

## Activity 1

# Does Africa have a future?

By **Jean-Pierre Sabourin**

Activity developed at  
Cégep de Sainte-Foy

Recognized at the “Sortir des sentiers battus” competition organized by Saut quantique in conjunction with Merck Frosst Canada & Co. and the Quebec Order of Engineers in the category: *Leading students to create links between science, technology and society (main discipline: biology)*

## **Activity 1**

### **Does Africa have a future?**

By Jean-Pierre Sabourin

Cégep de Sainte-Foy

The appendices in PDF format are contained on the CD-ROM accompanying this guide.

They are also available in Word format in the “Trésors pédagogiques” (Teaching treasures) section of the Saut quantique Web site (<http://www.apsq.org/sautquantique>). Instructional analyses of these activities are also available on this site.

The authors authorize the use of this text and the appendices for instructional purposes, provided the source is mentioned.

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

If you have any questions or comments, feel free to contact the author at the following address: [jpsabourin@cegep-ste-foy.qc.ca](mailto:jpsabourin@cegep-ste-foy.qc.ca).

## Activity 1

# Does Africa have a future?

---

## Introduction

The activity *Does Africa have a future?* is part of the second biology course offered in the third semester of the Science, Languages and Literature, Creative Arts program. It takes into account the knowledge acquired in previous biology, chemistry and mathematics courses. It also incorporates knowledge acquired in previous sociology and economics courses dealing with issues of globalization. It enables students to apply their knowledge of the immune system to a current problem. Moreover, students can appreciate the difficulties of developing effective technologies and making them accessible to populations in need, given issues surrounding North-South relations.

Two articles that appeared in *Scientific American* in May and June 2000 describing the story of an African woman undergoing tests for AIDS in a clinic serve as a springboard for a simulation of an international conference on the AIDS epidemic in Africa. The class of approximately 20 students divides up into four teams of experts. The activity involves practical assignments.

As is the case with a similar international conference that took place in the spring of 2000 in South Africa, students take on the roles of various representatives. **Representatives of the World Health Organization (WHO)** discuss how this terrible disease has evolved worldwide. **Scientists from the biomedical field** explain how the HIV virus functions and how the disease evolves. **Representatives of the pharmaceutical industry** present the various antiretroviral drugs that they manufacture, the advantages and disadvantages of tritherapy and

their efforts to develop a vaccine. Finally, representatives of non-governmental organizations (NGOs) describe the situation in Africa, the means that have been put in place to halt the progression of the disease in Africa and the problems encountered. After this hour of presentations, the groups of experts must write a joint declaration of two to five pages to confront this dramatic situation, while taking into account the interests and limitations of each group.

This activity is part of a massive trend in educational innovation in the Natural Science program.<sup>1</sup> It aims more specifically at moving the teaching of science away from academics and focusing more on teaching students to use their previously acquired knowledge and the scientific approach. The aim of this trend is to lead students to better confront “real-life” problems.

The new Natural Science program<sup>2</sup> is also part of the trend, since it has many of the same general aims:

- To establish links between science, technology and a changing society.
- To define their system of values.
- To handle new situations on the basis of their acquired knowledge.

The same is true of the Science, Languages and Literature, Creative Arts program when, for example, it is suggested that students: “do research and carry out projects relating to situations, problems or issues that require knowledge in more than one area of expertise.”<sup>3</sup>

---

<sup>1</sup>For more information, visit the Web site of the University of Buffalo at the following URL address: <http://ublib.buffalo.edu/libraries/projects/cases/case.html>.

<sup>2</sup>Quebec Department of Education, description of the Natural Science program, 200.B0 (1998), on line at the following URL address: <http://www.meq.gouv.qc.ca/ens-sup/ens-coll/Cahiers/program/200b098.htm>.

<sup>3</sup>Quebec Department of Education description of the Science, Languages and Literature, Creative Arts program, 700.01.

This activity encourages students to take an active role in their learning, to apply the scientific process in teams when carrying out their investigations and to synthesize their results. They will have to call upon their knowledge and experience. Like members of the scientific community, they will have to write a report and defend their points of view to their peers in order to reach a consensus (Waterman, M.A., 1998).<sup>4</sup>

## Relationship between the activity and the program

A major aim of the Science, Languages and Literature, Creative Arts program is to enable students to apply their learning to the following four areas: sciences, social sciences, creative arts, and languages and literature. A case study, like the one on AIDS in Africa, enables students to apply what they have learned in various disciplines to problem solving. Statistics available in the form of tables and graphs make it possible to analyze how the epidemic is evolving throughout the world. The stages of reproduction of the virus and the modes of action of the antiretroviral drugs point to the importance of understanding molecular structure. Biology combines various aspects ranging from prevention to the difficulty of developing an effective vaccine.

Students compare the lifestyles in developed and developing countries to explain the slowdown in the number of AIDS cases in Northern countries and the rapid progression in Southern countries, especially in Africa. This North-South dimension becomes even more significant when they analyze the various initiatives (prevention, testing, drugs, vaccines, etc.) and the costs involved. They must call upon their knowledge of international business and the issues surrounding intellectual property.

---

<sup>4</sup>For more information, you can view the PowerPoint presentation on the educational approach used for this activity at the following URL address:  
<http://www.cegep-ste-foy.qc.ca/~tirb/cas.htm>.

The activity gives students the opportunity to use their information technology and communication skills to do additional research and prepare their presentation.

## Presentation of the activity

*Does Africa have a future?* is carried out over a two-week period. During the first week, the teacher presents the case of an African woman undergoing tests for AIDS in a clinic (see Appendix E.1), in an effort to arouse students' interest. The teacher clarifies the role of each group of experts, the work to be handed in the following week and the framework for the oral presentation. Teams are created at the beginning of the semester, given that there are several cases to study, one for each section of the course.

The following week, the two hours set aside for assignments are devoted to the case study. In the first hour, each of the groups does a 15-minute presentation. The presentations are followed by a short question period. The teacher can take this opportunity to highlight any points that have been overlooked.

In the second hour, the teacher has each group of students write a joint declaration. This often results in protests about the assignment's feasibility. The teacher can make certain suggestions about how to proceed. Most groups manage to quickly organize and write the text of two to five pages within the allotted hour.

The case study on AIDS in Africa requires that the teacher read the suggested documentation for each of the teams and summarize it (six hours). It is also important to follow current events regularly to stay apprised of any new developments. The teacher can choose to collect a series of documents for each group of experts. He or she can also design a Web page dedicated to the case (four hours).<sup>5</sup> This approach offers several

---

<sup>5</sup>You can, for example, draw inspiration from my Web site at the following URL address:  
<http://www.cegep-ste-foy.qc.ca/~tirb/afrique.htm>.

advantages: it lowers costs for students and provides access to the most recent and thorough information on the subject.

On average, the students have two hours of reading and one two-hour team meeting to prepare their oral presentation. They are not required to do a literature search since references are suggested in the students' learning guide (Appendix E.1). A literature search could, however, be incorporated into the procedure if the activity is extended over a four-week period.

Since the skills involved in effectively carrying out a literature search are developed in the early courses of the program, this activity focuses on the skills involved in writing synopses and developing oral, written and critical thinking skills.

It is important to consider the weighting of the courses in order not to overload students unnecessarily.

## Description of the required material

The teacher develops a literature file, which he or she updates regularly. It contains articles from such magazines as *Pour La Science*, *La Recherche* and *Scientific American* (see the references for each group of experts in the students' learning guide: Appendix E.1). These references are divided up according to each expert's role. An additional list of links can serve to develop a Web page on the case study (<http://www.cegep-ste-foy.qc.ca/~tirb/afrique.htm>).

The students obtain their learning guide (Appendix E.1: Students' learning guide), which includes:

- a description of the case study
- the scenario
- the objectives to be achieved
- the role of each group of experts and the references to be consulted
- the procedure for the activity
- the main articles in print and on the Internet

It is very difficult to document and discuss an issue such as AIDS without using English-language science references. The students must use their English-language reading skills and the teacher must take this factor into account when forming teams.

**Note:** Appendix E.1 in PDF format is available on the CD-ROM accompanying this guide. It is also available in Word format in the "Trésors pédagogiques" (Teaching treasures) section of the Saut quantique Web site (<http://www.apsq.org/sautquantique>). The site also contains an educational analysis of this activity.

## Suggested evaluation

This activity is marked out of 10. Marks are distributed as follows:

- **5 marks** for the synthesis document by the group of experts:

Evaluation criteria:

- synthesis of main elements
- presentation
- language quality

- **3 marks** for the oral presentation:

Evaluation criteria:

- effectiveness and originality of the presentation
- oral communication

- **2 marks** for the joint declaration:

Evaluation criteria:

- synthesis of main elements
- relevance and feasibility of recommendations
- language quality

This activity should also be evaluated by means of a question during the next theory exam. This second evaluation encourages students to be attentive and to take notes during other student presentations.

## References

Waterman, Margaret, A. (April 1998). “Investigative case study approach for biology learning,” *Bioscene*, vol. 24.

The list of references intended for the groups of experts is contained in the students’ learning guide (Appendix E.1). Students can also use the

links from the case study Web site:  
<http://www.cegep-ste-foy.qc.ca/~tirb/afrique.htm>.

It might also be a good idea to show a documentary on the subject during the first week of the activity. The French CBC documentary entitled *La route des virus* is just one example.