

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

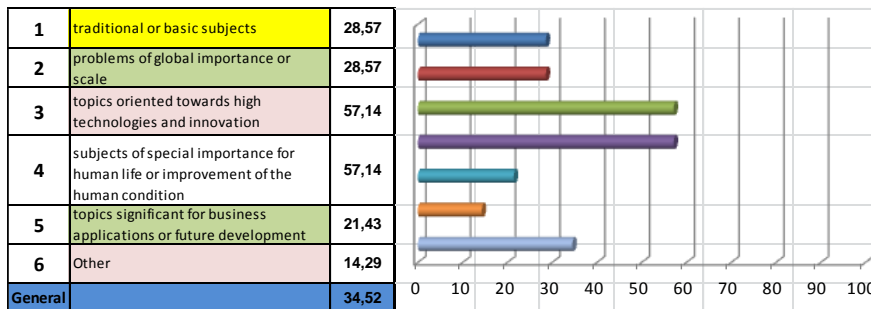
Number of questioned students: 14 - June 2011.

Questionnaire data processed by: Cafer Arıkan - Doga Schools (Turkey) – June 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:

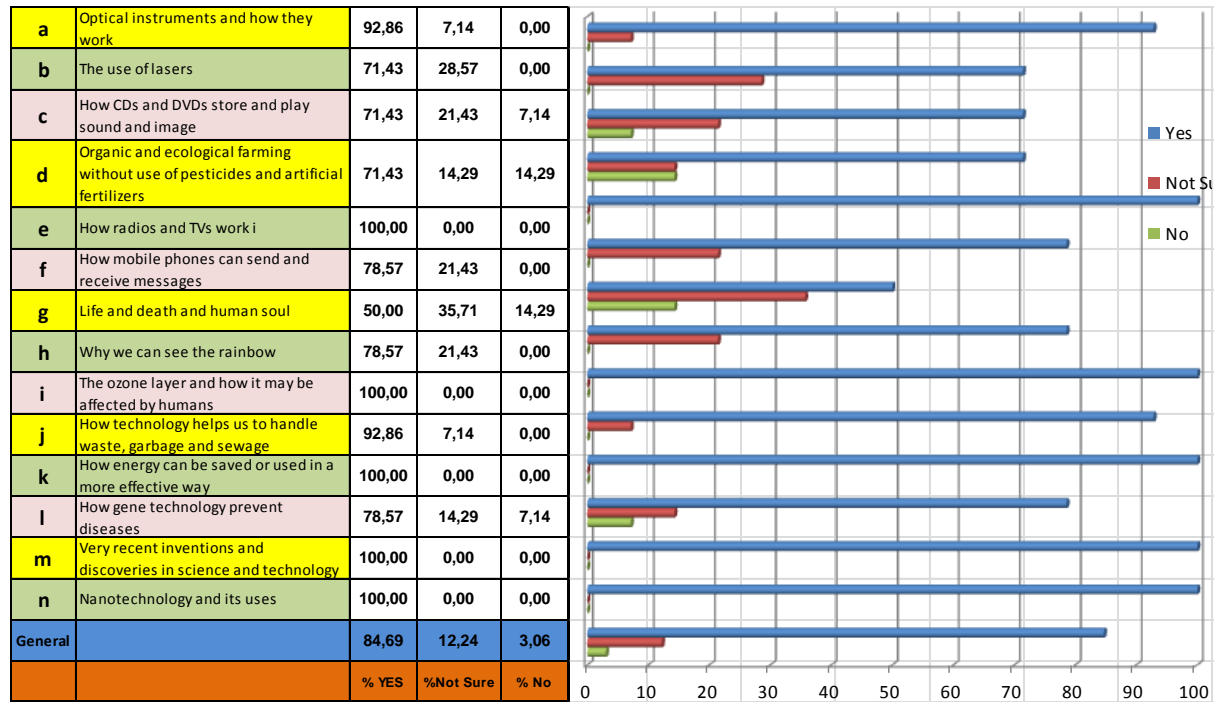


- % 57,14 of the teachers consider that topics oriented towards high technologies and innovation may be more appealing for students.
- % 57,14 of the teachers consider that subjects of special importance for human life or improvement of the human condition to be more appealing for students.

Question no. 2:

Which of the extracurricular topics should be integrated with science topics?

Results diagram is presented below:



The most important extracurricular topics that can be integrated with science topics are;

- The ozone layer and how it may be affected by humans (% 100)
- How radios and TVs work (% 100)
- How energy can be saved or used in a more effective way (% 100)
- Optical instruments and how they work (% 92,86)
- How technology helps us to handle waste, garbage and sewage (% 92,86)
- How gene technology prevent diseases (% 78,57)
- Why we can see the rainbow (% 78,57)
- How mobile phones can send and receive messages (% 78,57)
- Organic and ecological farming without use of pesticides and artificial fertilizers (% 71,43)
- How CDs and DVDs store and play sound and image (% 71,43)
- The use of lasers (% 71,43)
- Life and death and human soul (% 50)

Question no. 3a:

Do you have any knowledge about nanotechnology?

Results diagram is presented below:

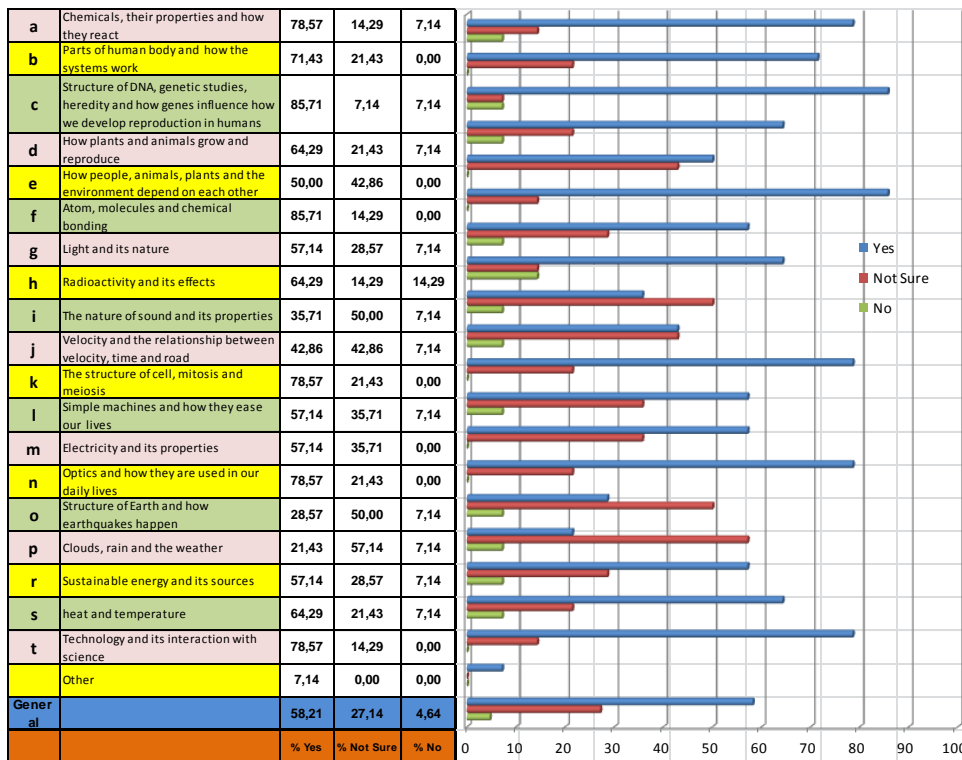
Do you have any knowledge about nanotechnology?	100,00	0,00
	% Yes	% No

- % 100 of the teachers have some knowledge about nanotechnology.

Question no. 3:

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

Results diagram is presented below:



Teachers believe that the following topics are related to nanotechnology:

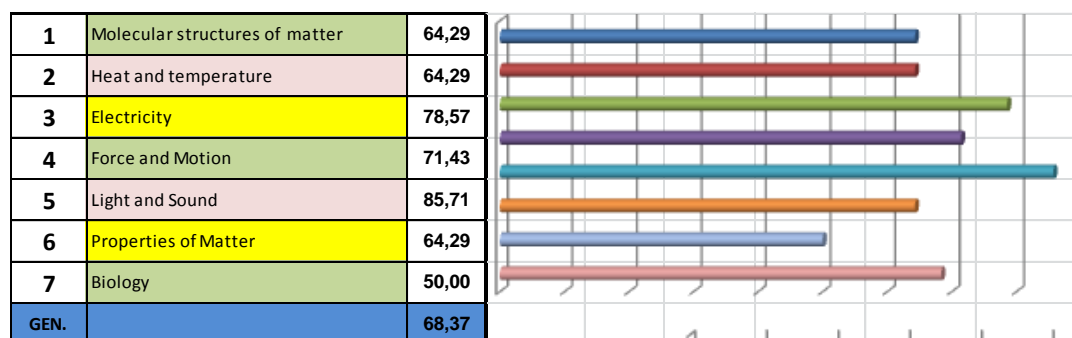
- Structure of DNA, genetic studies, heredity and how genes influence how we develop reproduction in humans (% 85,71)
- Atom, molecules and chemical bonding (% 85,71)
- The structure of cell, mitosis and meiosis (% 78,57)
- Chemicals, their properties and how they react (% 78,57)
- Optics and how they are used in our daily lives (% 78,57)
- Technology and its interaction with science (% 78,57)

- Parts of human body and how the systems work (% 71,43)
- How plants and animals grow and reproduce (% 64,29)
- Radioactivity and its effects (% 64,29)
- heat and temperature (% 64,29)
- Light and its nature (% 57,14)
- Simple machines and how they ease our lives (% 57,14)
- Electricity and its properties (% 57,14)
- Sustainable energy and its sources (% 57,14)
- How people, animals, plants and the environment depend on each other (%50)
- Other : Nanotechnology is the science that controls matter in smallest particles as atoms and molecules. For this reason, it is possible that it can be applied in every scientific area. (% 7,14)

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:



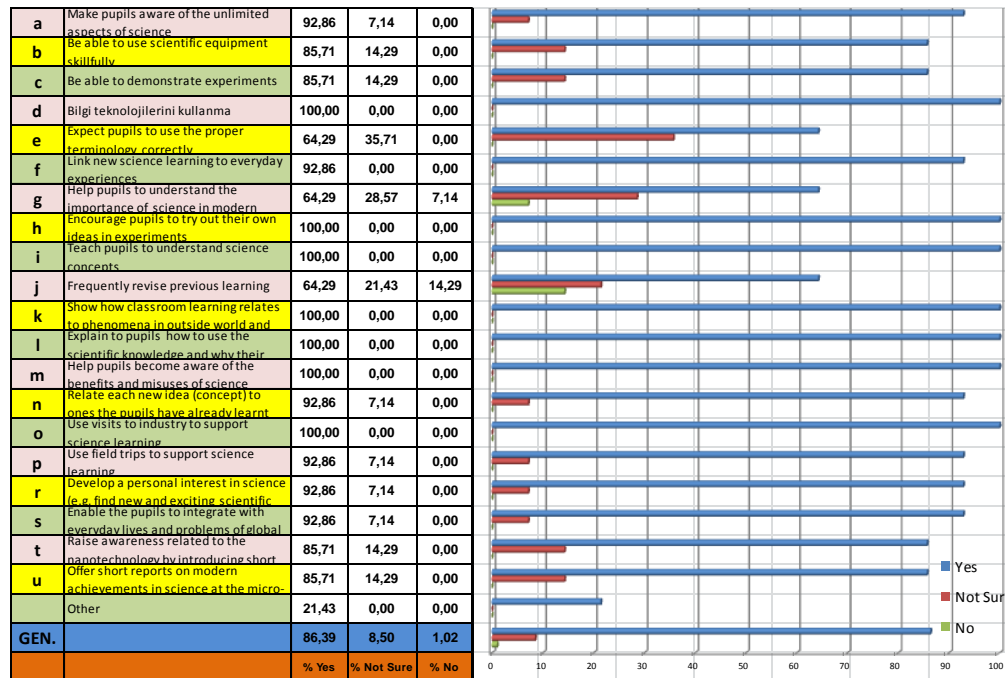
The teachers believe that the following topics should be supported with experiments:

- Light and Sound (% 85,71)
- Electricity (% 78,57)
- Force and Motion (% 71,43)
- Heat and temperature (% 64,29)
- Molecular structures of matter (% 64,29)
- Properties of Matter (% 64,29)
- Biology (% 50)

Question no. 5:

Science education should involve the following;

Results diagram is presented below:



Teachers consider that science education should involve the following:

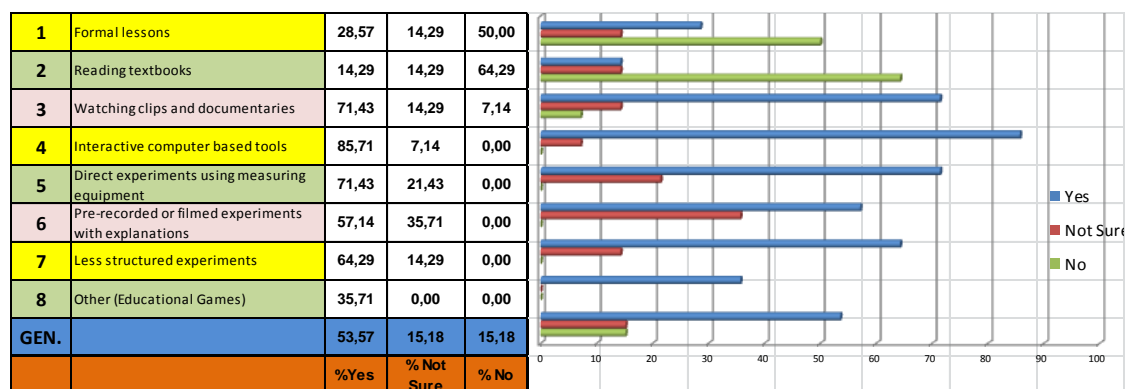
- Use the information technologies (% 100)
- Encourage pupils to try out their own ideas in experiments (% 100)
- Teach pupils to understand science concepts (% 100)
- Show how classroom learning relates to phenomena in outside world and everyday life (% 100)
- Explain to pupils how to use the scientific knowledge and why their science activity is important (% 100)
- Help pupils become aware of the benefits and misuses of science (% 100)
- Use visits to industry to support science learning (% 100)
- Make pupils aware of the unlimited aspects of science (% 92,86)
- Link new science learning to everyday experiences (% 92,86)
- Relate each new idea (concept) to ones the pupils have already learnt (% 92,86)
- Use field trips to support science learning (% 92,86)
- Develop a personal interest in science (e.g. find new and exciting scientific topics to enrich their understanding of new horizons) (% 92,86)

- Enable the pupils to integrate with everyday lives and problems of global importance, scientific/technological achievements (% 92,86)
- Be able to use scientific equipment skillfully (%85,71)
- Be able to demonstrate experiments (%85,71)
- Raise awareness related to the nanotechnology by introducing short talks at the last 10 minutes of learning unit (%85,71)
- Offer short reports on modern achievements in science at the micro- and nano-level to be added to every learning unit (%85,71)
- Expect pupils to use the proper terminology correctly (% 64,29)
- Help pupils to understand the importance of science in modern business applications (% 64,29)
- Frequently revise previous learning (% 64,29)
- Other: "The analytical way of thinking should be developed by brain storms, they shouldn't be criticized, directed and enjoined what you think is wright. "Scientific studies runs through freedom." (%21,43)

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:

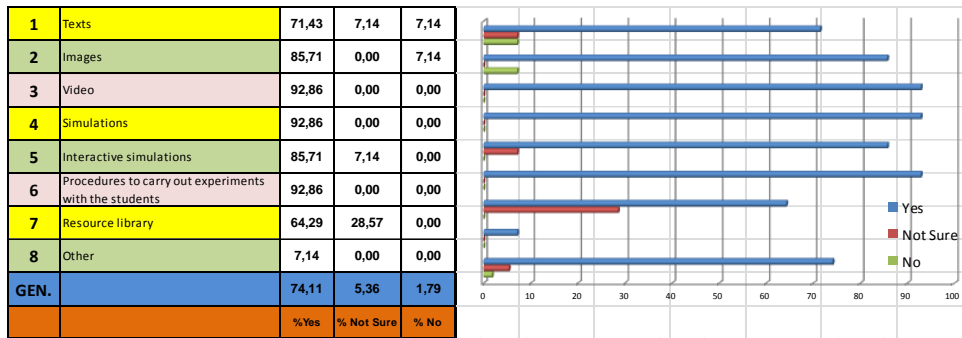


- % 86,71 of the teachers consider that interactive computer based tools are the most effective way to teach a particular scientific topic in a modern way.
- % 71,43 of the teachers consider that direct experiments using measuring equipment and also watching clips and documentaries are the most effective.
- % 64,29 of the teachers consider that less structured experiments are the most effective.
- Others (% 35,71) : Study visits to laboratories and institutions which are implementing scientific experiments, all of these ways should be supported by ethic, empathetic and modern teachers, hands-on activities, implementing educational games and inside and outside classroom activities, students should work in groups collaboratively.

Question no. 7:

Do you think the following tools are important for an online virtual lab?

Results diagram is presented below:

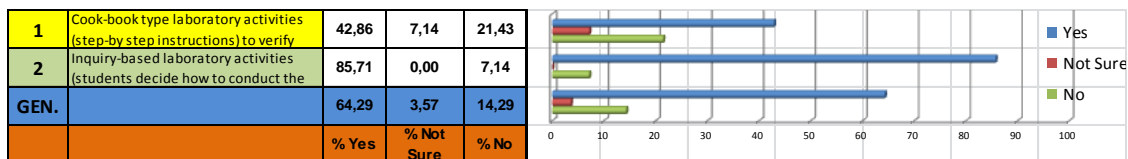


- % 92,86 of the teachers believe that videos are important for an online virtual lab while another % 92,86 believe that simulations are important.
- %85,71 of the teachers believe that images are important while another % 85,71 believe that interactive simulations are important.
- % 71,43 of the teachers believe that texts are important.
- % 64,29 of the teachers believe that resource library is important.
- Other: For the blinds and the students who have auditory intelligence the directions of the virtual lab should be audible (% 7,14)

Question no. 8:

Which type of lab approach do you think is better?

Results diagram is presented below:

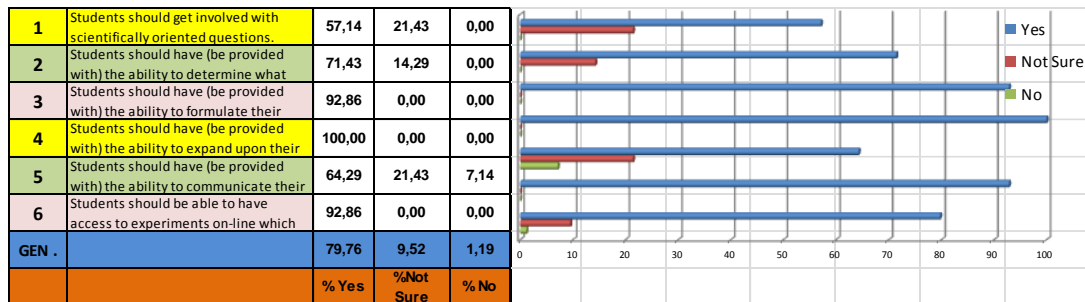


- % 85,71 of the teachers consider that inquiry-based laboratory activities (students decide how to conduct the activity, and have to explore in order to figure out how the world works) are better.

Question no. 9:

The appropriate activities in a laboratory would be;

Results diagram is presented below:



Teachers believe that the appropriate activities in a laboratory would be;

- Students should have (be provided with) the ability to expand upon their findings and relate those findings to similar situations. (% 100)
- Students should be able to have access to experiments on-line which cannot be done in a laboratory. (% 92,86)
- Students should have (be provided with) the ability to formulate their own explanations from the evidence they have obtained. (% 92,86)
- Students should have (be provided with) the ability to determine what data allows them to develop and evaluate scientific explanations. (% 71,43)
- Students should have (be provided with) the ability to communicate their experimental findings to others in class via written laboratory reports. (% 64,29)
- Students should get involved with scientifically oriented questions.(% 57,14)

Question no. 10:

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

Results diagram is presented below:



The teachers consider that if they were to create their own laboratory, the students should be able to:

- Make observations (% 100)
- Plan investigations (% 100)
- Use critical and logical thinking (% 100)
- Consider alternative explanations (% 100)
- Pose questions (% 92,86)
- Have access to an e-Library (other sources of information (% 92,86)
- Propose answers, explanations, and prediction (% 92,86)
- Reviewing what is already known in light of experimental evidence (%85,71)
- Use (virtual) tools to gather, analyse and interpret data (%85,71)
- Communicate the results (%85,71)
- Identify assumptions (%85,71)

Question no. 11:

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

Results diagram is presented below:

0,00	28,57	35,71	35,71
poor	average	good	excellent

- % 35,71 of the teachers consider themselves excellent ICT tool users for teaching science topics
- % 35,71 of the teachers consider themselves good ICT tool users 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:

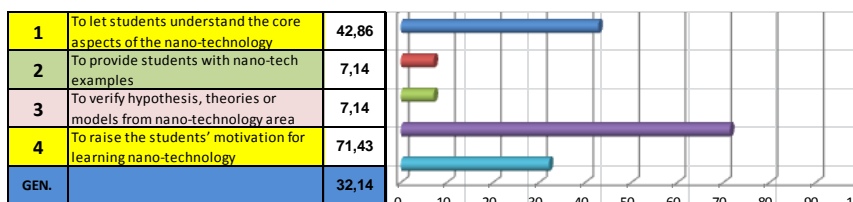
0,00	21,43	50,00	28,57
never	sometim es	often	always

- % 50 of the teachers implements ready-made ICT tools for teaching science topics often.
- % 28,57 of the teachers always implements 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:

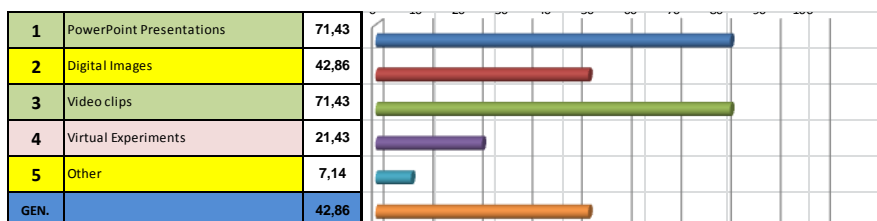


- % 71,43 of the teachers believes that the purpose of using Nano-Tech experiments in the classroom by the use of ICT is to raise the students' motivation for learning nano-technology.

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:

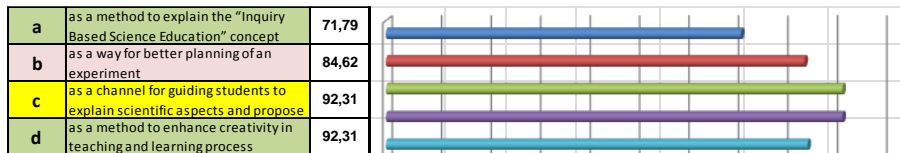


- % 71,43 of the teachers use powerpoint presentations, while another % 71,43 use videoclips for presenting science/nanotech experiments in their lessons.

Question no. 15:

Evaluate (on a scale from 1 to 3) how important are ICT tools to you for the purpose of promoting an inquiry based/creative learning environment in Science teaching?

Results diagram is presented below:



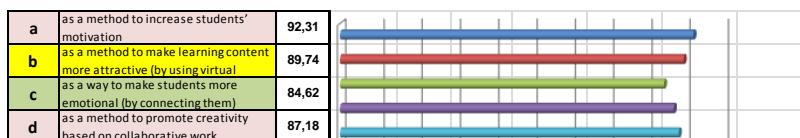
The importance of ICT tools for the purpose of promoting an inquiry based / creative learning environment in science teaching:

- as a channel for guiding students to explain scientific aspects and propose hypothesis for investigation (% 92,31)
- as a method to enhance creativity in teaching and learning process (% 92,31)
- as a way for better planning of an experiment (% 84,62)
- as a method to explain the "Inquiry Based Science Education" concept (%71,79)

Question no. 16:

Evaluate (on a scale from 1 to 3) how do you consider collaboration using ICT for teaching Science/Nano-Tech topics?

Results diagram is presented below:



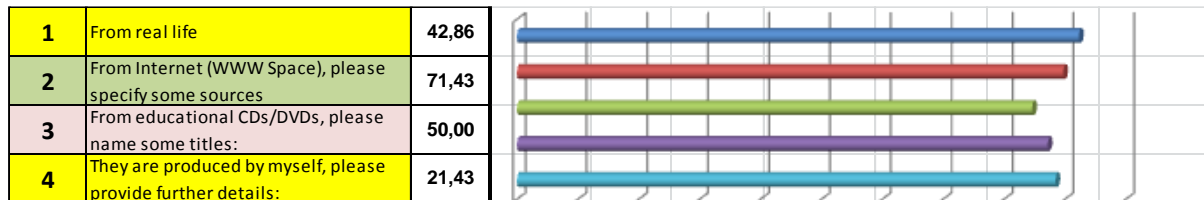
The teachers consider collaboration using ICT for teaching science/nanotech topics:

- as a method to increase students' motivation (%92,31)
- as a method to make learning content more attractive (by using virtual environments and multimedia tools) (%89,74)
- as a method to promote creativity based on collaborative work (% 87,18)
- as a way to make students more emotional (by connecting them) (%84,62)

Question no. 17:

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

Results diagram is presented below:



The teachers find good examples of experiments to be used in the classroom from:

- From the internet (%71,43)
- From educational CDs/DVDs (% 50)
- From real life (%42,86)
- They are produced by myself (% 21,43)