**AN ASTROBIOLOGY EXPERIENCE AT PUERTO RICO PUBLIC SCHOOLS**. Y. Serrano. Inter American University of Puerto Rico, Bayamón Campus. John W. Harris # 500 Bayamón, P.R. 00957. yserrano@bc.inter.edu.

**Introduction:** One of **NAI goals** is **to make NASA's discoveries known to** the general public [1]. As a Minority Institution Collaborative (MIAC) member one of our goals is to **help publicize** the field of **astrobiology. To do this, we** began with the creation of an **undergraduate astrobiology bilingual course** (English and Spanish). Then this field of study was presented to a group of **34 science teachers** (grades 3-9) through the astrobiology online course [2]. Finally, we **conducted a series of presentations,** titled **Discover Astrobiology Activity,** designed to **introduce students** from **grades 7 to 9 to** the field of **astrobiology.**

**One hundred - thirty students** from grades 7 to 9, **plus 10 teachers** participated in the Discover Astrobiology Activity. **Five** different **public schools** from the Municipalities of Bayamón, Toa Alta, Toa Baja and Dorado participated of this presentation. Almost one hundred percent of the students are **Hispanic**. Usually, public schools students don't have the same opportunities as private schools students to get involved in this type of project. The activity consisted in a **Power Point presentation**, a **discussion** of the topics of more interest for students, an **assessment instrument** and a **questions and answer** section.

The astrobiology presentation includes four main topics: **Origin of the Universe**, **Origin of the Solar System**, **Life**, and the **Search for Life in the Universe** [3].

The assessment instrument consisted of a **questionnaire** with the following **premises**: I learned new things with the presentation; The topics presented were very interesting; The presentation encourages me to learn more about astrobiology; I can apply the knowledge acquired in the presentation to my other courses; I can apply the astrobiology information to my daily life; and I understood all the presentation. In addition, an open question was presented: "Of the topics presented which were the most interesting to you?

**Discussion:** Students showed a **great interest** in the activity. Although there was a question and answer section, they didn't wait for it and posed questions during the presentation. The **interaction** between the lecturer and the students was a **very active** one. A lot of questions were posed by the students. Surprisingly, some of them had heard about the term astrobiology, and also some of them know a lot about astronomy.

Results for the first part of the assessment instrument revealed the following:

**Table 1. Results for the premises included in the assessment instrument**.

| Premises | Not agree | neither agree or disagree | agree | Completely agree |
|---|---|---|---|---|
| I **learned new things** with the presentation. | 0% | 3% | 28% | 69% |
| The **topics** presented were very **interesting**. | 1% | 6% | 16% | 77% |
| The **presentation encourages me** to **learn** more about **astrobiology.** | 4% | 8% | 33% | 55% |
| I can **apply** the knowledge acquire in the presentation to my **other courses**. | 4% | 8% | 41% | 47% |
| I can **apply** the astrobiology information to my **daily life**. | 2% | 11% | 32% | 55% |
| I **understood** all the **presentation**. | 1% | 9% | 45% | 45% |

It is well known that the following **topics attract public interest**: Origin and evolution of life, space exploration and possibility of extraterrestrial life [1]. The assessment instrument administered to the 7th to 9th graders surprisingly revealed that **these topics were also** the more **attractive to them**. The following topics also **impressed them**; The discovery that **our planet** and the **Sun will** eventually **disappear**, **bacteria** and **viruses**, organism **diversity in extreme**

**environments**, the **Arecibo Observatory projects** and the **Panspermia Theory** among others. They were asked to mention what topics were more interesting to them. In addition, **many comment**s were obtained from them. A list of topics is included in Table 2.

**Table 2. Results of the open question: "From the topics presented which were the most interesting to you?**

| **Specific topics mention by students** | No. of times mentioned |
|---|---|
| **Origin and evolution of life** | |
| Stars and star evolution | 23 |
| Bacteria | 23 |
| Meteorites | 22 |
| Galaxies | 21 |
| Planets | 16 |
| Asteroids, comets | 12 |
| Sun | 9 |
| Solar system formation | 7 |
| Panspermia theory | 7 |
| Big Bang | 3 |
| Craters | 2 |
| Origin of life | 2 |
| The following topics were mentioned once: Importance of Jupiter, Mars and the Moon for life on Earth, end of the Earth, role of bacteria and microbes, importance of water for life, life diversity, viruses, life and death of the Earth. | |
| **Possibility of extraterrestrial life** | |
| Extraterrestrial life | 11 |
| Arecibo Message | 8 |
| Titan | 6 |
| Exoplanets | 3 |
| Extremophiles | 3 |
| CETI | 2 |
| SETI project | 2 |
| Arecibo Observatory project | 1 |
| **Space Exploration** | |
| NASA Missions | 6 |
| Moons | 6 |
| Search for life in Mars, Missions to Mars | 5 |
| Telescopes | 3 |
| Hubble telescope | 1 |
| **Others** Lost of water from Earth, organisms in deep oceans, cells, atmosphere, world destruction, CHONPS, life, fumaroles, universe | |

As we can see, the list of **topics** includes **astronomy**, **planetary science**, **biology**, **microbiology**, **chemistry**, and **geology**. This confirms the **interdisciplinary nature** of the **astrobiology field.** They **learned** and used new **astrobiology terminology** such as: **extremophiles**, **exoplanets**, **CETI**, **SETI, asteroids**. One **unexpected comment** was that it was the first time they had seen a real scientist.

**Summary:** This type of activity can **increase** the **interest** of student **in science** with an **interdisciplinary** perspective. The **integration** of **a hands-on activity** approach to this project **will increase** student **understanding** of different topics. In addition, a group of these types of astrobiology activities can be **incorporated** into the science **curriculum.**

**Concluding Remarks:** We suggest the creation of a **network** of **faculty** and **school level teachers** to deliver astrobiology presentations to students at different levels of schooling. Also, we recommend the **translation** of different **teaching materials** produced by the NAI such as: "Looking for Life", Aliens of the Deep and "Voyager Through Time". This translation will allow access to Spanish-speaking groups.

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**References:** [1] National Research Council of the National Academies. (2008). Assessment of the NASA Astrobiology Institute. The National Academy Press, Washington, D.C. pp. 1-61., [2] Serrano-Núñez, Y. Astrobiology Online Course. (2008). Inter American University of Puerto Rico, Bayamón Campus., [3] SETI Institute. **Voyages Through Time** A High School Integrated Educational Science.2003. Learning in Motion.[Internet] (Cited November 30, 2009). Available from: http://www.voyagesthroughtime.org/index.html

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