



“Ignite Your Future” Career Discussion

Lesson Plan One

STEM and the World

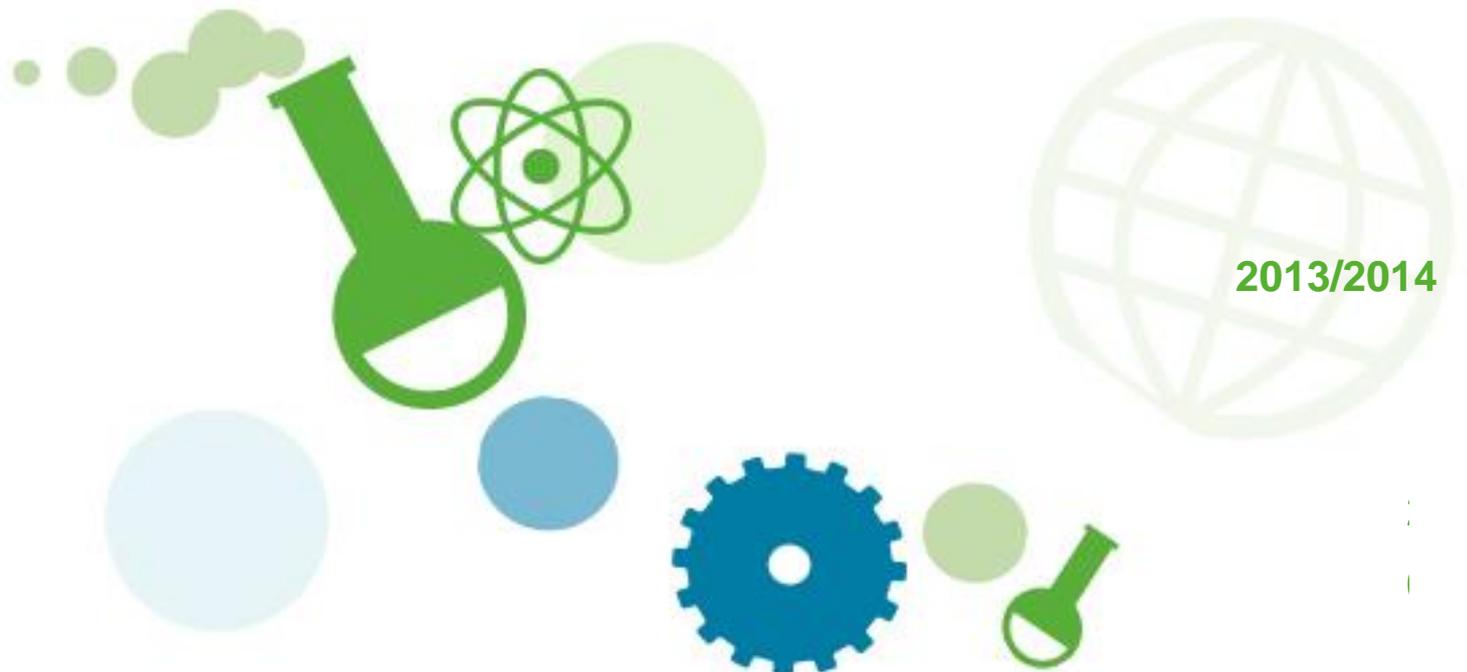


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OVERVIEW:

- **Lesson title:** STEM and the World
- **Age level:** 13-18
- **Time allotment:** 45 minutes
- **Resources:** video projector and the “Ignite Your Future” video developed for inGenious by European Schoolnet (<http://www.youtube.com/watch?v=xBYkxZzt8-M&feature=youtu.be>)
- **Document licensed**



INGENIOUS:

inGenious is one of the largest and most strategic projects in science education undertaken in Europe. It brings teachers and industry partners together to ensure STEM education is both up-to-date and relevant to the job skills young people need.

By improving the image of science subjects and related career options, inGenious aims to stimulate pupils' interest in, and their understanding of, the wide range of opportunities that STEM can bring to their lives in the future.

Set up in 2011 by European Schoolnet and the European Roundtable of Industrialists, inGenious brings over 40 members from industry, ministries of education and associations together with European teachers.

Join the inGenious Teacher Community: <http://www.ingenious-science.eu>



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INTRODUCTION:

Young people today are facing a complex and rapidly changing society. Pupils' understanding of careers is often limited to the experience of people in their immediate environment (family and teachers) and their perceptions can be influenced by incomplete information and stereotypes. It can be difficult for pupils to know where to begin when identifying their career pathway.

The “Ignite Your future” video was developed as part of inGenious, a European Commission funded initiative managed by European Schoonet. inGenious aims to foster collaboration between teachers and industry and improve pupils' understanding of careers in science, engineering, technology and maths (STEM). The video strives to show the link between STEM achievements, real careers and school pedagogy. It also aims to address stereotypical thinking, such as STEM is geeky or not for girls. It illustrates the important role that jobs employing STEM knowledge play in shaping our future world.

Subject matter

This lesson suggests a way of managing discussion before and after a classroom screening of the “Ignite Your Future” video. The video encourages pupils to think about the wider world relevance of STEM teaching at school by covering three STEM innovations and some of the jobs roles related to them. The lesson takes this a step further by inviting pupils to think broadly about the impact of STEM achievement, their current perception of careers in STEM and the role they want to play the evolution STEM can enable.



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LEARNING OBJECTIVES:

“STEM and the World” aims to stimulate thinking about the following areas:

- The role and value of STEM careers and, therefore, STEM studies in our society.
- The connection between what we enjoy and admire, what we learn at school, and what we might do for a living.
- The scope and range of jobs in STEM fields.

ACTIVITY DESCRIPTION:

The activity can be introduced as follows:

It is never too early to think about your future because what you do in school impacts your choices in the future. Today we are going the talk about careers that usually require an understanding of science, technology, engineering and maths (STEM).

Part 1: STEM and the World

Step 1

Divide class into groups of 4-5 pupils and provide each group with the list of questions detailed in Annex A.

Step 2

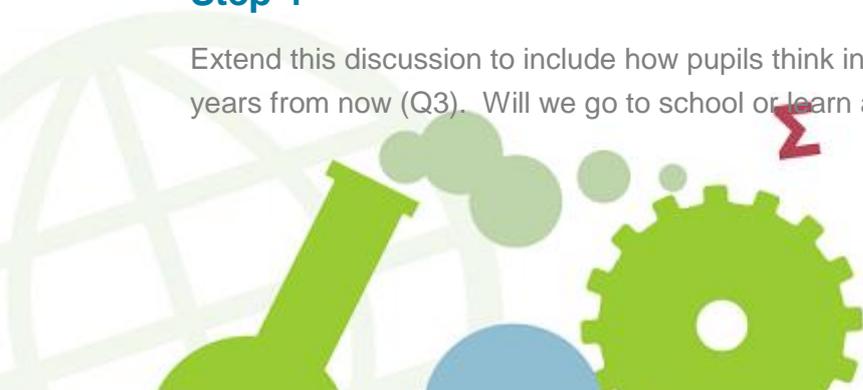
In their groups, ask pupils to list STEM achievements they value and admire (Q1) such as Facebook, collaboration technologies they use on their phones, the Internet, an iPad, solar power, wind turbines, keyhole surgery, artificial legs and hearts, airplanes, satellite systems.

Step 3

Then ask pupils to discuss what these achievements enable (Q2). The aim is to get pupils to think about the impact innovations have on our world today. Is the world a better place thanks to these innovations? If so, how?

Step 4

Extend this discussion to include how pupils think innovation might change the world fifty years from now (Q3). Will we go to school or learn at home via virtual lessons? Will we go to



work or connect to virtual teams? Perhaps we will beam people into our living rooms as holograms? If we travel, what energy will our cars use? Will cars exist? How will we heat our homes? Will problems like clean water and access to education in developing countries be solved? How will healthcare evolve?

Talking point:

The pace of change and what it means for jobs and skills acquisition.

- a. It took radio 38 years to reach 50 million users. It took the iPod just 3 years to reach the same number of people¹. (Technology)
- b. In the past ten years alone, we've learned to sequence the human genome, grow STEM cells, transplant faces and create working bionic limbs. (Medical science)

Step 5

Talk about how Science and Technology can impact world issues (Q4).

Talking points:

- a. Diseases can be fought by aggregating health data (Bioinformatics).
- b. Low literacy / poor education can be fought by providing the invaluable content of books and lessons virtually (eBooks and eLearning)
- c. Hunger can be fought by sharing knowledge to grow crops (Internet and collaboration technology)
- d. Accidents can be prevented and energy saved by sensor systems in cars and lights (Robotics and mechanical engineering)

Step 6

Ask pupils to discuss whether they think it is enough to be benefit from the innovations they enjoy or whether they would like to play a part in realizing and extending their use (Q5).

Step 7

Invite members of each group to give feedback to the class on the five questions discussed.



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Step 8

Play the “Ignite Your Future” video. Ask pupils (whole class) how the video made them feel. Ask pupils how the video made them think about working in an industry involving STEM. Talk about the types of jobs in these industries: people who invent and design, people who manage, people who support (eg. human resource teams, lawyers, accountants), people who sell, market and communicate. Pupils could be invited to suggest the different types of job categories.

ADDITIONAL ACTIVITIES:

inGenious Educational activities

A range of STEM education activities developed by inGenious industry partners including Philips, Shell, Volvo, Intel and Microsoft can be found on the [inGenious website](#). You will need to register to the inGenious Teacher Community (takes a few minutes) to access them.

Useful resources:

On-line careers tests exist in various languages. They can be a useful resource in helping pupils to develop their self-awareness. Examples below:

- www.bbc.co.uk/science/humanbody/mind/surveys/careers/
- www.toutpoureussir.com/eng/orientest/index (English and French)

Role model databases and job seeker tips:

On-line resources exist in most countries. These offer insight into different types of careers and offer CV template and job seeker tips.

Examples below:

- <https://vle.thebrilliantclub.org/brightside/knowledge-bank>
- <http://www.myworldofwork.co.uk>

EU and UK examples below:

- <https://vle.thebrilliantclub.org/brightside/knowledge-bank>
- <http://www.myworldofwork.co.uk/>
- <http://www.futuremorph.org/>
- <https://nationalcareersservice.direct.gov.uk/Pages/Home.aspx>



- <http://www.prospects.ac.uk/>
- <http://www.careerswales.com/en/>
- <http://www.education.gov.uk/>
- <http://www.shu.ac.uk/research/cse/about-us/stem-unit>
- <http://www.wisecampaign.org.uk/>

ANNEX:

Annex A: STEM and the World

1. List science, technology, engineering and maths achievements that you enjoy or admire?
2. What do these achievements enable?
3. How might innovation change the world fifty years from now?
4. How will science and technology impact world issues?
5. Would you like to play a part in shaping tomorrow's innovations? Is it enough just to benefit from innovation or would you like to shape it, enable it, communicate about it?

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The work presented in this document is supported by the European Union(s Framework Programme for Research and Development (FP7) - project ECB: European Coordinating Body in Maths, Science and Technology (Grant agreement N^o 266622). The content of this document is the sole responsibility of the Consortium Members and it does not represent the opinion of the European Union and the European Union is not responsible or liable for any use that might be made of information contained herein.

ⁱ <http://www.un.org/cyberschoolbus/briefing/technology/tech.pdf>



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