

## Information and health literacy for school students: the e-Bug experience in Italy

Paola De Castro<sup>1</sup>, Maria Cristina Barbaro<sup>1</sup>, Sandra Salinetti<sup>1</sup>, Annamaria Carinci<sup>1</sup>, Annalisa Pantosti<sup>1</sup>, Donna M Lecky<sup>2</sup>, Meredith KD Hawking<sup>2</sup> and Clodna AM McNulty<sup>2</sup>

<sup>1</sup> Istituto Superiore di Sanità, Rome, Italy

<sup>2</sup> Health Protection Agency, Gloucester, United Kingdom

### Abstract

*Health information literacy plays a strategic role to promote both life skills and health among different target audiences. To face the phenomenon of antimicrobial resistance, an emerging key problem in public health, a European funded project was developed: e-Bug. The project aims to improve young people's understanding of responsible antibiotic use through educational games on microbes, hygiene and the spread and prevention of infections, which allows children to learn while having fun.*

*Key words:* health; education; schools.

### Background

Health information literacy plays a strategic role to promote both life skills and health among different target audiences. Librarians and editors as well as researchers in health related disciplines can develop collaborative initiatives addressed to teachers and school children to improve awareness on health information literacy and contribute to create informed citizens.

We report here the experience of a positive collaboration developed in Italy within a European project intended to improve awareness on the prudent use of antibiotics.

Antimicrobial resistance, in fact, is considered a key problem in public health, as it “increases morbidity and mortality and leads to a diminution in the quality of life, as well as additional health and medicinal costs” (1). The 2010 Eurobarometer found that over 50% of adults still believe that antibiotics work on coughs and colds (2).

As antibiotic resistance is accelerated by unjustified and uncontrolled use of antimicrobial medicine, a massive action is required to cope with this inappropriate intake and to avoid further increases in resistant microorganisms. In the long term it is necessary to support and help changes of behaviour and attitudes in the future generation of adults. This means empowerment of wellbeing of children at school age.

For this purpose the Health Protection Agency in the UK has developed a European funded project to provide a

European wide school education resource, e-Bug, which aims to improve young people's understanding of the importance of responsible antibiotic use, through an interactive educational pack covering microbes, hygiene and the spread and prevention of infections. The training printed documents were produced together with a website ([www.e-bug.eu](http://www.e-bug.eu)), hosting the pack itself and additional materials as interactive games which allowed children to learn while having fun.

### Description of the e-Bug project

The development of the e-Bug resource has taken three years (2006-2009). It started with a research phase examining the science school curriculum in relation to microbes, hygiene and antibiotic use, and investigating any public antibiotic or hand hygiene campaigns, websites, countries' cultures and customs, and details of European school education promotions. Primary and secondary school teacher focus groups in the UK and France were established to gain more information on microbiology and health issues taught to target age groups.

An evaluation in England, France and the Czech Republic demonstrated that the resource increased student knowledge on microbes, spread of infection and prudent antibiotic use when adopted within the national curriculum at primary and secondary school levels. Afterwards, e-Bug was launched in September 2009 at a meeting in London attended by 18 European partner countries, who were asked to translate all the initial

*Address for correspondence:* Paola De Castro, Istituto Superiore di Sanità, Viale Regina Elena, 299, 00161 Rome, Italy.  
E-mail: [paola.decastro@iss.it](mailto:paola.decastro@iss.it)

English teaching materials into the native languages. In Italy this task was carried out first by the University of Verona (3, 4). Later in 2010 the Istituto Superiore di Sanità (ISS, the National Institute of Health in Italy) became the new Italian partner and was responsible for translating the new website sections dedicated to students. The involvement of the ISS was due to its chief role in the field of research to the benefit of public health in Italy, and to its experience in disseminating health promotion at school within specific projects carried out in the last decades. The e-Bug project now consists of a consortium of 28 international partner countries thus guaranteeing a widespread diffusion throughout Europe and to a wider international audience through translation in many languages.

When translating the texts, the ISS within e-Bug also adapted the materials to the Italian scenario, by adding new concepts and changing statements that would cause some ambiguous interpretations in the Italian context. e-Bug materials focused on description and spread of microbes, treatment and prevention of infections, etc., in

fact, were initially conceived for the UK setting, thus requiring adjustments as regards different organization of the school system, different ways of cooking and eating food, different behavioural patterns, etc. (5).

To better promote the project, the ISS also produced an invitation or explanatory leaflet in Italian addressed to teachers at school in order to create an initial interest among them, to be followed by the organization of ad hoc workshops addressed to teachers or other initiatives at schools also involving students, to introduce the project and better explain the aims of the resources (Figure 1).

The use of the leaflet is free, and we encourage its circulation amongst teachers and students and will be happy to receive comments on the resources. If you wish to know more about the project you can directly address the e-Bug partner in your country, as appearing in the project website. The e-Bug website is designed in an appealing way and its attractiveness is guaranteed also by quizzes, interactive games, experiments to be performed at home, and galleries of images to download. From the homepage you can access both teachers' and students' sections. Teaching with this resource can help young students to be informed through fun activities and become aware on how to use antibiotics in the future, only when appropriate and as instructed.

### Main results

Following the translation of the e-Bug website into Italian, the ISS promoted dissemination of the Italian version of the e-Bug website and project among public schools in different steps. First, the project was presented to a small group of teachers attending a workshop on micro-organisms and antibiotic resistance organized in ISS in 2011 (an annual initiative *I martedì scuola & salute* consisting of monthly seminars on Tuesdays addressed to teachers in order to promote science and health at school).

Then the Italian website was introduced during a meeting addressed to 200 students of the secondary schools on occasion of the XXI Italian Science week (October 2011), held annually in ISS (6). Afterwards some teachers were involved in checking its efficacy at school, and its implementation in educational schedules. This experience allowed feedback and made it perfectly clear that e-Bug resource can effectively help students improving their knowledge on micro-organisms and change their attitude in a good and responsible way. We found that effective learning by means of this tool is



Fig. 1. e-Bug leaflet in the English version

strictly related to teachers' commitment to help each student get his/her empowerment.

The Italian support to the e-Bug project was also reported at the European Meeting on Media and Information Literacy Education (EMMILE) held in Milan in February 2012, where the results of the whole experience were conveyed in a poster that received very positive remarks and feedback from the audience. The meeting turned out also as an effective advertising tool, thanks to the international composition of the participants and their active involvement in the fields of education and continuous learning.

This academic year so far (1 September 2012–11 February 2013) the Italian e-Bug website has had 2,104 visits, a 34.87% increase of visitors on the previous year. To date, the junior pack *Introduzione ai microrganismi* of the teacher website was the most viewed webpage this academic year with 279 visitors. At a European level, the e-Bug experience has allowed exchanging information

and good practice within the educational curriculum, public campaigns and websites with partner countries across Europe. Yet, it also works at national level, as e-Bug successfully serves as a tool for multimedia information literacy education, since it helped and helps to support to the empowerment of children across Europe, by developing similar school resources and website.

### Conclusion

The purpose of e-Bug project, building and implementing strategies to influence attitudes towards prudent antibiotic use in young students, has been pursued through a dynamic and interactive website to provide wellbeing through activities and resources meeting the interest of children and young people. Several different stakeholders were involved to reach these objectives: young people, primary and secondary school teachers, investigators, communicators and publishers, so that the key objectives of the project could be easily and properly implemented at local level.

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