The Relationship Between the Health of School-Age Children and Learning:
Implications for Schools

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Introduction

The relationship between the health of school-age children and learning has been discussed at length in both the educational and the health professions literature. According to a 1992 article in the Journal of School Health (Lavin, Shapiro, & Weill), "children who suffer form violence, hunger, substance abuse, too early pregnancy, depression or hopelessness are not healthy children. Unhealthy children are children with impaired learning" (p. 213). A 1990 report by the National Health and Education Consortium offered that, "Any health problem- hunger, poor vision or hearing, increased blood lead levels, dental caries, and child abuse- can interfere with learning. Physical and mental health problems which impair their ability to learn" (p. 8). Furthermore, a report prepared by the Council of Chief State School Officers (1991), concluded that healthy children are teachable children. Factors such as hunger, physical and emotional pain, drug and alcohol impairment, and chronic illness set the stage for poor school performance and the potential for not graduating.

As exemplified above, many of the articles and reports that address the relationship between health and learning identify slightly different list of casual health issues, or they offer slightly different perspectives regarding the impact that identified health issues have on learning. However, one common theme emerges from the vast majority: good health is a prerequisite to good learning.

The purpose of this paper is to identify the major health issues affecting school-age children that are most commonly identified as impacting learning; to explore and summarize the reasons why these issues have the impact on learning that they do; and to discuss the implications that this information has for both education in general and school health education specifically.

Major Health Issues Impacting Learning

After reviewing information from over one hundred articles and /or reports, written since 1979, that discuss the relationship between various health issues and learning, the following represents a list of those health issues that were most commonly identifies as having an impact on school-age children's ability to learn: nutrition, physical fitness, substance abuse, violence (family and societal), pre-existing pregnancy and/or early childhood factors, and emotional/mental health conditions. While this list may not reflect an exhaustive identification of *all* possible health factors that *could* impact children's learning capabilities, it does reflect those factors upon which there appears to be the greatest degree of consensus.

A complete listing of the articles and reports viewed can be found in the bibliography.

Nutrition and Learning

According to a 1995 report by the National Health and Education Consortium, "Studies have demonstrated a link between poor nutrition and learning in children, leading researchers to report that well-fed children learn better than poorly fed children. Furthermore, studies indicate that children's eating habits and attitudes about food develop early a last a lifetime" (p.4).

A 1988 Carnegie Foundation survey of teachers found that over half indicated that poor student nutrition was a problem in their school. Although adolescent nutritional concerns are often interpreted as issues of malnutrition and undernutrition, the issues of overnutrition and eating disorders are also important youth dietary concerns that affect learning and warrant discussion.

Undernutrition is not simply a state of not having enough food to eat. More precisely it is a condition of not consuming adequate quantities of *nutrients or calories* (Meyers, Sampson, & Weitzman, 1991). Nutrients with the highest correlation with achievement were iron and vitamin C. Total food energy was also highly correlated to achievement (American School Food Service Association, 1989).

Even moderate undernutrition can have lasting effects on children's cognitive development and school performance (Center on Hunger, Poverty, and Nutrition Policy, 1995). It has been demonstrated that children who are chronically undernourished achieve lower scores on standardized achievement tests, especially language ability tests (Hinton, Heimindinger, & Foerster, 1990) Children who are hungry or undernourishes tend to have difficulty resisting infection and thus, show a greater likelihood to become sick, to miss school, and to fall behind in their studies (Center on Hunger, Poverty, and Nutrition Policy, 1995; Hinton, et al., 1995). Undernoursihed children also tend to be more irritable, have difficulty concentrating, and exhibit lower energy levels (Troccoli, 1993).

One of the more common physical results of undernutrition can be iron deficiency anemia. Among school-age children, female adolescents are at greater risk for iron deficiency, with 1% of elementary children and 2%-4% of adolescent girls showing evidence of this condition (Dallman, Looker, Carroll, & Johnson's study as cited in

Centers for Disease Control and Prevention, 1996). Symptoms of iron deficiency anemia that may affect school performance include fatigue, shortened attention span, decreased work capacity, reduced resistance to infection and impaired intellectual functioning (Public Health Service, 1988; Pollitt, 1993).

Overnutrition is a condition in which quantities of nutrients and calories consumed exceed those necessary to provide optimal growth, development, and function. Chronic overnutrition is most commonly referred to as being overweight or obese.

Overweight and obesity are increasing among children and adolescents in the United States (Troiano, Flegal, Kuczmarski, Campbell, & Johnson, 1995). While overnutrition has not been as directly linked with cognitive development as undernutrition has, obesity in young people has been proven to be associated with medical conditions such as elevated blood cholesterol levels (Resnicow & Morabia, 1990); high blood pressure (Clark, Woolson, & Lauer, 1986); and respiratory problems, orthopedic conditions and hyperinsulinemia (Dietz, 1981). Each of these conditions can lead to irregular school attendance patterns. Overnutrition has also been linked with peer group alienation, psychological stress, poor body image, and poor self-esteem (Brownell, 1984), which are indicators of poor emotional/mental health. As will be discussed later in this paper, poor emotional/mental health has been linked to poor school performance and academic achievement.

Eating Disorders are psychological disorders that are characterized by severe disturbances in eating behavior (center for Disease Control and Prevention, 1996). Eating disorders often begin in adolescence, and greater than 90% of reported cases occur among females (American Psychiatric Association Task Force on DSM-IV, 1994). The most common eating disorders among adolescent children are anorexia nervosa and bulimia nervosa.

Because eating disorders are psychological conditions that manifest themselves physically, their implications for school performance can be similar to those for both undernutrition and overnutrition. Eating disorders seriously affect the dietary intake of nutrients and calories. As a result, many of the characteristics associated with undernutrition such as low energy, low resistance to infection, and poor academic performance are frequently exhibited. On the other hand, adolescents with eating disorders tend to see themselves as being overweight or obese, even when they are not. Because of this, they are prone to display personality characteristics such as lower self-esteem; a negative body image; and feelings of inadequacy, anxiety, social dysfunction, depression, and moodiness – poor emotional/mental health characteristics that are often associated with the overnourished (Herzog & Copeland, 1985).

PHYSICAL FITNESS AND LEARNING

A 1992 study by Harris-Dawson found that physically fit middle school students had higher grade point averages and higher levels of self-esteem than non-fit students. The same study also reported that physical fitness was able to be used as a predictor of not only academic achievement, in terms of Grade Point Average (GPA), but also levels of self-esteem.

Wineberg (1998) conducted a ten-week study of the relationship between increases in the level of physical fitness among a sample of fifth grade students and their

on-task behaviors in reading, math, science, and social studies classes. Wineberg found a positive correlation between physical fitness and on-task behavior. As physical fitness improved, so did on-task behavior in all four academic areas. Since on-task behavior has been substantiated as an important factor in the learning process (Karweit, 1984; Morton, 1986; Oldfield & Petosa, 1986; Gettinger, 1986; Brown & Saks, 1986), Wineberg's findings suggest a relationship between physical fitness and improved learning.

In its 1991 publication Beyond the Health Room, the Council of Chief State School Officers reported that school age children who get regular exercise have better concentration than those who are more sedentary. It also reported that physical activity reduces children's classroom disruptive behavior and their stress levels.

Finally, Hinkle (1992) reported that the collective results of research that investigated the impact of aerobic running-based physical fitness programs on school-age children, found that: 1.) Various degrees of self-esteem enhancement were achieved; 2.) Psychotropic drug doses for emotionally handicapped children were reported for hyperactive children; 4.) Children with developmental problems increased their completion of written tasks and reduced their degree of talking out in class; and 5.) Academic learning and creative thinking improvements were achieved (Carlson, 1982; Duncan, Boyce, Itami, &Puffenbarger, 1983; Hinkle & Tuckman, 1987; Lopez &Pruett, 1982; Shipman, 1984; Tuckman & Hinkle, 1986).

Substance Abuse And Learning

Prior to the early 1960s drug use by young people was not a considerable concern for schools, law enforcement agencies, or the medical community. By the 1970s the use of illegal drugs by students was at virtually epidemic proportions, and it continues to be one of the leading contributors to mortality and morbidity among 5-24 year-olds today (NASSP, 1988; Centers for Disease Control and Prevention, 1997a).

Data from the 1995 United States Youth Risk Behavior Survey (Centers for Disease Control and Prevention, 1997a), which was administered to high school students from February 1995 to May 1995, indicated that during the month immediately prior to responding, 52% of the respondents had drunk alcohol; 33% had experienced episodic heavy drinking; 25% had used marijuana; and 35% had smoked cigarettes. In addition, 20% reported that they had "ever" sniffed or inhaled intoxicating substances; and 71% had 'ever" smoked cigarettes. Michigan data for the same year reflect percentages that are almost identical (Center for Disease Control and Prevention, 1997b).

Because drugs are chemical agents, when they are observed they adversely alter the body's internal balance, primarily affecting the nervous system, and can interfere with a person's ability to function. Such interferences will generally affect learning-relates abilities such as memory, thinking, solving problems, communicating, and expressing emotions (Meeks, Heit, & Page, 1995). Supporting this information, two separate studies by Andrews (1991; 1994) found that an inverse relationship existed between substance abuse and academic motivation and academic success. As substance abuse increased, academic motivation and academic success tended to decrease; and vice versa.

A 1988 article by the National Association of Secondary School Principals reported that drug use diminishes students' abilities to learn and remember, it increases their likelihood of skipping school, and it contributes to student suicides, accidents, teen

pregnancies, and sudden deaths. Furthermore, the Midwest Regional Center for Drug-Free Schools (1993) has asserted that students addicted to alcohol and/or other drugs are more inclined to: engage in sexual risk-taking behaviors; commit crimes to support their habit; have lost all desire to excel in school and, thus, will fall asleep in class. Cut class, and even drop out completely; disregard both family and school rules; exhibit dramatic shifts in friendships; display physical symptoms such as hangovers, blackouts, weight loss or gain, accident or injuries, and uncleanliness; spend their time planning how to buy drugs, denying their problem, making excuses for using drugs, forgetting and blaming others for their problems; and finally, feel depresses, suicidal, different from others, angry, lonely, and unimportant.

Violence And Learning

A study of battered pregnant women (Boodman, 1994) found that physical abuse can affect not only the mother but also her unborn baby's later ability to learn and do well in school. Women and girls subjected to physical abuse while pregnant were more likely to have low birth weight babies who are at much greater risk for permanent handicapping conditions such as mental retardation, cerebral palsy, autism, epilepsy, and other developmental conditions.

Violence directed at children in their own homes profoundly affects their ability to learn by comprising critical school readiness factors such as a positive outlook and a general sense of well-being. In fact, studies have shown that there are significant differences between the academic and intellectual functioning of maltreated children and a comparison control group (Kurtz, 1994).

Children who grow up in abusive homes often grow up in chaotic, unpredictable environments. Out of fear and the need to protect themselves they learn to dull their own feelings, thoughts and responses, and instead mirror the mood of the person whose unpredictable "turning on them" they fear. This has a particularly significant effect on language development, which is often delayed and subverted in abused children. This delay and subversion is due to the fact that abused children are usually looking for danger cues through mood and tone, and they generally have not learned to trust or rely on language content (Prothrow-Stith & Quaday, 1995).

Because abused children grow up feeling that they have no impact on the world, they develop a sense of powerlessness. This sense of powerlessness interferes with the normal development of setting goals and delaying gratification that is essential for both successfully reaching adulthood and succeeding in school (Craig, 1992).

Violence that occurs outside of the home also has its impact on learning. Even when home is free of violence, the threat of community violence results in some parents, or caretakers, taking preventive actions that actually impede a child's ability to interact with his/her environment and other people. When this happens social development and the child's ability to function in cooperative environments can be affected.

Any time that children are chronically exposed to violence, whether it is in the family or their community, they are being exposed to repetitive traumatic episodes. Such exposure to acute traumatic episodes can limit cognitive development, affect their ability to form close attachments, disturb physiological functioning and cause regressions to earlier, safer behaviors, such as thumb sucking. Essentially they are developing defenses

against their fears and these defenses interfere with their development. Energy spent on the development of defenses is energy that is not available for learning (Prothrow-Stith & Quaday, 1995).

Children who are witnesses to chronic violence may also exhibit additional learning problems such as poor concentration, short attention span, and a general decline in academic performance (Lorian & Saltzman, 1993). Recurrent trauma may cause denial in children. As a result, their memories may get fragmented. If you ask them a specific question, they may demonstrate difficulty remembering. However, if you remind them what happened, they will remember. This behavior is not an act of defiance or uncooperativeness, but rather an act of emotional "numbing" meant to protect themselves form fear and feelings of helplessness. Serious trauma, either a single episode or recurrent events, hinder children's ability to assimilate skills and transfer them from one area of experience or interest to another (Prothrow0Stith & Quaday, 1995)

Children who are regularly exposed to abusive or neglectful environments may exhibit school behaviors that reflect opposite ends of behavior continuum. On one hand they may be aggressive and disruptive. On the other hand they may be withdrawn and depressed. Regardless of the behavior, neither presents an emotional state of mind that is conducive to learning (Council of Chief State School Officers, 1991).

Finally, school age children who live in violent environments often manifest a number of physical health problems such as sleep disorders, headaches, stomach aches, and asthma attacks, that can ultimately interfere with school attendance and learning (Prothrow-Stith & Quaday, 1995).

Pre-Existing Pregnancy And/Or Early Childhood Factors And Learning

Newman and Bika (1990), in their synthesis of major research studies on the development of learning impairments, identified seven major preventable factors associated with learning impairment in children between birth and five years of age: 1.) Low birth weight; 2.) Maternal smoking; 3.) Prenatal alcohol exposure; 4.) Prenatal exposure to drugs; 5.) Lead poisoning; 6.) Child abuse and neglect; and 7.) Malnutrition.

Children who are born at **low birth weights** are more inclined than normal birth weight babies to experience severe mental retardation or cerebral palsy (Eilers, Desai, Wilson, & Cunningham, 1986; Hack & Breslau, 1986); have borderline IQs; and have problems understanding and expressing language (hack & Breslau, 1986; Lefebvre, Bard, Veilleux, & Martel, 1988; Nickel, Bennett, & Lamson, 1982; Vohr, Coll, & Oh, 1988). Reading, spelling, handwriting, arts, crafts, and mathematics cause them difficulties, while speech and language delays are also evidenced (Newman & Buka, 1990). Children born at very low birth weights are also more likely than normal birth weight children to be inattentive, hyperactive, depressed, socially withdrawn, and/or aggressive (Breslau, Klein, & Allen, 1988). Follow up studies of low birth weight babies at school age suggest that the effects of environment far outweigh most effects of non-optimal prenatal or perinatal influences, and that early assistance can improve the intellectual functioning of low birth weight children (Aylward, Pfeiffer, Wright, & Verhulst, 1989; Richmond, 1990).

Maternal smoking during pregnancy shows a consistent pattern of children born with low birth weights, growth retardation before birth, and long-term growth reduction (Abel, 1980). A postnatal effect of maternal smoking exhibits an early onset is persistent asthma, which often leads to frequent hospitalizations and ultimately school absenteeism (Streissguth, 1986). Children of smokers are often small in stature, slower to develop cognitively, and lag behind in educational achievement. They are particularly prone to hyperactivity and inattention (Rush & Callahan, 1989). Compared to offspring of non-smokers, children of heavy smokers (more than two packs a day) were 1.7 times more likely to experience school failure by age 7 (Buka, Newman, & Gortmaker, 1990).

Over the past several decades, prenatal alcohol exposure has been increasingly identified as a leading cause of mental retardation, and is the cause of a pattern of birth defects know was Fetal Alcohol Syndrome (FAS). In order of a diagnosis of Fetal Alcohol Syndrome to be made, three conditions must be in evidence: prenatal and postnatal growth retardation, central nervous system dysfunction and facial abnormalities. For children who exhibit only one or two of the FAS characteristics, the terms Fetal Alcohol Effects (FAE) or Alcohol-Related Birth Defects (ARBD) are often used (Troccoli, 1994). The effects of prenatal alcohol exposure vary according to when in the pregnancy alcohol consumption occurred. It does appear, however, the more alcohol consumed, the worse the effects. And many effects do not appear until the ages of approximately four to seven, just when children are entering school (Newman & Buka, 1990). Although interventions can reduce the impact of FAS, FAE, and ARBD, there are no cures for any of them. The effects of prenatal alcohol exposure are irreversible and will impact the lives of its victims throughout the full course of their lifetimes (Troccoli, 1994).

Common characteristics that appear during FAS children's preschool years include: short attention span, distractibility, clumsiness, hyperactivity, severe temper tantrums, and developmental delays (Smitherman, 1994). The associated developmental delays often manifest themselves as speech and language deficits. One possible explanation for the frequency of speech and language difficulties among FAS children is the high incidence of hearing disorders among FAS children (Church & Gerkin, 1988). FAS-associated learning problems that tend to manifest during middle childhood include: impulsivity, memory difficulties, poor social skills, difficulty making transitions and predicting consequences of actions, and a dependency on concrete thinking that interferes with the child's ability to grasp abstract concepts, especially in mathematics (Olsen, Burgessm & Streissguth, 1992). By the time FAS children reach adolescence and adulthood, the cumulative effects of their impairments generally exhibit themselves as: limitations in reasoning and judgment abilities, poor time utilization, a need to seek immediate gratification, and a need for levels of supervision more commonly associated with a younger person (Smitherman, 1994). In general, all FAS children and/or adults display difficulty with recording, interpreting, storing, retrieving, and using information (Morse, 1993).

Prenatal drug exposure is very similar in its consequences to prenatal alcohol exposure. The primary difference is simply in the types of drugs used. As with alcohol use, prenatal drug use has different effects at different points in the fetal development. Use early in a pregnancy is most like to result in birth defects that impact organ formation and basic functions of the endocrine, metabolic, and central nervous system. If used later

in a pregnancy, the results may be pre-term delivery and/or intrauterine growth retardation (Kaye, Elkind, Goldberg, & Tytun, 1989; MacGregor, Keith, Chasnoff, Rosner, Chisum, Shaw, & Minguo, 1987; Pettiti & Coleman, 1990). Also as with prenatal alcohol exposure, symptoms of prenatal drug exposure may not become clearly manifested until later when the child has reached school age (Weston, Ivins, Zuckerman, Jones, & Lopez, 1989; Gray & Yaffe, 1986; Frank, Zuckerman, Amaro, Aboagye, Bauchner, Cabral, Fried, Hingson, Kayne, Levenson, Parker, Reece, & Vinci, 19988). Common characteristics of prenatal drug exposure that can impact learning include: poor sleep patterns resulting in chronic fatigue, poor overall development, vision and motor control difficulties, and poor social interaction skills.

According to Bellinger et al. (1987), **lead poisoning** is the most pervasive pediatric environment hazard in the United States. "Lead exposure comes from industrial contamination, leaded paints and gasoline, ceramics, household dust and soil, lead-soldered water pipes, water and tinned food. Because it does not degrade in the environment, but rather becomes dust, it is easy to ingest, especially by small children playing in yards and on floors" (Newman & Buka, 1990, p.12). Characteristics of lead poisoning that have implications for learning include: lower overall IQ levels, deficits in speech and auditory processing, lower reading levels, attention and behavior disorders, increased levels of distractibility and daydreaming, lack of organization and persistence, difficulties following directions, and higher rates of dropping out of high school (Needleman, Gunnoe, Reed, Peresie, Maher, & Barrett, 1979; Needleman, Schell, Bellinger, Leviton, & Allred, 1990; Needleman, 1992). Furthermore, a study reported in 1990 by Denno found that in males, lead poisoning was one of the strongest predictors of number and severity of delinquent offenses.

A 1990 report by the Children's Defense Fund asserted that an American child is a victim of **child abuse or neglect** every 47 seconds. This adds up to approximately 675,000 children annually. Widom (1989) found that the majority of children who are abused or neglected are under the age of five. Because of this, the most common result of their abuse and/pr neglect is often language impairment. Wolfe (1987) found that abused and neglected children are often aggressive and distractible, have poor self-control and self-esteem, suffer from depression and display delayed cognitive development overall. In fact, Wolfe's research found that abused or neglected children have IQs that average 20 points below those of children who were not abused or neglected.

The full impact of prenatal and early childhood **malnutrition** is difficult to measure due to its interrelationship with the other social and environmental factors mentioned in this section. For example, effects attributed to fetal malnutrition as measured by low birth weights, length, and head circumference at birth, may also be attributable to factors including fetal alcohol and drug exposure, maternal smoking, and lead poisoning. However, what is significant about these interrelationships is that each causes a decrease in nutrients to the fetus (Hingsson, Albert, Day, Dooling, Kaynbe, Morelock, Oppenheimer, & Zuckerman, 1982).

While certain effects of nutritional deprivation are reversible, some are not. Damage that is caused during the time of critical brain growth (12th –24th week) is not reversible. Consequences of malnourishment during this time result in a permanent reduction in mental functioning, apathy, and decreased levels of natural curiosity (Dobbing, 1985; Galler, 1984). Effects that occur outside the window of critical brain

gestatation are reversible and are similar to those already cited in the nutrition and learning section of this paper. With appropriate adjustments in dietary habits, reversible effects of malnutrition can be eliminated and children can hope to recover from heir deprivation.

Emotional/Mental Health and Learning

For some American children getting out of bed in the morning is a major accomplishment. Poverty, homelessness, parental divorce, violence, and drug use are but a few hazards that await them beyond the safety of the bed they sleep in. To many of these young people, even the thought of going to school and trying to concentrate on learning seems almost unimaginable. Consistent exposure to the awaiting hazards, without intervention, can lead to a number of tragic consequences: school dropout and delinquency, teenage pregnancy, substance abuse, and mental disorders (McElhaney, Russell, & Barton, 1993).

Although most people experience minor fluctuations in their mental health status, persons with chronic and persistent mental health problems can be diagnoses with a myriad of conditions identified by the American Psychiatric Association. Mental health disorders most commonly identified in school-age children include: autism, attention deficit and hyperactivity, conduct disorders, depression, and alcohol and other drug use (United States Congress Office of Technology Assessment, 1986).

Of the nearly eight million children in America who have a diagnosed mental disorder, nearly half are severely disordered. Characteristics of severely emotionally disordered children which have implications for the school and learning process include: difficulty developing and maintaining personal relationships; difficulty communicating with parents and other loved ones; difficulty learning alongside others in a classroom; dropping out of school; running away from home; feeling hopeless, helpless, and worthless; feelings of frustration; aggressive behavior; and feeling that no one in their lives understands them including parents, teachers, and friends (McElhaney, et al., 1993). While these characteristics primarily describe the severely disordered, they are also applicable to moderate, and even temporary, states of emotional or mental agitation. The only differences in the characteristics at each of the three levels- severe, moderate, temporary- lie in their degree of intensity and their length of duration.

Another emotional/mental health concern that impacts school community is the effect that the students' feel of loneliness, isolation, and depression have on their ability to succeed in school Between 1980 and 1989 the suicide rate for youth between the ages of 10 and 19 increased 30% and a 1991 survey found that as many as 1 in 12 high school students in American had attempted to take their own lives (National Commission on Children, 1993). A review of the leading causes of death among American youth (ages 12-24) found that nearly 70% of all deaths in this age groups were attributable to four *preventable* causes: motor vehicle crashes, unintentional injuries, homicides and suicides. Additionally, alcohol, other drugs and tobacco use were linked with each of the four major causes (Kolbe, 1993).

In an article that explored the health education needs for generation X, Kerr and Gascoigne (1996) described the emotional/mental make-up of this generation as needing personal contact with others, but being emotionally repressed; and possessing an intense

craving for stimulation. If this description is accurate, these characteristics, coupled with existing information regarding youth mortality and risk behaviors, indicate a need for educators to help young people to not only find ways to bridge the gaps between their need for closeness and their repressed emotions, but also to find ways to constructively fulfill their needs for stimulation.

Implications for Education in General

American education is being called upon to change, Spurred by reports such as A Nation at Risk (1983), Beyond Rhetoric (1991), and Raising Standards for American Education (1992), schools and their staffs have been reassessing their traditional ways of doing business in efforts to better prepare students to take their places as "world-class citizens". A major focus of these efforts has centered around how to improve students' achievement.

Although the interrelatedness of health and learning has been clearly documented; and although comprehensive school health education is the only content area that directly focuses on the teaching of skills and behavior necessary to prevent and/or reduce the impact of health factors that impede learning, many educators continue to resist attempts to broaden the schools' traditional responsibilities beyond those associated with intellectual development. These educators often fail to see that "whole" children come into school buildings day after day, whose intellectual needs cannot be entirely separated from their social, emotional, and physical needs. As a result of this inability to fully separate their many needs, children's academic achievement is often affected by factors that may have nothing to do with the school, the classroom, or intellectual development.

To counteract such influences, it is important that schools and their curricula respond to and address children in their "wholeness". This means expanding the definition of core learnings, and going beyond the traditional and primary emphasis on the four "intellectual" content areas: communication art, mathematics, science, and social studies. While many schools include other subjects in their courses of study, these "other courses" are generally not afforded the same level of importance, as are "the major four". If the needs of the "whole child" are to be truly met, then equal emphasis needs to be placed on subjects, such as comprehensive health education, which foster social, emotional and physical development. If this is not done, then schools will remain institutions with a one-dimensional focus on intellectual development, and educators will continue to wonder why children are not more successful learners.

A report by the national Commission on the Role of the School and the Community in Improving Adolescent Health (1990) stated the case for comprehensive health education as a core subject most succinctly when it asserted that, "Efforts to improve school performance that ignore health are ill-conceived, as are health improvement efforts that ignore education. This means that increasing academic achievement will require attending to health in the broadest sense" (p. 9).

Implications for School Health Education

Traditionally, school health programs had three components: health educations (primarily classroom instruction); health services (a school nurse, periodic screenings,

and periodic immunizations); and a healthful environment (one that was physically safe and nurturing) (Lavin, Shapiro, & Weill, 1992). While this may have been an adequate level of programming in the past, there is reason to believe it is no longer adequate in the present. As a report y the Council of Chief State School Officers (1991) pointed out, "Because poor health leads to poor learning, school health programs must go beyond simply providing a health room and a part-time nurse, or offering a semester of health education" (front cover). Unfortunately, many schools and their leaders still consider this "traditional view" as a comprehensive health program.

If the traditional view of school health is no longer adequate, then what should a comprehensive school health program include, and why? Generally, there are eight components that are recognized as critical to an effective comprehensive school health program: 1.) planned, sequential school **health instruction** at all levels K-12; 2.) school **health services**, which may include school-linked clinics or community-based systems for referrals or collaborations; 3.) a safe, nurturing, **healthful school environment**; 4.) planned, sequential school **physical education** instruction in grades K-12, that includes cognitive content, physical fitness, an skills-based learning experiences in a variety of activity areas; 5.) school **guidance and psychological services**; 6.) school **food services**; 7.) **integrated school and community health promotion efforts**; and 8.) **school site health promotion** for faculty and staff (West Virginia Task Force on School Health, 1990,p. 3; American School Health Association, 1989, p. 8).

Essentially the need for the expansion of school health programming is borne out of the expansion of health-related needs with which children come to school. As has been discussed earlier, if children come to school with health needs unmet, learning will be impaired. While it may be arguable that schools should not expect to bear the brunt of family and societal shortcomings, as the central institution that reaches the vast majority of children, it is a natural hub around which and through which collaborative and comprehensive health programming can be organized and delivered.

Although many school districts are already delivering a majority of the services associated with a comprehensive school health program, and doing so admirable, four components are particularly noteworthy of further discussion: health instruction; schoolsite health promotion for faculty and staff; health services; and integrated school and community health promotion efforts.

Health instruction is generally offered in the schools with the rationale that instruction will change students' health –related behaviors. So far, the evidence that school health instruction actually changes behavior is limited, however, it is not all together absent (health, you've got to be taught, 1988). Since research has consistently shown that health instruction does generally result in improvements in students' health-related knowledge, greater efforts need to be made to identify and implement instructional strategies and learning activities that will foster the desired, yet elusive, changes in student behaviors.

With alarming statistics that are out there regarding such consequences of youth risk behaviors such as substance abuse, teenage pregnancies, and sexually transmitted diseases, education programs that truly impact behavior are desperately needed. As Newman and Buka (1990) put it, "School health education toward a sound mind in a sound body is imperative for young people. It assists them in their role as students and also in their roles as parents themselves. What a woman does during pregnancy has an

impact on the resulting child. The message must go out to students that it matters what they do" (p. 20).

In their article Getting to Know Generation X: Health Education for the Thirteenth Generation, Kerr and Gascoigne (1996) recommend that instructional strategies and activities that might be more successful with the current adolescent population could include: hands-on experiences; student learning stations; small work groups; cooperative learning techniques; cross-age peer teaching; meaningful long-term projects, not just paper work; and problem solving activities that are real-world based and mesh with a style that is pragmatic, non-ideological, high-tech, entrepreneurial and action-oriented (p. 271). While many of these recommendations are not new, they are nonetheless methods from which health education has yet to reap behavioral change. The question, then, that needs to be answered is, "Is the fault with the methods, or is it with the implementation?"

Schoolsite health promotion for faculty and staff is an important element of a comprehensive school health program, because it encourages school staff members to pursue a healthier lifestyle which in turn improves their health status and their morale, and can also increases their support of the total school health program. Perhaps most importantly, health promotion for staff provides positive role modeling (Center for Disease Control and Prevention, 1997c). Children are reflections of the society in which they live. Positive role modeling is a critical component of their day-to-day learning experiences.

A growing trend in school **health services** is the concept of school-linked, full-service, health care facilities. To this date, most of these facilities are located in or near urban high schools; most provide primary healthcare, assessment and referral services; diagnosis and treatment of minor injuries, health education and counseling; and many prescribe, but do not dispense, contraceptives (Millstein, 1988). At least two studies, one conducted in Michigan, found that the presence of school-based health clinics had a positive impact on students' attendance, academic achievement, and/or perception of quality of life (Walters, 1996; Kane, 1995).

Finally, **integrated school and community health promotion** efforts are particularly critical to a comprehensive school health program, because of the opportunities that they provide for schools, parents, and community agencies to work together to enhance the health and well-being of students. According to Newman and Buka (1990) "For every suggested cause of learning impairment, there are successful programs of prevention. There is, however, no coordinated effort under way nationally or in individual states to deal with these problems (p. vii). Perhaps through local integrated health promotion efforts, the seeds of larger efforts can be planted. If this can be accomplished then the health status of children will begin to improve, and with it their ability to learn. As this happens, perceptions regarding the relationship between health and learning will also begin to change, and it will finally be recognized as the positive relationship that it is- a healthy lifestyle enriching the process of intellectual development to produce enhanced student learning and improved student success."

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