

Chapter 2 Health Literacy, Health and Academic Status

Schools, Health Literacy, and Health Education

Role of Schools in Promoting Health Literacy

As outlined in Chapter 1, health literacy, a significant global problem impacting health outcomes, as well as overall citizenship, has tremendous implications for all citizens, especially those with limited literacy. As recently noted by Ferguson and Pawlak (2011), health literacy, a significant predictor of health outcomes is markedly impacted by low formal education levels, with knowledge gaps that can extend from childhood through parenthood (Sanders, Shaw, Guez, Baur, & Rudd, 2009), among other factors. Since data in the United States has shown 7,000 students drop out of school each day, and that even among those who remain in school, the lack of consistent health curricula across grades K-12 may produce students with low levels of health literacy (National Action Plan to Improve Health Literacy, 2010), it is not surprising that 65 percent of young people, ages 16-24 have difficulty reading and processing everyday health information (Kansas Head Start Association, 2012). Because health is a highly valued state and the key to personal and social well-being of individuals and society (McGovern, 2010), there are increasing calls across the globe for early interventions to foster health literacy, so youth will have a better chance of becoming healthier adults (Kickbush, 2008; Manganello, 2008; McGovern, 2010).

Since graduating from high school is no longer sufficient to guarantee an adult will be able to read materials at a 12th grade level and most health materials are written above the 8th grade level (Ferguson & Pawluk, 2011), the failure of schools to foster basic literacy and skills

that are paramount in the context of health literacy, may predictably have far-reaching personal and collective health consequences (See Box 1). At a minimum, basic literacy problems that occur during the school years usually persist throughout an adolescent's lifetime (e.g., Fletcher et al., 1994) and are related to broad health issues such as delinquency (e.g., Waldie & Spreen, 1993), homelessness (e.g., Barwick & Siegel, 1996), loneliness (Sabornie, 1994), substance abuse (e.g., Beitchman, Wilson, & Douglas, 2001) and suicide (e.g., McBride & Siegel, 1997), in addition to poor physical and mental health (Gans, Kenny, & Ghany, 2003; Rootman & Ronson, 2003). These consequences may also prevail among students who remain in schools which do not provide for basic health literacy development in a consistent manner across grades K-12 (National Foundation Issue Brief, 2011). They may prove especially problematic however, for those that do not complete high school since research shows literacy levels in general, are commonly comparable to those attained in classrooms three to five grades below the highest grade of school completed (Kansas Head Start Association, 2012). We know that reading and comprehending material is necessary but not sufficient for impacting health decisions and health behaviours. Thus, in addition to effective health promotion and disease prevention strategies in later life and skills to communicate effectively about health, more practical ways of improving health literacy early on in life, even at the toddler stage, are strongly warranted (Sanders et al., 2009).

Indeed, among the extrinsic factors identified as highly influential for the attainment of the health literacy skills required by the contemporary child, adolescent, and adult health education in the formative years (McGovern, 2010) appears to be especially salient as proposed by Ferguson and Pawlak in their causal model of the determinants of health literacy, as well as by the Institute of Medicine in the United States (2004). This idea that initial efforts to achieving

a health literate populace rests with formal educational systems, including elementary, and high schools (Freedman et al., 2009), is supported by related research in the United States that shows that health literacy varies directly with level of education, in that over three-quarters of adults with less than a high school degree are found to have below basic level or basic level health literacy, and this percentage decreases markedly as education level increases. Moreover, even though higher education is more favourable than not, 44 percent of high school graduates and 12 percent of college graduates were found to have below basic or basic health literacy (America's Health Literacy, United States Department of Health and Human Services, <http://www.health.gov/communication/literacy/issuebrief/#lower>).

Due to the growing importance of health as an important value and one that influences academic attainment significantly, plus the evidence that a multitude of factors influence health literacy, including education, schools have consequently become an essential component in efforts to achieve the goal of health literacy for all (St. Leger, 2001).

Why is the school venue so important?

The school is a fundamental institution in building both the wealth and the health of citizens, and countries, where youth spend more time in schools in their formative years than any other venue, and are thus likely to be affected considerably by this institution (Begoray, Wharf Higgins, & McDonald, 2009). Yet, in an advanced nation such as the United States, national standards to improve primary and high school students' health literacy skills have not been widely adopted. Given that health instruction K-12 that includes the teaching of age-appropriate, personnel and social skills, along with other strategies not only improves health literacy (Society for Public Health Education Fact Sheet, 2011), and reduces risky behaviours (Ghaddar, Valerio, Garcia, & Hansen, 2011) that greatly impact the risk for future chronic disease as adults

(NICHM Foundation, 2011), optimally designed and delivered health education units can significantly improve students' academic behaviours and academic achievement as well as their health skills for wellness (Flay, Allred, & Ordway, 2001; Zins, Bloodworth, Weisberg, & Walberg, 2004).

Because the health issues today are quite different from those of past decades and are predominantly lifestyle related, and pediatricians are aware of health literacy-related problems and the need for good communication with families, but struggle with time demands to implement these skills (Turner et al., 2009), educating children to make healthy life choices through the teaching of age-appropriate health lessons as a component of formal education, promises to improve students' ability to access and interpret health information as an important step in the process of achieving lifelong wellness, foster their academic ability, in general (Leger, 2001; Wharf Higgins et al., 2009). That is, coupled with appropriate basic literacy and numeracy skills, enhancing health literacy through school-based strategies has the potential to significantly improve both the health as well as the educational outcomes of the child (Wharf Higgins et al.), including how to solve problems and arrive at critical decisions, while lowering the long-term health care costs and societal burden attributable to health illiteracy (Lee, 2009). It also seems crucial to acknowledge the high prevalence of childhood health concerns in today's classroom. Specifically, there is evidence that young adults with diabetes, which is becoming an epidemic involving youth in their formative years, have been found to report a higher rate of negative health behaviours than their counterparts who are healthy insofar as physical activity, weight control behaviours, binge eating, is concerned. They can also experience lower self-esteem, body satisfaction, depressive symptoms, and teasing that may warrant classroom discussion and attention among other approaches to preventing negative health outcomes (Berge, Bauer,

Eisenberg, Denny, & Neumark-Sztainer, 2012).

Furthermore, because many school aged children may have cognitive, social, and emotional challenges that impact health, the school is well poised to assist children with a special health care requirement to develop health knowledge and self-care skills so they can become effective independent self-managers. This may be especially salient for those living with limited cognitive abilities (DeWalt & Hink, 2009). This opportunity to optimize the opportunities for challenged youth, whether as a result of a chronic physical or mental illness, or multiple health challenges, is of great import, because research shows without consistent school-based efforts to foster a level of adequate health literacy among this group of youth, adolescents with special health care needs will experience a heightened risk for adverse health outcomes, which require at a minimum, the achievement of an adequate level of health literacy (Betz, Ruccione, Meeske, Smith, & Chang, 2008).

Yet, even though knowledge on health and disease prevention, and adolescent satisfaction with the health care system affect the adolescent's health status, Vardavas, Kondilis, Patelarou, Akrivos, and Falagas, (2009) found a large percentage of adolescents, especially boys, to be insufficiently informed on major health issues in the context of the Greek school. Astonishingly, the case for promoting youth health literacy was made more than 10 years ago by Leger (2001) who acknowledged that most effectively schools address health literacy at the basic level. Nonetheless, there remain very few interventions in the related research realm that depict any form of intervention specifically designed to improve child health outcomes by focusing on their health literacy development (DeWalt & Hink, 2009), and few that appear to promote critical health literacy or examine its effect on empowerment (Leger, 2001). Because ample research has shown that literacy levels that are below grade-level in adolescence are related to an increase in

risk-taking or violent behaviors later on (Diamond, Saintonge, August, & Azrack, 2011), health education programming for all youth, including those in Greek schools, would appear imperative in efforts to promote healthier lifestyles and to prevent chronic and infectious diseases, as well as the gap in outcomes between individuals with low and higher literacy (DeWalt & Hink).

Results of a study by Davis, Byrd, Arnold, Auinger, and Bocchini (1999) found those with low literacy to report higher rates of violence either as an instigator or as a victim than those with better literacy, arguably supports this view. Also affected detrimentally by low literacy was weapon carrying, the tendency to become embroiled in a fight, and the need for treatment for an injury incurred as a result of a fight. Although health literacy was not assessed directly, low literacy is a strong predictor of poor health literacy, and again suggests a crucial role for the school in helping children develop appropriate health related behaviours. It has also been argued that among the many perceived needs associated with promoting mental health in the school environment, an appropriate starting point might involve efforts to promote mental health literacy (Kutcher & Wei, 2012).

In addition to the above-mentioned arguments, as outlined by the Institute of Medicine, the education system is one of three key points of intervention deemed necessary or essential in efforts to develop a health literate society (Institute of Medicine, 2004), and is a key factor among those system factors that affect health literacy as outlined by Paasche-Orlow and Wolf (2007). To this end, growing evidence suggests formal educational systems, including elementary and high schools that aim to prepare youth to become informed members of the public, in multiple ways, including work, and parenting (Freedman et al., 2009) are good investments (Nutbeam, 2009). Moreover, classroom-based health education, in particular comprehensive school health education or the Coordinated School Health model (discussed

below in more detail) can significantly impact student's health literacy through its processes of consistent instruction and formative assessments (Benham-Deal & Hodges, n.d.), and by improving the desired health knowledge, skills, and attitudes inherent in the concept of being a health literate individual.

National health education standards for classroom based health education have thus been developed to establish what students should understand and be able to do so in order to be deemed health literate (Benham-Deal & Hodges, n.d). As well, the Joint Committee on National Health Education Standards in the United States (2007) and the American Association of Health Education (2008) have identified health literacy as the desired outcome of these criteria. Kickbusch (2008) is a strong advocate in favour of the school as a key resource for providing youth with the knowledge needed to make appropriate health-affirming decisions.

Nutbeam (2009), another long-time leader and visionary in the educational and health field, has similarly affirmed that health literacy, a vital 21st century skill, is best developed through education. As a venue, schools have long been deemed an effective setting in which to promote health behaviours of youth (Lee, 2009). We recognize that schools cannot realistically prepare the individual for all the challenges they may face, but recommendations that health literacy be incorporated into National Curricula, such as that conducted in Australia, are laudable first steps. Similarly, the concept and growing impact of the 'health-promoting school' (also referred to as a Coordinated School Health model) that fosters a broad approach to promoting healthy behaviour has been identified as 'an imperative strategy' (Cale & Harris, 2006; Naylor & McKay, 2009; Lee, 2009) that can facilitate the achievement of higher levels of health literacy by both providing a positive culture for health, and by helping youth, especially youth from disadvantaged backgrounds, to tackle determinants of chronic diseases and health risks more

ably (Lee, 2009). Informed by social ecological ideas of systems context and interconnectedness, and empowering students to have a voice and choice in shaping school-wide initiatives, whole or comprehensive school models that address changes to the school environment and school policies, in addition to curricula, and support learning about and practicing healthy behaviours are advocated for advancing the well-being of young learner (Beaudoin, 2011)., It appears feasible to suggest that schools offering comprehensive curricula, as well as healthy physical and social environments, can foster all levels of health literacy, including the more important interactive and critical levels of health literacy needed in today's health care environment (Deaton, 2002)(See Box 1). Conceivably, therefore, by providing children with knowledge as part of the regular curriculum, as well as practical opportunities to shop, cook, exercise, and use the health care system and learn to care for others, the development of a health literate population is more likely to be achieved than not, and to foster a populace that can think critically, problem solve, as well as access and analyse information, plus collaborate, all skills strongly predictive of healthy choices, as well as health status (Kickbusch, 2009; Wharf Higgins et al., 2009)(See Box 1). Among older youth, this translates into having skills to organize and apply health knowledge, as well as attitudes and practices relevant to managing their health in the health care environment (Massey, Prelip, Calimlin, Quiter, & Glik, 2012).

- Ability to **access** valid sources of information, products, and services
- Ability to **analyze** factors that influence responsible health decisions
- Ability to **make sound choices** and **set health-affirming goals** based on these decisions
- Ability to **communicate** with others
- Ability to **read** and **understand** health information
- Ability to **use** health information in health enhancing ways
- Ability to **advocate** (Benham-Deal & Hodges, n.d)
- **Ability to weigh** the validity of health claims

Box 1. Health Literacy Related Skills Known to be Impacted through Well-Coordinated Comprehensive Classroom and/or Experiential Educational Approaches

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- **Ability to weigh** the validity of health claims

Does this idea work?

Case Examples

To reduce the asthma burden, one of the most common causes of school absenteeism, 15 teachers were recruited from the St. Louis, MO, USA area during the 2006-2007 school year to assess an integrated curriculum that presents asthma as a real world example with the aim of raising all children's awareness and understanding of asthma, not just those with the condition. A 15-lesson, asthma-based curriculum was developed to integrate with and enhance the core subjects of math, science, and communication arts. A pilot test was performed in fourth- and fifth-grade classes to assess student asthma knowledge gain, teacher acceptance, and grade appropriateness of the curriculum. Paired t tests were used for each lesson taught, to evaluate pre-/post-test and classroom

differences, and focus groups were used for qualitative evaluation. Results showed a post test increase in asthma knowledge in both grades, individually and combined ($p < 0.001$), and intervention post-test scores were higher than four comparison classroom scores ($p < 0.001$). Teacher feedback indicated the lessons enhanced previously learned skills and increased students' overall understanding of the topic. It was concluded that the classroom activities provided an opportunity for all students to gain asthma knowledge and build health literacy about a leading chronic disease (Pike et al., 2011).

In their study, Naito, Nakayama, and Hamajima (2007) examined the acceptability and effectiveness of a new type of health literacy program for children. The program was organized in the form of a workshop by a dentist. Sixty-three students ranging in age from 11-12 years were divided into 14 groups. The discussion topic focused on the effectiveness of toothbrushing for preventing oral health problems. After a group discussion, participants received a lecture on appraising the quality of health information. Pre- and post-program questionnaire surveys were administered to assess the program. The post-program questionnaire survey revealed that 89% of participants easily understood the content of the program, and 76% found the program to be useful. These findings demonstrate the feasibility of using health literacy programs for schoolchildren. It was concluded health literacy programs for children can be developed and administered through collaborations between education and health professionals.

In a more recent classroom based activity, Katz et al. (2011) employed a curriculum called Nutrition Detectives™. This program, designed to teach elementary school students and their parents to distinguish between more healthful and less healthful choices in diverse food categories was assessed in three schools. A sample of 1180 second, third, and fourth grade students, 628 in the experimental group and 552 in the control group were studied. The program,

delivered by physical education instructors over several for a maximum of two hours involved learning how to identify and choose healthful foods. Results showed that the program increased nutrition label literacy significantly, especially among third graders. Parents too improved their ability to identify more nutritious foods. Since food intake is considered one of the most important risk factors underlying obesity and chronic health problems, this school based effort, which was not time consuming seems to be a promising one to emulate.

Current Barriers to Achieving Optimal Health Literacy Among School-Aged Youth

Although primary prevention that is achieved through health literacy instruction and practice in the classroom through health education may improve educational and social outcomes of today's children (Benham-Deal & Hodges, n.d.), among the various reasons why the problem of low health literacy prevails and cannot be readily resolved relate to the following issues:

1. The nature of traditional instructional units in the health realm that commonly focus on risky behaviours such as drugs, family life, and sexuality may not necessarily help the student to develop the capacity to obtain, interpret, and use this information competently to access services.
2. The reported widespread use of television as a means of entertainment, a medium that widely and routinely advertises unhealthy lifestyles to youth who often cannot readily discriminate healthy from unhealthy messages and behaviours, especially in the absence of any well-designed counter messages (Williden et al., 2006) or media literacy skills may prove very potent.
3. The possibility that current school education programs are not developmentally appropriate, or tailored to accommodate the student's everyday lived experiences, their

views, and their social norms and areas of interest, and thus these do not engage them sufficiently or make them able or motivated to enact responsible choices (Gibbons & Naylor, 2007; Naylor & McKay, 2009).

4. The possibility of encountering poor role models in schools, the low focus on health as a priority subject area in the school, the use of non-health teachers to teach health, plus a broader environmental policy and infrastructure setting that does not support healthy decisions.
5. The possible assumption by school personnel that children are receiving health instruction in the home even though this may not be the case. Research shows the low or limited health literacy skills of many caregivers today has a strong direct negative impact on many children's health (Abrams, Klass, & Dreyer, 2009), further limiting opportunities to acquire basic health related skills needed to assure optimal health literacy, health behaviours and use of preventative care services across the lifespan (Sanders, Federico, Klass, & Abrams, 2009).
6. The reliance of youth, especially adolescents on technology for communication, accessing information, and generally adopting lifestyles exposed to on social media sites, which may or not provide credible or healthful sources of information or being (Ghaddar et al., 2011).
7. The lower than average literacy levels of ethnic youths or minority populations (Ghaddar et al., 2011), who are often difficult to reach with health services because of economic and socio-political barriers (Lee, 2009).
8. The failure of teachers to focus on developing their student's self-efficacy so that they can confidently be empowered to make healthy choices (Benham-Deal & Hodges).

9. Instructional units do not offer a skills-based approach (Benham-Deal & Hodges).
10. Evidence that young people are less willing to overcome barriers to health access than older people (Lee, 2009).

Unfortunately, too, educators or educational administrators may not be aware of the importance of health literacy, or the need to redesign curricula and methods of instruction delivery in school settings, along with pediatricians who are unaware of these health-literacy related problems and the need for effective communication with families, and teachers themselves who are not health literate. Those who are aware or have the desired skills, in turn, may struggle to do anything about this due to the time demands required to implement such skills (Turner et al., 2009), particularly when entrenched institutionalized practices and policies pose obstacles to changing curricula and medical protocols.

As a result of the low priority placed on health education by policy makers and administrators, media exposure, socioeconomic disadvantages, and parental misconceptions about health, it is unsurprising that children today do not always have sufficient knowledge and the understandings needed to enable them to make wise personal healthy choices. Thus, despite much evidence that health literacy is a fundamental skill needed by the contemporary citizen, society may not be able to meet the health literacy needs of young people in the 21st century without making concerted efforts in this realm to mobilize policy makers and education administrators to implement comprehensive evidence based programs that can help students access, understand, and make appropriate science based and value judgments about health related issues.

According to Nutbeam (2008), health literacy should be viewed as an asset that can be built and as an important outcome of health related education. In addition, the ability to

communicate one's health needs and issues affords greater empowerment in the context of decision making. The ability to govern one's behaviour and make healthy choices requires teachers recognize the hierarchical and synergistic nature of health literacy and provide the means to achieve this through basic skills development, followed by interactive applications, and analysis.

Are there solutions to meet this set of challenges?

In light of the overlapping barriers to fostering the health literacy of youth in the school setting, and that a positive culture for health would facilitate higher levels of health literacy (Lee, 2009), leading national education organizations are being urged to recognize the close relationship between health and education, as well as the need to foster health and well-being within, as well as beyond, the educational environment for all students. That is, effective multi-pronged strategies that have been evaluated indicate that if implemented strategically, these can provide the future adult with tools and skills to maximize their health and citizenship attributes. Indeed, multi-dimensional programs designed to improve academic performance are increasingly recognized as important public health interventions, and schools that can tailor health education instruction along with basic reading, writing, math, and science skills to meet the developmental needs and challenges of students (Benham-Deal & Hodges, n.d.) can thus play a critical role in promoting the optimal health status and lifelong health behaviours that can impact health and productivity in highly positive ways (Centers for Disease Control and Prevention, Health and Academics, http://www.cdc.gov/HealthyYouth/health_and_academics/index.htm).

According to Abrams et al. (2009), helping children grow up with good general literacy skills will improve their health literacy and chance of effectively understanding and managing

their own health and care, especially dietary behaviours (Reinaerts et al., 2006). As well, school-oriented interventions can serve as an important upstream strategy to help prevent or attenuate the adoption of high risk health behaviours (Marks, 2009). Since health behaviours such as smoking often adopted during adolescence greatly impact the risk of future ill health as an adult (NIHCM, 2011), a strong imperative prevails for introducing interventions that can foster life-long literacy during critical developmental periods through exposure to research-based programs such as Reach Out and Read, early Head Start, and universal preschool. Other ideas include:

- The creation of schools where all students are encouraged and enabled to read proficiently at their prevailing grade level.
- The creation of schools where those with reading and learning disabilities are identified early on and treated accordingly.
- The creation of schools where resources for fostering literacy, and numeracy are made available and are offered as indicated.
- Improving the preparation of teachers, as well as school health instruction (Peterson, Cooper, & Laird, 2001), as well as recognising the hierarchical nature of health literacy identified by Nutbeam (Benham-Deal & Hodges. n.d.).

In light of the growing importance of health literacy as a basic adult competency, as others before them have argued, Abrams et al. (2009) call for incorporating health literacy–related skills into standard kindergarten through 12th grade curricula. For Ghaddar et al.(2011), advocating adolescent health literacy can serve to address and minimize current inequities and disparities in health outcomes, because youth constitute a group of dependent health care system users who will eventually become independent users of the system. The goal of achieving critical health

literacy is also consistent with those skills students need to master in order to succeed in work and life in the 21st century (Benham-Deal & Hodges, n.d.).

Promoting school-based health literacy

As outlined in the preceding paragraphs, increasing research suggests that to attain the goal of achieving a more health literate populace, promoting the health literacy of younger generations is critical (Ghaddar et al., 2011). To this end, one strategy for advancing this goal involves a collaboration between researchers, educators, school administrators, and policy makers as well as parents, school health counselors, and nurses. Working together these stakeholders can help identify: the health literacy skills vital to their communities and community members, what can be taught through the educational system, where current curricular approaches in health education and other subjects need to be updated to account for newer dimensions of health-seeking behaviours, as well as local health issues among adolescents (Ghaddar et al.). The appropriate use of evidence-based strategies to develop efficacious lesson plans and curricula that can help advance critical personal, cognitive, social and analytic skills necessary for understanding their bodies and how their behaviours influence their health is recommended. Because there is a wide gap between the current presentation of most school-based health lessons in the classroom and the health information seeking behaviours of youth (Ghaddar et al.), opportunities for learning how to obtain and evaluate the accuracy and trustworthiness of health information is critical in a world where access to information is less of a problem than understanding what is being written or discussed. Moreover, as outlined by Abrams et al. (2009) such efforts are likely to work most effectively if they begin with preschool curricula that can reinforce health promotion activities among toddlers and their caregivers, rather than later on. Hence standardizing kindergarten through 12th grade curricula to teach

health literacy competencies across all educational disciplines including science, mathematics, reading, social studies, health, and physical education is deemed crucial and highly recommended. Adult-education modules that teach health literacy skills in environments that are designed to foster general educational development (GED) and English-as-a-second-language curricula are strongly indicated as well to enhance the literacy skills of those adults who have trouble reading. As supplemental strategies, health literacy activities integrated into after-school, camp, literacy programs, community centers, health care centers, home-visiting and community-based parenting programs can potentially help reinforce the novice learner to appreciate and act on the manifold attributes of health and related competencies that lead to the development of health literacy.

Sanders et al. (2009) have specifically proposed a developmental model for attaining health literacy skills that suggests school age children be able to apply adequate reading, verbal and expressive skills as well as numeracy and navigational skills. Similarly because adolescents and young adults are also expected to be able to understand and act on complex health information, including decisions that impact them personally, they indicate adolescents too require these skills albeit at a more advanced level. Accordingly, in maintaining that schools have a fundamental role to play in the development of health literate populations, Benham-Deal and Hodges (n.d.) suggest classroom-based health education as a specific discipline be supplemented by mathematics, arts, science, social studies, language arts, as well as physical education and nutrition services.

Donald Nutbeam has proposed a three tier model of health literacy development involving basic or functional literacy, communicative or interactive literacy and critical literacy. Since considerable research points to the importance of health and health promotion in

maximising learning outcomes, St.Leger and Nutbeam (St. Leger, 2001) proposed the health promoting school or whole school approach to addressing health and social issues because these can potentially provide youth with adequate building blocks to achieve both health and educational outcomes that are fundamental to health literacy.

These four school-related learning outcomes include the acquisition of a) lifelong learning skills; b) appropriate health related competencies and behaviours; c) adequate knowledge and skills; and d) self-attributes and self-efficacy. These are all said to be dependent on students attaining all three levels of health literacy as proposed by Nutbeam. Adhering to national, and state health education standards, as well as collaborations across the school sectors, educators can specifically foster the student's competencies to become active members of society, members who are empowered to act autonomously, rather than those that commonly only help students develop very basic reading and writing skills, or knowledge, alone.

Given their heightened vulnerability to poor health literacy, children living in poverty who are found to acquire language and reading skills more slowly (Aikens & Barbarin, 2008; Wyner, Bridgeland, Dilulio, & John, 2007) should be specifically targeted, and their early participation in quality childhood education programs, plus placing emphasis on contemporary evidence based health education classroom curricula and basic literacy skills development is especially recommended (Benham-Deal & Hodges, n.d.; Zaza, Briss, & Harris, 2005). As with more able youth, all should be afforded opportunities to participate and learn more about their own health (Zaza et al., 2005).

Teaching the elements of health and literacy in schools, and focusing on lessons that evoke higher order thinking, communication, problem solving, and decision making skills, children can succeed more ably, and they may experience better health. Likewise, the intentional,

meaningful, and continuous involvement of young people in well-designed programs from Pre K-12 will help youth to develop the confidence to participate as thoughtful active partners in decisions that affect them individually and collectively. This 'life-course' approach to promoting health behaviour should begin early in life, and include the inputs of the health promoting school or school structures such as food services, and counseling services.

Helping youth to keep up with evolving health issues, plus current technological advances is also a crucial aspect of the education process. For example, given that technologies that are currently in the pipeline will vastly advance the field of personal genetics, Kung and Gelbart (2012) suggest we do all we can to ensure our current and future generations of students will be well informed about the science, benefits, risks, and ethical issues related to genetic testing. At a more basic level, recent qualitative research has shown the need to address low levels of oral health literacy among young boys ages 5-7 by developing their functional health literacy, and schools were implicated as the ideal site in which such an initiative could occur with the added benefit of concomitant knowledge transfer back to the family home (Drummond & Drummond, 2012).

In contrast to the detrimental impact of limited health literacy on long-term outcomes shown in Box 2, the role of education in this attenuating these outcomes may yield students who are not only educated about health and healthy lifestyle choices, but students who may grow into happier, healthier and more productive adults. Because those who are health literate are more likely to have the skills to better achieve and maintain their physical, social and emotional health, they will be better able to contribute to the nation's economic competitiveness by working more effectively, missing fewer days from work due to injury and illness, and by using fewer medical services, and health insurance benefits. They may also be more empowered on behalf of themselves and others (McGovern, 2010).

Box 2. Health Associated Impact of Health Illiteracy

- Low adherence to medical regimens (De Walt & Hink, 2009)
- Health risk behaviours are increased (De Walt & Hink, 2009)
- Child depressive symptoms and withdrawn behaviour problems are rife (De Walt & Hink, 2009)
- Child diabetes control is suboptimal (De Walt & Hink, 2009)
- Enormous societal and medical costs are incurred
- Higher incidence of emergency department visits, hospitalizations, and missed school days are reported (De Walt & Hink, 2009)
- Health disparities are magnified
- Optimal educational attainment may be impeded
- Preteenaged tobacco usage (De Walt & Hink, 2009), associated with dropping out of high school, low commitment to school, academic failure and poor achievement (Townsend, Flisher, & King, 2007) may increase
- Students' health, well-being, and quality of life may be lowered (St. Leger, 2001; Wharf Higgins, Begoray, & MacDonald, 2009, p. 352)

To summarize - related studies in the United States and elsewhere (e.g., Carlson et al., 2008), provide increasing evidence that health-related instruction, which can foster health literacy, can significantly improve academic achievement. In addition, youth exposed to health -associated instructions may exhibit heightened motivation for schooling, reduced absenteeism, and suspensions. Not surprisingly, initiatives that foster health-related personal and social skills are found to yield improved test scores, grades, and graduation rates. In turn, academic success, a predictor of the overall well-being of youth, is a primary predictor and determinant of adult health status (Eggert, Thompson, Herting, Nicholas, & Dicker, 1994; Flay et al., 2001; Hawkins, Catalano, Kosterman, Abbott, & Hill, 1999).

To achieve a desirable outcome for future citizens St. Leger (2001) believed good schools that apply quality teaching and learning approaches will foster the achievement of the three

levels of health literacy proposed by Nutbeam (2000). As indicated by St. Leger, schools that work diligently towards the goal of helping their students to become critical thinkers and provide a participatory collegial support system for students, will build a strong basis for attaining both functional as well as interactive and critical health literacy. The latter component of health literacy is deemed especially crucial for enabling the student leaving the school to become a member of society that can help him or herself to improve opportunities for health for themselves as well as for others.

St. Leger (2001) described three challenges to schools embracing critical health literacy that remain relevant in this decade: a) the school structure; b) teachers; practices and skills; c) time and resources. According to Benham-Deal and Hodges (n.d.) emphasizing 21st century instructional skills, practice, and assessment, in the health class, as well as in mathematics, science, social studies, English language arts, and involving all academic disciplines can enhance the health literacy skills of youths and future adults both within as well as beyond the educational system. Indeed, without a well-developed health curriculum, administrative support for its implementation, knowledgeable staff, plus an appropriate evaluation component (Ghaddar et al., 2011), schools are likely to produce less than optimal educational and health outcomes for their students

As this chapter has discussed, among the many domains where improvements can be made to foster health literacy, the educational system, schools and continuing education institutes play a major role (Kickbush & Maag, 2008) teaching children to make healthy choices on a daily basis. As such, and following in the leadership of Nutbeam and St. Leger, Kickbush and Maag argue health literacy must become a focus or central element of school agendas (2008, p. 204). The health promoting school approach, similar to the Coordinated School Health Program

approach, can undoubtedly empower students quite markedly to develop optimal health and critical thinking related skills, to respond to health challenges with confidence, and to achieve beneficial societal outcomes, and consequently this approach appears strongly encouraged.

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