

POLICY BRIEF 19

Investing in health literacy

What do we know about
the co-benefits to the education
sector of actions targeted
at children and young people?

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Keywords:

HEALTH LITERACY

COST-BENEFIT ANALYSIS

HEALTH PROMOTION

ADOLESCENT

CHILD

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This policy brief is one of a new series to meet the needs of policy-makers and health system managers. The aim is to develop key messages to support evidence-informed policy-making and the editors will continue to strengthen the series by working with authors to improve the consideration given to policy options and implementation.

What is a Policy Brief?

A policy brief is a short publication specifically designed to provide policy makers with evidence on a policy question or priority. Policy briefs

- Bring together existing evidence and present it in an accessible format
- Use systematic methods and make these transparent so that users can have confidence in the material
- Tailor the way evidence is identified and synthesised to reflect the nature of the policy question and the evidence available
- Are underpinned by a formal and rigorous open peer review process to ensure the independence of the evidence presented.

Each brief has a one page key messages section; a two page executive summary giving a succinct overview of the findings; and a 20 page review setting out the evidence. The idea is to provide instant access to key information and additional detail for those involved in drafting, informing or advising on the policy issue.

Policy briefs provide evidence for policy-makers not policy advice. They do not seek to explain or advocate a policy position but to set out clearly what is known about it. They may outline the evidence on different prospective policy options and on implementation issues, but they do not promote a particular option or act as a manual for implementation.

Investing in health literacy:
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sector of actions targeted at children and young people?

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The authors and editors are grateful to the reviewers who commented on this publication and contributed their expertise.

Acronyms

BBBF	Better Beginnings, Better Futures
EEF	Education Endowment Foundation
EU	European Union
GIVE	<i>Servicestelle für Gesundheitsbildung</i>
GPA	grade point average
OECD	Organisation for Economic Co-operation and Development
RULER	Recognizing, Understanding, Labeling, Expressing and Regulating emotions
SEL	Social and emotional learning
UKRP	UK Resilience Programme
USA	United States of America

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KEY MESSAGES

- Poor health literacy is detrimental to health across the life course and up to 47% of the European population are thought to have poor or inadequate levels of health literacy.
- Effective health literacy interventions can positively influence education and academic performance, which can have long-term benefits across the life course.
- It is important to develop health literacy skills early in life. The promotion of health literacy for children and young people will typically be delivered outside the health sector, often in the education sector.
- Embedding health literacy within routine educational activities, aids implementation and additional costs may be considered a reasonable investment if the needs of the educational sector are also met.
- Having better evidence on effectiveness and economic benefits to other sectors can facilitate implementation by increasing the potential for buy-in by stakeholders:
 - o economic modelling can be used to make estimates of long-term costs and benefits as there are potential cost savings for the whole of society;
 - o the routine collection of data on education and health outcomes can also be used to look at the impact of initiatives over time;
 - o it is also important to take account of the differing delivery contexts when considering potential outcomes and challenges in implementation.
- Improved health and educational outcomes in school increase the potential for greater economic benefits for children when they reach adulthood as a result of enhanced career opportunities as well as better physical and emotional health, and these effects can be passed down to future generations.

EXECUTIVE SUMMARY

Making a cross-sectoral case for investment in health literacy

A continuing challenge in public health and health promotion policy is to encourage the implementation of proven effective actions outside of the health sector. One such action is fostering good health literacy across the life course. This is about having the knowledge, confidence and skills to seek out, as well as process, information from a variety of sources to improve and protect health. Poor health literacy is detrimental to health; up to 47% of the European population have poor or inadequate levels of health literacy. Actions to improve health literacy may imply significant costs outside of the health sector, so it is helpful to demonstrate that there are substantial specific benefits for these other sectors (so-called co-benefits) to be gained.

Highlighting the impact of health literacy beyond the health sector

One example of benefits beyond the health sector concerns health literacy interventions delivered to children and young people. There is evidence suggesting that effective health literacy interventions can influence education and academic performance. The evidence appears most substantial for social and emotional literacy programmes, which strengthen self-awareness, self-management, social awareness and relationship skills, as well as promoting responsible decision-making.

General school-based health promotion programmes can also be a vehicle for implementing health literacy in schools. Programmes that include health literacy as a component, such as the Health Promoting Schools model, have been associated with some evidence of impact on educational outcomes.

Evaluations looking specifically at the impact of health literacy on educational attainment can be supplemented by literature on the association between the consequences of health literacy – better physical and mental health in childhood – and educational outcomes. There is, for instance, a significant body of evidence to indicate that children who are more physically fit and engage in aerobic exercise pre-adolescence, have improved brain function and are likely to have superior cognitive performance and academic achievements compared with children with low levels of exercise.

Understanding financial and economic impacts beyond the health sector

It is also important to look at the financial and economic consequences of investing in health literacy promotion programmes. Very few studies have estimated the economic value of health-related benefits of health literacy, let alone the economic benefits to education or other sectors. Some examples of positive economic benefits to the education sector can be seen in pre-school/primary school programmes, as well as teenage sex education programmes. Key short-term drivers of savings to the education system are reductions in stress levels for teachers and a reduced need to

place children in expensive special educational needs classes.

It is also possible to highlight some potential long-term economic benefits associated with better educational outcomes, particularly where there is evidence of sustained educational improvement following the use of health literacy promotion interventions. Educational attainment itself is an important determinant of economic growth. Increased levels of skills or human capital due to better levels of education and cognitive development will increase average earnings and reduce the likelihood of unemployment. The Organisation for Economic Co-operation and Development (OECD) reports that employment rates among highly educated groups are more than 30 percentage points higher than among those with low levels of educational attainment. It also notes a 23% difference in self-reported good health between adults with the highest and lowest levels of educational attainment or literacy proficiency.

Quantifying cost and cost-effectiveness from a multisector perspective

In making the case for health literacy interventions, it is important to estimate accurately the costs of implementation, as well as looking at cost-effectiveness from a multisector perspective. A first step is to look at the resources required to deliver programmes, attaching appropriate unit costs to each of these resources and identifying which sector would have to pay.

Health literacy programmes need to be feasible for implementation in school settings. The greater the levels of time or effort needed from school staff, the more difficult the programmes may be to implement. However, the costs may actually be quite modest if the health literacy programme can be implemented by teachers as a core component of the teaching curriculum and clearly contributes to meeting educational goals.

Evidence on their cost-effectiveness can also be strengthened by looking at impacts within and beyond the health system. Economic modelling techniques can aid this process; for instance, these can be used to synthesize previous data on educational outcomes with local resource and cost data to provide local estimates of the immediate costs and benefits to the education sector in different country contexts. The routine collection of data on education, health literacy and health outcomes, as in Finland, can be used in the future to look at the impact of initiatives over time. Such data could also inform models that could be used to estimate the economic value of any long-term benefits of investment in health literacy programmes.

Facilitating the uptake of health literacy beyond the health sector

Having better evidence on effectiveness and benefits to non-health sectors, such as the education sector, can help facilitate implementation by increasing the potential for buy-in. One example demonstrating the value of looking at cross-sectoral benefits is the Better Beginnings, Better Futures (BBBF) project to promote the health and well-being of primary school children and their families in Ontario, Canada. In addition to looking at social, emotional and

behavioural outcomes for children and their parents, the evaluation also considered a number of outcomes related to school performance. The overall economic analysis demonstrated that the programme had net benefits per child, the majority of which were due to a reduction in the need to use special educational services; there was also an improvement in the well-being of teachers and the use of social welfare services decreased.

It is important to take account of the differing delivery contexts across Europe when considering potential outcomes and challenges in implementation. Much might be learnt from existing experience of implementation strategies within specific settings and educational systems; for instance, harnessing the experience of the Schools for Health in Europe network.

Implementation is more likely to succeed if education sector staff are both confident of the value of health literacy programmes and receive sufficient ongoing support and training. Embedding health literacy within routine educational activities will aid implementation. Legislation might also be introduced to ensure that it would be mandatory to implement health literacy in the education

sector; for instance, by strengthening existing requirements on health promotion within the student teacher training and school curriculums. Regulatory and financial levers available in some countries may also help with implementation by encouraging joint working and shared budgets across sectors.

Another approach is to use award schemes to encourage implementation and fidelity to the core principles of programmes. Some studies suggest an association between achievement of Health Promoting Schools awards and academic success. Schemes that provide financial incentives for good practice to help encourage uptake and fidelity to specific health promoting practices might also be considered.

Relevance for actions across the life course

While the focus here has been on health literacy for young people, these principles can be applied to arguments across the life course; for instance, when looking at potential costs and benefits to employers of supporting workplace-delivered health literacy programmes, or for local governments considering programmes on health literacy to help older people maintain their independence and well-being.

POLICY BRIEF

Introduction

A continuing challenge in public health and health promotion policy is to encourage the implementation of effective actions outside the health sector. This can be particularly challenging if the non-health sector in question is expected to finance and administer health literacy activity. These external sectors may not see health literacy as a critical goal, but rather as something that may deflect valuable resources away from activities that are core to their own sector-specific goals. Thus, while promoting health in all policies as a concept is appealing, in practice implementation can be difficult. So one key question is how to facilitate a greater level of implementation. One way of doing this may be to demonstrate that there are substantial specific benefits (so-called co-benefits) for these other sectors that can be gained by investing in health-related actions.

This policy brief will address this issue by focusing on one particular approach to health promotion – health literacy. The brief goes on to discuss definitions but, essentially, good health literacy involves having the knowledge, confidence and skills to seek out, as well as process, information to improve and protect health and manage disease, from a variety of sources. Poor health literacy is detrimental to health and is still a common concern in Europe. A survey of nearly 8000 people aged over 15 across eight European Union (EU) countries in 2011, found that 12% had inadequate levels of health literacy; rates varied considerably across countries from just 2% in the Netherlands to 18% in Austria and 27% in Bulgaria (Sørensen et al., 2015). A further 35% of this survey population had problematic levels of health literacy, again with some variation in country rates from 27% in the Netherlands to 38% in Austria and 51% in Spain.

Approach to synthesizing the evidence

This brief deliberately does not focus on synthesizing the evidence on the impacts of health literacy interventions on health outcomes; several reviews of the evidence base on health benefits, as well as on the strengths and weaknesses of different health literacy developmental approaches targeted at different population groups, are available (Berkman et al., 2011; D'Eath, Barry & Sixsmith, 2012; Kickbusch et al., 2013). Instead, it focuses on looking at the costs and benefits of taking action to improve health literacy for those non-health sectors that have to implement health literacy interventions.

Discussion of impacts beyond the health system appear to be almost absent from many publications reviewing the effectiveness of mechanisms to promote health literacy, despite an emphasis in reviews on working across sectoral boundaries. Yet it is precisely these wider impacts that may be critical to investment in health literacy in many settings outside of health care systems that are responsible for the delivery and/or funding of health literacy interventions.

This is a very broad topic as health literacy is relevant across the life course. To illustrate the importance of looking beyond health outcomes when making the case for health literacy, this policy brief concentrates on the potential

benefits arising from the delivery of selected health literacy interventions to children and young people in the early years and education sectors. In addition to schooling, this could include interventions delivered in kindergartens, play groups and after-school clubs, as well as children's groups, such as the Scouting movement. It might also involve providing programmes for parents or for professionals who work with young people, such as teachers.

The focus is on children and young people because health literacy strategies, it is argued, need to begin early in the life course, so as to maximize the chances of developing good health behaviours (Borzekowski, 2009; Kickbusch et al., 2013). Good childhood health literacy has, for instance, been associated with routinely having a healthier diet, as well as a better understanding and use of nutritional information on foods and drinks (Cha et al., 2014). These benefits reduce the chances of poor health behaviours in adulthood. Health literacy programmes may encourage greater levels of physical activity; again, there is good evidence that individuals who participate more in sports in their teenage years are more likely to be physically active in adulthood (Tammelin et al., 2003). Building resilience in childhood through health literacy programmes can also have a positive impact on psychological health and well-being across the life course, as well as reducing the severity of depression experienced in adulthood (Roberts, 2015). The importance of influencing long-term health lifestyle choices, as a result of improving cognitive and emotional skills through educational interventions, has been recognized by the OECD in their recent work on measuring well-being (OECD, 2013).

Figure 1 shows an adapted version of one framework for the complex association between health in childhood, educational outcomes and longer-term impacts, including adult health, income and the schooling of future generations (Suhrcke & de Paz Nieves, 2011). Educational attainment and academic performance are influenced by health status and health behaviours, as well as by external factors, such as the school and family environment, and social networks. The figure also indicates that children who already have poor physical or mental health, or poor health behaviours, are likely to be at greater risk of poor academic performance. A number of different mediating factors, including cognitive development, self-esteem and physical energy, will also impact on academic outcomes.

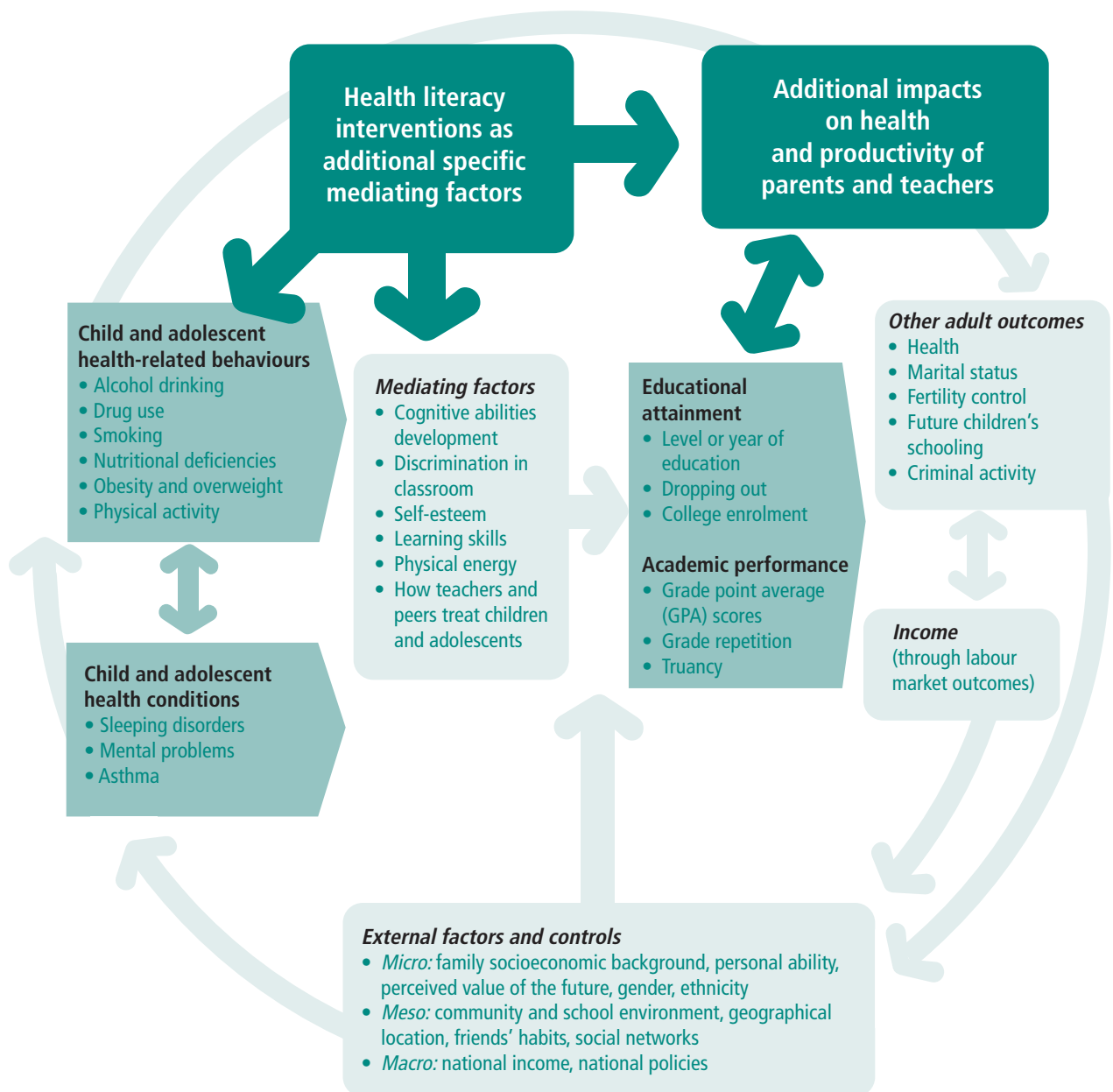
Health literacy programmes can help as they directly address the physical and mental health-related behaviours seen in this framework and they can influence mediating factors such as learning skills and levels of self-esteem. As Figure 1 indicates, better educational performance may then subsequently have an impact on the life chances of these children, through better employment prospects, improved health and lower rates of contact with the criminal justice system. This, in turn, is likely to influence both the health and educational outcomes of future generations, as their own children will grow up in a more supportive environment.

Figure 1 also indicates that effective health literacy programmes may generate health and productivity benefits to teachers and families. In fact, health literacy actions in

school and other early years environments can be targeted directly at teachers, with the aim of protecting their physical and mental health, which in turn “are a prerequisite for good and high-quality teaching” (Fischer et al., 2013). The high levels of stress and pressure experienced by the teaching professions have, for example, been noted to lead to early retirement in Austria, while, more generally, the issue of early retirement is a particular concern in many European

countries where demographic change is leading to the ageing of the teaching population. In German-speaking countries, the risks of burnout and psychosomatic health problems have been shown to rise with seniority in the teaching profession. Families may also benefit, not only from reduced stress but also from less time lost from work if there is a reduction in child behavioural problems.

Figure 1: Health literacy actions, child health and educational outcomes



Source: Adapted from Suhrcke & de Paz Nieves (2011).

What do we mean by health literacy?

Health literacy is about much more than simply having the basic educational skills for applying language, literacy and numeracy skills to process information on health issues. It is also about having knowledge, confidence and skills to seek out and interpret information; for instance, to know what to look for when health-related claims are made about specific products and activities, as well as being better able to understand the concepts of risk and benefit associated with different lifestyle choices or different health care treatment options.

Individual levels of health literacy will be dependent on other factors as well, such as the availability of “health-literate” information that is clear and accessible rather than incomprehensible technical documentation, personal socioeconomic circumstances, social connections and working environment (Roberts, 2015). It therefore covers both physical and psychological health and well-being, and can help create supportive environments for health in a variety of settings, including schools and workplaces.

Health literacy has formally been defined in different ways. One definition, which seeks to be all encompassing, followed a review of 19 definitions and approaches (Sørensen et al., 2012). It describes health literacy as the “knowledge, motivation and competences to access, understand, appraise, and apply health information in order to make judgments and take decisions in everyday life concerning health care, disease prevention and health promotion to maintain or improve quality of life during the life course”.

Given the focus of this brief on health literacy action for children and young people in particular, we concentrate on three aspects of health literacy that have been discussed in the literature as being particularly important to develop early in life: *critical health literacy*, *empowerment* and *self-efficacy*. This is not to say that other aspects of health literacy are less important, but rather that they tend to focus much more on direct interaction with health care systems, such as the ability to interact in an informed manner, abilities that – while of importance to young people – are often more relevant to adults.

Critical health literacy was originally defined as “advanced cognitive skills which, together with social skills, can be applied to critically analyse information, and to use this information to exert greater control over life events and situations” (Nutbeam, 2000). These skills are vital in using literacy to promote health, allowing children and young people to consider some of the broad influences on their health, such as being able to distinguish between advertising and health information, or on the importance of a healthy balance between study and leisure activities.

Children and young people need to be **empowered** to take control and make informed decisions that can influence their health; for instance, on whether or not they adopt a healthy lifestyle. This is just as much an issue for young children, who may or may not decide to wear a cycle helmet regardless of what the law states, as for older teenagers

who may or may not decide to follow advice on smoking or sexual health. Approaches to health literacy need to equip young people with the skills to fully seize empowerment opportunities to better their own health and perhaps even to positively influence the health behaviours of their parents and other members of their families.

The third element, **self-efficacy**, is all about equipping children and young people with confidence in their own ability to influence their health. Building resilience in children and young people to enable them to weather adverse events and, for instance, deal with harmful peer pressure at school to engage in unhealthy behaviours, or avoid dangerous situations on the internet, is one way in which self-efficacy can be facilitated.

How can early years and education services help facilitate the acquisition of health literacy skills?

The importance of developing health literacy skills early in the life course, as well as the critical role to be played by various early years services and schools in facilitating the acquisition of health literacy skills, is well acknowledged (St Leger, 2001). Indeed, there is a strong overlap between the core goals of early years services, such as kindergartens as well as schools, with the core goals of health literacy, i.e. both wish to encourage the development of independent critical and well-informed thinking to help promote greater levels of personal development and empowerment. Education goals, which are also integral to health literacy, include lifelong learning skills, competencies and behaviours, knowledge and skills, and self attributes (St Leger & Nutbeam, 2000). Poor levels of educational attainment are associated with increased likelihood of inadequate levels of health literacy in adults (Sørensen et al., 2015).

There are different ways in which health literacy skills can be developed by children and young people. One well-known example is the concept of the Health Promoting School, which it has been argued is a more effective approach to developing health literacy skills than simply relying on the provision of health-related information in the school environment (St Leger, 2001). These schools aim to improve health and well-being outcomes through the improvement of learning and educational skills (Kickbusch et al., 2013). They take “a holistic, whole school approach to health promotion in which a broad health education curriculum is supported by the environment and ethos of the school” (Lee et al., 2006). However, it is not just about actions that take place within the normal school day; health literacy can be promoted in other services for children and young people, such as in after-school clubs (Durlak, Weissberg & Pachan, 2010) (see Box 5).

What do we know about co-benefits from health literacy programmes that are delivered to children and young adults?

Identifying benefits to other sectors of health literacy programmes can help facilitate their implementation. So, what do we know about the benefits of programmes delivered to

children and young people? Ultimately, the early years and education sectors will be interested in whether investment in health literacy promoting actions may have any impact on educational attainment in schools. This is particularly important given the relatively poor performance of European countries in terms of educational attainment rates. The highest average scores in international student achievement tests are to be found in Singapore, Hong Kong, South Korea, Japan and Chinese Taipei. Finland, Estonia, Switzerland and the Netherlands are the only European countries in the top ten, with countries such as Austria, the United Kingdom, France, Spain and Italy ranked 19th, 20th, 23rd, 27th and 28th respectively (Haneshuk & Woessmann, 2015).

Too often, hard educational outcomes have not been included in health literacy evaluations (Langford et al., 2014) but evidence of impact is now emerging and this needs to be strengthened. It appears most substantial for social and emotional literacy programmes as a specific subset of health literacy programmes which seek to empower children and build self-efficacy. Developing emotional literacy has an important bearing on academic performance and outcomes in school (Gutman & Vorhaus, 2012). An emotionally unstable child is less likely to be productive in the classroom.

While we provide some examples here from these programmes to illustrate the benefits to the education sector in particular, it should be clear that there is also evidence on the association between programmes focused more on physical health literacy and improvements in educational

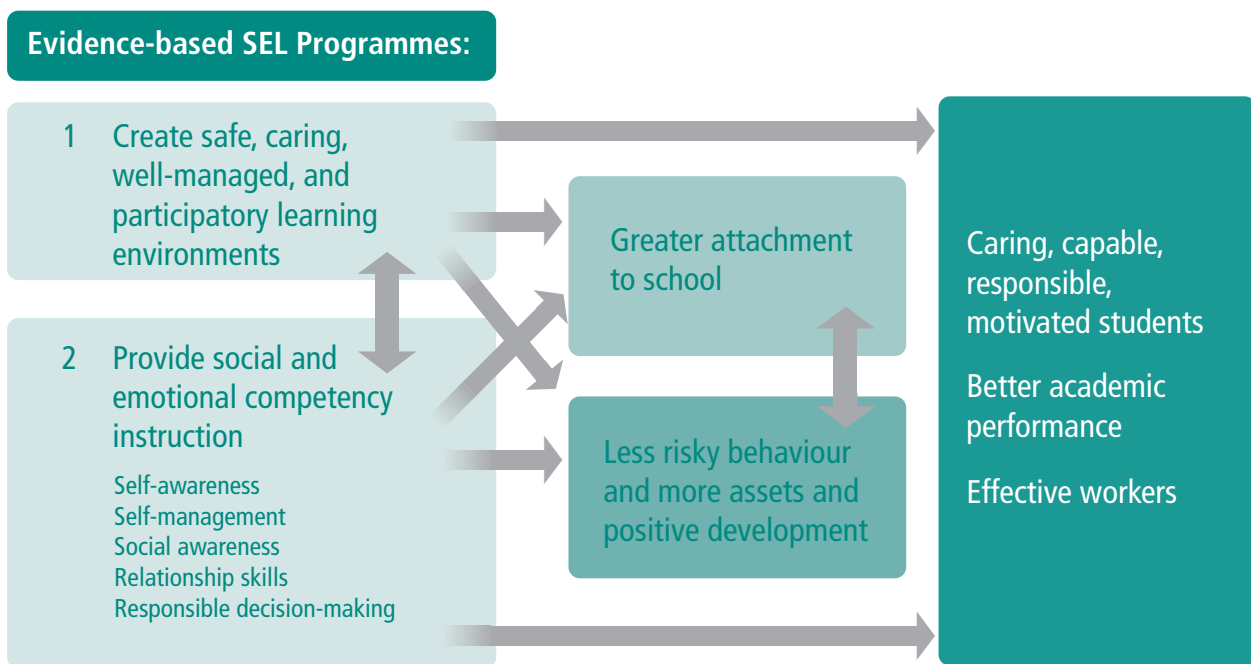
performance (Brooks, 2014). It should also be borne in mind when reading these examples that the contexts in which interventions are delivered may be quite different to those seen in some parts of Europe.

Impacts of social and emotional literacy on educational outcomes

Social and emotional literacy programmes for children and young people can take many different forms and be targeted at different age groups. They focus on psychosocial issues that are not always a strong element of the focus of general health literacy programmes in schools. They foster health literacy by strengthening self-awareness, self-management, social awareness and relationship skills, as well as promoting responsible decision-making (Collaborative for Academic Social and Emotional Learning, 2005).

As Figure 2 illustrates, there are a number of educational benefits associated with evidence-based social and emotional learning programmes. These can include more immediate impacts, including better school attachment (or the sense of belonging that children have about the school they attend), as well as less risky behaviours and the development of assets, including better resilience and cognitive skills. This, in turn, could help promote more engaged and motivated students, leading to improved academic performance. Longer-term benefits may arise through better further education and employment opportunities.

Figure 2: How evidence-based social and emotional learning programmes work to produce greater student success in school and life



Source: Collaborative for Academic Social and Emotional Learning (2008).

Some systematic reviews and meta-analyses suggest substantive improvements in outcomes that are considered important to the education sector. A major meta-analysis of school-based programmes delivered to promote pupils' social and emotional development focused on their impact on academic performance when delivered by school staff in real-world settings (Durlak et al., 2011). This provides considerable evidence on the benefits to the education sector of investing in social and emotional learning programmes.

The review focused on programmes that delivered interventions universally to all children rather than being targeted at children with pre-existing problems. Pupils could be of any age between 5 and 18. The analysis also looked at whether multicomponent programmes that not only involved the delivery of a school-based social and emotional curriculum but other school-wide environmental changes and other supports (including parental actions) as well, would be more effective than curriculum programmes alone. The analysis then reflected on how implementation affected outcomes.

Including 186 from the USA, 213 evaluations of programmes were identified, of which 47% used randomized study designs. Overall, programmes were associated with a significant 11% improvement in academic performance; moreover, significant academic performance improvements were found for studies where teachers delivered the programmes; this was not the case for programmes delivered by non-school staff. Both curriculum-only and multicomponent programmes were associated with greater gains in academic performance but there was no significant difference in performance between these two groups. Significant effects were maintained in studies that reported at least a six-month follow-up (although it should be noted that only 15% of studies reported follow-up beyond six months). Implementation was found to be important; studies of programmes with poor levels of implementation did not achieve significant improvements in academic performance.

Better classroom atmosphere and organization arising from social and emotional learning programmes have also been associated with longer-term academic improvements. One recent evaluation in Norway looked at the education system benefits of a universal school-based programme called "Zippy's Friends". This programme is designed to increase the ability of young children to cope with stressful situations both within and outside school, including the development of emotional literacy and social skills. The programme has been implemented in at least 27 countries, with evaluations in various countries including Canada, Denmark, Ireland and Lithuania (Clarke, Bunting & Barry, 2014). Using a cluster randomized evaluation design, the Norwegian programme was found to have had a positive effect on classroom atmosphere, as well as significantly reducing bullying and improving academic scores (Holen et al., 2013) (Box 1).

The sustainability of these outcomes is important. One study from the USA concerns a randomized trial that evaluated the impact of another social and emotional learning programme – RULER (Recognizing, Understanding, Labeling, Expressing and Regulating emotions) – delivered to 10- and 11-year-old children over a two-year period (Hagelskamp et al., 2013).

Like Zippy's Friends, in comparison to classes in control schools, short-term benefits were observed, but there were also significant sustained improvements in emotional support, improved classroom atmosphere and organization, as well as in the learning environment.

Box 2 provides a further illustration from a controlled study in England looking at the impacts of the UK Resilience Programme (UKRP), which aimed to improve children's psychological well-being by building resilience and promoting accurate thinking. Delivered by trained school staff, the programme was found to have positive impacts on child emotional, behavioural, social and school well-being. There were also impacts on school performance. On average, children whose psychological well-being improved had higher levels of academic achievement and were more engaged in school than children who did not experience these levels of emotional well-being (Challen et al., 2011).

Survey data on 7000 young people from Norway also indicate that exposure to violence, both physical and non-physical, before the age of 13 had an impact on academic achievement during the last year of school at the age of 18 or 19 (Huang & Mossige, 2012). Improved social adjustment, including lower levels of bullying and violent behaviour, have been shown in a further analysis in schools in the USA to have a positive impact on future academic achievements (Derosier & Lloyd, 2011). The authors of this study argue that this makes it vital to invest in social and emotional literacy programmes at an early age when the underlying social adjustment problems that ultimately have an impact on academic performance in adolescence, including poor language and mathematics skills, violent behaviour and truancy, begin to develop.

Box 1: Evaluating the educational impact of a school-based stress management programme for young children in Norway

Zippy's Friends is designed to promote the mental health and emotional well-being of all young children in diverse countries and cultures by increasing their range of coping skills and stimulating varied and flexible ways of coping with problems of day-to-day life (Bale & Mishara, 2004). It is implemented over 24 one-hour sessions, delivered once a week by a teacher over a school year. Each module is centred around a set of six illustrated stories about a group of children, their families, friends and an imaginary stick insect called Zippy. The modules focus on six themes: emotions, communication, relationships, conflict resolution, dealing with change and loss, and general coping skills. A manual provides a detailed description of how to conduct each lesson and teachers also receive two days training.

Thirty-five schools in both rural and urban areas in three regions of Norway took part in an evaluation; 18 schools with 745 children in 47 classes were randomized to receive Zippy's Friends, with 17 schools with 738 children in 44 classes randomized to a control group. Multilevel regression analysis of teacher reports indicated that the programme had a positive effect on the social climate in the classroom, as well as significantly reducing bullying and improving academic achievement scores. The evaluation noted that other research suggests that any improvement in the social climate in the classroom may further promote pupils' academic skills and mental health.

Box 2: Emotional well-being and educational outcomes in England – longitudinal analysis

Children in 22 schools in England took part in a quasi-controlled evaluation of the UK Resilience Programme (UKRP). This aimed to improve children's psychological well-being by building resilience and promoting accurate thinking; it was first implemented in 2007–08 through 18 hours of workshops for children age 11 to 12 in 22 secondary schools in the United Kingdom.

Workshop facilitators were school employees. They were a mixture of school teachers, learning mentors, teaching assistants, psychologists and health professionals. They underwent between 8 and 10 days training; the intervention was taught according to a manual. They were asked to give up the first two weeks of their summer holidays in order to train in Philadelphia (USA), and had to prepare a large amount of new material in order to teach the workshops. This workload has decreased in subsequent years. Training now involves less holiday time and more term time, requiring headteachers to agree to provide cover for staff while they are on the training course. The number of days of training has been reduced to 5–7 days a year. However, it still requires participants to give up some weekends or holidays in order to participate.

Longitudinal data were available on the emotional, behavioural, social and school well-being outcomes of 2000 children at the ages of 7, 10 and 13 at these schools. Subsequent academic outcomes at ages 7, 11, 14 and 16 were also measured. On average, children in the programme had higher indicators of emotional and behavioural outcomes. Those with better well-being also had higher levels of academic achievement and were more engaged in school. Moreover, all of these dimensions of well-being in children at age 7 were significantly associated with better future educational outcomes after intervention at ages 11, 14 and 16, although there was no significant association between the measure of school well-being at age 7 and better academic achievement at age 11. The analysis also found that children who were not engaged in troublesome behaviours at ages 10 and 13 made more progress in secondary school. There were also short-term impacts on academic performance at one-year follow-up for 12 year olds, but no longer-term significant impacts were observed (Challen et al., 2011).

Health Promoting Schools and educational outcomes

Health Promoting Schools provide a holistic approach to promoting the health of children, including developing health literacy as a component of these programmes. Health Promoting Schools therefore demonstrate an example of a general health promotion programme in schools that can contribute to better health literacy. They can foster health literacy explicitly through teaching, as well as implicitly by providing examples of good practice, improving community relationships and creating supportive school environments. Evaluations of this holistic approach of including health literacy as part of the programme have looked at the impact on academic performance; for example, an evaluation two years after the introduction of the Health Promoting Schools concept in Hong Kong found statistically significant differences in academic performance between schools that were found to have implemented the Health Promoting Schools model well compared with schools that had not (Lee et al., 2006). There were also improvements in health-related outcomes and a reduction in violent behaviour and petty thefts in schools (see Box 3).

Box 3: Reward schemes and academic performance in Health Promoting Schools in Hong Kong (Lee et al., 2006)

Implemented in 2001, the HPS framework covered six key areas: health policy; physical and social environments; community relationships; personal health skills; and health services. Schools were rated on how well they met the criteria for Health Promoting Schools, and could be awarded with the Hong Kong Healthy Schools Award (at bronze, silver or gold levels).

Two years after Health Promoting Schools began, nine schools were included in an evaluation, consisting of children in their fourth year of primary school (age circa 8–9) or in the third year of secondary school (age circa 13–14). Compared with the baseline, analysis of results at the two-year follow-up found that in all primary and secondary schools that received either bronze or silver awards (no school received a gold award), there was a reduction in the number of academic results considered to be poor to fair; in schools without awards the converse was true with an increase in the number of poor to fair academic results observed. This difference was statistically significant in the case of secondary schools, which saw a 14% decrease in poor academic performance compared with a 3% increase in poor academic performance in schools without awards ($p = 0.001$).

In both primary and secondary schools that received healthy school awards there were significant improvements in the self-reported health status and dietary behaviours of pupils. There was also a significant reduction in physical fights and fight injuries in primary schools with awards. Damage or theft of property was reduced by 14% and 9% respectively in the primary schools and secondary schools with awards.

Impacts on education outcomes of health literacy programmes delivered to pre-school aged children

There is also a body of research on the long-term impacts of many different types of early years intervention programmes, particularly for programmes developed in the United States of America (USA). These typically seem to have a positive impact on educational, labour market and social outcomes by enhancing cognitive and socioemotional skills (Karoly, Kilburn & Cannon, 2005; Nores & Barnett, 2010; Heckman & Kautz, 2013). Many of these studies were originally targeted at disadvantaged population groups (Heckman & Kautz, 2013; McDaid et al., 2014). While a detailed analysis of the components of these programmes would be necessary in order to understand the extent to which they include health literacy mechanisms, some examples of effective programmes with literacy actions targeted at either parents and/or pre-school children that also look at educational impacts can be identified. One example of this is the evaluation of the Abecedarian programme in the USA, which has been associated with improved outcomes to several different sectors including education (Campbell et al., 2002, 2012; Heckman & Kautz, 2013) (Box 4).

Box 4: Long-term impacts beyond the health sector of a pre-school multicomponent programme

This programme was targeted and delivered to 57 disadvantaged African-American children from infancy until they reached the third year of school at the age of eight. The pre-school component involved full-day child care five days per week, 50 weeks a year. The curriculum focused on a series of "educational games" emphasizing language, emotional development and cognitive skills, alongside medical and nutritional interventions. Parents and teachers were in contact every week for school-aged children (Campbell et al., 2002). Compared to the 54 children in the control group there was less need for placement in special education classes (Campbell et al., 2012). There were also improvements both in IQ to age 21 and educational achievement tests (Heckman & Kautz, 2013). At age 30 they had completed significantly more years of education and 23% had a university degree, compared with 6% in the control group (Campbell et al., 2012). Finally, 75% of participants were in employment at age 30 compared to 53% of the control group, and they were six times less likely to be in receipt of social welfare benefits.

Impacts on education of health literacy programmes delivered to young people outside of school

It is not just health literacy actions within the school day that can be used to impact on academic achievement, as health literacy interventions delivered in different settings, such as after-school clubs, can also have a significant impact on academic and health outcomes (Box 5). This also has implications for activities conducted within organizations such as the Scouting movement and sporting associations.

Box 5: Impact of participation in after-school clubs that promote personal and social skills on health and academic outcomes

A meta-analysis looked at organized programmes offering one or more activities that: (a) occurred during at least part of the school year; (b) happened outside of normal school hours; and (c) were supervised by adults. In addition, programmes needed to have the development of one or more personal or social skills as one of their goals. Programmes could be delivered to children and young people between the ages of 5 and 18. The meta-analysis included 68 studies, all of which were from the USA. All had control groups and 35% used randomized evaluation designs. A small but significant positive standardized mean difference in effect size of 0.17 was found for academic performance, supporting participation in after-school clubs. There were also small to medium size effects on improving positive social behaviours, school bonding and child self-perception (Durlak, Weissberg & Pachan, 2010). Separate qualitative analysis indicated that the quality of the programmes rather than the duration of participation in these programmes was critical to improvement in academic outcomes for both literacy and numeracy (Shernoff, 2010).

Linking effective health literacy interventions to better health and educational outcomes

As well as specific evaluations of the impact of health literacy programmes on educational outcomes, it is important to look at the literature on the relationship between better health behaviours and/or health status and educational outcomes in children in different country contexts. If health literacy interventions have been shown in evaluations to successfully influence health behaviours, then it is reasonable to infer that some of the benefits to the education sector that have been associated in studies with better child health might be realized. It is feasible to link two different sources of information: evidence on the effectiveness of health literacy programmes on both health behaviours and health outcomes, with evidence on how changed health behaviours and/or health status impact on educational outcomes.

For example, if health literacy actions do influence the physical health behaviours of children, then it can be helpful to point to evidence on the association between physical health and educational attainment. There is, for instance, a significant body of evidence indicating that children who are more physically fit and engage in aerobic exercise pre-adolescence have improved brain function and are likely to have superior cognitive performance and academic achievements compared with children who have low levels of exercise (Stead & Nevill, 2010; Chaddock et al., 2012). Longitudinal studies also suggest that academic achievement is maintained or enhanced by increased physical education, physical activity or sport; benefits may be greatest for children below the age of 13 (Trudeau & Shephard, 2008; Stead & Nevill, 2010). Caution over the strength of this evidence base must be exercised though and it is important to consider the quality of individual studies and their relevance to the local context.

Take, for instance, the findings of a systematic review looking at the longitudinal relationship between general physical activity and academic performance (Singh et al., 2012). Fourteen studies were identified, of which 12 were from the USA. These studies had inconsistent results for the impact of physical activity on academic outcomes, but three of the four randomized controlled trials of physical activity interventions in the review, covering periods of 8 weeks, 2 years and 3 years respectively, did report improvements in academic outcomes and cognitive skills. Moreover, there was a positive association between physical activity and several components of mental health, including self-esteem, emotive well-being, spirituality and future expectations, all of which may impact on academic achievement.

It is also feasible to link evidence on effective health literacy interventions with literature on the impacts of not taking action to improve health. Poor physical and psychological health has been associated with poor levels of educational achievement (Suhrcke & de Paz Nieves, 2011; Rimpelä et al., 2013). Conversely, positive experiences of education can improve long-term adult lifetime health outcomes, even for those children who had experienced hardships and difficulties prior to entering school.

This same approach can also be used when thinking about making the case for health literacy interventions targeted at different population groups; for instance, if health literacy actions targeted at adults in the workplace are shown to change lifestyles, it could be helpful to look at the impact of healthier lifestyles on outcomes of interest to employers, such as the rate of absenteeism or performance at work.

An important caveat in looking at this literature is the possible impact on inequalities in health. Figure 1 indicated that the effects of health literacy interventions will be mediated by external factors, such as parental and sibling influence and the home living environment. Policy-makers must be mindful that any effective health promoting intervention, including health literacy programmes, could potentially widen inequalities in health and educational outcomes in any community, unless measures are taken to address any adverse factors outside of the school environment that affect some children. Similarly, inequality concerns may also have to be addressed for health literacy interventions targeted at other population groups. In the case of schools, although sensitivity needs to be exercised, there may be scope to combine school-based health literacy programmes with additional measures, such as opportunities for parents to participate in various parenting support programmes that may in turn help to further promote positive health and educational outcomes.

What do we know about economic impacts of co-benefits from health literacy programmes delivered to children and young people?

It is important when making an argument for health literacy interventions for policy-makers to provide some indication of the financial and economic consequences of investing in health literacy or, indeed, any health promotion programmes.

This remains a major limitation in our current knowledge of health literacy interventions. Unfortunately, while we have indicated that there is an evidence base on the benefits to the education sector of better health and well-being in schools, and evidence on the impact of some health literacy interventions within schools, very few of these studies have sought to quantify the economic value of health-related benefits of health literacy, let alone the economic benefits to the education or other sectors.

This is not just an issue for health literacy interventions for children and young people, as several reviews of the health literacy evidence base have highlighted *the almost complete lack of evidence on the cost-effectiveness of any health literacy interventions* (DeWalt & Hink, 2009; Berkman et al., 2011; Sheridan et al., 2011; D'Eath, Barry & Sixsmith, 2012; Heijmans et al., 2015). This includes a very recently published review of the evidence on European health literacy interventions, which specifically searched for evidence on cost-effectiveness to no avail; not a single European study looking at cost-effectiveness was identified (Heijmans et al., 2015).

There is also relatively little evidence specifically on the costs of poor health literacy to the health system and none at all that could be identified on the economic costs of poor health literacy to other sectors. There have only been some (albeit very limited) analyses of the costs of poor health

literacy to health care systems, with one review of studies of people with diabetes or hyperlipidaemia suggesting that low health literacy can account for between 3% and 5% of total annual health care costs (Eichler, Wieser & Brügger, 2009), while recent studies from the USA suggest an increased rate of adverse events, mortality, readmission and utilization of services in people with low literacy who have been in contact with the emergency health care for conditions including cardiovascular disease (Griffey et al., 2014; Bailey et al., 2015; McNaughton et al., 2015).

This lack of published evidence on cost-effectiveness or economic impact does not however mean that nothing can be said about the economic impacts of health literacy programmes. A first step is to look at the resources required to deliver programmes and to attach costs to these programmes (Box 6). If programmes have been shown to be effective in specific settings, policy-makers will want to know what would be the economic cost of delivering the same intervention (perhaps adapted to take account of differing local circumstances) in their own local context. In the case of interventions delivered within the education sector, these costs may actually be quite modest if the interventions are implemented by teachers, but it is important to identify what gaps there are in the current provision of service in order to then estimate the resource requirements and costs of programme provision, and to determine which group or groups, from which sector(s), would be responsible for paying for these programmes.

Box 6: Quantifying the costs of delivering health literacy programmes: school-based examples

A first step is to undertake an assessment to identify the extent to which aspects of health literacy programmes may already be delivered within the existing teaching curriculum and to estimate their resource use, time and costs. If already embedded, then no additional costs will be incurred. The assessment would also identify gaps in literacy provision and could make recommendations on new initiatives, the full costs of which would then be estimated.

In estimating costs, it is important to identify who is responsible for funding these programmes. It might, for instance, be the school headteacher or a government education department. Some activities might be volunteered by teachers in their own time at their own expense. The costs of implementing new or dedicated health literacy programmes may still be very modest if they are delivered by salaried teachers or teaching assistants as a core component of the teaching curriculum. In effect, this would then be budget-neutral, although it would mean that time spent on health literacy programmes would result in less teaching time being available for other activities. The principal additional cost elements are likely to be those of providing training to teachers, including the cost of paying for temporary replacement teachers to allow permanent teaching staff to take time away from the classroom to go on dedicated training courses. As Box 2 previously indicated, in one programme, these costs were shared between the education sector and the teachers themselves, who gave up their holiday time to be trained.

If additional members of staff or external service providers are needed to deliver health literacy programmes, the costs will be much more substantial. There will also be costs associated with materials or technologies that are used to help engage with children, as well as any licensing fees that may have to be paid to use literacy programmes taught according to manuals.

Examples of the types of resources and costs required for health literacy programmes can be identified by looking at literature on the cost-effectiveness of the delivery of health promotion programmes in school; many of these programmes will in effect be taking a health literacy approach, but they do not think of themselves in this way and are thus not identified in reviews of the health literacy literature. For example, there is evidence from the USA and Australia that education programmes for school children about the dangers of overexposure to the sun are cost-effective from a health system perspective (Kyle et al., 2008; Shih et al., 2009). These economic studies also provide detailed cost estimates for programmes delivered by teachers, which can help provide initial estimates of teacher-delivered health literacy actions.

There are also potential immediate benefits to be quantified. From a school perspective, these can include a reduction in classroom disruption due to poor behaviour by some children, which in turn will have impacts on the behaviour of other pupils and concentration levels. Better behaviour should also reduce the likelihood of teachers becoming stressed and taking time off work, therefore limiting the need for employment of temporary or permanent replacement staff. Any reduction in absenteeism rates by pupils will reflect well on a school, while there can also be savings to the education system by avoiding the need to educate children in costly special educational settings because they have been excluded from mainstream schooling.

The economic value of such benefits can be illustrated by looking at the evaluation of the long-term effects of a universal, comprehensive, community-based prevention project for primary school children and families in the Canadian Better Beginnings, Better Futures evaluation (Peters et al., 2010). The evaluation reported significant improvements in educational outcomes; moreover, the children were far less likely to need to repeat school years or use expensive special educational needs services compared with their control school counterparts (Box 7).

It is also important to consider further economic arguments for investing in health literacy programmes that look at the economic consequences of impacts on health and education systems alone. In this Canadian study, there were substantive avoided costs to the social welfare system in Ontario as a result of reduced social welfare assistance and the reduced need to enrol a child's parents in disability welfare payment programmes, in part as a result of the improved parental mental health seen in the study. These benefits would be enjoyed by a different ministry in Ontario, the Ministry of Community and Social Services.

Box 7: Estimating some of the immediate economic co-benefits to schools

The Better Beginnings, Better Futures project targeted primary school children and their families living in three disadvantaged communities in Ontario, Canada (Peters et al., 2010). Evaluation has looked at outcomes and costs at one, four and seven years after programme participation in comparison with control school populations. This included costs to several different sectors: education, health and social welfare. In addition to looking at social, emotional and behavioural outcomes for children and their parents, the evaluation also considered a number of outcomes related to school performance. Levels of current academic achievement were measured both in terms of each child's relative position in their class and in their performance on a standardized maths test. The long-term economic costs and benefits of the programme were also considered, including the costs of special educational services and any need to repeat a year of school. The overall economic analysis demonstrated that the programme had net benefits of \$3777 (US\$ 2010 prices) per child, the majority of which was due to a reduction in the need to use special educational services; there was also an improvement in the well-being of teachers, and the use of social welfare services decreased. The analysis has been influential for budget-holders in the education sector, as they can see that a programme to improve emotional well-being in school has substantial benefits to the education sector.

Another source of cost data may come from studies that have looked at the cost-effectiveness of multicomponent education and awareness programmes to promote greater levels of physical activity and good diet in school children. Delivery of these programmes to children aged 10 in schools in Boston, Massachusetts, has been shown to be cost-effective from a health system perspective and there would be no costs for delivery of lessons in the classroom because these interventions were integrated within the existing school curriculum. In fact, the intervention could be cost saving when long-term benefits in adulthood from increased participation in employment are taken into account (Wang et al., 2003). These broader employment benefits potentially would be of interest in the USA to both Federal and State finance departments, given that employment generates revenue through income tax and reduces the likelihood that an individual will need to be supported by social security welfare payments.

In a separate analysis, this programme was found to generate additional benefits to the health system from the avoidance of eating disorders in young people (Wang, Nichols & Austin, 2011). A subsequent study demonstrated that there were also economic benefits when these programmes are delivered to pupils aged seven to eight (Wang et al., 2008). The analysis did not look at the benefits to the education sector though; however, if an impact on levels of obesity and physical health has been demonstrated, it is then possible to make some estimate of the benefits to the education sector.

It has also been argued that the greatest economic returns are to be made by focusing on early intervention in childhood, such as supportive services for new mothers and their infants, pre-school support, and actions in primary schools (Heckman, 2006, 2013). Earlier we highlighted the example of the Abecedarian programme in the USA. This

has also been the subject of economic evaluation (Barnett & Masse, 2007). The economic analysis looked at costs and benefits of the programme until children reached the age of 21. Benefits were reported to outweigh costs by almost 4:1, including greater levels of future earnings; reduced health system costs through avoidance of smoking; savings to primary and secondary school educational budgets; and reduced welfare use. Another example concerns the favourable long-term return on investment shown in an economic evaluation of the implementation of a school-based teenage pregnancy programme in the USA (Box 8). This analysis looked at impacts on both the health and education sectors.

Box 8: Estimating the economic costs and benefits of a comprehensive teenage pregnancy prevention programme

Few economic evaluations have been conducted of education and behavioural interventions to prevent teenage pregnancy. One exception is the evaluation of a neighbourhood programme targeted at disadvantaged adolescents of both sexes between the ages of 11 and 18 in New Britain, Connecticut (Rosenthal et al., 2009). This intervention involved: education about life, family and sex; academic support and tutoring; career and vocational guidance; artistic expression; and access to mental health services. It looked at the impacts on the income of fathers, foster care and long-term costs linked to poor outcomes for children of teenage mothers. The long-term economic impacts of participants in the programme to age 30 (due to benefits of increased educational opportunities) were also estimated. Taking this long-term perspective, the net benefits of the programme were \$11,262 per participant.

Finally, better levels of education are in turn associated with higher levels of health literacy in adulthood; parental education levels can also have an impact on the health literacy levels of children, so there may be intergenerational benefits resulting from investment in health literacy contributing to improved educational outcomes, which in turn contributes to better health literacy in subsequent generations.

Making use of literature on the short- and long-term economic co-benefits of better educational outcomes

It is also possible to highlight some of the potential long-term economic benefits associated with better educational outcomes, particularly for interventions where there is evidence of sustained educational improvement associated with the use of health literacy interventions. The same principle could be used to link to long-term co-benefit data associated with better health outcomes for different target population groups and, while it is beyond the scope of this policy brief to list these arguments in detail, some examples of the short- and long-term economic value of educational co-benefits that may arise from investment in effective health literacy actions for children are illustrated.

We have seen that health literacy can have a positive impact on educational attainment. Educational attainment itself is an important determinant of economic growth, earnings and income in any society (Woessmann, 2014). It also

influences future health. Analysis of data from Great Britain indicates that better cognitive development and health outcomes in children before they reach the age of 10 have a strong influence on employment and health outcomes at the age of 30 (Conti, Heckman & Urzua, 2010). Using USA longitudinal data, better social and emotional cognitive development is associated with better educational impacts and also affects wage rates; the likelihood of smoking in adulthood; and overall physical health (Heckman et al., 2014). The OECD reports a 23% difference in adults reporting they are in good health between adults with the highest and the lowest levels of educational attainment or literacy proficiency (OECD, 2014).

Increased levels of skills or human capital due to better levels of education and cognitive development will increase average earnings and reduce the likelihood of unemployment; for instance, using data from the US Panel Study of Income Dynamics, the impacts of poor psychological health in childhood have been estimated to lead to an annual reduction in family income in adulthood of more than \$313 000 over a working lifetime (Smith & Smith, 2010).

Higher levels of education are more likely to stimulate innovation in society, something that is particularly important for Europe when seeking to compete in a highly globalized economy. Educational attainment is associated with higher levels of volunteering and this is an important element of any country's economic output; for instance, the OECD reports an 11% difference in rates of volunteering between individuals with high and low levels of educational attainment (OECD, 2014).

In the EU there is a strong relationship between the level of educational attainment and employment rates. Employment rates among the highly educated are 10.7 percentage points higher than the medium educated, who in turn have rates 20.6 percentage points higher than low educated. Across EU countries, gross hourly wages also increase on average by 7.4% with each additional year of education (Woessmann, 2014). At national level the potential benefits of improving educational outcomes across all of the OECD countries, so as to raise them to the level seen in the best-performing education system in an OECD country, Finland, would generate more than \$260 trillion in economic growth gains (Haneshuk & Woessmann, 2010). Even just a small fractional improvement linked to a better start early in life might help strengthen the case for health literacy actions to support children.

How can health literacy interventions be better facilitated?

This policy brief has highlighted the importance of health literacy during the first years of life and noted the strengths and weakness of some approaches that have been delivered to children and young people. The evidence base on social and emotional literacy actions is perhaps most well developed. The focus here has been on identifying the benefits to non-health sectors, in this case the education sector, because sectors other than health, or the whole of government, are ultimately responsible for implementing and funding health literacy interventions for young people.

This final section looks at some of the challenges in facilitating the implementation of health literacy interventions outside of the health sector, and how, in particular, evidence of their impacts, in this case for the education sector, can help strengthen the case for investment and help achieve buy-in by education. Box 9 summarizes some actions to help facilitate implementation.

Box 9: Actions to support the delivery of health literacy programmes within the education sector

- Ensuring that health literacy is an integral element of teacher training and school curriculums.
- Developing supportive strategies for implementation at the individual school level.
- Making use of regulatory mechanisms that allow the pooling of funding and responsibility for policy and programmes between health and education sectors.
- Developing financial and reputational incentive schemes to promote fidelity in the implementation of education-system based health literacy programmes.
- Tailoring health literacy programmes to the local education sector context.
- Strengthening the European evidence base on effectiveness and cost-effectiveness from an education as well as health system perspective.

Ensuring that health literacy is an integral element of teacher training and school curriculums

A long-term action that can help facilitate greater focus on health literacy in schools is to make the topic one of the elements of student teacher training. A review of 20 studies of health training for student teachers, half of which were from the United Kingdom, reported an increase in teacher knowledge and confidence to teach on health issues following training (Shepherd et al., 2013). This review concluded that to be effective such training courses should include practical experience and skills, taking account of differences in teacher needs. Barriers to health training that need to be overcome included limited time, balancing the breadth and depth of courses, and inequalities in access to training.

Literacy programmes are also more likely to be implemented when embedded into routine educational practices. To support this it may be feasible in some settings to make the teaching of health literacy in schools mandatory as part of the education curriculum. School inspectorate systems may subsequently have a role to play in assessing the quality and fidelity of programmes.

Developing supportive strategies for implementation at the individual school level

Implementation may not be successful unless there is a supportive atmosphere within schools for health literacy as well as wider health promoting activities. One systematic review identified a number of important enablers that assist

the implementation of health promoting activities in schools (Hung et al., 2014). These include making use of frameworks/guidelines for implementation; for instance, when it comes to emotional and mental health, research has indicated that while teachers see the importance of mental health to educational achievement, they often do not have the confidence to deliver mental health literacy interventions. Another recent review notes “the degree to which teachers are committed to the approach appears to be important” to the implementation of social and emotional health literacy programmes (Education Endowment Foundation, 2016).

One successful example of a guideline approach to improving confidence was initially rolled out in a province of Canada. This Mental Health Curriculum Guide, delivered over eight hours and covering six modules to teachers, has been associated with a positive improvement in both the knowledge and attitudes of teaching staff towards mental health literacy (Kutcher et al., 2013). The mental health curriculum for pupils, which itself involves 10 to 12 hours of teaching time, has now been successfully implemented in more than 1000 schools across Canada and has been shown to deliver positive mental health literacy benefits in different school contexts (Kutcher, Wei & Morgan, 2015).

Guidelines will also have more impact if teachers and other staff feel some sense of ownership; while it may be impractical for each school to develop its own set of guidelines, schools can (and do) discuss how best to implement accepted guidelines so as best to meet the individual needs of their own school (Vostanis et al., 2013). This might include modifying guidelines to allow flexibility for schools to use delivery mechanisms that best meet the needs of their pupils and staff.

More generally at a school level it will also be important to obtain the support of the appropriate management, whether this be the headteacher, local education board, school governors or parent-teacher association. This support may be necessary, for instance, for a school to agree to pay bonuses to teaching staff for any extra hours spent on training or delivering health literacy programmes.

Other school-based strategies to support individuals delivering programmes include peer support and the development of networks to share experiences of implementation and to offer opportunities (and financial support) for continued training and education.

Understanding how the regulatory environment may impact on implementation

It is important to assess and understand the regulatory and financial environment and to act accordingly; incentives will be influenced by which sector is responsible for funding health promotion in schools. In some contexts this will be the responsibility of the health ministry, in others the education ministry or local government, or as in many schools in England, the responsibility may rest directly with headteachers as to how schools spend their budgets. Legislation and regulation may allow for the sharing of budgets across sectors to encourage investment in health literacy in schools.

Introducing incentive schemes to encourage fidelity in implementation

In cases where mandatory introduction of health literacy programmes is not feasible, it may be worth considering the potential case for reward schemes to encourage implementation and fidelity to the core principles of programmes. We have seen the association between achievement of the highest level of health promoting school award in Hong Kong and academic success. Such awards may help attract pupils to schools in some educational systems, which in turn may increase the budgets of schools.

Schemes which provide financial incentives may help encourage uptake and fidelity to specific health promoting practices. One example of this is the *Schulentwicklungspreis Gute Gesunde Schule* (Good Healthy School Implementation Prize), which is awarded by the occupational health insurance organization Unfallkasse Nordrhein-Westfalen; with prizes totalling €500 000 it is the most valuable scheme of its kind in Germany.

Tailoring actions to the local context

To date, most of the more robust research on what works to promote health literacy for children has been conducted in the USA; however, even where research findings are from European countries, careful consideration needs to be given as to how easily such programmes may be implemented elsewhere in Europe. In some cases school-based programmes, such as those to promote better parenting, have been successfully transferred between very divergent country contexts (Gardner, Montgomery & Knerr, 2015). However, educational and health systems may be structured in very different ways and programmes will not always transfer well; in addition, some of the issues faced by young people may be quite different.

It is important to take into account local context and to adapt approaches accordingly. In doing this much might be learnt from existing experiences of adapting strategies within specific settings; for instance, harnessing the experience of the Schools for Health in Europe Network and the International School Health Network in implementing intersectoral strategies and mechanisms for the implementation of health literacy interventions. Within countries, it might be possible to build on existing support for health promotion in schools, e.g. making use of the information, advice and health promotion practice advice service GIVE (*Servicestelle für Gesundheitsbildung*) in Austria. Could such services, for instance, provide more information on educational attainment and cognitive benefits of health literacy for schools and teachers to examine?

Strengthening the European evidence base on effectiveness and cost-effectiveness

Even in situations where the health sector may fund health literacy programmes delivered in school settings, education sector policy-makers may be reluctant to agree to these activities taking place if their impact from an education sector perspective remains unclear. The attitudes of headteachers

and other teaching staff towards health literacy programmes may also have an important bearing on the level of uptake and fidelity in delivery. It is not enough just to know about the health benefits of health literacy programmes; more evidence on effectiveness and academic benefits to the education sector may help increase buy-in.

It is important therefore to generate more evidence on the effectiveness of programmes from an education perspective within different European contexts, ideally making use of randomized control group research designs. The routine collection of data on education and health literacy, *in addition to health outcomes*, can help to demonstrate whether health literacy and any other school-based interventions may be associated with improvements in education outcomes, as has been done in Finland, where school ambassadors help encourage the use of this at local and regional levels (Box 10).

Another very useful source of evidence is the Education Endowment Foundation (EEF). The EEF received a grant of around €150 million in 2010 to establish a 'What Works' centre focused on improving education outcomes in children. Summaries of the strength of evidence for different interventions, as well as their costs and challenges in implementation, continue to be added to the EEF database and can be accessed online via <https://educationendowmentfoundation.org.uk>

Box 10: Finland: use of the School Health Promotion Survey to influence policy and practice

The School Health Promotion study monitors the health and well-being of Finnish 14–20-year-old adolescents. The aim of the School Health Promotion study is to strengthen the planning and evaluation of health promotion activities at school, municipal and national levels. Every two years data are collected from all schools for children in the eighth and ninth grades of comprehensive schools (ages 14 to 16) and the first and second grades of upper secondary and vocational schools (ages 17 to 19). The survey reaches about 200 000 young people, roughly 80% of all target children. These data are combined with information available on educational as well as health and well-being outcomes at national and regional levels. Information then feeds into strategic planning for health promotion activities in schools, with school ambassadors appointed to enhance the use of data at local and regional levels.

Source: Finnish National Institute for Health and Welfare (<https://www.thl.fi/fi/web/thlfi-en/research-and-expertwork/population-studies/school-health-promotion-study>) and Rimpelä et al. (2013).

In making the case for health literacy interventions, it is important to estimate accurately the costs of implementation, as well as looking at cost-effectiveness from a multisector perspective. A first step is to look at the resources required to deliver programmes, to attach appropriate unit costs to each of these resources and to identify which sector would have to pay.

Literacy programmes need to be feasible for implementation in school settings. The greater the levels of time or effort needed from school staff, the more difficult they may be to implement. Even in the example evaluation of Zippy's Friends in Norway, external funding needed to be provided for temporary teaching staff, so as to free up teachers to participate in two days of training to deliver the programme (Holen et al., 2013). Programmes that provide training opportunities, easy access to programme materials and ongoing implementation assistance are much more likely to be used effectively and maintained by schools over time. If lessons can be embedded into different disciplines in the school curriculum, then they are much more easily integrated into everyday classroom use.

It is also critical to demonstrate the relative cost-effectiveness of investment in health literacy interventions in different European contexts. While questions of cost and returns on investment to the health sector remain poorly addressed in the health literacy field, most analyses appear completely to have failed to quantify any economic impacts beyond the health sector, even though it is possible to quantify some of the potential impacts, such as those on resource use within the education sector. If data on resource use are collected, this may help demonstrate, for instance, whether literacy

programmes might help generate realizable cash savings to the education sector, e.g. by avoiding the need to place children in special education needs classes or special schools, or freeing up resources e.g. the time of salaried teachers, which could be used for different purposes. In the case study from Canada shown in Box 7, identifying economic benefits to the education and social welfare sectors has been instrumental in ensuring the sustainability of this programme.

It is also important to determine the time frame over which any avoidable costs are likely to be realized, identifying what will be achieved within a short time period, e.g. 12 months, as well as over the longer term. Analyses might also be conducted to look at the cost-effectiveness of targeted rather than universal approaches to health literacy or in the use of different ways of reaching and engaging with the target population.

Economic modelling techniques could also be used to synthesize previous data on educational outcomes with local resource and cost data to provide local estimates of the immediate as well as long-term costs and benefits to the education sector in different European contexts.

CONCLUSIONS

The focus here has been on identifying benefits outside of the health sector that can be realized by investing in health literacy programmes targeted at children and young people. Too little attention has been paid to these co-benefits, with few evaluations addressing this topic. Nonetheless, it is possible to strengthen the case for health literacy by demonstrating that if health literacy interventions are effective there are also additional benefits to other sectors, in particular the education sector.

One important area for action would be to strengthen the availability of social and emotional literacy programmes for children; there is a robust body of evidence supporting their health benefits, as well as their positive impacts for the education sector. These programmes can help with self-efficacy, equipping children and young people with confidence in their own ability to influence their health and build resilience to weather adverse events; for example, programmes have been associated with improving the classroom environment for pupils and teachers, as well as facilitating better educational attainment. Other short-term drivers of savings to the education system include a reduced need to place children in expensive special needs education classes and better mental health of teachers. This policy brief has also indicated that there can be immediate benefits to other sectors, notably social welfare services, through a reduction in the need to support children with behavioural problems, as well as longer-term benefits.

It also makes sense to invest early in the life course for all health literacy actions, thereby maximizing the opportunity for these actions to positively influence the life chances of children. Empowering children to take control and make informed decisions that can influence their health can have immediate benefits for their health and well-being, but there are also opportunities to enhance critical health literacy skills that can last for a lifetime.

Improved health and educational outcomes in school increase the possibility of greater economic benefits for children when they reach adulthood as a result of enhanced career opportunities and better physical and emotional health. This better environment, in turn, can have a positive influence on the next generation of children and young people, improving the opportunities for them to develop good health literacy skills early in life.

For these actions to be implemented, the education sector must play a key role, supported by other sectors such as health. Regardless of which sector pays for these health literacy interventions, if they are delivered within school settings they will require the support not only of the education authorities but of the whole school community as well. The education sector can play a crucial role by creating the capacity to provide health literacy by skilling up future generations of teachers as part of their initial training, as well as encouraging the incorporation of health literacy within the school curriculum. In some circumstances it may be possible through regulations to formally place health literacy on the curriculum, perhaps as part of a wider school

health promotion strategy. The health sector could also play a key role, potentially by providing support (given that there are health as well as education benefits) and it could also help to co-ordinate the ongoing monitoring and evaluation of participation in programmes on long-term health and educational outcomes.

More generally, there is scope for greater evaluation of existing effective health literacy programmes in different European contexts. Statistical modelling techniques could be used to synthesize evidence from many studies to look at the potential short-, mid- and long-term return on investment to be gained, from at least an education as well as a health sector perspective, from adapting existing health literacy programmes to be delivered in different education systems in Europe.

Finally, it must be emphasized that, while the focus here has been on young people, the principles set out in this paper in respect of health literacy interventions can be applied to arguments across the life course, for instance, when looking at potential costs and benefits to employers of supporting workplace-delivered health literacy programmes, or for local governments considering programmes on health literacy to help older people maintain their independence and well-being.

ACKNOWLEDGEMENTS

The author and editors are grateful to the reviewers who commented on this publication and contributed their expertise: Stephan Van den Broucke (Université Catholique de Louvain, Belgium); Christina Dietscher (Department of Health Promotion and Disease Prevention, Austrian Ministry of Health); Ilana Ventura (Department of Health Promotion and Disease Prevention, Austrian Ministry of Health); and Matthias Wismar (European Observatory on Health Systems and Policies).

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