



## Questionnaire for future teachers

*This questionnaire is aimed at gathering the opinions of the virtual lab beneficiaries concerning several different aspects of their activity / preferences in order to better define the features the Virtual Lab should have in terms of ICT, scientific contents and educational methodology.*

### A. QUESTIONS FOR THE CONTENT OF THE SCIENCE TEACHING

1. How would you describe your knowledge about nanotechnology?
  - a) I am proficient to teach nanotechnology without any training required.
  - b) I have knowledge about some basic concepts
  - c) I just know what it is but do not have any further knowledge
  - d) I only have heard the name of nanotechnology
  - e) I have never heard about it
  
2. What do you think about teaching the emerging sciences (i.e nanotechnology) to K12 students?
  - a) It should be a required course for 12 years
  - b) It should be a required course for only high school
  - c) It should be a elective course for 12 years
  - d) It should be a elective course for only high school
  - e) I do not think it should be thought at the K12 level
  
3. If nanotechnology is thought what should be the level for elementary school students?
  - a) It should be a complete training so that during high school, students can learn it in a deeper level.
  - b) Only the basics of the technology and some application fields should be introduced.
  - c) Only some visual simulations about nanotechnology should be revealed in the regular science course
  - d) The best is just to regulate some field trips for the students to high technology companies
  - e) Education of nanotechnology should be only for self interested students by using a virtual lab
  
4. If nanotechnology is taught what should be the level for high school students?
  - a) It should be a complete training so that at the university level students can master this technology
  - b) Only the basics of the technology and some application fields should be introduced
  - c) Only some visual simulations about nanotechnology should be revealed in the regular science course
  - d) The best is just to regulate some field trips for the students to high technology companies
  - e) Education of nanotechnology should be only for self interested students by using a virtual lab
  
5. If nanotechnology is taught to the science teachers what would be the level?
  - a) It should be a complete theoretical training so that teacher can answer all the questions that may arise from the students
  - b) Only the basics of the technology and some application fields should be introduced
  - c) Only some visual simulations about nanotechnology should be shown to the teachers to give an idea about this science
  - d) It should be thought to all science teachers by using a virtual lab
  - e) The teachers need to be trained in the professional laboratories of nanotechnology for experimental experience and theoretical knowledge.

## B. QUESTIONS FOR THE METHODOLOGY OF THE SCIENCE TEACHING

6. The most effective way to teach a scientific topic in general is:

	1 Disagree	2 Not really	3 Agree	4 Strongly agree
Formal lessons				
Reading textbooks				
Watching clips and documentaries				
Interactive computer based tools				
Experiments				
Less structured experiments				
Other (please specify)				

7. Please, rate the importance of the following tools for an online virtual lab:

	1 Disagree	2 Not really	3 Agree	4 Strongly agree
Texts				
Images				
Video				
Simulations				
Interactive simulations				
Procedures to carry out experiments with the students				
Resource library				
Other (please specify)				

**8. What type of lab approach you prefer?**

	1 Disagree	2 Not really	3 Agree	4 Strongly agree
Cook-book type laboratory activities (step-by step instructions) to verify scientific facts.				
Inquiry-based laboratory activities (students decide how to conduct the activity, and have to explore in order to figure out how the world works).				

**9. What do you think that the regarding activities in a laboratory would be;**

	1 Disagree	2 Not really	3 Agree	4 Strongly agree
Students should be engaged by scientifically oriented questions.				
Students should have (be provided) the ability to determine what data allows them to develop and evaluate scientific explanations.				
Students should have (be provided) the ability to formulate their own explanations from the evidence they have obtained.				
Students should have (be provided) the ability to expand upon their findings and relate those findings to similar situations.				
Students should have (be provided) the ability to communicate their experimental findings to others in class via written laboratory reports.				
Students should be able to access to the experiments on-line that cannot be done in a laboratory				

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

	1 Disagree	2 Not really	3 Agree	4 Strongly agree
Make observations.				
Pose questions.				
Have access to an e-Library (other sources of information).				
Plan investigations.				
Reviewing what is already known in light of experimental evidence.				
Use (virtual) tools to gather, analyze and interpret data.				
Propose answers, explanations, and predictions.				
Communicate the results.				
Identify assumptions.				
Use critical and logical thinking.				
Consider alternative explanations.				

**C. QUESTIONS FOR THE USE OF THE ICT INSTRUMENTS IN SCIENCE TEACHING**

**11. To what extent do you know to use ICT tools for teaching Science/Nano-Tech topics?**

- poor
  average
  good
  excellent

**12. Which kind(s) of ICT tools do you intend to use for leading nano-tech experiments in your future lessons?**

- PowerPoint Presentations
  Images
  Video clips
  Virtual Experiments

**Other, please specify...**

**13. Evaluate (on a scale from 1 to 4) how important are ICT tools for you when considering their usefulness for teaching Science/Nano-Tech topics?**

a) as a source of inspiration for you as a future teacher	1	2	3	4
b) as an effective learning environment	1	2	3	4
c) as a method to improve students' learning skills	1	2	3	4
d) as a way for improving students' understanding	1	2	3	4

(Scale: 1 – not at all; 2 – very little; 3 – to some extent; 4 – to great extent)

**14. 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?**

a) as a method to explain the “Inquiry Based Science Education” concept	1	2	3	4
b) as a way for better planning of an experiment	1	2	3	4
c) as a channel for guiding students to explain scientific aspects and propose hypothesis for investigation	1	2	3	4
d) as a method to enhance creativity in teaching and learning process	1	2	3	4

(Scale: 1 – not at all; 2 – very little; 3 – to some extent; 4 – to great extent)

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

a) as a method to increase students' motivation	1	2	3	4
b) as a method to make learning content more attractive (by using virtual environments and multimedia tools)	1	2	3	4
c) as a way to make students more emotional (by connecting them)	1	2	3	4
d) as a method to promote creativity based on collaborative work	1	2	3	4

(Scale: 1 – not at all; 2 – very little; 3 – to some extent; 4 – to great extent)

**16. From where do you find examples for the Nano-Tech experiments for your preparation?**

From real life

From Internet (WWW Space), please specify some sources:

From educational CDs/DVDs, please name some titles:

They are produced by myself, please provide further details: