Flight of fancy: An imaginative though realistic idea

The online implementation of an AERO Learning Scenario with 8th graders

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Abstract

Flight of fancy is an AERO Learning Scenario (LS) that was designed during the Aerospace in Class MOOC, coordinated by European Schoolnet (EUN), and part of the "Aerospace in Class" project. The participation in the MOOC provided me with the incentive, knowledge and the materials to design and implement the LS with my students. I am a teacher of English in a lower secondary public school in Greece and I was so excited with all the information I had acquired during the MOOC that I really wanted to share it with my students. STEM subjects have always fascinated me and with the "A" added to the term - STEAM - I have the opportunity to combine my discipline - language Arts - with science, technology, engineering and mathematics to my everyday teaching. The learning scenario was implemented exclusively online (March-April 2021) with my 8th grade students (13-14 years old) as in Greece we have been in an emergency remote teaching (ERT) situation since October 2020 (with few in between small onsite teaching breaks). The LS was submitted in the STEM ALLIANCE & STE(A)M IT COMPETITION / 2021 STEM DISCOVERY CAMPAIGN in the "Scientix Competition 2: STEM Resources". English, History, Engineering, and Technology are combined with the resources of the Airbus Foundation and offer students with no previous familiarity with the topic, a unique way of experiencing the science of flying.

"Flight of fancy: An imaginative though realistic idea" is a learning scenario that focuses on the science of flight and leads the students into a journey to the history of flying and the pioneers who made the imaginative task of flying realistic and achievable. Through the stories of the Wright Brothers, the inventors of the airplane and Amelia Earhart, the first woman pilot to cross the Atlantic, students discover how flying machines were invented, powered, designed and evolved to satisfy the need for fast and safe long distance transportation. The videos from the resources of the Airbus Foundation Discovery Space are an excellent means of inspiring students to explore aviation and learn the how, what and why of flying!

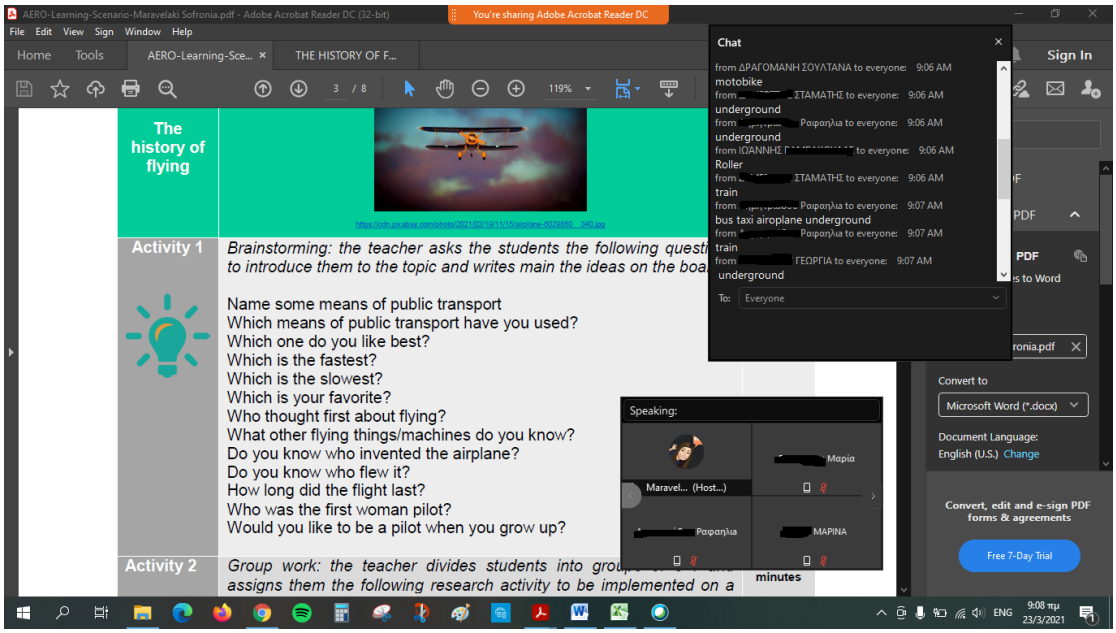
Key words: History of flying, pioneers of flying, Aerospace in Class, Airbus Foundation, STEM

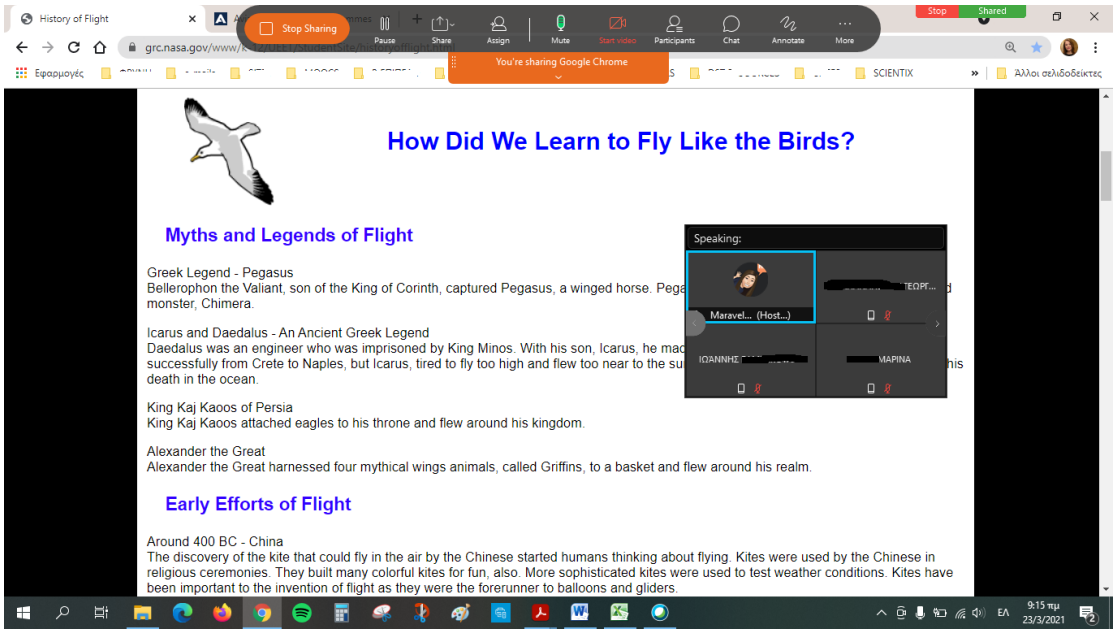
Aims and objectives

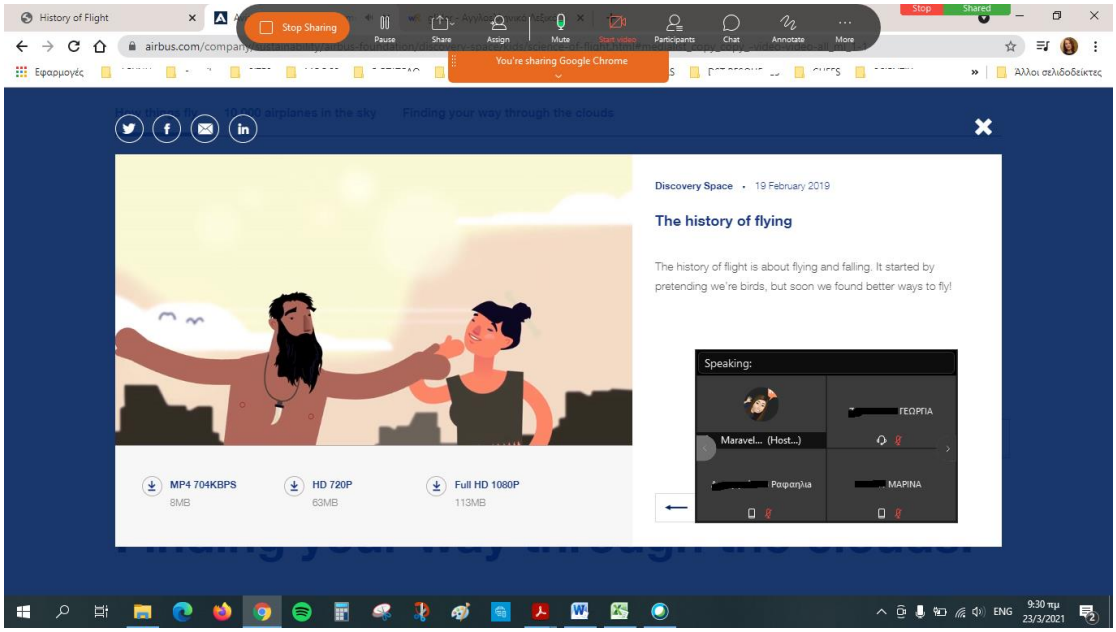
The general aim of the lesson is to acquaint students with aviation. Additional aims of the learning scenario are for students to learn about the history of flight, to learn about the design and engineering of airplanes, to meet the pioneers who made travelling by air possible, to design their own paper planes, to guess the causes of a flight not going well. Other objectives are online collaboration and communication, engaging in project work and using web 2.0 tools and web resources to achieve learning outcomes.

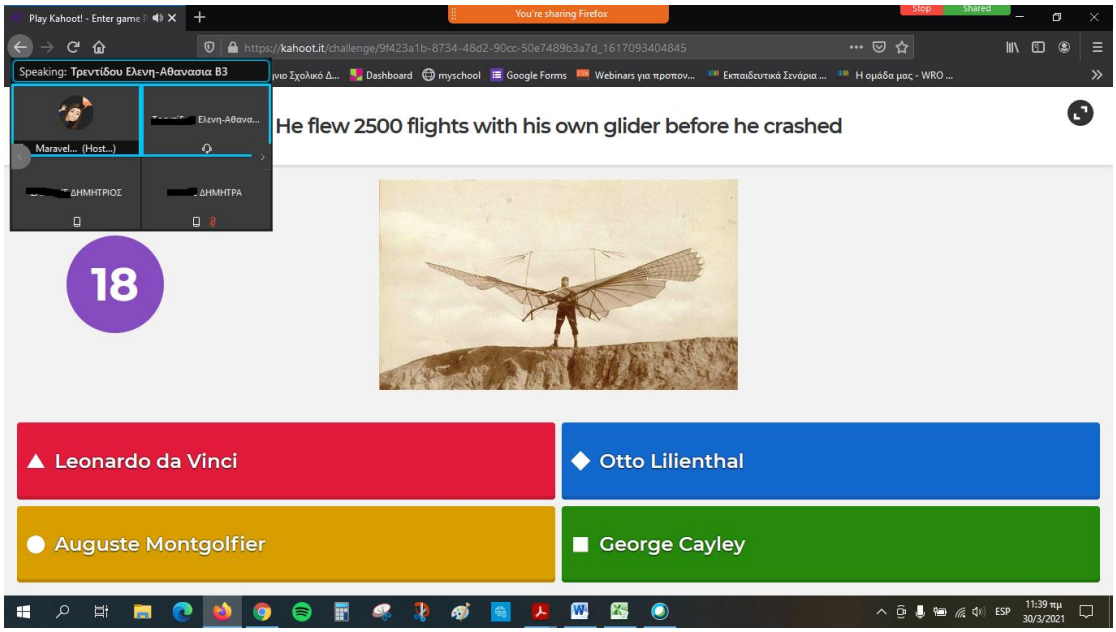
Procedure

In the first online lesson, students learnt about the history of flight, from mythology to the 20th century, and got to know the first men who thought about flying and those who made it feasible. After brainstorming questions about the means of transport, students read about the History of flight in NASA's webpage and then watched the video “The history of flying” from the Airbus Foundation (AF) webpage. They were divided in groups in breakout rooms and wrote questions on topics assigned to them by the teacher. In the next lesson they designed the quiz with the teacher’s help and played it in Kahoot to check knowledge acquisition and understanding. Students had fun and learnt the first useful information that immersed them into the world of aviation.

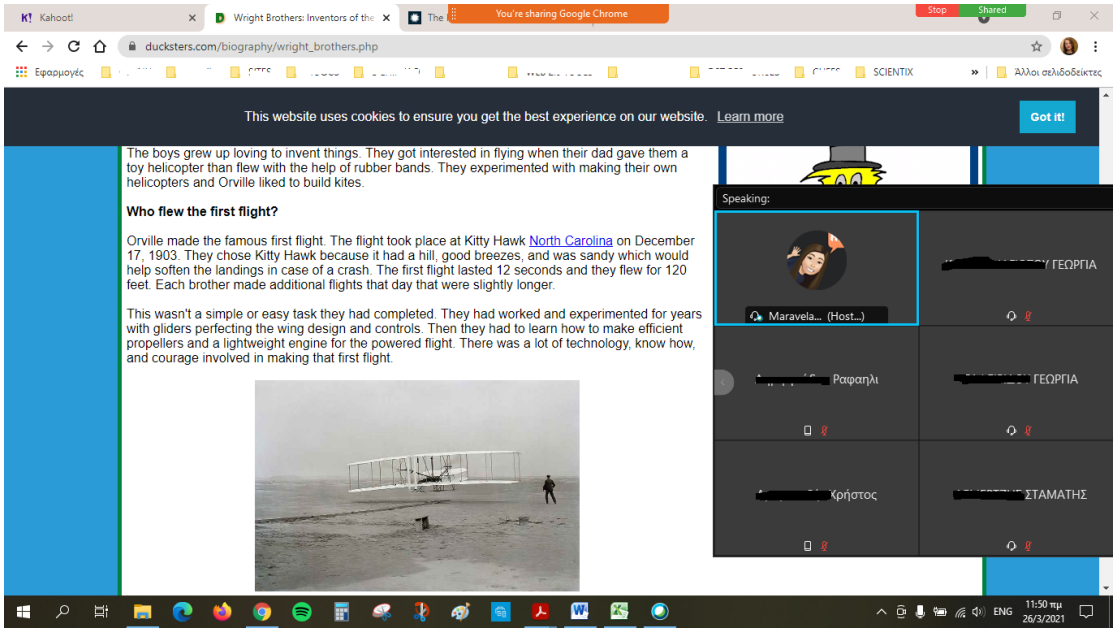


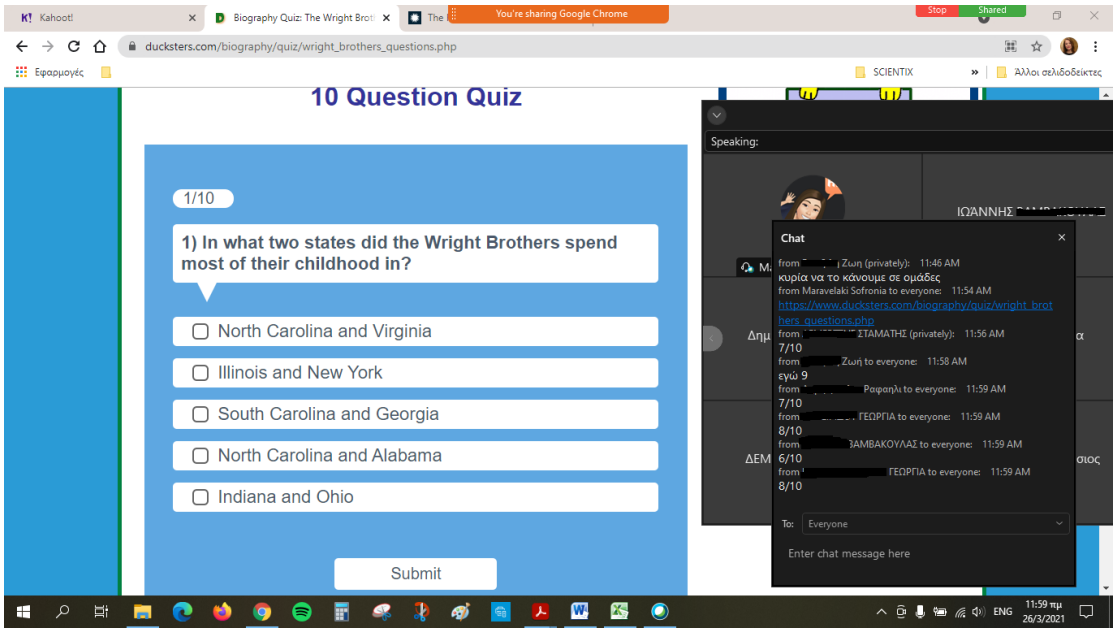




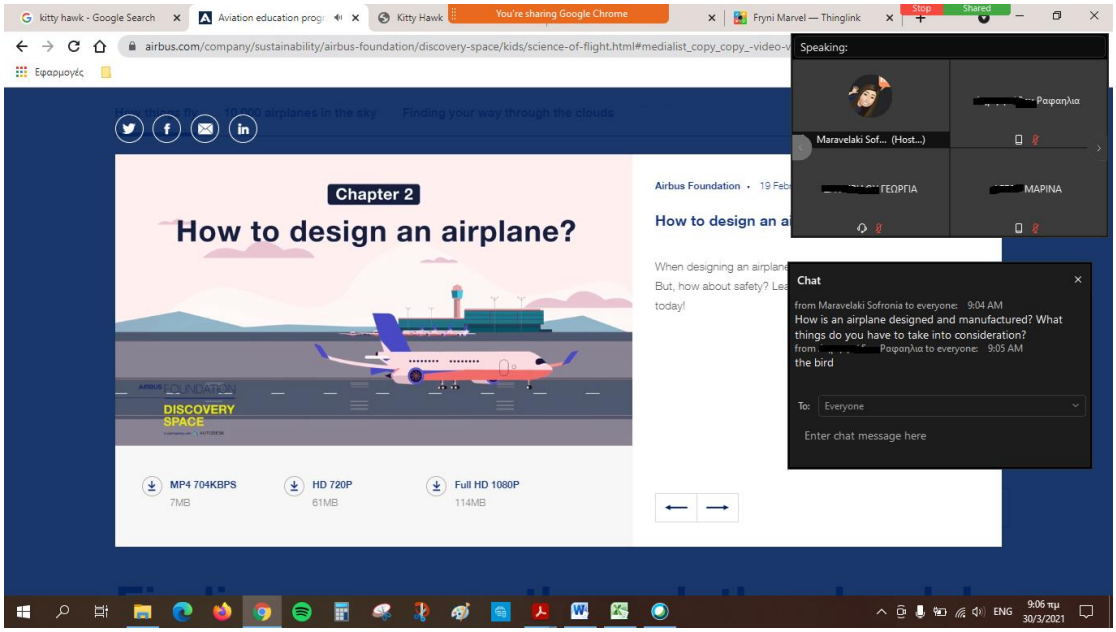


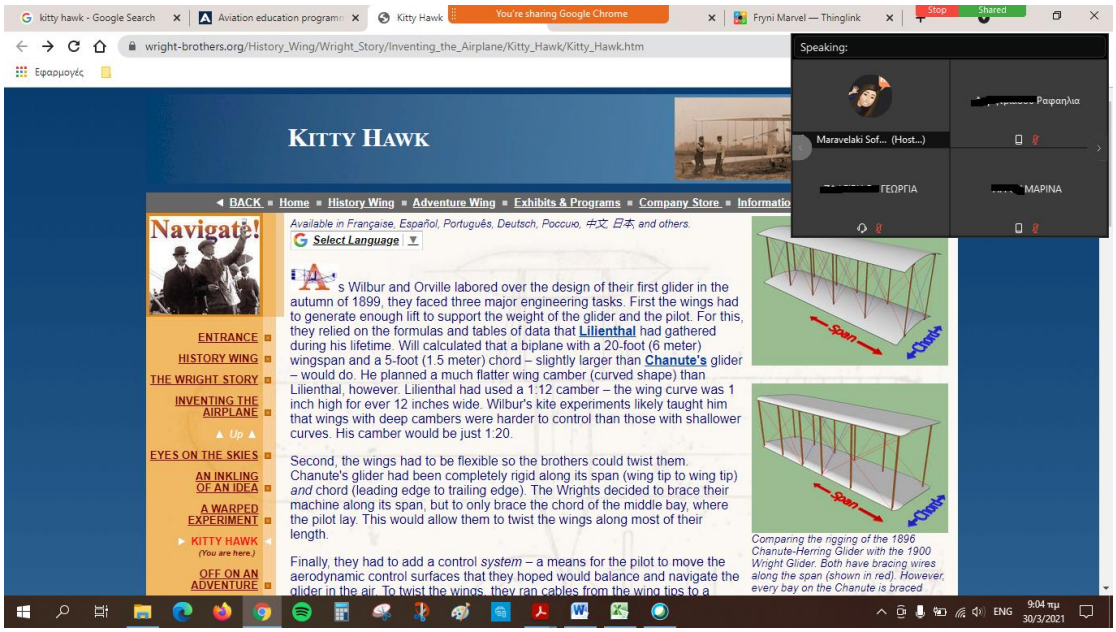
In the second lesson we read about the history of the Wright Brothers and the invention of the airplane. Students studied the webpage about the Wright Brothers in Ducksters and answered a 10 question trivia quiz to evaluate the knowledge gained on the topic.



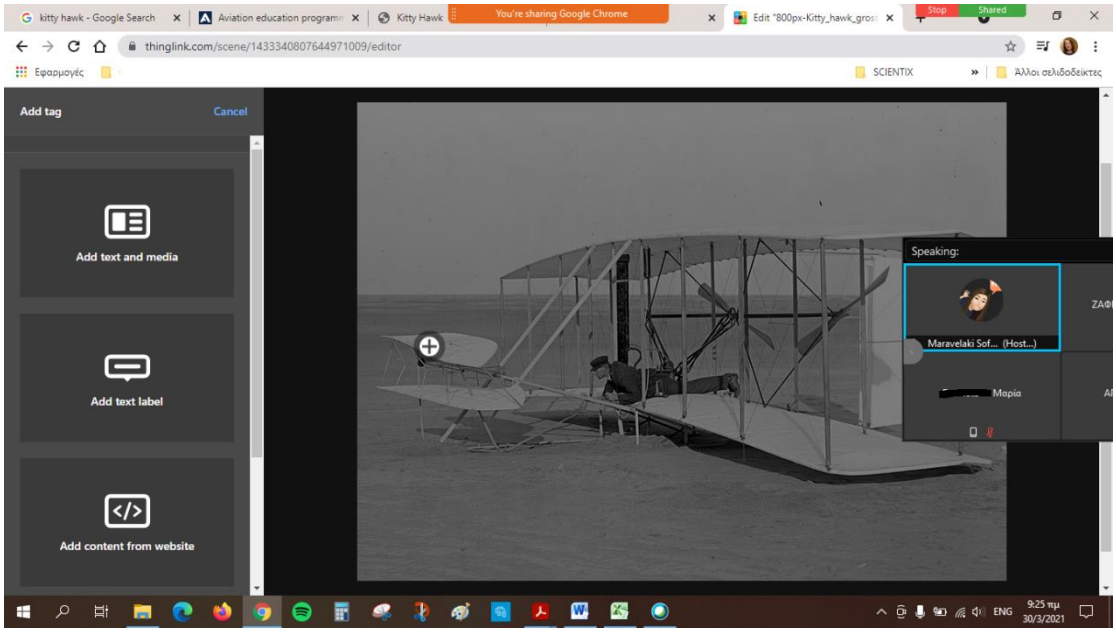


In the third lesson students watched the video How to design an airplane from the AF. The aim was to provoke students' curiosity in order to research the topic, in the Wright Brothers webpage, of how the Wright Brothers designed their plane and what they had to take into account in order to make it fly.

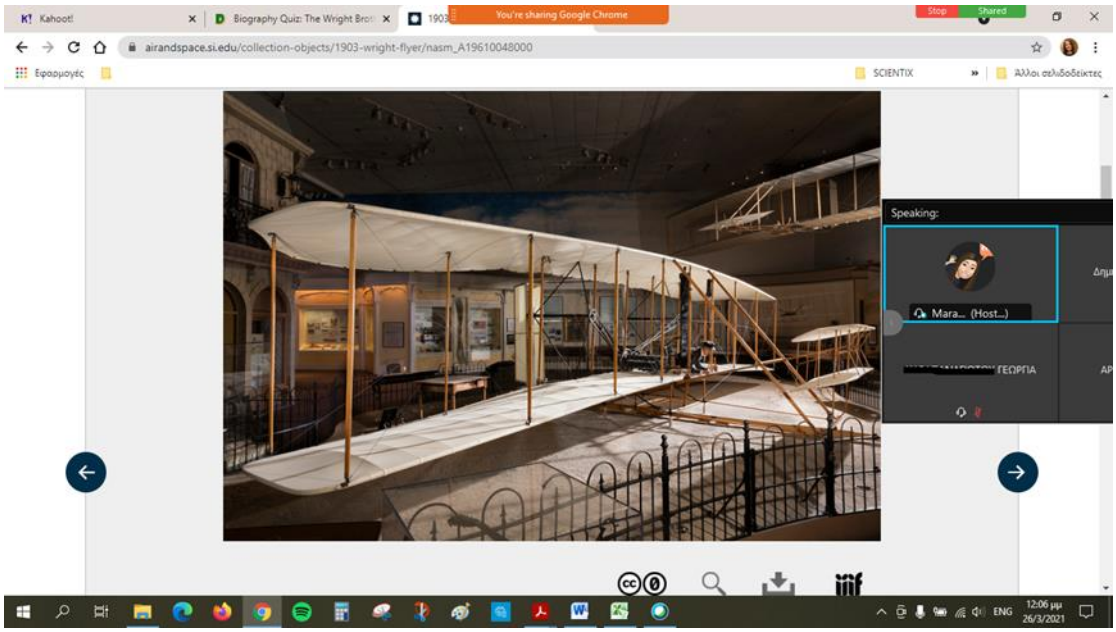




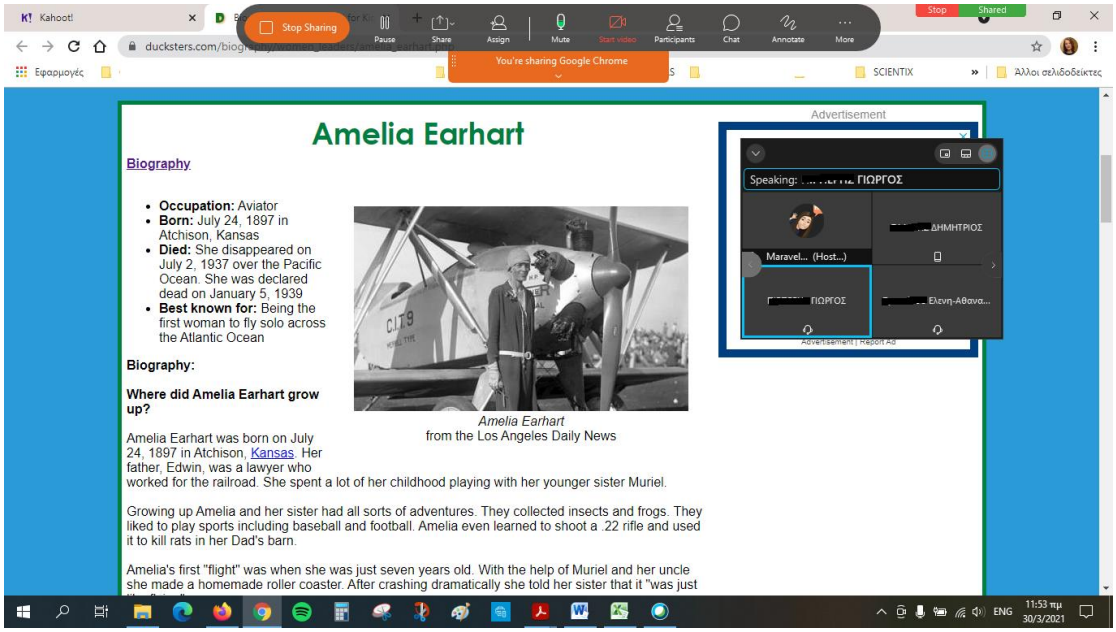
After investigating the topic, we downloaded the picture of the Kitty Hawk from Wikipedia commons and uploaded it to Thinglink. Then we included the parts of the plane in the picture (wings, chords, cables, tail, rudder, etc) and explained their function according to what students have read.

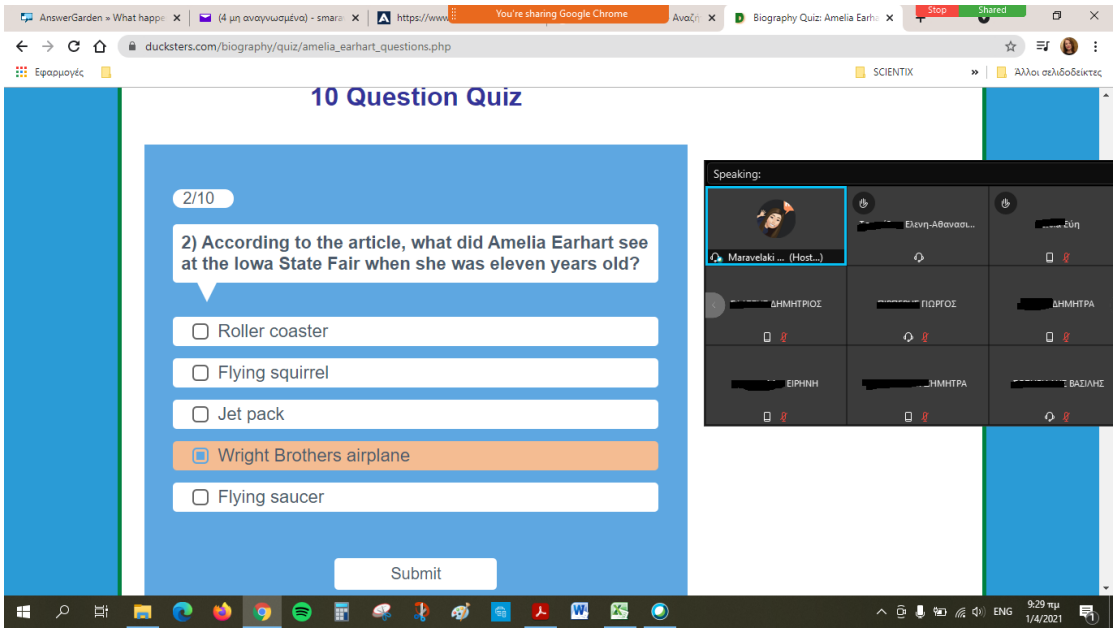


Finally we visited online the [Smithsonian Air and Space Museum] to see the Kitty Hawk which is exhibited in the museum. The students were impressed that the plane was still intact and in good condition and that someone could actually see if from up close.

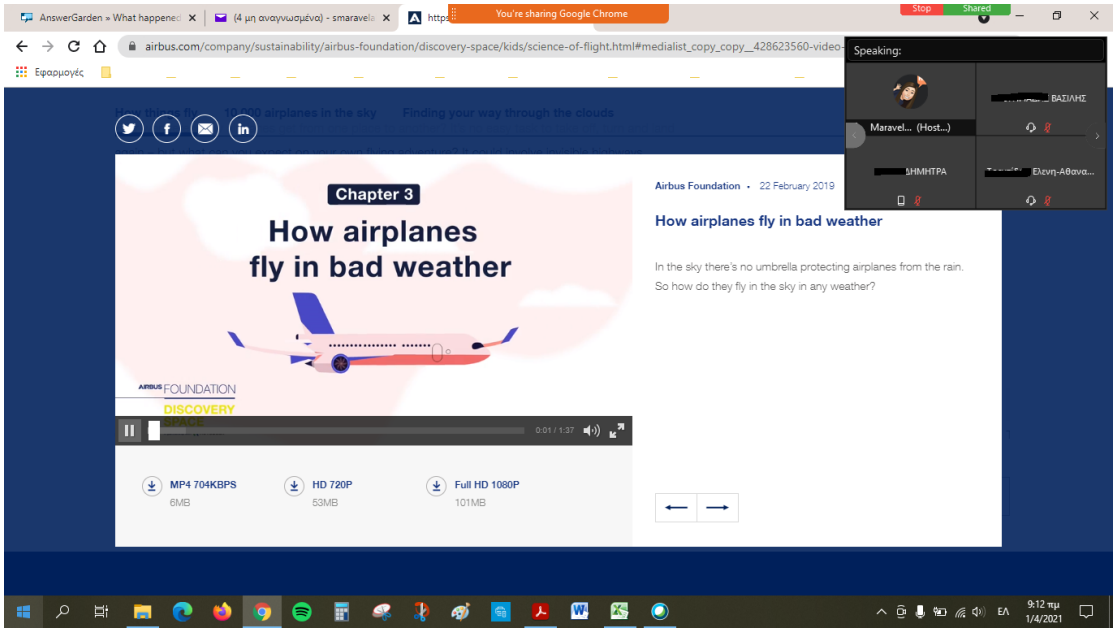


In the fourth lesson students learned about Amelia Earhart, the first woman to cross the Atlantic solo, and were very impressed by her achievements. But they were also very sad to know that she got lost and was never to be found. Students studied the webpage about [Amelia Earhart in Ducksters] and answered a [10 question trivia quiz] to evaluate the knowledge gained on the topic.





With this in mind, in the fifth and final lesson, we investigated the possible causes of Amelia's failure to cross the Pacific Ocean. Students watched the videos from AF "What happens when you fly", "How airplanes fly in bad weather", "The invisible highways in the skies" and made guesses and discussed the problems Amelia may have encountered during her last flight according to what they have understood from the videos. Then, in an online brainstorming activity in AnswerGarden, the students expressed the most possible causes of her disappearance. They also voted in a Tricider the most plausible reason of her disappearance.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Chapter 3
How airplanes fly in bad weather
Airbus Foundation • 22 February 2019
How airplanes fly in bad weather
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So how do they fly in the sky in any weather?
MP4 704KBPS 6MB
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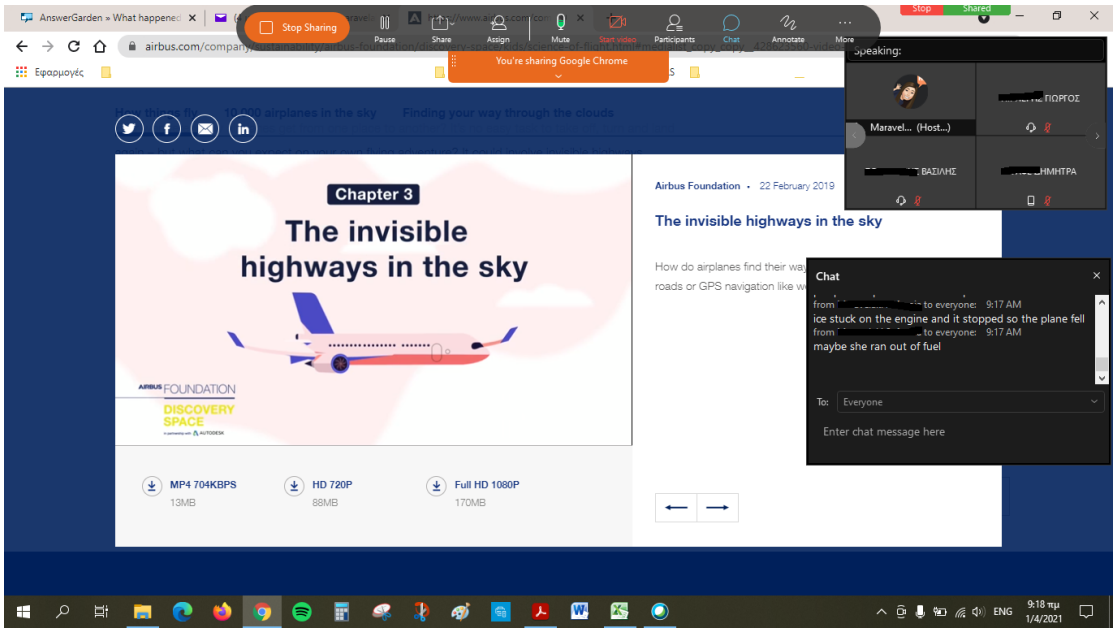
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Chapter 3
The invisible highways in the sky
Airbus Foundation • 22 February 2019
The invisible highways in the sky
Chat
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Everyone
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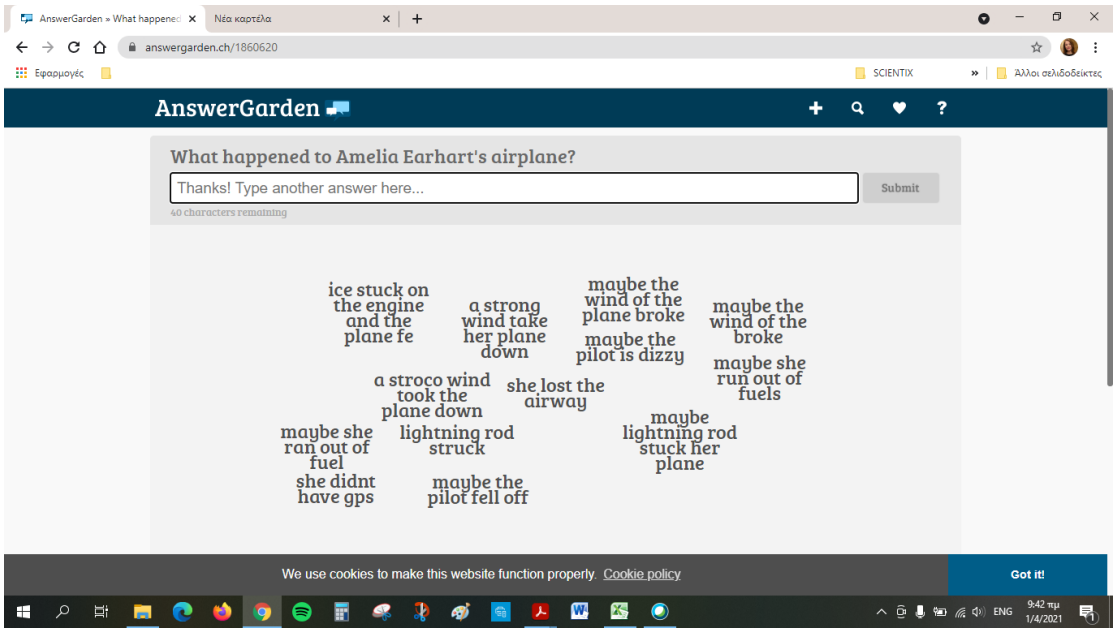
answergarden.ch/1860620
AnswerGarden
What happened to Amelia Earhart's airplane?
Thanks! Type another answer here...
Submit
40 characters remaining
ice stuck on the engine and the plane fe
a strong wind take her plane down
maybe the wind of the plane broke
maybe the wind of the broke
maybe the pilot is dizzy
maybe she run out of fuels
a stroco wind took the plane down
she lost the airway
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lightning rod struck
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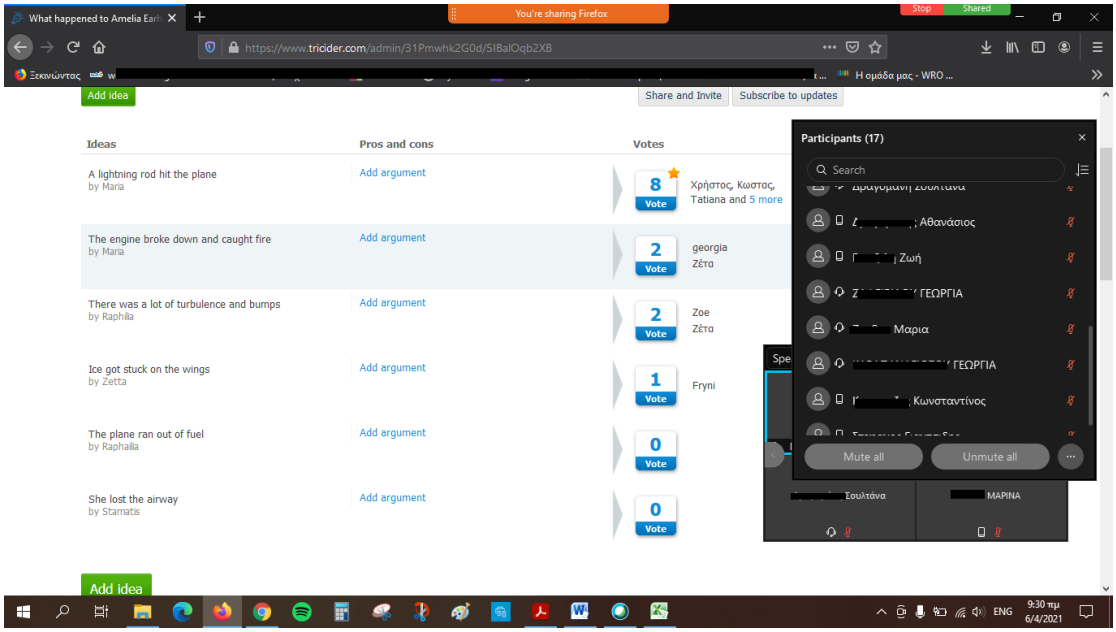
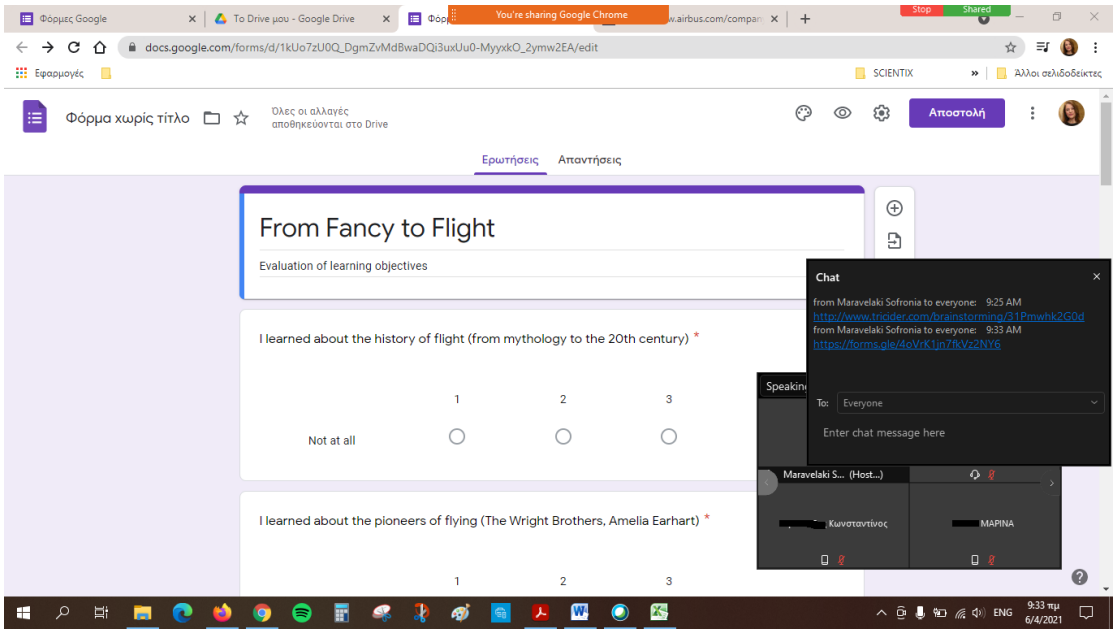


At the end of the lessons, students expressed satisfaction or dissatisfaction of learning and knowledge acquisition by filling in a Google form administered to them at the end of the lessons. Students reacted to statements and expressed their views by choosing from a likert type scale from 1.Not at all, 2.Enough, and 3.A lot, what they learned(or not) and liked (or not) in the lesson. Then, teacher and students will discussed the results of the Google form in order to exchange views and opinions and suggest possible ways of improving teaching and learning objectives.



Discussion

Most of the learning objectives have been achieved. From the 21 students that have filled in the form, most of them learnt about the history of flight, about the pioneers of flying, about the invention of the airplane, how to design their own paper airplane, the causes of a flight not going well. Most of them liked the videos from the Airbus Foundation, enjoyed making and playing the Kahoot quiz, enjoyed making the Thinglink picture of the Kitty Hawk, enjoyed their visit to the Smithsonian Air and Space Museum, enjoyed playing the quizzes about The Wright Brothers and Amelia Earhart, think they know what happened to the airplane Amelia Earhart was flying in and why she got lost, liked the online lessons, liked the

online communication and collaboration with their classmates and most of them think their English teacher is great and enjoyed her lessons (20/21! You can't please them all, can you?)

Teacher and student relationships have played an important role in achieving these learning outcomes. I have been working with these students since last year and they are used to doing collaborative group activities and using web 2.0 tools for projects. Their level of competency in English varies, from A2 to B1 according to the CEFR, and I tried to simplify the procedure for the weaker students (using mother tongue, explaining) and make it more interesting and challenging for the stronger ones (assigning roles, giving initiatives).

Personally I was surprised at the students' reactions towards the topic of the LS. When I suggested it they gladly agreed to take part and their enthusiasm during the implementation was obvious. I gained a lot of satisfaction and useful insights of how to better prepare online lessons, teach and engage all students and making effective use of resources while designing this LS.

This LS could have been implemented with the aid of other colleagues, e.g. the teacher of technology who would help the students make a model a plane, the teacher of Physics who could talk to the students about aerodynamics and turbulence, the History teacher who could describe in detail the historical context of the topic of flight. Collaboration among teachers of other disciplines is hard while teaching online during a pandemic that has isolated the school community to their personal premises behind a screen. Let's hope and pray this situation ends soon and be positive and optimistic about the future!