Tackling big issues

Summary

Let's Talk is an initiative, funded by the AstraZeneca Science Teaching Trust and the Wellcome Trust, which aims to encourage Scottish primary and early secondary school pupils to discuss important health related science issues. In sympathy with the vision of the new 'Curriculum for Excellence', *Let's Talk* sets out to embed innovative ways of approaching science and health in the classroom and independent evaluation has shown how exposure to the approach has had a marked impact on teacher confidence to try new techniques and a better learning experience for their pupils. Science features increasingly in our lives, especially in areas of health where technological advances pose important social, ethical and economic questions. We face increasing choice in how we live our lives, and are subject to powerful economic and social forces that attempt to influence which paths we take. *Let's Talk* sets out to provide young people with the knowledge and skills that will serve them in the future to evaluate both the choices on offer and the messages that accompany them.

Introduction

Deaths from coronary heart disease and cancer in Scotland are amongst the highest in the UK. Figures have fallen in recent years overall, though the downward trend is less pronounced amongst the most deprived communities. Between 2000 and 2007 deaths from cancer reduced by nine per cent amongst the population as a whole, but actually increased by one per cent in the most deprived areas. Reducing these figures further will rely on persuading more people to change their attitudes and behaviours.

Figure 1 *- Technological advances pose ethical questions.*

Therefore educating young people about the science associated with health choices has taken on a new significance. Where once biology teachers were expected to go beyond anatomy and physiology to discuss the reasons why, say, smoking is bad for you or the science behind a healthy diet, a combination of factors has squeezed the time available for such discussion in science lessons. With lifestyle diseases at the forefront of political and health economic concerns, perhaps now is the time to restore the link between what we do and what we know, when it comes to our health.

In Scotland, the need to meet challenges about physical and mental health has placed this work at the core of the Government's major education reform 'Curriculum for Excellence'. The new curriculum, currently being taught from primary year 7 (P7) includes a commitment to ensure that each pupil:

- understands and develops their physical, mental and spiritual well-being and social skills
- understands how what they eat, how active they are and how decisions they make about their behaviour and relationships affect their physical and mental well-being
- participates in a wide range of activities which promote a healthy lifestyle
- learns about where to find help and resources to inform choices
- assesses and manages risk and understands the impact of risk-taking behaviour

Our technological, knowledge-rich and choice-oriented society poses further challenges to today's young people. The choices are great - stem cells, genetics, food security and global warming all pose difficult political and lifestyle challenges. Yet when it comes to the effects of scientific advance, how well informed are we to make difficult personal, social or ethical choices that they bring?

Let's Talk is an education programme aimed at teachers and their pupils that sets out to develop a scientifically literate society, one in which individuals feel

Figure 2 *- Example of Agree/ Disagree card.*

Figure 3 *- A popular kit from the Let's Talk range.*

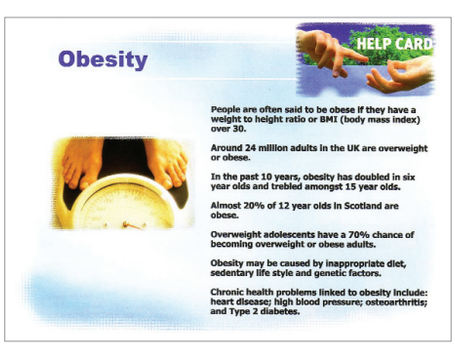

Figure 4 *- Help cards give background information.*

[1] Health of Scotland's population - Health Inequalities, High Level Summary www.scotland.gov.uk/Topics/Statistics/Browse/Health/TrendsHealthOutcome

empowered to weigh up options and reach their own conclusions. Scotland has always excelled in producing scientists and engineers, but this scheme has as its core the desire to produce an informed citizenry with the confidence to challenge and interrogate health and environmental messages and their sources.

Let's Talk is the brainchild of Marjorie Smith, a teacher at Dollar Academy and curriculum development expert, currently working with SSERC. *Let's Talk* is based around a series of teaching and learning packs developed with funding from the independent AstraZeneca Science Teaching Trust (AZSTT) and the Wellcome Trust, and aimed at upper primary and early secondary school pupils and their teachers.

Currently the work being carried out in more than 20 Fife primary and secondary schools is being extended to include Midlothian, East Lothian and Edinburgh.

Look Who's Talking

The teachers' packs comprise professionally produced DVDs, guidance notes, background information, a glossary and activity materials that provide all that a teacher needs to get young people talking about science, society and ethics. The initial idea and early materials were developed with the support of the Wellcome Trust, through its Engaging Science awards scheme.

A particularly popular kit is themed *Diet, Diabetes and Obesity* (Figure 3) and has been used in 200 schools in Scotland. Typically, teachers using the packs introduce the theme to their class and then are encouraged to divide them into small groups. Each group is given a set of cards and one member reads its contents to the others. Each card comprises a series of facts e.g. Figure 4.

The group has to discuss and arrive at an answer to the generic question: *Do you think this is a problem for society and if so, why?* Next, pupils decide on the acceptability of a series of policy options (also presented on cards), such as:
After sifting and small group discussion, the teacher brings the entire group together to consider the complexity of the subject under consideration. The pack also provides a set of postcards on which each pupil is encouraged to write a summary of his or her position on the matter. A few weeks later the teacher will post the cards - the passage of time providing an opportunity for pupils to reflect on their ideas and to see their original suggestions afresh.

What do teachers think?

Many science teachers feel uneasy about addressing social and ethical issues in science classes. Changes in curricula and professional development opportunities have gone some way to ensuring that science is not simply the 'delivery of factual knowledge', yet many teachers of science find it hard to shift from this more traditional role. Michelle Russell, a biology and guidance teacher in West Lothian, identified the nature of the challenge for some. Ms Russell told the Times Educational Supplement Scotland that while science teachers like to "tell pupils the facts" they are "less comfortable with the kids forming their own opinions".

A study of this project as part of AZSTT's wider evaluation of the programme states: *"This project has been particularly successful at generating high-quality material and involving teachers in the development, so they are powerful advocates"*

The impact and value of *Let's Talk*

A sample of 15 *Let's Talk* users completed survey questionnaires comprising structured and free response questions. In addition, responses were gathered from 58 evaluation forms included with packs and returned by teachers. The following sections are based on a synthesis of both sets of data.

Respondents were asked to rate three sets of activity[1] using a six-point scale ranging from poor (1) to excellent (6). Their views were overwhelmingly positive, with the majority ranking the usefulness of the resources as excellent for all three themes, though fewer teachers appear to have used the Vaccinations and Health scheme. The quality of each resource was also highly regarded, with responses registering as excellent in all but three cases.

Figure 5 *- Pupils decide on the acceptability of a series of policy options.*

Who is using *Let's Talk*

Response from the evaluation suggests that the resource packs have been used in a range of subjects: Higher Biology, Science, Biology, Home Economics, Chemistry, Social Education, Human Biology, Access Science, English. The year groups using the activities comprise: P6, P7, Int2, S1, S2, S3, S4, S5 and S6. The materials have also been used by Access to Science groups, in teacher professional development and in health education for parents.

Changes in classroom practice

Though *Let's Talk* stands alone as a resource, the intention is that its usage will broaden the themes, contexts and approaches for teaching and learning about science. The evaluation highlights how the scheme promotes better discussion activity by providing a real structure for managing meaningful ▶

[2] (i) Diet, Diabetes and Obesity; (ii) Liver and Alcohol; (iii) Vaccinations and Health

debate. The increase in teacher confidence seems to have an effect that goes beyond the individual topics and packs:

"I have tried to introduce more active learning into lessons. I have incorporated more debates and discussions. I am also more confident to try out new ideas".

Pupil understanding and enjoyment

Pupils appeared to understand some of the issues associated especially with the 'lifestyle' diseases covered in *Diet, Diabetes & Obesity* and *The Liver.* They started with different levels of knowledge about the subject matter, with greater awareness of the science associated with obesity and alcohol abuse and less about the relevance of vaccinations and cervical cancer, other than the fact that girls would be receiving an injection but little appreciation as to why. Teacher feedback indicated that the activities really did help pupils to think about issues they would otherwise not have considered and increased their awareness of the issues, and sensitivities associated with them.

The skills that pupils felt *Let's Talk* most improved while engaged in this unit of work were communication, discussion and listening. The Vaccines materials also managed to convey some fairly complex concepts in an accessible and enjoyable way. The DVD was valued as the best activity by almost 70 percent of respondents, with around a quarter praising the 'agree-disagree' cards approach as the most enjoyable. All pupils said that they understood more about vaccines after they had completed the unit, with 80 percent suggesting they would recommend the lesson format to friends in other classes.

Let's Talk has been shown to establish an environment in which discussion about the social and ethical questions linked to health-related science can occur. But how much of the success of the scheme simply focuses on giving both teachers and pupils the confidence simply to talk and how much encourages reference to real evidence and data? The project unapologetically sets out to raise issues of science and its impact on society, yet attempts to underpin the ensuing discussion with sound science.

Impact on education policy

The overall aims of the project were to encourage teachers to develop strategies and approaches that engage young people in understanding the science behind the headlines and to help them articulate considered views based around evidence. It would appear that *Let's Talk* has met these expectations and achieved more. Working closely with curricular leaders, education officers and education advisers at the heart of the Scottish Government means that the work is potentially much more than a curriculum initiative. *Let's Talk* has set in train the essential elements that hopefully will become embedded in how science is taught in Scotland. The philosophy is consistent with the principles of the Curriculum for Excellence and Marjorie Smith and her associates appreciate that long-term sustained success relies on training and support, establishing cross-curricular links and promoting buy-in.

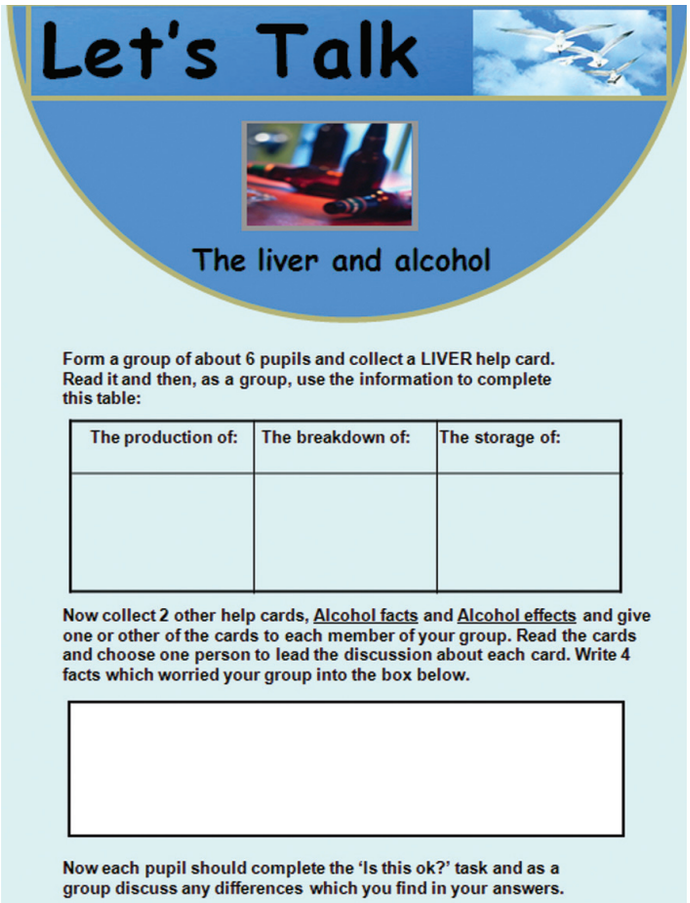

Figure 6 *- The liver and alcohol activity sheet.*

Conclusions

Let's Talk is more than simply a pack of school resources. In fact it is an exemplification of the challenges and opportunities that science offers. Health and lifestyle choices are hard to make, especially when we are continually exposed to the persuasive power of the media and prevailing cultural experience. Access to reliable knowledge and a context in which young people can explore choices, should be the very least formal education provides. The strength of *Let's Talk* goes beyond its potential to help teachers to talk to pupils and pupils talk both to their peers and to their parents, but also its position at the interface between education policy, curriculum change, professional development and health awareness. The health impact of programmes like this, takes time to become visible, since attitudes and behaviours are resistant to change, and health benefits slow to surface. Yet the evidence suggests that the educational outcomes alone are more than worth the effort.

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