EUROPEAN SOCIAL FUND
MALTA2007-2013

MINISTRY FOR EDUCATION AND EMPLOYMENT

PARLIAMENTARY SECRETARIAT
FOR THE EU PRESIDENCY 2017 AND EU FUNDS

Learning Outcomes Framework

Design of learning Outcomes Framework,
Associated Learning and Assessment Programmes

ESF Project 1.228

Core Science

educators feedback

Operational Programme II - Cohesion Policy 2007-2013
Empowering People for More Jobs and a Better Quality of Life
Project part-financed by the European Union
European Social Fund
Co-financing rate: 85% EU Funds; 15% National Funds

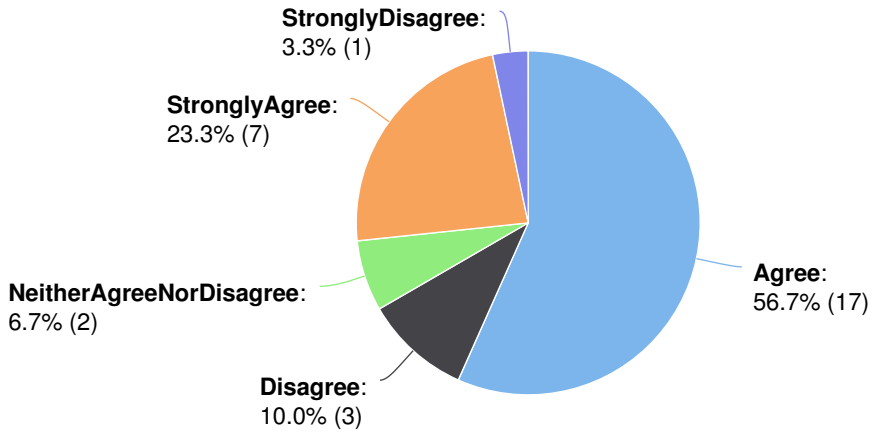
Investing in Your Future

Number of respondents

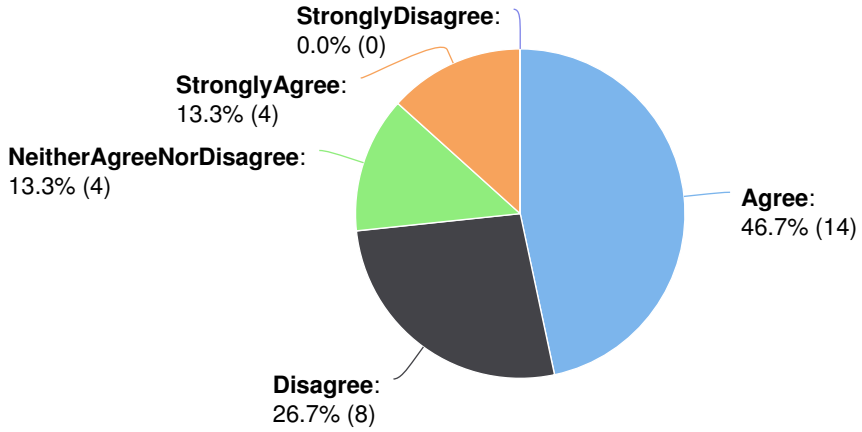
Education Officers	1
Head / Assistant Head of school / Deputy Heads	0
Head Of Departments	4
Inculsion Coordinators	0
Learning Support Assistants	0
Other	0
Subject Specialists	0
Teachers	24
University Lecturers	0
Vocational Education Training Lecturers	0

Statistics

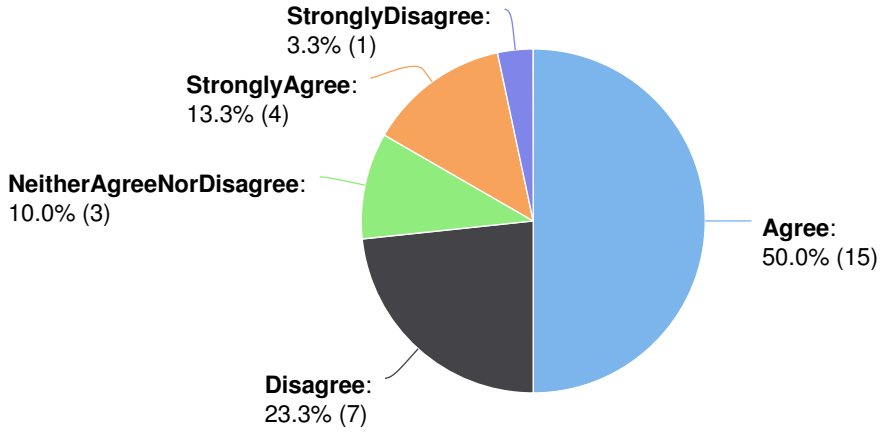
Focused on the learner



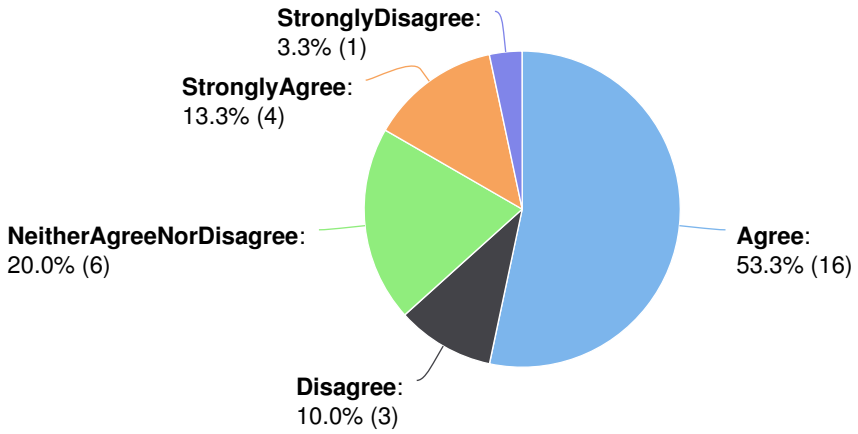
Comprehensive



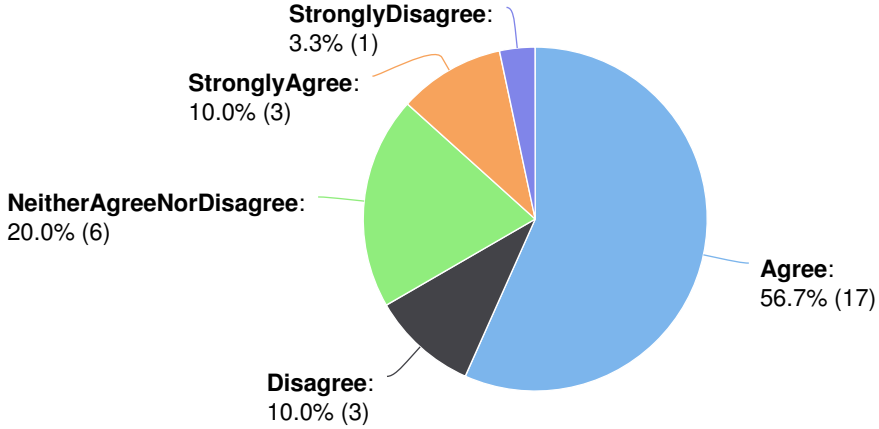
Clear



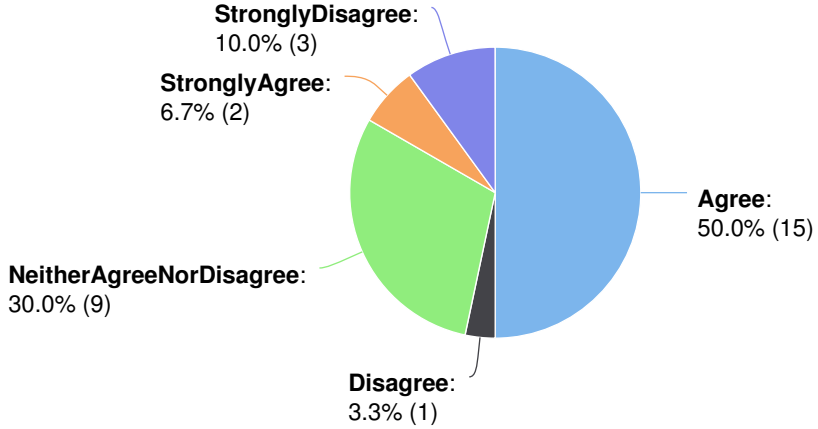
Articulate



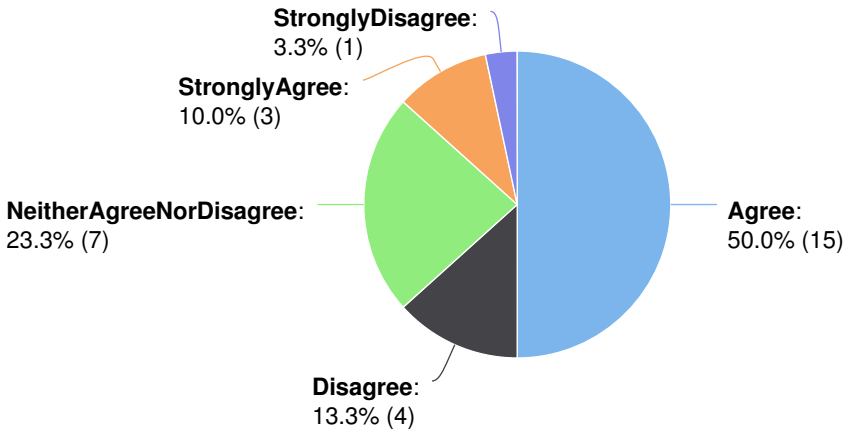
Good for providing direction for learning activities



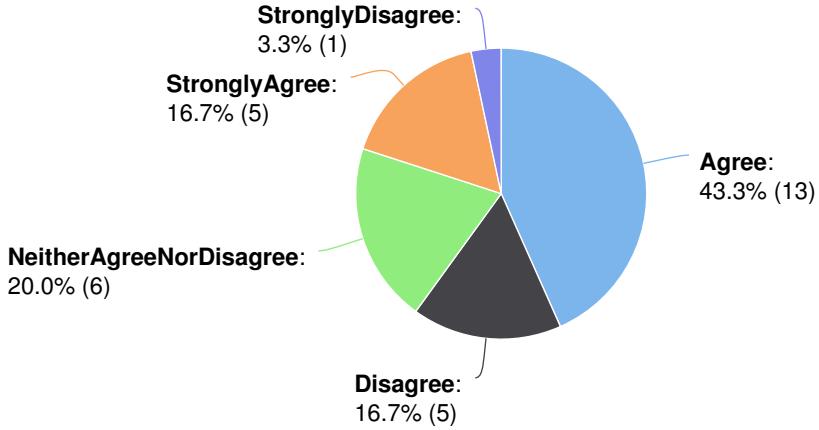
Good guidelines for teaching and assessment



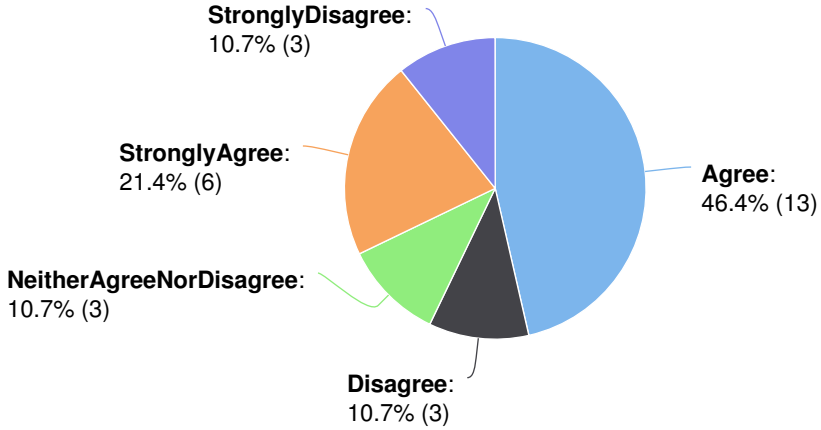
Measurable



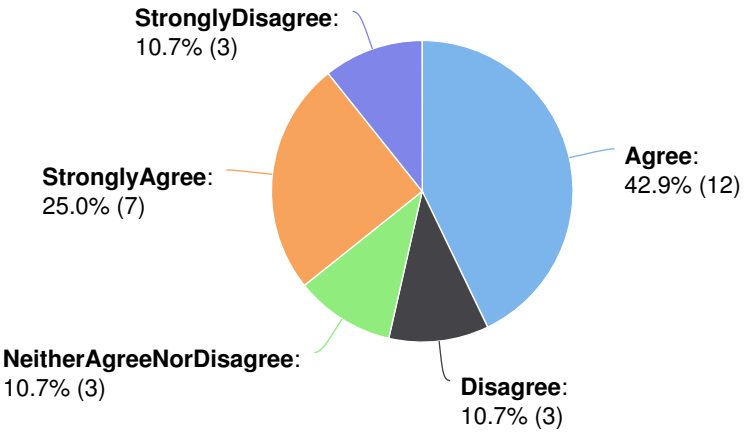
Suitable for providing progression



I feel that the Learning Outcomes approach will help me in my teaching



I feel that the Learning Outcomes approach will enhance my teaching practice



Feedback

#585

teacher core-science secondary church_school

General comments or concerns about the subject:

I was all the time checking if I was in the correct level- am still checking it right now over and over. Students at Level 7 (some of them will be at their fist year in science) being exposed to areas like magnetism and genetic engineering?!!!! The learning objectives are a mix and match between level 7 and level 10!!!!! How can students who have just started science be expected to build a periscope on their own when they still are at a grasp with what a wave is???? How can they describe the effect of recreational drugs on the brain when they still consider the brain to be the skull and have no idea on nerve cells and nerve impulses????

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

uuuuuu !!!!!!!!!!!! A never ending list!!!!!
How to keep fit and healthy:
diagram of the heart and around body OUT (2)
(7) Too complex...tackled in PSD and enough of that...they can study in their BSc or MD course the effects
(10) Genetic engineering!!!!!!! when DNA and genes have never been introduced? Not even inheritence?!!!!

How senses help
(8) Construct a periscope- unless parents are considered pupils
(12) INVESTIGATE!!!!!

Earth supporting life
(5) Not even at university is this level expected.....
(8) not even the word 'potable' is understood by students
(12) and (13) all of magnetism....too complex even for level 9 students!

How do things move- ALL OF IT!!!!!!

How do we stay alive
(15)
(13) Draw!!!!!!!!

What is Energy
(13)- two way switch out ...will surely help students get mixed up
(9)

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

You can include most credits done in the BSc university course as well....considering we have arrived at these levels in Form 1/grade 7 already....Why not?

The present levels for Level 7 are much more reasonable to help my teaching and to guide students and motivating them in learning/investigating science!!!

#587

teacher core-science secondary church_school

General comments or concerns about the subject:

Will demotivate students when such levels are requires. Some of the areas have in the past been tackled at university or a level. Why should they now be tackled by student at grade 8 level???
Considering all, the subject content and activity is more focused than the level 7 which is the laughing stock for the level!

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

What scientists do
13

How do we stay alive
2
10/11- humans only

Keep fit and healthy
6- done in the medicine course

How senses gather info
8 and 9

Things made of
13

Earth and support life
8- needs specification too vague
11
13
14

How things move
all out except 5 6 and 10

Space
4
6

Forensic
2

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

The learning outcomes are over and above the age group. According to Piaget the students at this level would have just started formal operational level and presenting with such activities like Hadron Collider experiments and constructing models that can only be done by engineers and professional designers will surely demotivate their learning.

#588

teacher science secondary state_school

General comments or concerns about the subject:

Actually my concern is.... What is core science? Is it going to replace the compulsory physics subject? We did not have any compulsory consultation or maybe a PD session about the learning outcomes. They are vague and we as teachers cannot interpret the learning outcomes, if we do not know how they are going to be applied to in practice. There is also no clear distinction in the levels which learning outcomes are going to be done in Year 7,8,9,and 10. With regards to the learning outcomes I observed that the number of material actually increases in level 7, thus it would be more impossible to do IBL in our classroom. Form 1/Year 7 syllabus is at present overloaded which at times does not allow and room for interactivity with the students. These learning outcomes will continue to hinder this.

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

In these five years that I have been teaching the subject they were changes continuously to the syllabus without any resources for us as teachers.

I hope that if these are going to be implemented the teachers are provided with resources (not only digital ones) in order to help us.

In addition more details should be given on the level of detail expected in each topic, or else teachers will do a lot of material, which again decrease the amount of time available for IBL.

#595

teacher physical-science secondary church_school

General comments or concerns about the subject:

Though the idea of the students carrying out investigations unattended as much as possible is recommended, I think that the students would still find it difficult to be almost completely independent when it comes to investigations.

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

All learning outcomes are very interesting and valuable for the students' holistic understanding of the world around them since they provide a very good detailed introduction to science in their everyday life.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

I feel that there are already a lot of learning outcomes, including more would make the subject difficult to cover.

#596

teacher physical-science secondary church_school

General comments or concerns about the subject:

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

#597

teacher physical-science secondary church_school

General comments or concerns about the subject:

I like the fact that at the end the students would leave school with a holistic grip of science and how it affects our life.

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

#598

teacher physical-science secondary church_school

General comments or concerns about the subject:

I find the presented learning areas as very interesting and providing a platform for further development of concepts.

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

#600

education_officer materials-science

General comments or concerns about the subject:

I think that the LOF for Science could have contained more content involving Chemistry.

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

#603

teacher core-science secondary state_school

General comments or concerns about the subject:

My main concern is how these learning outcomes will be assessed. This will be very very time consuming.
As a science teacher, I can say that I have enjoyed using the new science syllabus since it has been written down in detail and has helped me a lot in the preparation of my lessons. I don't want to see any drastic changes done.
Will there be a core science for Forms 3,4,5?

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

At level 7 I would leave out 'explain what is meant by genetic engineering'. I think this is beyond this level.
The word investigate should be used more appropriately. Example, to investigate how a flowering plant reproduces. I can't think of a practical way to do this. The word investigate should be more linked to practical sessions maybe even at higher levels.
Also, 'draw labels of the male and female reproductive organs'. Maybe label is a better word.
I would also remove heating of materials in air and their properties. This goes beyond this level.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

At level 7, I would include once again chromatography since students love it.

#606

teacher core-science secondary state_school

General comments or concerns about the subject:

It is very difficult to give accurate feedback on this framework when scant information has been provided to us. Before these LOFs were emailed to us, meetings should have been held in each school for teachers to provide detailed feedback prior to this draft publication (not afterwards).Holding a meeting after school hours in just one school, surely is not enough.It is clear that that the usual pattern if imposition is being repeated under the guise of consultation. Another thing is that we should have been asked for feedback before June where together with my colleagues, I would have been able to discuss the subject in more detail. Asking us for feedback in one week in the middle of August is not fair. Some of my colleagues were not even included in the email. This is going to be continues in level 8.

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

I can describe the production of potable water locally.I can investigate the types of agribusiness that take place in Malta and their importance. (These are done in geography. Why are we repeating. I can identify a range of unusual plants in my local area. (Why unusual, considering that most of our students come from the inner harbour region where it is a miracle if you find any local plants let alone unusual. Constucting a simple periscope (When are we going to have time to include this as well? What about resources) I can draw a diagram of male and female reproductive system (Why not just label, when diagrams are easily available?) I can build models of a typical plant and animal cell. (What is the purpose of buiding a model of these when they are already available? Are we teaching Crafts?)

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

#607

teacher core-science secondary state_school

General comments or concerns about the subject:

Continued from level 7.I have more questions than feedback. What is going to happen regarding exams and assessment? Who is going to prepare the tasks to assess the students? What about the levels? Does level7&8 apply to year 7&8 students? If this is so, in the proposal there are far too many objectives in level 7&8 for these students to reach. Even the most intelligent hard working student would not be able to achieve all these objectives in the first 2 years of sec school. let alone the average, below average students. I hope that unlike many previous and present reforms this is not going to be imposed & introduced in our schools without enough information, training & taking in consideration teachers' feedback. During the last 5 years, lots of changes took place without proper consultation. No one took notice of the teachers'feedback who are the experts in the classroom.

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

#610

teacher | science | secondary | church_school

General comments or concerns about the subject:

I believe the learning outcomes will help students relate science more to everyday life. My only concern is time management. Since much more has been added to the current syllabi I am afraid it might have repercussions on the teaching method used.

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

In my opinion the following objectives should be removed/ altered:
- drawing diagrams of male and female reproductive system - I would replace it with labelling such diagrams.
- describe and draw a diagram showing the forces acting on two people on a see-saw - I found that students find the topic of forces very difficult and I believe this would make things even more confusing.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

I believe that reaching such learning outcomes depends on what the students will already have learned from primary level. For instance if the following topics will not be familiar to students they must be introduced in such a level:

- Labelling and using different apparatus
- Living/ Non-Living things (Mrs.Gren)
- Safety in the lab
- Basic electricity knowledge such as connecting components, drawing circuit diagrams.

#611

teacher | core-science | secondary | state_school

General comments or concerns about the subject:

1st of all it is not fair that you are asking for feed back during our summer holidays. Dont forget that august is our official leave. During summer holidays is very difficult to consult with other colleagues and so it is not fair to send my feedback from my sight only. It is not clear what is going to happen with this core science as there are level 7-10? Does this mean that core science is going to be from year 7 to year 11? Or Level 9 and 10 has to be added to year 7 and 8? Because if that is so you are seeing big big big as it is impossible to be done. Even though you have said that same levels are aimed to gifted students, I think even the gifted will not be able to obtain those certain outcomes.

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

Do we have time to build models?
Static electricity is all done in physics and i think a lot of repetition in very short time.
Water cycle is a geography topic and i don't think there is the need to be done again in science
Earth's magnetic field again is a physics topic which i think at that age is very difficult to be understood. We have to keep in mind that our students have an average ability. Even for the gifted ones it will be difficult to be understood as even in form 5 student dont understand the concept of magnetic field.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

#612

None

General comments or concerns about the subject:

As i said in level 7 this is very unfair on teacher to give this type of feedback as no one came to explain what's going to happen from the present system?What type of assessment do we have to use?are exams still going to be held?I think 1st there should be a clear explanation to everyone by doing a compulsory session so that it will be explained what's going to be changed or not.Are we going to be given resources & training to teach certain subject?We have to keep in mind that not all science teachers are specialized in integrated science but most of them are physics and maths teachers & this training should be held during working hrs & not after. Topics such as Electricity & Rocks are topics that are being done in detail in other subject and there is no need to be done in science.

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

#614

teacher | core-science | secondary | church_school

General comments or concerns about the subject:

The subject is too broad and covers quite a lot of content. This will all depend on the number of lessons which will be allotted in the scholastic years.

I have also noticed that there are some concepts which are usually covered in level 9 (such as 'I can carry out an experiment to demonstrate the stages of, and the conditions needed for, germination.' and ' I can draw a diagram of the male and female reproductive systems and explain how a sperm fertilises an egg.')

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

I am specialised in Biology and Chemistry. For this reason I can only comment on the learning outcomes which are from these area of specialization.

I can draw a diagram of the male and female reproductive systems and explain how a sperm fertilises an egg: labeling rather than drawing of the male and female reproductive parts is enough.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

#619

teacher | science | secondary

General comments or concerns about the subject:

very interesting but way too vast. certain topics would need to be rushed through to manage all well within stipulated time frame

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

Details on genetic engineering may be too vague for students to comprehend

details about collisions of particles are very difficult to explain as they are very abstract for students of such a young age

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

more 'I can' about team work. I can lead my team to plan an investigation. I can follow instructions/discuss instructions with my team leader. I can discuss results of an experiment with my team mates.

#622

teacher | science | secondary | church_school

General comments or concerns about the subject:

I like the idea of moderising the science curriculum a bit, this will provide a more up-to-date idea of where science is heading towards.

Having said that there is a lot of content involved and there is too much to be able to carrying out all the investigations, research listed here, aside from the assessment work they will have to do.

I understand that Level 7 will begin at Form 1. For me there is too much content to be done within a year. And certain aspects seem a bit much. I don't see why students need to know how to draw and label the parts of a flower at such a young age for example.

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

Some of the content I feel can be a bit more practical and related to everyday life. For example when dealing with electricity and heat it would be worth discussing how to insulate homes to increase their efficiency to control the temperature and even discuss sound proofing.

#623

teacher | core-science | secondary | state_school

General comments or concerns about the subject:

1. The timing of issue of these LOFs is completely wrong. Teachers are during their holidays and we cannot even meet to discuss the issues amongst us. Apart from the fact that teachers who are abroad may not be in time to give their feedback.

2. The LOFs are presented in a complete vacuum so it is very unfair to expect valid feedback from teachers. We have no idea in which type of system will these objectives be implemented. We don't know anything, if any, of the changes that will happen to the current assessment and examination system. What will happen to the HY, Annual and SEC exams? Who will design the tasks to assess if the "i can" objective is reached? Will all schools have a common accreditation system or will each school create its own? Will this create inequality in entitlement between schools/colleges? All of this, and much more, should be explained clearly because the feedback given with regards to these LOFs should be in a complete and clear context. The "we will see what will happen" approach is not acceptable. And this is the attitude we are getting when question questions on the matter.

3. Why were compulsory meetings for ALL educators in ALL colleges not organised before these LOFs were launched? A voluntary meeting organised out of school hours, during exam period and in a place which is neither central nor easily accessible by public transport is not the way to do things. Because of this lack of information and communication, most teachers, who are the primary stakeholders in this system have absolutely no idea of what these LOFs are and the implications their implementation will have on the whole education system. I find this to be an insult to the profession and this is not the way we should be treated.

With regards to science in particular: Since I am seeing "Core Science" from levels 5 to 10, I am getting the impression that this subject will replace Integrated Science (Form 1 and 2) and compulsory Physics (Form 3-5). If the science strategy board NEVER met to discuss the future of science education in Malta, who decided the way forward in this regard? Who decided that we will have core, physical and life sciences? Is this the type of consultation that is being practiced?

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

I find the LOFs for Core Science to be very much burdened with content. If IBL is to be practiced and different modes of assessment (presentations, answering oral questions etc) are to be used we cannot expect to cover effectively so much material. If the students are to learn at their own pace and construct their own knowledge the amount of content presented needs to be reduced. For example I think that building models is unnecessary. They can reach those objectives in other subjects like crafts. Other objectives overlap with geography and home economics. Why the repetition? I think that the experts need to spend some time in class with the students to see how far-fetched some of these objectives are.

I did not understand the difference between headings like "learning to know", "information management", "cognitive learning", "creative learning" etc

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

no

#625

teacher | materials-science | secondary | church_school

General comments or concerns about the subject:

The Framework proposed is a step ahead of previous science curricula as it at least includes an area specifically focused on the process of science. Despite this advancement, the learning outcomes are still very much stuck in the nineties philosophy of general science education (NRC, 1996; AAAS, 1993). Here the main focus was to change all students into mini scientists. The inherent assumption was that if an individual knows enough science, or is apt of thinking scientifically, he or she will be able to apply that knowledge in life contexts involving science (Jenkins, 1999; Bybee & McCrae, 2011). Since then, the philosophy of science education, especially for the majority of students who will not become science specialists has evolved and the ultimate aim currently promoted is that of moulding our students to become functional and active citizens in relation to issues having a scientific/technological component (Hodson,2010, EC,2015)

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

While going through the learning outcomes, one can still easily recognise a rearrangement (with some minor changes) of the traditional science content we all experienced through our own schooling. It's as if there is almost a fear in our community of Maltese science educators of ensuring that all science content is covered. It is time to let go. It is time to change!The students have all that knowledge listed in the learning outcomes just a buttonclick away on their tablets and laptops. In the classroom, the focus should be on skills and attitudes which students cannot gain through digital media. If there is so much energy being focused on changing....then let it be an authentic not a superficial transformation.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

In my opinion, the framework still reflects a resistance to humanise science education. The framework being proposed still projects science and technology as feeding into society. In reality, it is an interplay between science, technology and society. What scientists research is largely determined by funding, by political decisions etc. Scientists do not only work in labs but need a variety of other skills to engage in discussions with peers, politicians, businessmen etc. This reality should be projected to students at least as an awareness.

#626

teacher | core-science | secondary | church_school

General comments or concerns about the subject:

The subject content generally provides a balanced mix of the three sciences, with Chemistry being least represented. There is good scope for hands-on activities and practical work. The amount of work outlined also seems suitable, but this can only be fully determined once it is tested out in class.

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

Galileo's experiments on falling objects: I believe this is too abstract for students at this level. It should be shifted to Level 8.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

#627

teacher | life-science | secondary | state_school

General comments or concerns about the subject:

There is good progression of skills corresponding to students' cognitive development between Levels 7 and 9. On the whole, however, Chemistry is under-represented.

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

Choices relating to sexual orientation: there is, at the moment, no scientific explanation for sexual orientation. Such a subject cannot be therefore treated from a scientific point of view without creating undue controversy, misconceptions or misinformation. It should be left to PSCD.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

#628

teacher | life-science | secondary | church_school

General comments or concerns about the subject:

Students should have a working knowledge of the normal functioning of the digestive and respiratory systems. Otherwise they cannot fully appreciate problems arising from allergens or bad eating habits.
The learning outcomes at level 7 continue to be developed at this level.

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

Chemistry is under-represented: what about gases in the atmosphere? compounds of carbon (highly relevant even to Biology)?

#630

teacher | science | secondary | state_school

General comments or concerns about the subject:

I view the current Integrated Science curriculum as being well balanced and interesting, with clear learning outcomes which are relevant for Level 7, for Form 1 and 2 students. I do not agree with a radical departure from the learning outcomes of the Integrated Science curriculum. Certain topics such as food webs, digestion, defence against disease, series and parallel circuits, conductors and insulators, distillation have been left out in the proposed learning outcomes. I consider several of the proposed learning outcomes as not being appropriate or relevant for Science at level 7. I would suggest that the learning outcomes are revised, using the present Integrated Science curriculum as the starting point on which to base the learning outcomes. One has to keep in mind that Level 7 is the basis for Secondary Science and students should be provided with an educational experience which is appropriate and relevant for this level.

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

Learning outcomes which I do not consider appropriate for Level 7 Science: * Experiment on stages and conditions of germination should be dealt with later on * Drawing diagrams of the male and female reproductive systems - Students should know how to label the diagrams. * Harmful effects of recreational drugs should be dealt with in PSD. * Genetic engineering should be dealt with later on. * Experiment on speed of sound not appropriate at this level. * Recording and identifying a range of unusual plants in a locality? * The production of potable water locally - may be dealt with later on. * Translational, rotational and oscillatory motion - should be dealt with later on. * Investigating the working of joints in the body / keeping joints healthy - not appropriate for level 7 * Investigating why fabrics like polyester are best suited for sports like yoga and gymnastics?

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

I would include learning outcomes on the following topics:
* Food webs
* Digestion and the digestive system
* Defence against disease
* Series and parallel circuits
* Electrical conductors and insulators
* Separating mixtures to include chromatography and distillation
The current Integrated Science curriculum should be used as the basis for the learning outcomes.

#632

head_of_department | core-science | secondary | church_school

General comments or concerns about the subject:

The proposed LOs for Core Science at level 7 give a good overview of the subject to our students. The application and relevance of science in our lives is emphasized. Attention was also brought to encouraging the students to pursue careers in the scientific field.

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

1. Drawings – Rather than drawing the male and female reproductive system, it would be more ideal to limit this task to labelling.

2. Genetic engineering and local production of potable water are difficult concepts for level 7 students to grasp. The areas related to DNA sequencing, diffusion, osmosis and active transport are not tackled at this level, but should be done in levels 9 and 8 respectively.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

1. Drawings should be used to enhance observation skills. During fieldwork sessions students should observe and draw different life forms. Attention in these drawings should be given to relative proportions, similarities/differences when comparing organisms and adaptations to survive in particular habitats.
2. Recording and identifying endemic and indigenous plants rather than unusual plants.
3. Increasing the chemistry component by for example including the comparison of properties of metals vs non-metals when focusing on the periodic table rather than just using it to decide whether a substance is an element or a compound. This would also serve to give a better understanding of the Periodic table.
4. Including a general overview of how the breathing and digestive systems function. Students would not tackle these areas unless choosing the life sciences option.
5.Classification of substances into acids/alkalis shouldn't be limited to lab chemicals but is to include common household items too.

#633

head_of_department | materials-science | secondary | church_school

General comments or concerns about the subject:

Core science includes many LOs from various science areas but there is only one main theme related to chemistry - what are things made up of. Some chemical aspects are found in How does our planet support life.
Current science Form 1 and 2 syllabus includes more aspects of chemistry. So core science is not balanced in terms of the different aspects of science

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

I can test the quality of water - rather vague - are you referring to soft and hard water? LOs to be included here:
Quality of potable water in Malta
effect of hard water on appliances eg scale in kettle
ways of removing hardness - ion exchange column used in our homes
ways of obtaining potable water should be included here not in level 7. no chemical equations required only descriptive chemistry.

in level 9 - I can research and write a report about chemicals which are used in everyday life - rather vague - which chemicals? Examples of chemicals [e.g chlorine based products, acids, alkalis, fertilisers] need to be specified in the LAP

in level 8 - I can investigate examples of useful chemical reactions in local industry. Which simple chemical reactions are you referring to? examples need to be specified in LAP

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

Besides comparing the properties of metals and non-metals, reactivity of metals needs to be included. This can be done by conducting an experiment investigating the reactivity of commonly used metals, e.g by adding the metals to an acid or burning them in air.
Corrosion of metals - rusting.
Uses of common metals (eg. Al, Fe, Cu) need to be included and why their physical properties makes it suitable for their use.
imp of recycle metals

Main reactions of acids eg reactions of acids with metals, carbonates and alkalis/ bases. Students need to work out/ complete word equations. These reactions can be demonstrated through simple experiments using everyday materials eg what happens when we take antacid tablets (which are usually carbonates)? neutralisation reactions should not be limited to acid and alkali reactions.

In separating mixtures distillation needs to be included as a separating technique besides the ones mentioned

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#635

teacher | life-science | secondary | church_school

General comments or concerns about the subject:

I think core science is a good approach as to avoid the fragmented idea. However I think there are still learning outcomes which are specifically tackling only one science subject such as materials science. This may be due to the content which may not be easily related to other sciences.

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

I think time limit is always an issue hence one has to limit the amount of learning outcomes. However, in my opinion there are a few points which if listed more clearly may be more of help such as learning outcome:how does planet earth support life: 1st point - too vague

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#640

head_of_department | core-science | secondary | church_school

General comments or concerns about the subject:

The proposed LOs for Core Science at level 8 also provide a good overview of the subject to our students. The application and relevance of science in our lives is emphasized. A historical point of view and the use of data loggers are encouraged. Attention was also brought to encouraging the students to risk assess the practical investigations they carry out. This should be extended to students in the lower levels too.

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

• Investigating how pulse rate is affected by eating different foods as this would result in having students eating foods prohibited in the HELP document
• "identify and compare drugs to treat common infections" from level 8 and inputting in level 10. At level 8 it would be better to include items related to knowledge about cancer formation, cardiac problems and their treatments such as radiotherapy, chemotherapy, stents, bypass surgery etc.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

• Specifying the study of endemic and indigenous species (rather than focusing solely on the alien ones)
• Knowledge about colloidal substances rather than limiting to solids, liquids and gases
• Knowledge about distillation – (chromatography would already be covered at level 7)
• Inclusion of food tests in the section of forensic science
• Healthy eating is beneficial to all the systems and not just the digestive system
• Increasing the "Chemistry" component e.g. by including topics related to "Rates of Reactions" and "Air"

#641

head_of_department | core-science | secondary | church_school

General comments or concerns about the subject:

The application and relevance of science in our lives is outlined.

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

• Knowledge of chemical equation of photosynthesis – students should be able to do this at level 8.

• Knowledge of food webs and inserting it in lower levels – students would already be inquiring about this in the junior years when food chains are being tackled.

• Discussion of choices related to sexual orientation should be removed even though as teachers we are to be sensitive to different orientations when discussing areas such as puberty, reproduction, contraception and IVF.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

• Genetic engineering should not be limited to the improvement of crops but also extended to uses in medicine.

• Knowledge about sewage treatments when discussing waste management.

• Specifying particulates when dealing with atmospheric pollution and linking them to the effects on humans and other organisms.

#642

teacher | core-science | secondary | church_school

General comments or concerns about the subject:

A lot of emphasis is based on topics that are biology or physics while only a small proportion deals with chemistry.

At Form 1 level students will still be learning to carry out experiments on their own and therefore carrying out investigations with limited teacher guidance may be difficult at this stage. These types of investigations are carried out at a higher level when the students have more knowledge and have developed their thinking and laboratory skills more.

Some terms are such as translational, rotational and oscillatory motion are too complex at Form 1 and 2 level. Simpler language should be used.

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

Some students find drawing diagrams difficult, I think that expecting a Form 1 student to draw accurate diagrams of the reproductive systems is a lot - this outcome should be changed to being able to label diagrams of the reproductive systems.

Understanding how genetic engineering works at this level may be too complicated for students at this level and should be moved to level 9.

Galileo's experiments on falling objects, explaining his discoveries and how scientific theories develop and change over time should be moved to a higher level. At this stage some students find explanations based on scientific principles difficult to grasp and explain.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.

Students should be able to identify hazards and know how to work safely in a laboratory.

#643

teacher | life-science | secondary | church_school

General comments or concerns about the subject:

I think that this is more focused on hands on and to do, idea rather than just the knowledge itself. This will surely be more motivating for the students whilst still learning and grasping the knolwedge required in order to manage such learning outcomes. Also I find the idea of bridging the 3 sciences together as providing a fuller picture of what is science to the students. also such outcomes help students to be active thinkers and more creative in their work rather than passive students just receiving information.

Are there any Learning Outcomes you (respondants) would take out? Specify which and why.

No as i think all points may be rather fruitful and easily linked with everyday issues. As long as time is not an issue, i would not opt to remove any points.

Are there any Learning Outcomes you (respondants) would include? Specify which and why.
