**Lesson Plane Table**

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| **Subject:** | **DIGITAL TEACHING IN COMPUTER SCIENCE SUBJECT – LOULE, PORTUGAL** | | | | |
| **Authors:** | **Teachers:** Florinel Bisag, Alina Savu  **Students:** Adelin Letcanu,Sorana Popa, Andrei Vincz | | | | |
| Date: | | | | 13/03/ 2019\_ | |
| Estimated time: | | 50 minutes + 50 minutes |  | |  |
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| Summary: |  | | | | |

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| **Objectives**  (Specify skills information that will be taught) | **Activity/ Information**  **Teacher Guide/ Student guide** | **Materials Needed**  (Other resources - web, book...) | **Assessment Methods**  (steps to check for student understanding) | **Time**  **Where?** |
| \* understanding the notions of theory in the subjects of Informatics and Geogrphy studied in romanian high schools  \* solving interdisciplinary applications using programming knowledge  \* understanding natural phenomena and establishing geography notions by using them in an interactive and fun way.  Solving interdisciplinary applications.  \* using the notions of physics, chemistry and geography in an original way through practical experiments  ***Know Concepts or Keywords :***  - basic concepts in C++, Java;  - basic concepts in Geography;  - concepts of computer operation; | **Motivation Activities**  -Do you want to learn how to use Arduino and new programming concepts?  We built a weather station using Arduino!  -Do you want to find interesting things in geography? Do you want to test your knowledge in this area?  Then use the **Georaphy App** and **EarthOwn App** applications created by us for Android and Windows systems.  -Do you want to know more about the solar system, the constellations and even the satellites?  You can use the application for that **SkyView® Lite** for Android and IOS.  -A cloud in a bottle! A practical experiment that teaches how clouds form, how the fog appears and disappears. | * Phone * Worksheet * PC * Internet * Video-projector * Tools for practical experiment | * Resolve interactive Apps * Testing meteo station   -Participate in the contest using the applications  - Participate in the experiment creating their own cloud | **In Classroom**  **Outside school**  30 minutes+  30 minutes+  30 minutes |

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| **Description of the activity 1:** | |
| **Introduction** | Explain how to make simple weather station to sense temperature and humidity using DHT11 sensor and Arduino. |
| **Main activity** | Explaining how the weather station was built.  Testing it by students |
| **Lesson Guide (Step by step)** | - connects all the station elements.  - displaying a short presentation film  - distribution of weather station building schemes  - sensor testing and data verification  - details of the programming code used. |
| **Exercises (2 or 3 levels of difficulty)** | * connecting elements and testing the weather station |
| **Conclusion and Evaluation** | Students are challenged to solve various problems.  They check the correctness of the result obtained using learned using the methods learned during the workshop |
| **Notes:** | Students check their knowledge of computer science.  Information on how the weather station was built is in the PowerPoint attached to this lesson plan  Presentation video: <https://www.youtube.com/watch?v=IO5kay3q3O8#action=share> |
| **Description of the activity 2:** | |
| **Introduction** | Find interesting things in geography and test our knowledge  We can use for this **Georaphy App** and **EarthOwn App** |
| **Main activity** | Interactive solving of some applications |
| **Lesson Guide (Step by step)** | -Finding out interesting things about the environment or the geography of our continent   * solving the proposed applications; * solving quizzes; * solving some fun apps; |
| **Exercises (2 or 3 levels of difficulty)** | * solving final quizzes |
| **Conclusion and Evaluation** | Students discover new things..  They have immediate feedback to what they have learned with quizzes and interactive applications. |
| **Notes:** | Applications can be downloaded by following links  **GeographyAp**p: <https://drive.google.com/file/d/1pPfYuXUMWouE6z9zefx7ZuBVkrj4KZaW/view>  **EarthOwn App:**  <https://drive.google.com/file/d/1-5DfeYqjN02kKPq3tlCKAqGTr4cj2GmW/view> |
| **Description of the activity 3:** | |
| **Introduction** | **SkyView® Lite** is an amazing stargazing app. |
| **Main activity** | Notice the constellations, the planets and even the satellites using the mobile phone in a very simply way. |
| **Lesson Guide (Step by step)** | -installing **SkyView® Lite** on every mobile phone   * dividing the students into 3 groups * make them look for constellations, satellites, and more * we organised a contest to see who can find the fastest constellations using the app. * each group had look for 3 different horoscope constellations. |
| **Exercises (2 or 3 levels of difficulty)** | Students are looking for constellations or other elements in the galaxy with the help of the application. Everything takes place against time. |
| **Conclusion and Evaluation** | . Students were delighted to discover the constellations or the movement of the planets themselves. They found out that each zodiac sign corresponds to a constellation. Application design is very attractive and interactive |
| **Notes:** | You can find the app here:  <https://itunes.apple.com/us/app/skyview-lite/id413936865?mt=8>  <https://play.google.com/store/apps/details?id=com.t11.skyviewfree&hl=en_US> |
|  | **Description of the activity 4:** |
| **Introduction** | How are the clouds forming- |
| **Main activity** | Our experiment actively teaches you how clouds are formed in the atmosphere |
| **Lesson Guide (Step by step)** | - Projecting an YouTube video that helped us explain the process  - After everybody understood the process on the big scale, we proceed to demonstrate it on a much smaller scale.  - For this we need a empty, clear bottle, a cork, a pen, water and a pump.  - Drilling a hole in the centre of the cork  -Attached the pen to the pump, added a little bit of water in the bottle  - Attached the cork to the bottle  - Add some air in the bottle to create pressure,  - After we release the pressure drastically, condensation starts to happen and it will transform into a cloud, well, in a bottle!  - pumping air still into the bottle, it is noticed how the cloud disappears. Continuing pumping, the cloud reappears in the bottle. This is actually the phenomenon of the appearance and disappearance of the fog |
| **Exercises (2 or 3 levels of difficulty)** | Students were invited to create their own cloud in bottle, using not only water but also alcohol. |
| **Conclusion and Evaluation** | It was a fun and very interactive way to learn something about how certain natural phenomena occur. Students were delighted to discover how interesting and simple you can be to do such experiments. |
| **Notes:** | You can find the video here:  <https://www.youtube.com/watch?v=cXpuo3YHOn0> |

**Bibliography**

* IT and Geography books used in our high-school .
* Internet