

# Activity **10**

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## Astronomy News

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Activity developed at Cégep de Saint-Félicien  
By **BRUNO MARTEL**

## Astronomy News

Date Last Tested

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Author's Name

**Bruno Martel**

Originating Cegep

**Cégep de Saint-Félicien**

Author's E-Mail Address

**bmartel@cstfelicien.qc.ca**

Scientific Discipline

**Physics**

Average Age of Students

**18 years old**

Course Title and Number

**Exploring and Understanding  
the Universe (203-FSW-03)**

Duration of Activity

**9 twenty-minute periods and  
one hour to defend the projects**

### NOTE

In this document, the masculine is used without discrimination and solely to make the text easier to read.

Appendices are available in PDF and Word format on the CD provided with this document.

In addition, an instructional analysis of the activity is available in the pedagogical treasures section (Trésors pédagogiques) on the Saut Quantique Web site at:

**<http://www.apsq.org/sautquantique>.**

Use of this text is authorized for instructional purposes, provided that author's name and college are mentioned.

Adherence to these recommendations will encourage authors to share their experience.

## Astronomy News

### Description of Activity

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#### OVERVIEW

In science courses, teachers are always looking for ways to get students interested and involved. They also try to integrate learning and to give some meaning to their teaching. It is in this perspective that we came up with *Astronomy News*.

This activity is conducted as part of the complementary course *Exploring and Understanding the Universe (203-FSW-03)*. Students who register are from the following programs: *Social Science, Arts and Literature, Business Administration Techniques, Wood Processing Techniques* and *Exploration*.

Although the activity was developed in a complementary course, it can be used in any science course. Since presentations are based on a reflection on connections between science, technology and society, there is an interest for students at any stage of their training.

#### Description:

What are the issues facing science today? Amidst the mass of information we receive, some are news items, while others are indicators of major developments that will change the way we live and see the world. Students should therefore be able to make a judgment as to the type of information they receive. *Astronomy News* serves that purpose. The activity includes two stages, i.e. two separate oral presentations: *presentation of a news item* and *defending a project*.

#### Presentation of a News Item:

*During the first stage, students divide into teams and present a news item in astronomy to the class.*

The evaluation is individual and based on the presentation itself as well as student participation during that presentation.

#### Defending a Project:

During the semester, students will have presented several contemporary issues and covered several research areas. For example, they will have talked about space exploration by humans or robots, the search for extraterrestrial life, international space stations, extrasolar planets, etc. However, they should be aware that everything cannot be done at once... And if they had to choose a single project, a single research avenue, which aspect of astronomy, in their opinion, should come first?

To defend a project, students are asked to consider the following situation: *You are nominated as director of the prestigious National Aeronautics and Space Administration (NASA). Upon your nomination, you learn that, due to budget restrictions, you are limited to only one project. Which one would you choose?*

The activity is conducted in teams and the grade is assigned to the team. The students can either draw upon one of the projects already presented, or choose an entirely new subject. Each team gets two turns to talk: first to explain the project, and then to clarify certain aspects or criticize other projects. At the end of the presentations,

projects are classified in order of priority and results depend on the rank in the list. The team whose idea receives top priority gets the highest grade. Usually, the lowest grade is 60% for a serious presentation. Examples for projects include:

- Lunar tourism;
- Studying the greenhouse effect;
- Colonization of Mars;
- Searching for extraterrestrial life;
- Colonization of asteroids;
- Shuttle (trip and exploration);
- Survival of the species;
- Origin of the Moon.

### RELEVANCE AND ORIGINALITY OF ACTIVITY

The originality of the activity lies not in the method used (oral presentations), but rather in its inclusiveness. The different themes covered, both during student presentations and class lectures, are linked to contemporary issues in astronomy and the final activity of defending a project, thereby improving course consistency. Finally, the activity is innovative in that it is based mainly on information and communication technologies (ICT), and students decide which subject to choose and how it will be covered.

Students enjoy the activity, especially when the time comes to defend their project. In addition, this activity is not very time-consuming since there are no written assignments, and students do not have the impression that they are working when they are looking for references! The activity's success relies on everyone's enthusiasm.

## Objectives and Relation to the Program

### PEDAGOGICAL OBJECTIVES OR TARGETED COMPETENCIES

*Astronomy News* initially targets the development of the general competency of complementary courses in the *Science and Technology*<sup>1</sup> field:

*To explain the general nature of science and technology and some of the major contemporary scientific or technological issues.*

Furthermore, it especially facilitates the development of the fourth competency element:

*Deduce different consequences and questions resulting from certain recent scientific and technological developments.*

More specifically, this activity gets students to:

- Consult different sources of scientific news (magazines, Internet, media, etc.);
- Question themselves on the importance of a news item;
- Deduce consequences from scientific developments;
- Define their system of values;
- Learn to work in teams;
- Communicate scientific information;
- Conduct a debate respecting different points of view, and summarize ideas;
- Take part in scientific, social, political, ethical and other discussions.

<sup>1</sup> Ministry of Education, *Ministerial Guidelines for the Complementary Course 000X: Scientific and Technological Culture* (1998). [Online]. URL Address: <http://www.mels.gouv.qc.ca/ens-sup/ens-coll/Cahiers/cours-comp/comp.asp?NoObj= 000x>.



Getting students involved in their training is often a desired objective, but difficult to achieve. The main interest of this activity is to serve this purpose, in that students are asked to consult scientific references, read the news, question themselves on what they read, choose a specific news item, and learn enough about the subject to be able to present it in class. There is reason to believe that students will continue to follow news developments after the end of the activity.

In addition, the activity raises student awareness of the links between science and society, and the influence they have on each other. Students also see how they may be confronted with scientific questions or the world of science in their field of study.

### **LINK BETWEEN THE ACTIVITY AND THE PROGRAM**

#### *General Program Goals Targeted*

*Astronomy News* targets the following general goals of the *Science* program:

- To use the appropriate data-processing technologies;
- To reason logically;
- To communicate effectively;
- To learn autonomously;
- To work as members of a team;
- To make connections between science, technology and social progress;
- To define one's personal system of values;
- To apply what has been learned to new situations.

## **Number of Students and Educational Support**

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### **APPROXIMATE NUMBER OF STUDENTS IN CLASS**

25 students

### **NUMBER OF STUDENTS PER TEAM**

2-4 people

### **EDUCATIONAL SUPPORT**

When the teacher distributes the course syllabus, which includes the description of both stages, he explains the activity and gives the percentage associated with each evaluation. He also asks students to refer to the schedule to see how the semester will unfold. Projects are defended during the last class of the semester and the order of presentation is selected at random.

During the semester, the teacher usually starts a class by talking about visible objects in the sky and news in astronomy. In both cases, the students can refer to relevant documents, which are posted on a bulletin board right next to the physics laboratory. He then suggests potential *Astronomy News* items.

## **Conducting the Activity**

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### **CONDUCTING THE ACTIVITY AND TIME REQUIRED TO COMPLETE EACH STEP**

#### *Before*

Two or three weeks before the first period scheduled for the *Astronomy News* presentations, the teacher informs the students that they

have to divide into teams of 2 to 4 people, and determine the subjects. Each team is then assigned one of the periods scheduled for *Astronomy News*, based on priorities stated earlier, i.e. links with theoretical courses and student preferences on a first-come-first-serve basis! The teacher then hands out the evaluation grid to be used in correcting presentations (see Appendix T.1).

One week before each team presents its subject, the teacher must meet with presenters to ensure that their news items make sense and that their reflections are relevant.

### ***During***

Nine twenty-minute periods over five weeks are scheduled for news presentations. These periods are assigned based on subjects (link with theoretical courses that follows) and student preferences.

Each news presentation lasts twenty to thirty minutes, and is done at the beginning of the class. It includes the discussion and summary.

This news item, which can be as short as a newspaper headline, or as long as a series of articles on a subject, can be from a magazine, a newspaper, an Internet site, etc. During the presentation, the students must give a brief account of the news item and provide further information required. They must then show the importance of this news item and the scientific, social and ethical impacts involved. The presentation should lead to a discussion with the rest of the class, either in the form of a debate or an opinion poll.

As an example, we will use a magazine article presenting the Sudbury Neutrinos Observatory. The presentation should start (2-3 minutes) with a summary of the news item (Who? What? When? Where? etc.). The students would then explain the importance of the work on neutrinos based on our understanding of the universe (2-3 minutes). They could then question themselves on fundamental research vs. applied research, ask themselves whether it is relevant to provide such major subsidies to answer theo-

retical questions that will in no way relieve human suffering, etc. Afterwards, they conduct a discussion on the subject with the rest of the class (10-12 minutes). In closing, they provide a summary of important points (2-3 minutes).

After the presentation, the teacher reviews the subject to study certain points in further detail and answer any questions students might have.

### ***After***

After the last presentation, the teacher invites the students to choose the project that they will defend during the last class. This project may be different from those presented in connection with the news items. It is important to mention that two teams cannot defend the same project. The students should therefore meet with the teacher to reserve their subject.

When the students defend a project, the teacher determines the presentation order at random. He then asks each team to present its project, and imposes a time limit based on the number of projects.

After the presentations, the teacher invites each team, in the same order, to comment on their own or other projects. When all the presentations are done, the teacher withdraws for deliberation. Projects are graded based on their rank order. Results are disclosed immediately.

## **Evaluation and Required Material**

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### **APPENDICES**

#### ***Teacher***

Appendix T.1: *Astronomy News* Evaluation Grid

#### ***Note:***

Appendices are available on the CD provided with this document.



## Other Suggestions and Media Directory

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### OTHER IDEAS TO EXPLORE

An alternative to this activity is to choose the program's discussion thread as news theme (e.g. the environment at Cégep de Saint-Félicien).

### MEDIA DIRECTORY

Scientific News Sites:

Science Presse, [Online]. URL Address:  
[http:// www.sciencepresse.qc.ca/manchettes.html](http://www.sciencepresse.qc.ca/manchettes.html)

La Recherche, [Online]. URL Address:  
<http://www.ruedutexel.net/smlr/index>

Cybersciences, [Online]. URL Address:  
[http:// www.cybersciences.com](http://www.cybersciences.com)