

Schools, health literacy and public health: possibilities and challenges

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ABSTRACT

Health literacy is a concept that can be widely embraced by schools. Schools throughout the world contribute to the achievement of public health goals in conjunction with their educational commitments. In this paper, the interface between a school's core business of education and public health goals is identified, and examples provided in the area of nutrition demonstrating how these links can operate at school level. The structure and function of the health promoting school is described and the author proposes that there is a very close connection between the health promoting school and the enabling factors necessary in achieving health literacy. Major findings in the literature that provide evidence of good practices in school health

education and promotion initiatives are described. Also, those factors that make schools effective and which facilitate learning for students are identified. There is a substantial overlap between the successful components of a health promoting school and effective schools. This enables schools to potentially achieve all three levels of health literacy, including level 3—critical health literacy. However, there are three challenges that must be addressed to enable schools to achieve this level: the traditional structure and function of schools, teachers practices and skills, and time and resources. Strategies are proposed to address all three areas and to reduce the impediments to achieving the goals of health literacy and public health using the school as a setting.

Key words: health literacy; health promoting schools; school health

INTRODUCTION

Schools are essential in achieving health literacy. The school is a fundamental institution in building the wealth and health of countries, and education has been shown to be a key factor in narrowing the differential between rich and poor. There are very strong correlations between poverty and poor health (World Bank, 1993; WHO, 1996a). It is therefore vital that we look at what schools can do to equip young people with knowledge and skills at the highest level to enable them to be active participants in shaping those policies and practices that impact on their own health, and the health of their community and country. Research in the last two decades in the education field has given us better knowledge of how schools can achieve effectiveness in meeting their educational

outcomes and how they can contribute to better health. Studies in the last decade have indicated the potential for a settings approach to school health, as portrayed through the 'health promoting school', to provide a promising strategic framework which will enable the outcomes of health literacy to be achieved (NHMRC, 1996; WHO, 1996a; WHO, 1996b; Lister-Sharp *et al.*, 1999).

This paper examines the role schools could play in facilitating the achievement of health literacy as a public health goal. It briefly explores the possibilities of schools addressing and achieving Nutbeam's three levels of health literacy (Nutbeam, 2000), summarizes the evidence of successful school practices and structures that are fundamental to achieving health literacy outcomes, and realistically examines current challenges that need to be addressed.

HEALTH LITERACY AND SCHOOLS

Nutbeam has proposed a three-level hierarchy in health literacy: basic/functional literacy, through communication/interactive literacy to critical literacy (Nutbeam, 2000). He argues that achieving the level of critical literacy 'allows for greater autonomy and personal empowerment'. This is also an important goal of school education.

Schools are about maximizing the educational outcomes for students. We need to remind ourselves that their core business is education and their level of expertise in health issues is minimal. Yet research clearly shows there are strong links between poor health and educational achievement (Lavin *et al.*, 1992; Devaney *et al.*, 1993; Igoe, 1993; World Bank, 1993; WHO, 1996a). Schools, and the education sector in general, have begun to recognize these links and embrace the concept of a whole school approach in addressing health and social issues, which will assist them in maximizing learning outcomes (Allensworth, 1993; Cameron and McBride, 1995; WHO, 1996a; St Leger and Nutbeam, 2000). The approach is often called the 'health promoting school', or in the USA, 'co-ordinated school health'. It is not a vehicle for legitimising topic-based and school-located health promotion interventions in areas such as drug reduction, weight management and injury prevention. When mapped in educational terms, it demonstrates that its prime purpose is achieving education goals through addressing health issues within an education framework. St Leger and Nutbeam have proposed that the health promoting school contributes to four main school-related outcomes: (i) lifelong learning skills; (ii) competencies and behaviours; (iii) specific cognate knowledge and skills; and (iv) self-attributes (St Leger and Nutbeam, 2000). It is asserted that these building blocks are necessary

to achieve both health and educational outcomes, and are fundamental to health literacy.

Table 1 shows how the area of nutrition can be addressed in the four areas. Schools have responsibility for developing lifelong learning skills. These educational skills are fundamental in adjusting to, and coping with, dietary changes that may occur because of life events such as parenting, diagnosis with an illness or disease, and understanding the debate about a relevant community issue, e.g. genetically modified foods. Secondly, schools are also charged with developing certain competencies that underpin appropriate behaviours. Being able to read enables one to examine food labels. Being numerate enables a person to understand food prices/unit volume or weight and facilitates balancing both the budget and the diet. Being able to cook enables one to be self-sufficient as well as providing opportunities for social interactions. The third category of specific cognate knowledge and skills requires the educated student in food and nutrition to be able to know and understand the functions of carbohydrates, fats and proteins, and what foods contain these, and appreciate the cultural dimensions of food. Finally, the category of self-attributes enables the student to cope with the pressures of body image as well as to use food as part of building social relationships.

All of these four school-related health/education outcomes are dependent on students achieving each of Nutbeam's three levels of health literacy. It is possible that a person can manage some level of survival on level one, i.e. basic/functional health literacy, but being able to read a food product label and not being able to analyse the information for one's own needs or that of one's family severely limits a person's autonomy.

It is argued that when the purposes of the health curriculum are examined in most schools

Table 1: Educational outcomes in nutrition using a whole school approach

Lifelong learning skills	Competencies and behaviours	Specific cognate knowledge and skills	Self attributes
<ul style="list-style-type: none"> • To learn appropriate foods for life stages, e.g. as a parent • Using learning skills to modify diet after (say) diagnosis with diabetes • Demonstrating capacity to understand the debate on genetically modified goods 	<ul style="list-style-type: none"> • Capacity to read labels • Ability to prepare a variety of foods • Competent in buying food on a budget 	<ul style="list-style-type: none"> • Knowledge of what constitutes a healthy diet • Ability to be a proactive consumer of food • Understand meanings of food within cultural contexts 	<ul style="list-style-type: none"> • Comfortable with body image • Able to use food as part of social relationships

in most countries, a number of common factors emerge. These are characterized by:

- a focus on building certain knowledge, e.g. knowledge about one's body;
- an attention to developing certain competencies, e.g. analysing contemporary health issues (these are nearly always written in education terminology); and
- developing certain attitudes, e.g. attitudes to one's own health, interpersonal relationships or social responsibilities.

However, whilst these form a very solid foundation in facilitating the development of some basic achievements, they are not sufficient to enable students leaving school to be empowered or autonomous as active members of society engaged in addressing social, economic and environmental determinants of health through actions. The 'critical literacy' (level 3) component is not well developed in many schools and countries.

THE POTENTIAL OF THE HEALTH PROMOTING SCHOOL IN ENABLING THE ACHIEVEMENT OF HEALTH LITERACY OUTCOMES

The health promoting school shows great potential in enabling high levels of health literacy to be achieved. The health promoting school concept emerged simultaneously in Europe and North America in the mid-1980s, where its beginnings can be traced to the Ottawa Charter for Health Promotion (WHO, 1986). It challenged those involved in traditional school health education to rethink the problem-based focus of the health curriculum. This focus, which had framed the direction of school health education in many countries, was characterized by giving students substantial amounts of knowledge in the classroom about diet, physical activity, drugs, safety, oral health, sexuality and relationships, in the belief that such information would develop certain attitudes on which health behaviours would be based. It was also believed this would impact on morbidity and mortality rates. This traditional top-down approach to health education resulted in few sustainable behaviour changes and did not address the gap in health status between those in the higher and lower socio-economic groups.

Work by Lalonde, WHO and those who addressed social inequities, e.g. Kickbusch, shifted

the attention towards looking at the individual in the various settings in which they live, e.g. schools, worksite, community, towns and cities (Lalonde, 1974; WHO, 1978; Kickbusch, 1989). The principles of the Ottawa Charter and the research about the influences of environmental components on health caused health and education authorities to rethink how school health education strategies should be designed and implemented (Green *et al.*, 1980; Kolbe, 1986; Tones, 1993).

Termed the 'health promoting school' in Europe and 'comprehensive school health' in the USA (now called 'co-ordinated school health'), a new framework for school health was in place in many countries by the beginning of the 1990s. Basically, it looked beyond the curriculum in identifying those components of schooling that impacted on health opportunities for young people. Attention was given to the school environment, both social and physical, school-based health policies, links with health services, and school partnerships with the local community (Allensworth and Kolbe, 1987; McDonald and Ziglio, 1994; WHO, 1996a). This new approach to school health endeavoured to increase student knowledge and skills by shifting health into a more dynamic and political domain, and to provide young people with opportunities to develop skills in advocacy and to achieve a sense of empowerment. It provided a framework that facilitated the attainment of all three levels of Nutbeam's hierarchy of health literacy (Nutbeam, 2000). It more clearly reflected the core business of schools—educational outcomes—and provided a strategic approach for schools to address health issues. (Lister-Sharp *et al.*, 1999).

Whilst the health promoting school framework should make the attainment of health literacy more achievable, the comprehensiveness of health literacy (i.e. all three levels present in a reasonable amount) is largely dependent on the type of school (autocratic or democratic), and the cultural and political practices of the region or country in which the school exists. Schools that demonstrate breadth and depth in how they are led and managed, the ways they seek to maximize educational outcomes for their students, and how they foster relationships between both students and staff provide excellent environments for the growth of empowerment and the achievement of level 3—critical literacy. (Edmonds, 1979; Sammons *et al.*, 1994). Such schools also have a very close affiliation with the building blocks of the health promoting school framework (Parsons

et al., 1996; WHO, 1996a; WHO, 1996b; WHO, 1996c).

Table 2 uses Nutbeam's matrix of health literacy to show examples of content, outcome and educational activity for all three levels of health literacy.

What does the evidence of the last 15 years tell us about the capacity of schools to attain level 3, critical health literacy, and to be comprehensive health promoting schools, producing graduating students with the ability to play a role in addressing the social and economic determinants of health? Are these outcomes achievable? It is useful to look at two sources for such evidence: the evidence of effective school health and the evidence of effective schools.

THE EVIDENCE BASE OF GOOD PRACTICES AND SETTINGS IN ACHIEVING HEALTH OUTCOMES

Good schools demonstrating quality teaching and learning approaches will enable the attainment of all levels of health literacy. Hopkins argues strongly that schools do make a difference to a child's social, cognitive and health achievements (Hopkins, 1995). He states:

...the difference in outcomes are systematically related to variations in the school's climate, culture and ethos, [and] that the school's culture is amenable to alteration by concerted action on the part of the school staff...
...the evidence suggests that teachers and schools have more control than they may have imagined, over their ability to change their present situation and create healthier learning environments for their students.'

A number of reports and meta-analyses have been published in the last part of the decade that provide considerable evidence about the effectiveness of school health and its outcomes (Peters and Paulussen, 1994; NHMRC, 1996; Lister-Sharp *et al.*, 1999; St Leger and Nutbeam, 1999). They show that programmes need to:

- focus on cognitive and social outcomes in conjunction with behaviour change within an educational framework;
- occur over several years and be relevant to young people's social and cognitive development;
- be adequately resourced;
- provide significant professional development for teachers;

- be holistic in addressing strategic combinations of the curriculum, the school's physical environment, the school's social environment, health services, partnerships with parents and the local community and school policies;
- be based on effective learning theories; and
- recognize the limitations and opportunities of schools in bringing about substantial health improvements.

Three of the above meta-analyses argued that the health promoting school was a promising approach in that it provided a more coherent framework to address school health in a more integrated and strategic way than traditional school health (NHMRC, 1996; Lister-Sharp *et al.*, 1999; St Leger and Nutbeam, 1999). However, there is still insufficient evidence to show conclusively that the health promoting school approach (or coordinated school health) is the 'gold standard' by which all school health programmes should be shaped and judged.

The conclusion which can reasonably be drawn is that carefully and skillfully executed interventions following the health promoting schools approach have the potential to improve children and young people's health. Given the relatively low cost of these interventions and this potential for improving health, further experimentation should be encouraged (Lister-Sharp *et al.*, 1999).

There is a parallel body of evidence in the educational literature that clearly identifies those factors that make an effective school and which helps students to learn to their maximum ability (Rutter *et al.*, 1979; Miles, 1986; Sammons *et al.*, 1994). Some of the common themes emerging are:

- shared vision and goals of the key stakeholders in the school;
- collegiality and collaboration between staff;
- professional development and rewards for teachers;
- developing a climate supportive of learning (i.e. building a school ethos);
- opportunities for students to take responsibility and leadership, and respect for students rights;
- purposeful and shared leadership; and
- high expectations for students, staff and parents.

There is clearly a major overlap between the successful elements of a health promoting school and those factors which make up effective

Table 2: Levels of health literacy in a school setting

Health literacy level and educational goal	Content	Outcome	Examples of educational activity
Functional health literacy (level 1) (communication of information)	<ul style="list-style-type: none"> • Transmission of basic information about: <ul style="list-style-type: none"> – hygiene – nutrition – safety – drugs – relationships – sexuality – parenthood 	<ul style="list-style-type: none"> • Increased knowledge of the factors that inhibit and enhance health 	<ul style="list-style-type: none"> • Classroom-based lessons • Reading books and leaflets
Interactive health literacy (level 2) (development of personal skills)	<ul style="list-style-type: none"> • Opportunities to develop specific skills, e.g.: <ul style="list-style-type: none"> – problem solving – food preparation – hygiene – communication • Classroom and community learning opportunities which address social inequities, determinants of health, policy development and ways of affecting change 	<ul style="list-style-type: none"> • Improved capacity to be independent and take care of own health through health-related behaviours (e.g. physical activity, no tobacco use) and to access health information and services • Capacity to participate in community and societal action to bring about health improvement for disadvantaged groups 	<ul style="list-style-type: none"> • Small group work in schools • Individual tasks with the outside community involving the curriculum • Tasks analysing current health issues and discussing at school • Involvement in school–community issues which students have chosen and which confront current policies and practices

schools. The 'best' schools in the large Australian study by Northfield *et al.*, which sought to tease out the essential commonalities of quality health promoting schools, also highlighted many aspects of effective schools (Northfield *et al.*, 1997).

It appears that schools that work seriously towards building a challenging learning environment seek to develop competencies in their students in areas such as critical thinking and decision making, and provide a climate where learning is valued, participatory and collegial, will create a very strong basis in achieving health literacy outcomes, particularly at level 3. Achieving the outcome of critical health literacy in such schools is relatively easy. The practices and policies of these schools and the ethos created only enhance the opportunities for an excellent understanding at level 3, but this is not the case in most schools. Many challenges must be confronted if outcomes of the higher levels of health literacy are to be achieved.

MEETING THE CHALLENGES IN ACHIEVING HEALTH LITERACY IN SCHOOLS

It is reasonable to expect all schools to achieve level 1 functional health literacy. For years, schools have been transmitting basic knowledge to students about health, from the degree of alcohol misuse, beginning with the Temperance Education Movement in the 1920s and 1930s, to the risks associated with HIV/AIDS in the 1980s and 1990s. The health curriculum in many developing countries is characterized by topics such as basic hygiene and how to avoid worm infestation. Both developing and developed countries invariably provide information about what constitutes a balanced diet. This is level 1, functional health literacy, in operation. It rarely involves interactive communication and doesn't seek to provide students with the skills to take action in their own community.

Schools in developed countries and an increasing number of schools in developing countries demonstrate level 2, interactive health literacy. The last two decades have seen the development of health education courses, which purposefully encourage students to develop specific skills as a health consumer (WHO, 1996c). In addition to basic knowledge in areas such as nutrition, oral health, sexuality, relationships and drugs, most health education programmes seek

to foster the attainment of personal skills in areas such as problem-solving, communication and decision-making. An educational outcome demonstrating functional health literacy is the capacity of a student to understand specific knowledge and to contextualize and work out options for them as individuals in specific situations, e.g. coping with peer pressure in using alcohol or being safety conscious when using equipment. (WHO, 1996c).

However, achieving level 3 critical health literacy in Nutbeam's hierarchy appears to be beyond the current capacity of most schools. It is postulated that there are three reasons for this. These are now discussed briefly and suggestions made how some of the barriers might be overcome to a degree.

Before discussing these it is useful to restate the elements of critical health literacy:

Outcomes which are oriented towards supporting effective social and political action, rather than individual action... ...linked to population benefit, alongside benefits to the individual... ...directed towards improving individual and community capacity to act on social and economic determinants of health... ...improve the capacity for social action... ...towards changing public policy and organisational practices [(Nutbeam, 2000), p. 265].

Clearly the focus of critical health literacy is directed at populations, social issues, and changing policies and practices. Are there attributes that should and could be developed in school students? To function collaboratively and creatively as a member of society, one needs to contribute to those strategies and processes that seek to make society worthwhile; in this case, improving the opportunities for better health for oneself and others. These skills can and should be learned at school. The health promoting school provides such a framework to achieve this. Outstanding examples of students engaging in school and community health issues using the health promoting school concept, and achieving change in policies and practices can be found in both developed and developing countries, e.g. the excellent year 4 programme in St Lawrence Heights in Toronto, Canada (Kalnins *et al.*, 1994), the action-competence framework for Danish Schools (Bruun-Jensen, 1994), and the HESAWA School Health and Sanitation Package, a school-community health mobilization programme in Tanzania (Mwasha, 1990). However, such examples are the exception rather than the norm.

It is argued there are three challenges that need to be addressed which currently prevent most schools embracing critical health literacy:

- the traditional structure and function of schools;
- teachers' practices and skills; and
- time and resources.

Each challenge is discussed briefly.

The traditional structure and function of schools

The notion of critical health literacy and the health promoting school concept require schools to work in different ways—to move from a teacher-dominated school hierarchy to a more collaborative community. Schools need to be more student-centred and aware of the social and political issues that shape health priorities and policies. McLaughlin believes that it is schools themselves rather than government policy and priorities that matter (McLaughlin, 1990). She claimed:

The nature, amount and pace of change at the local level was a product of local factors that were largely beyond the control of higher-level policy makers. Local variability is the rule, uniformity the exception [(McLaughlin, 1990), p. 12].

If the idiosyncratic nature of schools is so important then more attention needs to be directed at supporting schools. But changes will need to be made. Elmore has argued that there are three main changes schools need to embrace if they are to be more student-centred and action higher educational outcomes, which are fundamental to critical health literacy (Elmore, 1990). He states substantial change is needed in:

- the way teaching and learning occurs;
- the organizational and internal features of the school; and
- the distribution of power between the school and its pupils.

Hopkins argues strongly that the three changes need to occur simultaneously for schools to be more health promoting and effective in their health promotion achievements (Hopkins, 1995); however, it is problematic if such changes occur rapidly. There is evidence that schools are adopting some of these features, but progress is extremely slow (NHMRC, 1996; WHO, 1996a). As such, the widespread attainment of competency at level 3, critical health literacy, are compromised.

Teaching practices and skills

It has been well documented that the current levels of education and training for teachers to adopt comprehensively the health promoting school concept are inadequate (WHO, 1996a; Symons *et al.*, 1997; Lister-Sharp *et al.*, 1999; St Leger, 2000). For students to achieve critical health literacy requires teachers to be cognisant with major health issues, competent in developing advocacy and social change skills, and aware of key agencies and organizations in the community that provide the contextualization of the issue for the students. Most teachers are simply engaged in educating their students in the classroom. More recognition of beyond-classroom activities in health would enable students and teachers to utilize critical health literacy opportunities within the local community.

However, more important is the commitment of school authorities and teachers to ongoing professional development to enable teachers to learn skills to enable them to educate their students beyond the classroom. Joyce and Showers showed that most of our professional development programmes for teachers have failed to acknowledge the evidence for effective staff development (Joyce and Showers, 1988). Hopkins summarized the essential component as:

- the use of integrated theory-demonstration-practice-feedback programme development programmes to ensure skill development;
- the use of considerable amounts of practice in simulated conditions to ensure fluid control of new skills;
- the employment of regular on-site coaching to facilitate critical transfer of teaching skills; and
- the preparation of teachers who can provide one another with the necessary coaching [(Hopkins, 1995), p. 16].

It is these professional development requirements that are so fundamental to increasing the capacity of teachers to develop high levels of critical health literacy in their students. Although some changes have been made in professional development—the comprehensive staff development in the European Network of Health Promoting Schools is a good example of how professional development for teachers has grown—most countries and schools are not seriously recognizing the necessity to improve and change teaching and learning practices, and extend learning opportunities beyond the classroom.

Time and resources

Changing the way schools work and the pre- and post-service education and training for teachers is both time consuming and resource intensive. The WHO Expert Committee on Comprehensive School Health Education and Promotion showed that there are many excellent efforts to demonstrate that health promoting schools in action achieve health literacy outcomes. But the successes, with few exceptions, are idiosyncratic and often based on project money. They argued for government leadership and resources devoted to school health, particularly from the education sector (WHO, 1996a). Teachers need time to learn about new concepts such as critical health literacy and the subsequent changes needed in school structures to achieve beneficial outcomes.

CONCLUSION

Most schools do address health literacy, albeit at basic levels. Many schools in countries throughout the world have achieved substantial outcomes in health literacy using the health promoting schools framework or similar models. Health literacy as a concept is very compatible with the health promoting school concept and could form an acceptable outcome by which the success of a health promoting school could be assessed.

There is now sufficient *prima facie* evidence to suggest that it is possible to attain the changes needed in school structures and practices to achieve better education and health outcomes, and that they do in fact work under many different conditions. But increasing the number of schools capable of making such changes will require governments to invest more in three core areas: professional development for teachers, research into school health frameworks and their effects, and dissemination of the evidence of effective school health initiatives to a wider school-based audience. There will also need to be recognition of the fact that schools and education systems change slowly, and are under constant pressure from competing societal demands.

A great deal has been achieved in school health in the last 20 years. The evidence base of what is effective has increased considerably. Producing changes in schools to reflect 'best practice' in school health is still a major challenge. Health literacy is a very important concept, which shows us how education and health

can collaborate to achieve both public health outcomes and high levels of skills and knowledge in students. Schools can achieve all three levels of health literacy, and the attainment of level three—critical health literacy—will be easier if schools adopt the health promoting school approach. Increased and widespread empowerment of students through health literacy concepts is possible, but only if there is a will to support schools in their efforts.

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REFERENCES

- Allensworth, D. (1993) Health education: state of the art. *Journal of School Health*, **63**, 14–20.
- Allensworth, D. and Kolbe, L. (1987) The comprehensive school health program: exploring an expanded concept. *Journal of School Health*, **57**, 409–412.
- Bruun-Jensen, B. (1994) An action competence approach to health education. In Chu, C. M. and Simpson, R. (eds) *Ecological Public Health: From Vision to Practice*. Griffith University, The Netherlands.
- Cameron, I. and McBride, N. (1995) Creating health promoting schools: lessons from the west Australian school health project. *Health Promotion Journal of Australia*, **5**, 4–10.
- Devaney, B., Schochet, P., Thornton, C., Fasciano, N. and Gavin, A. (1993) *Eventuality of the Effects of School Health Interventions on School Performance: Design Report*. Mathematica Policy Research, Inc., Princeton, NJ.
- Edmonds, R. (1979) Effective schools for the urban poor. *Educational Leadership*, **37**, 15–29.
- Elmore, R. (1990) *Restructuring Schools*. Jossey-Bass, Oakland, CA.
- Green, L. W., Kreuter, M. W., Deeds, S. G. and Partridge, S. G. (1980) *Health Education Planning: A Diagnostic Approach*. Mayfield Publishing Company, Palo Alto, CA.
- Hopkins, D. (1995) Healthy schools, healthy students; development strategies for school effectiveness. In Rasmussen, V. (ed.) *Health Promoting Schools Manual*. Commission for European Communities, Brussels.
- Igoe, J. B. (1993) Healthier children through empowerment. In Wilson-Barnett, J. and Macleod-Clark, J. (eds) *Research in Health Promotion and Nursing*. Macmillan, Basingstoke.
- Joyce, B. and Showers, B. (1988) *Student Achievement through Staff Development*. Longman, New York, NY.
- Kalnins, I. H., Ballantyne, P., Quataro, G., Love, R., Sturis, G. and Pollack, P. (1994) School based community development as a health promotion strategy for children. *Health Promotion International*, **9**, 269–279.

- Kickbusch, I. (1989) Approaches to an ecological base for public health. *Health Promotion International*, **4**, 265–268.
- Kolbe, L. (1986) Increasing the impact of school health promotion programs: emerging research perspectives. *Health Education*, **17**, 47–52.
- Lalonde, M. (1974) *A New Perspective on the Health of Canadians: A Working Document*. Information Canada, Ottawa.
- Lavin, A. T., Shapiro, G. R. and Weill, K. S. (1992) Creating an agenda for school-based health promotion: a review of 25 selected reports. *Journal of School Health*, **62**, 212–229.
- Lister-Sharp, D., Chapman, S., Stewart-Brown, S. and Sowden, A. (1999) Health promoting schools and health promotion in schools: two systematic reviews. *Health Technology Assessment*, **3**, 1–207.
- McDonald, H. and Ziglio, E. (1994) European schools in a changing environment: health promotion opportunities not to be lost. In Chu, C. M. and Simpson, R. (eds) *Ecological Public Health: from Vision to Practice*. Griffith University, Brisbane.
- McLaughlin, M. (1990) The Rand Change Agent Study revisited. *Educational Researcher*, **5**, 11–16.
- Miles, M. B. (1986) *Research findings on the stages of school improvement*. Center for Policy Research, New York, NY.
- Mwasha, E. S. (1990) *HESWAA School Health and Sanitation Package: An Effective Tool for Sensitizing and Mobilising Communities to Participate Actively in Community Based Health Development Projects Mwanza, Tanzania*. HESAWA, Mwanza, Tanzania.
- National Health and Medical Research Council (1996) *Effective School Health Promotion*. AGPS, Canberra.
- Northfield, J., St Leger, L. H., Sheehan, M., Marshall, B., Maher, S. and Carlisle, R. (1997) School based health promotion across Australia. Australian Health Promoting Schools Association (AHPSA), Sydney.
- Nutbeam, D. (2000) Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century. *Health Promotion International*, **15**, 259–268.
- Parsons, C., Stears, D. and Thomas, C. (1996) The health promoting school in Europe: conceptualising and evaluating the change. *Health Education Journal*, **55**, 311–321.
- Peters, L. and Paulussen, T. (1994) *School Health: A Review of the Effectiveness of Health Education and Health Promotion*. Dutch Centre for Health Promotion, Utrecht.
- Rutter, M., Maughan, B., Moritmore, P. and Ouston, J. (1979) *Fifteen Thousand Hours*. Open Books, London.
- Sammons, P., Hillman, J. and Moritmore, P. (1994) *Characteristics of Effective Schools*. Office for Standards in Education (OFSTED), London.
- St Leger, L. (2000) Reducing the barriers to the expansion of health promoting schools by focusing on teachers. *Health Education*, **100**, 81–87.
- St Leger, L. and Nutbeam, D. (1999) Evidence of effective health promotion in schools. In Boddy, D. (ed.) *The Evidence of Health Promotion Effectiveness: Shaping Public Health in a New Europe*. European Union, Brussels.
- St Leger, L. and Nutbeam, D. (2000) A model for mapping linkages between health and education agencies to improve school health. *Journal of School Health*, **70**, 45–50.
- Symons, C., Cincelli, B., James, T. C. and Groff, P. (1997) Bridging student health risks and academic achievement through comprehensive school health programs. *Journal of School Health*, **67**, 220–227.
- Tones, K. (1993) Changing theory and practice: trends in methods, strategies and settings in health education. *Health Education Journal*, **52**, 125–139.
- World Bank (1993) *World Development Report 1993. Investing in Health*. Oxford University Press, Oxford.
- World Health Organization (1978) *Primary Health Care: Report on the Conference of Primary Health Care*. WHO, Geneva.
- World Health Organization (1986) *Ottawa Charter for Health Promotion*. WHO, Geneva.
- World Health Organization (1996a) *The Status of School Health*. WHO, Geneva.
- World Health Organization (1996b) *Research to Improve Implementation and Effectiveness of School Health Programmes*. WHO, Geneva.
- World Health Organization. (1996c) *School Health Promotion—Series 5: Regional Guidelines: Development of Health Promoting Schools: A Framework for Action*. WHO, Manila.

