

**REGULAR FEATURE: TEACHING
AND LEARNING IN ACTION**

Information specialists and researchers working together for health promotion: Benefits from school-work educational programmes at the National Institute of Health in Italy

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Abstract

In 2015, the Italian Ministry of Education in Italy launched innovative upper school educational programmes envisaging school-work initiatives. In this framework, the National Institute of Health (Istituto Superiore di Sanità, ISS) was among the first scientific institutions to develop educational programmes with school. Involving school students in health research activities allowed health literacy improvement, acquisition of scientific communication skills and fostered student interest in science careers. This article focuses on how health literacy and health promotion can be taught to school students through taking part in this programme. It is a multi-disciplinary collaboration among different stakeholders—ISS tutors (researchers, information and communication experts), teachers and students. This collaborative initiative is a good example of ‘teaching and learning’ in action since all stakeholders could benefit from cross-fertilisation in an informal educational context.

KEYWORDS

communication; health literacy; health professionals; information science; research networks; research skills; students

INTRODUCTION

The National Institute of Health (Istituto Superiore di Sanità, ISS) is the leading technical-scientific institution working in the field of public health in Italy, which carries on research, control, training, consultation and communication activities. The ISS is a multi-disciplinary research body within which

researchers and information specialists collaborate for public health purposes. As part of its multidisciplinary commitment to create awareness on well-being and healthy lifestyles at school, in 2016 the ISS decided to participate in the Italian Ministry of Education school-work educational programme, known as PTCO (Percorsi per le Competenze Trasversali e l’Orientamento, i.e. education and training in soft life skills

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and students' orientation) according to the Italian Law no. 107/2015 (Italy, 2015) and subsequent amendments. PCTO aims to help the transition between school and work by offering students to experience (short) working periods in companies or public institutions for the acquisition of practical and theoretical skills (De Castro et al., 2016, 2018).

In the period 2016–2020, the ISS established a collaboration with 33 governmental upper schools of Rome and its province, engaging over 900 students aged 16–18 in practical training courses on health science research.

This article focuses on how health literacy and health promotion can be taught to school students through taking part in this programme. It is a multi-disciplinary collaboration among different stakeholders—ISS tutors, researchers, information and communication experts, teachers and students.

Students were engaged in health research and health communication activities focused on significant public health topics.

The ISS information specialists and researchers were called to participate in the PCTO programme by the ISS programme coordinators. More than 250 employees were involved in developing training activities in their own fields of expertise. Information specialists were recruited within the Scientific Communication Unit, the Library and the Press Office represented about 5% of the total number of experts involved. By involving information specialists and researchers, students were introduced to scientific methodology, participated in scientific project experimentation and engaged health promotion activities, including peer education. Students shared with peers what they learnt at the ISS or collaborated with ISS researchers in scientific events for citizens (e.g. European researcher's night).

METHODOLOGY

The programme is made up of three options: (1) 50-hour standard training modules (usually held in February and March); (2) collaborative training modules; and (3) involvement in events or in other training modules of variable length (held in different times of the year). The only requirement to take advantage of this programme is that the school needs to sign an agreement with the ISS.

The standard 50-hour training modules take place over 2 weeks and consist of working one to one with an ISS tutor. Both theoretical and practical activities are focused on health research areas, such as environment and health, biology of diseases, disease prevention and life styles, science and communication. The collaborative training modules are usually focused on health communication topics, and they are not hosted in the research laboratories.

The collaborative training modules are projects developed within the framework of the National Operational Program (NOP) 'For School—skills and learning environments'

funded by the European Commission with the aim of improving and qualifying PCTO. The programme is 4 weeks long.

Students participating in the PCTO programme are invited to play an active role in selected scientific conferences or meetings. They provide information at booths, distribute printed material, produce posters and videos. On some occasions they present their work at ISS during plenary sessions.

HEALTH LITERACY SKILLS ARE DEVELOPED THROUGHOUT THE PROGRAMME

All modules include discussion on the reliability of information sources. Library and communication staff offer further training on the credibility of information, fake news and misinformation. Students are trained to search for information themselves and to recognise reliable sources.

Activities are based on scientific evidence, and an evidence based explanation of health topics are provided. Researchers use clear language but do not oversimplify the problems at stake. Students acting as researchers develop critical thinking skills. In some modules, students develop questionnaires to survey health habits of their peers and the general public.

Before taking part in the PCTO activities, all students are required to attend a preparatory course on health and safety at work organised by the ISS according to the Italian regulations.

Specific forms to collect and compare information from schools, students and tutors are designed. A web site in Italian has been developed to be used both as a dissemination tool and to manage the complex interaction between the ISS team and the school managers in a reserved area. This website will be integrated into the ISS website section devoted to school, and an English version will be also available soon.

At the end of each training, students are asked to present and share their working experience with other students/teachers/tutors by giving a short scientific talk.

Istituto Superiore di Sanità tutors all complete student evaluations, stating skills and knowledge acquired.

Students complete a satisfaction questionnaire, including suggestions to tutors.

RESULTS

All students attended the mandatory course on occupational health and safety. In order to assess their level of knowledge on the concepts of danger, risk, prevention and protection and their correlations and differences at the workplace, they were asked to develop a specific concept map (Novak, 1991) at the beginning and at the end of the training. This method of active learning and evaluation can be more effective than face to face teaching followed by multiple

choice questions (Sorrentino et al., 2016). The continuous review of the course contents (taking into account the most frequent students' errors), in particular as regards concept maps, is shown by the improved students' scores through the years (Figure 1).

The ISS tutors developed training modules in accordance with current school curricula, thus integrating students existing knowledge. Students were first introduced to the scientific method and the specific topic of the module, and then, they were directly involved in the experimental procedures by working side by side with tutors. In this way, students were allowed to acquire not only specific technical skills (knowledge of laboratory technologies/devices/specific software programs), but also to become aware of the scientific research workflow and the importance of researcher's and scientific communicator's work for public health. For example, students improved their ability to communicate with others and to organise written information in leaflets using a simple language and proper images. They also learned to use only scientific information from reliable sources, such as those coming from institutional websites.

Of the 900 students who participated in the standard training modules, 10% also took part in further collaborative training projects supported by European Commission through a national call for proposals (NOP). In the NOP projects, students' modules were organised in collaboration between the ISS and other research institutions (National Research Council and the Regina Elena Hospital) to carry on research activities in health issues. This multidisciplinary approach allowed students to enhance their skills, and for schools to improve their knowledge of the research institutions.

After the PTCO programme, 28% of the students (256/900 people) were involved as 'expert' for peer education purposes in 18 initiatives (conferences and scientific meetings on public health topics, science communication events and

national scientific competitions) organised both at the ISS (e.g. No Tobacco Day, Alcohol Prevention Day, European Researchers' Night) and other venues (e.g. FISV Days 2017 at Sapienza University of Rome, JOB & Orienta 2018 in Verona). This implied an extra commitment by tutors to help students become ambassadors of scientific literacy in different contexts. For example, they carried on an ad hoc survey on the use of tobacco among peers. To do so, they were involved in the design and implementation of the questionnaire, they processed data and presented results on the No Tobacco Day. During the events related to the European Researchers' Night, students supported the ISS staff in guiding and orienting participants to select the most appropriate event to follow among a wide offer of initiatives taking place at the same time at the ISS.

At the end of the training modules, the students gave a scientific presentation in a plenary meeting, addressed to their peers, teachers and tutors. This was an excellent opportunity to improve their communication and public speaking skills by applying the 'learning by teaching method' (Say & Yıldırım, 2020) and which added value to the training activities which provided specific skills for health promotion.

Figure 2 shows the details of the total amount (nearly 40,000 hours) of activities offered and certified as a whole by the different training programmes during the 5 years of the project.

A key outcome of the project is the tutors' evaluation of students, which makes up part of their final assessment during the last 3 years of their school curricula. The assessment covers knowledge and scientific competencies alongside personal and relational skills. 90% of the students obtain a medium-high evaluation score and most cite their ISS experience at their graduation examination.

Overall, the PTCO experience produced positive results and enthusiastic reactions among students, teachers and researchers and the number of schools wishing to participate in the ISS health training modules is very high and difficult to meet. Forty-one schools are currently on the waiting list. An increase in the number of programmes developed by public health research organisations is required to meet the growing interest of the younger generations.

The ISS-PTCO projects scheduled for March 2020 could not be released because Italy was placed under quarantine to contain the spread of the COVID-19 pandemic. We could not replace our training modules designed to be held in scientific laboratories with online learning activities and our PTCO projects were forced to stop.

In November 2020, we were able to offer a training module on the topic of health communication in the era of fake news. This was aimed to help students spot health misinformation and stop its spread. The module was implemented by information specialists who work at the ISS Library and are engaged in the editing of 'ISSalute' website, a platform

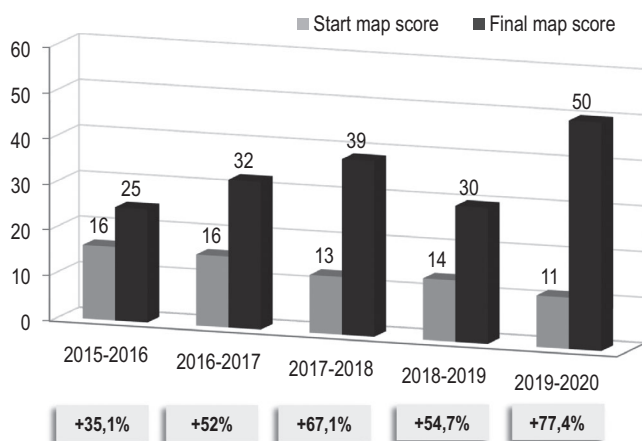


FIGURE 1 ISS-PTCO: students' scores in the pre- and post-test on the concept map on risks used in the mandatory course on health and safety at work in the period 2016–2020 per school year

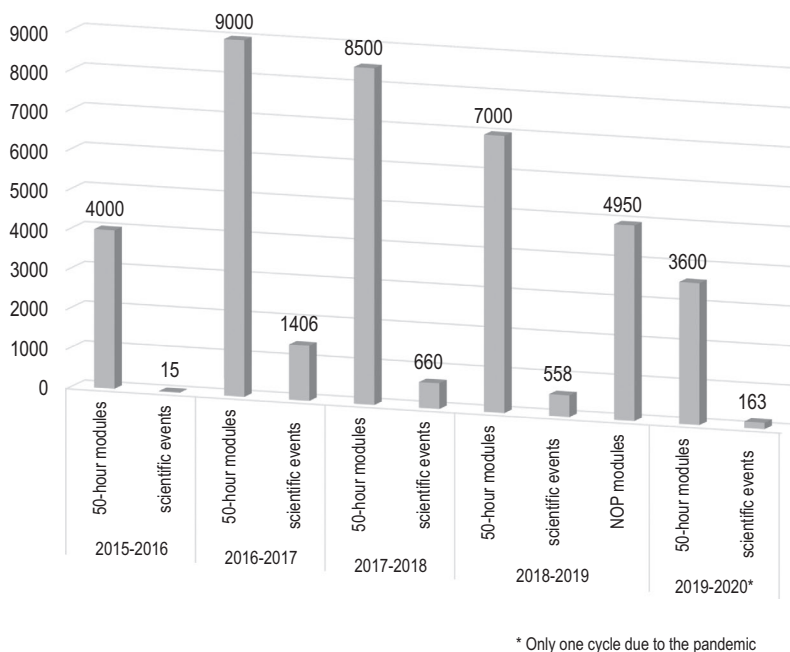


FIGURE 2 ISS-PCTO: numbers of certified hours in all activities in the period 2016–2020 per school year

where citizens can find updated and trusted information on lifestyles, nutrition, environment and diseases. Twelve students of 3 different schools attended the 21-hour training module. The result of their work was a short presentation and a video to be broadcast to their peers through both ISS and schools' websites and social networks.

DISCUSSION AND CONCLUSION

The PCTO programmes carried on at the ISS have allowed many students to participate in an integrated and highly formative experience of health research. The integration of theory and practice and of knowledge and experience of specific objectives represents the aim of the PCTO projects, as delineated by the Ministry of Education guidelines, and it is particularly applicable to the scientific research work. Along with the strict compliance with PCTO objectives, the ISS experience has also been developed with the purpose of increasing students' interest in health sciences and, at the same time, offering them tools to gain awareness on responsible healthy behaviours.

The ISS tutors benefited from participation in the programme. By working with secondary school students, tutors gained a better understanding of students' health information needs and they gained developed unique experiences in effectively training young people. This practice also allowed tutors to demonstrate and practice explaining complex information using plain language and so increased their own knowledge of health literacy.

Along with the strict compliance with PCTO objectives, the ISS experience has also been developed with the purpose

of increasing students' interest in health sciences and, at the same time, offering them tools to gain awareness on responsible healthy behaviours. Students had the opportunity to act as health promoters by exchanging knowledge and experiences and transferring their information and health literacy skills family members and peers.

The PCTO activity represents the result of a new open approach to science dissemination based on the co-creation of new health promotion models, which were possible thanks to the active collaboration of different stakeholders (Burget et al., 2017).

This school-work educational programme of the ISS was challenging to set up and institutionalise as it required a huge participation of research staff and significant costs for the development and administration of the project. Yet, we are confident that this effort is relevant to strengthen the links between health science and society.

The COVID-19 pandemic emergency has highlighted the need of our working group to develop new strategies to better meet school requests. For this reason, further efforts will be necessary for the digitisation of some school-work educational programmes or to facilitate the participation of students from all over Italy.

The deep immersion in research real life activity allowed health literacy improvement, acquisition of scientific communication skills and fostered students' interest in science careers.

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