Cyprus University of Technology

PARRISE Promoting Attainment of Responsible Research & Innovation in Science Education

# SSIBL Teacher Professional Development

# Handouts

*Cyprus University of Technology*
*Department of Communication and Internet Studies, Cyprus*

These materials are based on the work of the project "Promoting Attainment of Responsible Research & Innovation in Science Education" (PARRISE).

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# Session 1 Introduction to PARRISE and the SSIBL framework

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# Understanding the pillars of the SSIBL pedagogical framework

## Structure

Group activity: Groups of 5-6 teachers

## Duration

Total duration: 60'
Part A – Introduction to the SSIBL framework: 30'
Part B – Presentation: 30'

## Instructions

The following activity is a group activity and is comprised of two sections:

- Part A – Introduction to the SSIBL framework: At the first part of the activity you will have the opportunity to discuss and reflect with the members of your group one of the pillars of the SSIBL framework (e.g., inquiry, socio-scientific issues, active citizenship, responsible research & innovation). During the activity complete your ideas on the provided handout.
- Part B – Presentation: At the second part of the activity you will have the opportunity share your thoughts with rest of the groups, in relation to the SSIBL pillar, on which you will have focused on with your group.

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# Handout 1/Group 1: Inquiry-based learning

1. Discuss within your group and write a definition for inquiry-based learning.

2. Do you think that inquiry-based learning should be considered as a primary teaching goal in science education? Please discuss with your group and explain your agreed upon position in writing.

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## Handout 2/Group 2: Socio-scientific issues

1. Discuss and provide a definition for “Socio-scientific issues”.

2. Do you think that “Socio-scientific issues” should be considered as a primary teaching goal in Science Education lessons? Please explain.

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## Handout 3/Group 3: Active Citizenship

1. Discuss and provide a definition for “Active citizenship”.

2. Do you think that “Active citizenship” should be considered as a primary teaching goal in science education? Please explain.

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# Handout 4/Group 4: Responsible Research & Innovation

**1.** Discuss and provide a definition for “Responsible Research & Innovation”?

**2.** Do you think that “Responsible Research & Innovation” should be considered as a primary teaching goal in science education lessons? Please explain.

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# Session 2 A collaborative design process for integrating SSIBL in your science modules

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# A collaborative design process for integrating SSIBL in your science modules

**Structure**
Group activity: Disciplinary groups of teachers

**Duration**
Total duration: 90'
Part A – Introducing the collaborative design process: 30'
Part B – Selecting a science module: 60'

**Instructions**
The following activity is a group activity and is comprised of two sections:

- Part A – Introducing the collaborative design process: Read and discuss the following two handouts ("Presentation of the Google online space" and "Design and development of SSIBL modules/Rules of collaboration for the teacher groups")

- Part B – Selecting a science module: Discuss with the members of your group and decide on the science module you will adapt (or design anew) according to the SSIBL framework. By the end of the process, record your decision using the handout "*Criteria for the selection of the SSIBL module"*

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## Presentation of the Google online space

The group's web design online space will be hosted on Google drive, for organizing and supporting the participatory design process.

This space is organized in four folders, as follows:

- **Notes:** In this folder you can document your thoughts in relation to the development of the SSIBL module you chose to implement with your colleagues. These ideas can be shared with the members of your group online and will be used for the face to face and during the online design meetings.

- **Minutes:** In this folder you will find the minutes of each online meeting, including (a) issues discussed, (b) decisions taken, and (c) the next steps in relation to the development of your SSIBL module. The minutes will be archived in this folder by the group coordinator.

- **Useful material:** You can use this folder to share useful material regarding your SSIBL module with the other members of your group (e.g., a relevant publication, links to videos, websites, etc.)

- **SSIBL module:** The files relating to the SSIBL module will be archived here (e.g., pedagogical scenario, learning activities, worksheets, etc.)

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# Design and development of SSIBL modules
# Rules of collaboration for the teacher groups

The development of the PARRISE learning environments will be developed by you and your colleagues and will be coordinated by a teacher educator. The members of the group share a common goal, should follow the same rules, and should develop a sense of "belongingness" in the group. Thoughts, ideas, and behaviors of group members affect each member separately. In the same way, a member's proposal, the handling of specific situations, his or her general attitude, etc. may affect the other members of the group. The punctuality in time of attendance and, in general, the respect of each member towards others, will ensure the work and effectiveness of the group. It is expected that:

1. All group members contribute in an equal manner to the group's activities.
2. Any criticism is made in the context of mutual respect and appreciation of the contributions of other members.
3. All members should inform the group coordinator and all the members about the tasks they undertake to accomplish.
4. After the end of each meeting (f2f or online), the group coordinator will record the decisions and the next steps, in a google doc that will be shared with all members of the group.
5. Timetables will be set for the tasks assigned to the group members.
6. In case of disagreement, a voting process will be followed, and a decision will be taken democratically.
7. Each member participates in all scheduled group meetings, unless of course he faces an extraordinary impediment.
8. If a member is absent from a meeting (f2f or online) the group continues to work, and the absent member is bound by the decisions taken by the other members of the group.
9. The group coordinator is responsible for the coordination of the discussions, the observance of the rules and the effort to solve any problems that may arise.

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# Criteria for the selection of the SSIBL module

**1. Which curriculum topic have you chosen to adapt to the SSIBL pedagogical framework? Why?**

**2. In which grade and lesson (e.g. chemistry, biology, etc.) do you plan to implement your SSIBL module?**

**3. How many teaching periods are usually devoted to this module?**

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**4. What are the learning goals of this module, as described in the national curriculum?**

**5. How many teaching periods will be devoted to the SSIBL module?**

**6. What will be the learning goals of the SSIBL-ized module?**

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# Session 3 Controversial socio-scientific issues and their pedagogical value

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# The "antibiotics in livestock" debate

## Total duration

Total duration: 90'
Part A' – Role assignment: 60'
Part B' – Public debate: 30'

## Instructions

### ***Part A': Role assignment***

1. Visit the following website [in Greek]: https://sites.google.com/site/meatsafetydebate/

2. Study the information included in the website carefully, to learn more about the controversial socio-scientific topic "Whether antibiotics in livestock should be banned?"

3. Discuss the role of the stakeholder that has been assigned to your group (Concerned scientists, Farmers, Medical industry, Government agencies, Public interest organizations which oppose antibiotics)

4. Then, read carefully the sources that respond to your role, for adopting the position and the main arguments of the stakeholder that has been assigned to you.

5. After you develop your arguments, select a representative from your group who will present your positions and arguments in the public debate that will follow.

### ***Part B': Public debate***

**1.** Representatives of the groups are invited to the forum. Each representative presents his group's position in 2-3 minutes. Presentation time will be strictly adhered to.

**2.** A public debate between the representatives will follow. In this debate, members of groups that have the role of the public can also intervene.

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# CATEGORIES OF REASONABLE DISAGREEMENT

| Category | Formulation | Examples | Role of evidence | Social dimensions |
|---|---|---|---|---|
| 1 | Where insufficient evidence is as yet available to settle a matter, but where such evidence could in principle be forthcoming at some point | • Which is the best soccer team in the premiership?<br>• Explanation for death of the dinosaurs<br>• Is X likely to develop Huntington's disease?<br>• Is xenotransplantation free from retroviral infection?<br>• Has there been a global rise in temperature since the Industrial Revolution?<br>• Does magnesium gain mass when it burns in air and suitable precautions are taken?<br>• Predicting the change in the size of a current when the configuration of a circuit is changed | Criteria for evidence to be met are set out beforehand and agreed by all parties. Evidence is usually unambiguous and is consistent with the terms of the criteria. The likelihood of developing Huntington's can be confirmed by an unambiguous genetic test. The top soccer team in the premiership is the won that wins the highest proportion of its fixtures. Principles of verification and falsification can be applied | Differences between parties beforehand about their judgements relating to the matters at stake but evidence should settle differences. Ethical principles are involved in aspects of the matters at stake, e.g. in the decision to inform someone that they are likely to develop Huntington's, but there is agreement about how the matter can be settled |
| 2 | Where evidence relevant to settling a matter is conflicting, complex and difficult to assess | • What is the acceptable risk of the transmission of disease as a result of the after effects of xenotransplantation?<br>• Which factors are responsible for the pollution of a local river?<br>• Which is the best drug for reducing the risk of heart disease?<br>• Does the use of 'green' fuels reduce carbon dioxide emissions? | Criteria can be agreed but it is difficult to assess whether evidence meets the criteria because of the nature of the evidence and the problem. For example, acceptable risk may be estimated differently in different countries depending on cultural and economic factors. One drug might be effective for a certain group of people while another might be better for other groups. The evidence might also be too complex to be understood by non-specialists | Differences between parties beforehand about both their judgements about the matters at stake and about their view about the status of different kinds of evidence. There could be consensus that evidence has not resolved the problem but acceptance that one might have to wait for better quality evidence or a willingness to reframe the problem to meet the Requirements of the available evidence |

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| Category | Formulation | Examples | Role of evidence | Social dimensions |
|---|---|---|---|---|
| 3 | Where the range of criteria relevant for judging a matter are agreed, but the relevant weight to be given to different criteria in a given decision is disputed | • It is agreed that both the future health of the patient and the risk of infection are both matters to be taken into account for a xenotransplantation but there are differences as to whether the patient's health takes priority over the risk of infection. This influences the decision as to whether the operation should be carried out<br><br>• A local government authority agrees it must take action to reduce pollution but there are differences as to whether the emphasis should be put on energy conservation or encouraging residents to set up solar cells | All parties might agree that the evidence is the best available but the evidence cannot necessarily influence the decision because of different weightings influenced by such factors as costs, culture, interest group. There is a possibility that better quality evidence might influence a decision but this cannot be guaranteed | Differences between parties before availability of evidence. Only likely to be consensus if contending parties agree that the evidence eventually produced is convincing in prioritizing one form of action over another, e.g. evidence shows that risk of infection from a xenotransplantation, under properly monitored conditions, is negligible |
| 4 | Where a range of cherished goods cannot simultaneously be realised, and where there is a lack of a clear answer about the grounds on which priorities can be set and adjustments made | • The separation of conjoined twins where the parents objected to the operation on grounds of religious and personal conviction even if it meant the death of both children. The decision of the judiciary was that the operation must be carried out to safeguard the life of one of the twins. The operation resulted in the death of one of the babies but almost certainly extended the life of the other. Although the judgement was made the precedents and guidelines were not without ambiguity. (http:// | The evidence is often irrelevant because of fundamental ethical differences in the premises. Some cases may be susceptible to change through evidence | Issue might be resolved by a legal judgement but the disagreement itself is not resolved by that judgement. Parties may simply refuse to talk to each other although all might recognise the tragic nature of a case. Proponents of PGID, for example, might recognise that an embryo must be treated with respect when it has been destroyed. Equally, those opposed to PGID might recognise the consequences of refusing this treatment. What might have united contending parties re-the conjoined twins was the |

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| Category | Formulation | Examples | Role of evidence | Social dimensions |
|---|---|---|---|---|
| | | www.guardian.co.uk/uk_news/story/0,3604,372028,00.html)<br><br>• Pre-implantation genetic diagnosis (PGID) is not acceptable to certain groups because of the necessary destruction of embryos even where a child's life is at stake) | | realisation that one or both twins would die |
| 5 | Where the range of criteria relevant for judging a matter are broadly agreed, but there is dispute about the proper interpretation of a criterion or criteria, given the indeterminacy of many concepts | • It might be broadly agreed that immigration should be controlled but there are disputes about what constitutes a legal or illegal immigrant, or disagreements about what constitutes a liberal society<br><br>• Differences of interpretation over the term 'rights' where some claim PGID gives children the right to a life free from pain while others argue that embryos destroyed in the process are being refused the right to life | Evidence can have only a limited, if any, bearing on resolving the disagreement. Until the concepts are clarified or agreed upon viewpoints cannot be vindicated by the evidence | There is usually a conversation between the parties but the disagreement is unlikely to be resolved quickly if at all, especially if the clarificatory terms are avoided |
| 6 | Where there are different kinds of normative consideration of different force on both sides of an issue, and it is hard to make an overall judgement | • Employees at a nuclear power station see their jobs at risk even though there is evidence for a cluster of leukaemia in young children. It is difficult to make a judgement on reasonable grounds whether it is right to close down the power station | As in category 2 the evidence is complex and difficult to assess and could be interpreted differently by both sides | Both parties feel there is a lot at stake. There is likely to be a conversation between contending parties but resolution of the disagreement is unlikely |
| 7 | Where there is disagreement about the criteria relevant for judgement | This could be subsumed by category 9 below | | |

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| Category | Formulation | Examples | Role of evidence | Social dimensions |
|---|---|---|---|---|
| 8 | Where the differing 'total experiences' of people in the course of their lives shapes their judgements in divergent ways | • Someone who has seen a sibling die from a genetic disease might be more likely to draw on that experience in supporting pre-implantation genetic diagnosis than someone who opposes this technique. This divergence is illustrated in the video 'The Gift' produced by ytouring. www.ytouring.org<br><br>• Someone who has suffered from flooding attributed to climate change brought about by carbon emissions differs in their interpretation of climate change from an oil company executive who might point out the complexity and unreliability of the climate change models used (see also category 2) | Where evidence is available parties incorporate the evidence into the worldviews which stem from their experiences | Parties might be asserting prejudices based on their own contexts of living but there might also be a telling of stories which illuminate the judgements people make |
| 9 | Where there is no agreement about whole frameworks of understanding relevant for judgement | • Fundamentalist creationists work from different premises and use different truth criteria from evolutionists to establish their claims<br><br>• 16th century adherents to the Earth-centred universe confronting Galileo's heliocentric model | Evidence is either completely irrelevant, or in a Kuhnian sense so linked to the theoretical framework that it cannot be translated to another framework or paradigm | Parties are unlikely to find any common ground to pursue dialogue. This might result in further conflict, agreements to differ, complete absence of communication or a combination of all three. Parties could make an effort to at least listen to each other but they might find the discourses used incompatible and uncomprehended by contending parties |

Levinson, R. (2006). Towards a theoretical framework for teaching controversial socio-scientific issues. *International Journal of Science Education, 28*(10), 1201-1224.

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# Session 4 The socio-scientific aspects of a SSIBL module

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# The socio-scientific aspects of a SSIBL module

**Structure**
Group activity: Disciplinary groups of teachers

**Duration**
Total duration: 90'
Part A – Selecting a socio-scientific controversy: 45'
Part B – Reflecting on the nature of the socio-scientific controversy: 45'

**Instructions**
The following activity is a group activity and is comprised of two sections:

- Part A – Selecting a socio-scientific controversy: Discuss the socio-scientific controversy of the SSIBL module you have selected and then answer Questions (1) and (2) in the "*Designing a SSIBL module: The socio-scientific issue"* handout.

- Part B – Reflecting on the nature of the socio-scientific controversy: Discuss with the members of your group the relevance of the topic you have selected to students' interests and everyday life and then answer Questions (3), (4), and (5) in the "*Designing a SSIBL module: The socio-scientific issue"* handout.

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# Designing a SSIBL module: The socio-scientific issue

**1. What is the controversial socio-scientific issue you have chosen?**

**2. Please give the title and the driving question of your module:**

**3. Why is this issue controversial? (E.g., are there different dimensions on this topic, are there multiple stakeholder groups with conflicting interests, etc.).**

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**4. Why is this issue socio-scientific?**

**5. Explain why this issue can be considered as relevant to students' everyday lives and interests.**

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# Session 5 Developing a socio-scientific pedagogical scenario & mapping a socio-scientific controversy

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# Developing a socio-scientific pedagogical scenario & mapping a socio-scientific controversy

**Structure**
Group activity: Disciplinary groups of teachers

**Duration**
Total duration: 90'
Part A – Developing a socio-scientific pedagogical scenario: 45'
Part B – The "Scenario machine": 45'

**Instructions**
The following activity is a group activity and is comprised of two sections:

- Part A – Developing a socio-scientific pedagogical scenario: Discuss with the members of your group and complete the *"Designing a SSIBL module: The Pedagogical scenario"* handout for developing your pedagogical scenario

- Part B – The "Scenario machine": Use the "Scenario machine" provided to your group for and discuss with your colleagues the available prompting your questions for ensuring the suitability of the socio-scientific pedagogical scenario you have selected.

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# Designing a SSIBL module: The pedagogical scenario

**1. Please describe the pedagogical scenario that you plan to use for introducing your students for stimulating their interest.**

**2. What mission or driving question will you give to your students introducing them in the socio-scientific issue you have selected.**

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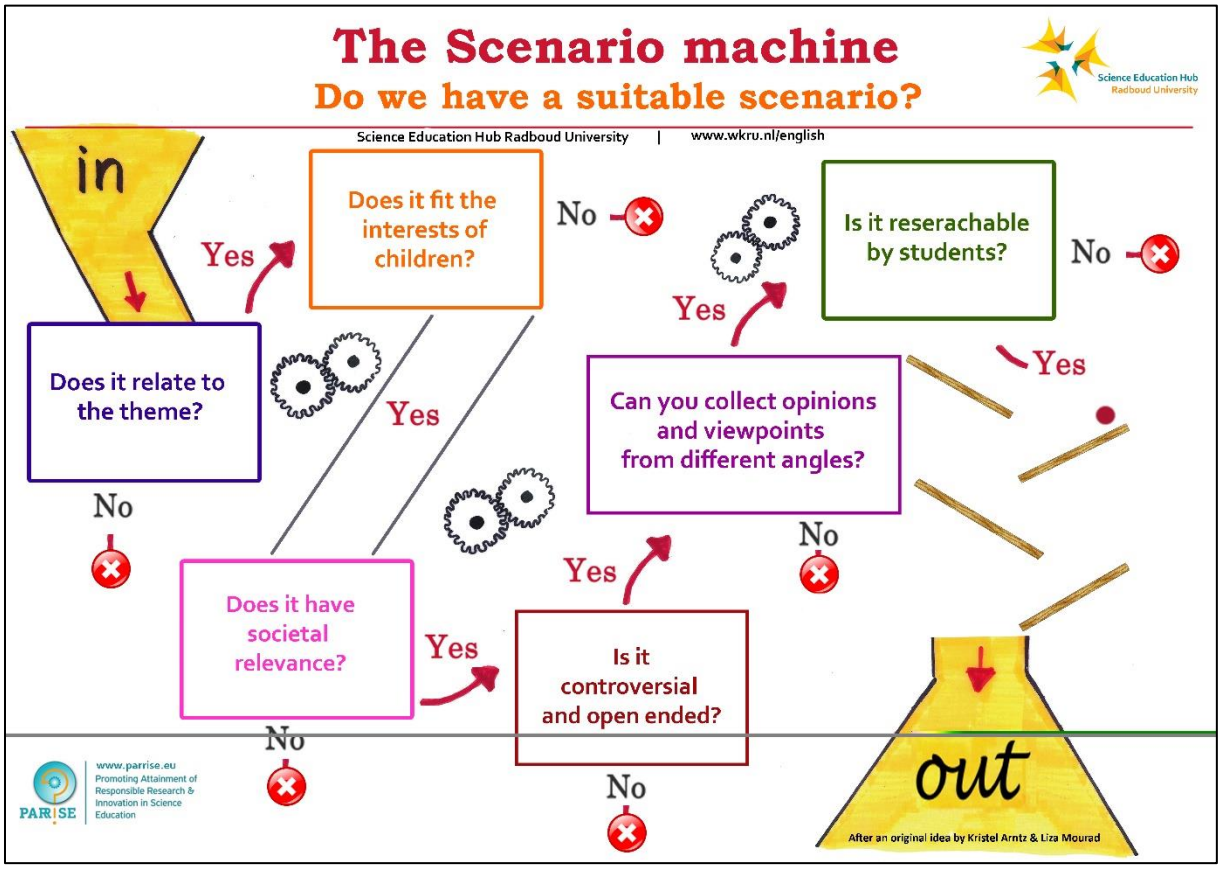
# The scenario machine

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# Session 6 The nature of scientific inquiry

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# Views About Scientific Inquiry [VASI questionnaire]

**1) A person interested in birds looked at hundreds of different types of birds who eat different types of food. He noticed that birds who eat similar types of food, tended to have similar shaped beaks. For example, birds who eat hard shelled nuts have short, strong beaks, and birds who eat insects from tide pools have long, slim beaks. He concluded that there is a relationship between beak shape and the type of food birds eat.**

- Do you consider this person's investigation to be scientific? Please explain why or why not.
- Do you consider this person's investigation to be an experiment? Please explain why or why not.

**2) Two students are asked if scientific investigations must always begin with a scientific question. One of the students says "yes" while the other says "no". Whom do you agree with and why? Give an example.**

**3) (a) If several scientists, working independently, ask the same question and follow the same procedures to collect data, will they necessarily come to the same conclusions? Explain why or why not.**

**(b) If several scientists, working independently, ask the same question and follow different procedures to collect data, will they necessarily come to the same conclusions? Explain why or why not.**

Lederman, J. S., Lederman, N. G., Bartos, S. A., Bartels, S. L., Meyer, A. A., & Schwartz, R. S. (2014). Meaningful assessment of learners' understandings about scientific inquiry - the views about scientific inquiry (VASI) questionnaire. *Journal of Research in Science Teaching, 51*(1), 65-83.

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**4) Please explain if "data" and "evidence" are different from one another. Give an example.**

**5) Two teams of scientists are walking to their lab one day and they saw a car pulled over with a flat tire. They all asked, "Are different brands of tires more likely to get a flat?"**

- Team A went back to the lab and tested various tires' performance on three types of road surfaces.
- Team B went back to the lab and tested one tire brand on three types of road surfaces.

Explain why one team's procedure is better than the other one.

**6) The data table below shows the relationship between plant growth in a week and the number of minutes of light received each day.**

| Week | Minutes of light each day | Plant growth-height (cm per week) |
|---|---|---|
| 1st | 0 | 25 |
| 2nd | 5 | 20 |
| 3rd | 10 | 15 |
| 4th | 15 | 10 |
| 5th | 20 | 5 |
| 6th | 25 | 0 |

Given these data, explain which of the following conclusions you agree with.

- Plants grow taller with more sunlight.
- Plants grow taller with less sunlight.
- The growth of plants is unrelated to sunlight.

Why did you select this conclusion?
Are the data what you expected? Why or why not.

Lederman, J. S., Lederman, N. G., Bartos, S. A., Bartels, S. L., Meyer, A. A., & Schwartz, R. S. (2014). Meaningful assessment of learners' understandings about scientific inquiry - the views about scientific inquiry (VASI) questionnaire. *Journal of Research in Science Teaching, 51*(1), 65-83.

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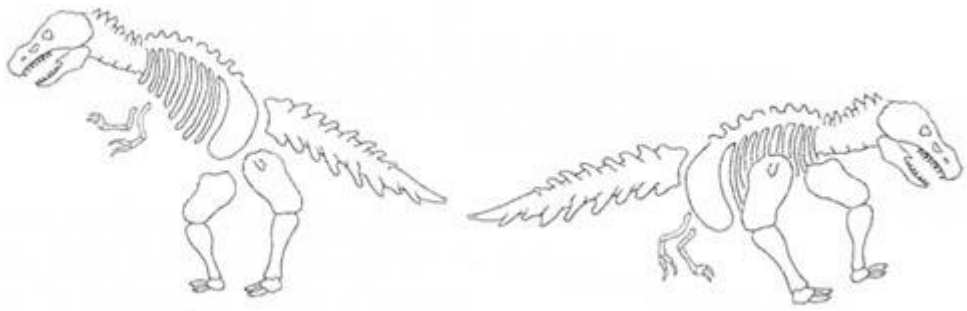
**7) The fossilized bones of a dinosaur have been found by a group of scientists. The scientists put the bones together into two different possible arrangements.**



| Skeleton 1 | Skeleton 2 |
|---|---|

- Describe at least two reasons why you think most of the scientists agree that the animal in *skeleton 1* had the best positioning of the bones?
- Thinking about your answer to the question above, what types of information do scientists use to explain their conclusions?
- When scientists do any investigation, what type of information do they use to explain their conclusions.

Lederman, J. S., Lederman, N. G., Bartos, S. A., Bartels, S. L., Meyer, A. A., & Schwartz, R. S. (2014). Meaningful assessment of learners' understandings about scientific inquiry - the views about scientific inquiry (VASI) questionnaire. *Journal of Research in Science Teaching, 51*(1), 65-83.

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# Session 7 Scientific inquiry as a core aspect of a SSIBL module

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# Inquiry-based learning as a core aspect of a SSIBL module

## Structure

Group activity: Disciplinary groups of teachers

## Duration

Total duration: 90'
Part A – Investigating scientific concepts in inquiry-based learning: 45'
Part B – Defining the inquiry-based activities: 45'

## Instructions

The following activity is a group activity and is comprised of two sections:

- Part A – Investigating scientific concepts in inquiry-based learning: Discuss the core scientific concepts involved in the socio-scientific controversy you have selected as well as the core scientific practices that they will be adopted by your students, during the enaction of their SSIBL module. Subsequently, respond to Questions (1), and (2) in the "*Designing a SSIBL module: Inquiry-based learning"* handout.

- Part B – Defining the inquiry-based activities: Discuss the inquiry-based learning activities of your SSIBL module and specify the learning goals of the proposed activities. Subsequently, respond to Questions (3), (4) and (5) in the "*Designing a SSIBL module: Inquiry-based learning"* handout.

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# Designing a SSIBL module: Inquiry-based learning

**1. What are the main scientific concepts that are involved in the socio-scientific issue that you have chosen?**

**2. Can these scientific concepts be investigated by your students? To what extent? Please explain.**

**3. Describe the activities that you would like to propose in order for your students get involved in the investigation of these concepts.**

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**4. Please write the teaching objectives for each ones of the proposed inquiry-based activities.**

**5. What is the expected duration of the proposed inquiry-based activities?**

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# Session 8 Active citizenship as a core aspect of a SSIBL module

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# Active citizenship as a core aspect of a SSIBL module

## Structure

Group activity: Disciplinary groups of teachers

## Duration

Total duration: 45'
Part A – Investigating the affordances for active citizenship actions: 20'
Part B – Defining the active citizenship activities: 25'

## Instructions

The following activity is a group activity and is comprised of two sections:

- Part A – Investigating the affordances for active citizenship actions: Discuss the core citizenship actions that could be adopted by your students, during the enaction of their SSIBL module. Subsequently, respond to Questions (1), and (2) in the "*Designing a SSIBL module: Active citizenship"* handout.

- Part B – Defining the active citizenship activities: Discuss the active citizenship activities of your SSIBL module and specify the learning goals of the proposed activities. Subsequently, respond to Questions (3), (4) and (5) in the "*Designing a SSIBL module: Active citizenship"* handout.

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# Designing a SSIBL module: Active citizenship

**1. To what extent can the socio-scientific issue you have selected lead your students to act as active citizens, by forming a personal view on the topic? Explain.**

**2. To what extent can the socio-scientific issue you have selected encourage your students to act as active citizens by undertaking personal and / or collective actions? Explain.**

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**3. Describe the activities that you would like to propose in order for your students get involved in citizenship actions.**

**4. Please write the teaching objectives for each ones of the proposed citizenship-based activities.**

**5. Record the duration of the proposed citizenship-based activities.**

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# Session 9 RRI as a core aspect of a SSIBL module

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# RRI as a core aspect of a SSIBL module

## Structure

Group activity: Disciplinary groups of teachers

## Duration

Total duration: 90'
Part A – Elaborating on the RRI aspects: 45'
Part B – Defining the RRI activities: 45'

## Instructions

The following activity is a group activity and is comprised of two sections:

- Part A – Elaborating on the RRI aspects: Discuss the RRI aspects of your SSIBL module (e.g. the role of scientific and technological advancement in society, societal concerns in relation to scientific and technological advancement, ethics in relation to scientific and technological advancement, "Science for society" and "Science with society"). Subsequently, respond to Questions 1-4 in the "*Designing a SSIBL module: Responsible Research & Innovation"* handout.

- Part B – Defining the RRI activities: Discuss the RRI activities of your SSIBL module and refine the learning goals of the proposed activities. Subsequently, respond Questions (5-7) in the "*Designing a SSIBL module: Responsible Research & Innovation"* handout

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# Designing a SSIBL module: Responsible Research & Innovation

**1. Reflecting on the socio-scientific issue you have selected whether it can promote your students' awareness of the role of scientific and technological development in our society? If so, explain briefly.**

**2. Reflecting on the socio-scientific issue you have selected whether it can allow your students to reflect on the society's concerns about scientific and technological development? If so, explain briefly.**

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**3. Reflecting on the socio-scientific issue you have selected whether it can promote your students' understanding about the significance of ethics in Responsible Research and Innovation? If so, how?**

**4. Reflecting on the socio-scientific issue you have selected whether it can promote your students' understanding of the motifs "Science for society" as well as "Science with society"? If so, explain briefly.**

**5. Describe the learning activities that you would like your students to engage with in order to promote Responsible Research & Innovation.**

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**6. Please write the teaching objectives for each ones of the proposed RRI activities.**

**7. Record the duration of the proposed RRI activities.**

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# Session 10 Instructional strategies for developing a SSIBL module

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# Instructional strategies for developing a SSIBL module

## Structure

Group activity: Disciplinary groups of teachers

## Duration

Total duration: 2,5 hours

## Instructions

Discuss the instructional strategies presented during the previous activity and select an appropriate instructional design for the structuring your SSIBL-based module.

According to instructional strategy selected document the activity sequence for your SSIBL module, using the *Lesson Plan Handout*.

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# Designing a SSIBL module: Lesson plan template

| No | Learning activity | Activity materials | Duration | Learning goals |
|---|---|---|---|---|
| | | | | |
| | | | | |
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# Session 11 Reflection on the SSIBL implementations

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# Reflection and evaluation of SSIBL implementations

**Structure**
Group activity: Disciplinary groups of teachers

**Duration**
Total duration: 3 hours

Part A – Elaborating on the "Strengths": 45'
Part B – Elaborating on the "Weaknesses": 45'
Part C – Elaborating on the "Opportunities": 45'
Part D – Elaborating on the "Threats": 45'

**Instructions**
The following activity is a group activity, is structured around a SWOT analysis and is comprised of four sections:

- Part A – Elaborating on the "Strengths" of your SSIBL implementations: Reflect on the strengths of your SSIBL implementations and respond to Question (1) of the "*Reflection and evaluation of SSSIBL implementations"* handout.
- Part B – Elaborating on the "Weaknesses" of your SSIBL implementations: Reflect on the weaknesses of your SSIBL implementations and respond to Question (2) of the "*Reflection and evaluation of SSSIBL implementations"* handout.
- Part C – Elaborating on the "Opportunities" of your SSIBL implementations: Reflect on the opportunities of your SSIBL implementations and respond to Question (3) of the "*Reflection and evaluation of SSSIBL implementations"* handout.
- Part D – Elaborating on the "Threats" of your SSIBL implementations: Reflect on the threats of your SSIBL implementations and respond to Question (4) of the "*Reflection and evaluation of SSSIBL implementations"* handout.

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# Reflection and evaluation of SSIBL implementations

**1. What were the main strengths of your SSIBL implementations?**

**2. What were the main weaknesses of your SSIBL implementation? What would you like to improve?**

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**3. What were the main opportunities during your SSIBL implementations?**

**4. What were the main threats during your SSIBL implementations?**

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