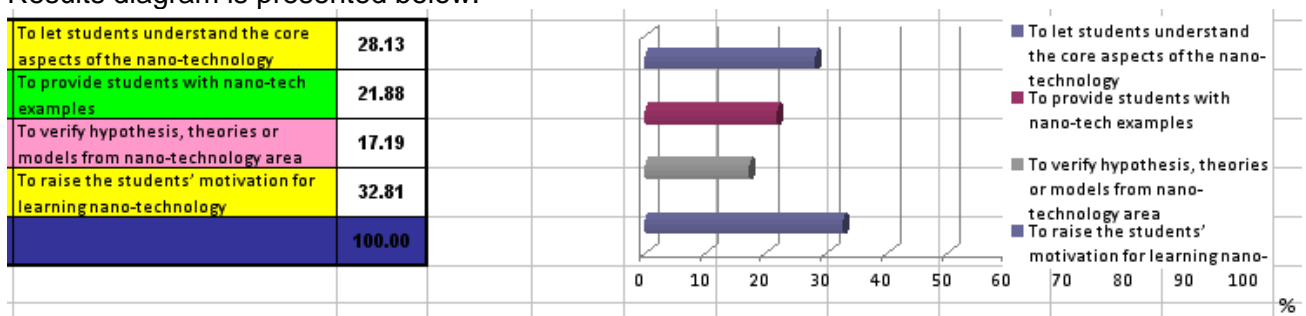


- 62.86% of Science teachers declare they implement sometimes ready-made ICT tools for teaching Science topics.

Question no. 13:

- What is the purpose of using Nano-Tech experiments in your classroom by the use of ICT?

Results diagram is presented below:

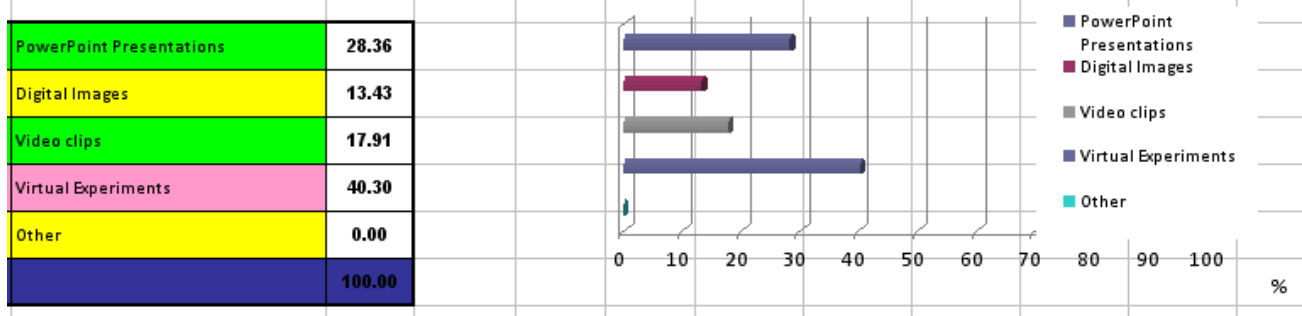


- 32.81% of Science teachers declare that raising the students' motivation for learning Nano-technology represents the purpose of using Nano-Tech experiments in the classroom by the use of ICT.
- just 17.19% of Science teachers declare that verifying hypothesis, theories or models from Nano-technology area represents the purpose of using Nano-Tech experiments in the classroom by the use of ICT.

Question no. 14:

- What kind(s) of ICT tools do you use for presenting Science/Nano-Tech experiments in your lessons?

Results diagram is presented below:

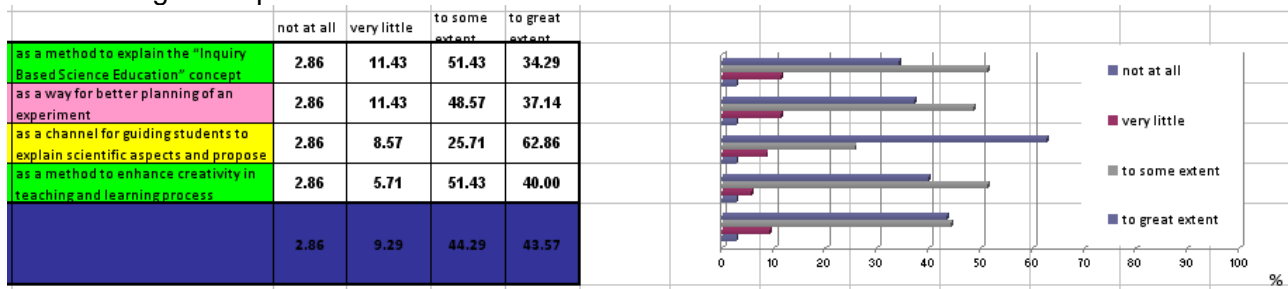


- 40.30% of Science teachers intend to use Virtual Experiments for presenting Nano-tech experiments in the lessons.
- just 13.43% of Science teachers intend to use digital images for presenting Nano-tech experiments in the lessons.

Question no. 15:

- Evaluate (on a scale from 1 to 4) how important are ICT tools for you related to the promoting of inquiry based/creative learning about Science/Nano-Tech topics.

Results diagram is presented below:



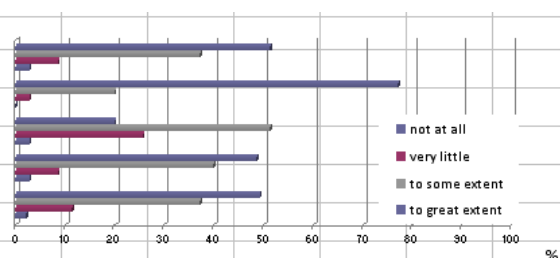
- 62.86% of Science teachers appreciate (in a great extent) that ICT tools represent a channel for guiding students to explain scientific aspects and propose hypothesis for investigation, considering the importance of ICT tools to the promoting of inquiry based/creative learning about Science/Nano-Tech topics.
- however, 40.00% of Science teachers appreciate (in a great extent) that ICT tools represent a method to enhance creativity in teaching and learning process, considering the importance of ICT tools to the promoting of inquiry based/creative learning about Science/Nano-Tech topics.

Question no. 16:

- Evaluate (on a scale from 1 to 4) how you consider collaboration using ICT for teaching Science/Nano-Tech topics.

Results diagram is presented below:

		not at all	very little	to some extent	to great extent
a	as a method to increase students' motivation	2.86	8.57	37.14	51.43
b	as a method to make learning content more attractive (by using virtual)	0.00	2.86	20.00	77.14
c	as a way to make students more emotional (by connecting them)	2.86	25.71	51.43	20.00
d	as a method to promote creativity based on collaborative work	2.86	8.57	40.00	48.57
GEN.		2.14	11.43	37.14	49.29



- 77.14% of Science teachers appreciate (in a great extent) that ICT tools represent a method to make learning content more attractive (by using virtual environments and multimedia tools), considering the role of ICT tools for teaching Science/Nano-Tech topics.

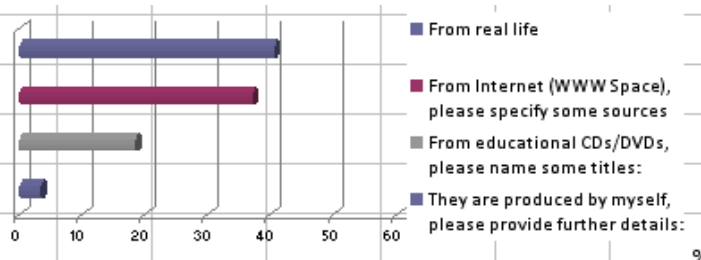
- however, 51.43% of Science teachers appreciate (in a great extent) that ICT tools represent method to increase students' motivation, considering the role of ICT tools for teaching Science/Nano-Tech topics.

Question no. 17:

- Where do you find good examples of Science experiments, appropriate to be presented in the classroom?

Results diagram is presented below:

From real life	40.68
From Internet (WWW Space), please specify some sources	37.29
From educational CDs/DVDs, please name some titles:	18.64
They are produced by myself, please provide further details:	3.39
100.00	



- 40.68% of Science teachers use examples from real life for the Nano-Tech experiments (needed to be presented in the classroom).

- however, 37.29% of Science teachers use examples for the Nano-Tech experiments (needed to be presented in the classroom) collected / downloaded from Internet (WWW space) – from various webpages: <http://www.chemcollective.org/vlab/vlab.php>, <http://www.nanotek.nu/> and <http://nanoyou.eu/>.

- just 3.39% of Science teachers use examples for the Nano-Tech experiments (needed to be presented in the classroom) produced by themselves.