

# Health Literacy Roadmap Initiative: Conducting Research, Analysis, and Knowledge Development for a Health Literacy Approach for All Canadians

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## ABSTRACT

*In recent decades, efforts have been taken by governments and non-governmental organizations (NGOs) to promote healthy living in Australia, Hong Kong, the United Kingdom, the United States, and Canada. This paper will give a brief overview of selected nations that advocate for a health literacy framework in health policies, programs, and activities.*

*Umwelt und Gesundheit Online, 2011; 4, 42-51.*

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## Introduction

From childhood to adulthood, people may not necessarily have the knowledge or skills to make healthy choices, which will ultimately affect both their current and future well-being. To help people become health-literate, they need to be informed about the various health risks that they may be exposed to in their daily lives. Health education, disease prevention, and promotion must go beyond the traditional approach of direct knowledge transfer to a skill-based practice (Windsor, Clark, Body, & Goodman, 2004). This paper will give a brief overview of selected nations that advocate a health literacy framework in health policies, programs, and activities.

## The Root of the Problem

To solve health problems, we must first recognize what they are. Both local and international research has identified a range of issues that put Canadians 'at-risk'. First and foremost, international literacy surveys conducted between 1994 and 2003 have shown that a sizable percentage of Canadians scored below the international criteria of functioning literately in their daily lives. Table 1 outlines the five levels of health literacy measured by the International Adult Literacy and Skills Survey (IALSS) which is most commonly used (Murray, Rudd, Kirsch, Yamamoto, & Grenier, 2007).

One may ask "what does this mean?" Specifically, 22% of Canadians scored at level 1. These are people who have few basic reading skills or strategies for comprehending printed texts and acknowledge that they have literacy problems. In terms of level 2, 26% of Canadians have been identified as having limited reading skills. For

example, people who scored at level 2 can only comprehend printed texts that are simple, and do not recognize that their reading skills and strategies are limited. This translates into the concept that low literacy skill levels can "put [Canadians] at risk of poor health" (Murray, Hagey, Willms, Shillington, & Desjardins, 2008, p. 20). The authors stated that this situation is not likely to improve without meaningful and sustained action.

Whereas numerous countries/cities around the world are currently active in developing and initiating initiatives to improve health literacy within their jurisdictions, there are only a few countries/cities that in recent years have developed strategic plans, policy initiatives and infrastructures to address this issue. The following section discusses current efforts taken by governments and non-governmental organizations (NGOs) to promote healthy living in Australia, Hong Kong, the United Kingdom, and the United States.

## The International Stage: Health Literacy Approaches

### *The Australian Government*

In 2008, the Department of Health and Ageing (2008) announced that in its attempt to address the health challenges faced by Australians in the 21st century, the Rudd Government created a *National Primary Health Care Strategy* (NPHCS) to ensure that all Australians will get the health care they need. While the Rudd Government did not state which department/agency the NPHCS falls under, it appears to local grassroots groups that the NPHCS has the agenda that will promote health literacy.

On February 26, 2009, local grassroots groups (the Public Health Association of Australia (John

Coveney, President), the SA Health Literacy Alliance (Bob Adams, Chair), and the Australian Health Promotion Association (Jeanette Brown, President)) submitted a joint letter to urge that the NPHCS focus on health literacy as a core prerequisite for health and well-being. Coveney et al. argue vehemently that:

...health literacy is NOT just the provision[al] information, NOR is it just educating people in health. It IS the recognition that all citizens have the right to be a part of the planning and maintenance of their own health as well as the health of the population as a whole and therefore policies and incentives need to be developed to support their ability to do this (original capitalization, Coveney, Adams, & Brown, 2009, p. 4).

To achieve this, Coveney et al. (2009) urge the government to place health literacy at the centre of a primary health care-focused system, and that all stakeholders must share the responsibility of systems and services to promote health literacy in the population as a whole.

#### *Hong Kong Government*

In Hong Kong, health education, prevention, and promotion efforts are promoted through the Department of Health. During the same year of 2008, the Department of Health (2008) published a report, entitled *Promoting HEALTH in Hong Kong: A Strategic Framework for Prevention and Control of Non-Communicable Diseases*. In the report, the Department of Health acknowledged that “poor health status is disproportionately high among

people with low health literacy. To enhance population health, therefore, the health literacy of the whole population needs to be increased” (p. 21). To address this, the Department of Health refers to one of its recommendations mentioned in the Bangkok Charter (WHO, 2005) – “all sectors and settings must act to build capacity for policy development, leadership, health promotion practice, knowledge transfer and research, and health literacy” (p. 30). This forms the basis upon which health literacy is built.

The Department of Health (2008) adopted a sectoral approach, coupled with social marketing strategies, to promote health education, prevention, and promotion. In that report, it wrote: “Since its re-organisation in 2002, the Central Health Education Unit (CHEU) of [the Department of Health] has strengthened the use of social marketing strategies to inform and influence the public on options that enhance health” (p. 21). Through this dynamic and interactive process, the Department of Health (2008) highlights in the report that “the Government will have a leading role in taking the agenda forward and [mobilizing] intersectoral collaboration for health promotion and disease prevention” (chap. 7, p. 74). Ultimately, the Hong Kong government needs to invite “the whole community to consider and take appropriate actions for the prevention and control of NCD [noncommunicable diseases]” which are confronted by other countries worldwide (chap. 7, p. 74).

**Table 1. Five Levels of Health Literacy Measured by the International Adult Literacy and Skills Survey**

| Level | Health Literacy scores | Description (in terms of ability)                    | IALSS Results                         |
|-------|------------------------|--|---------------------------------------|
| 1     | 0-225                  | Reading relatively short text                        | 22% of Canadians are at level 1       |
| 2     | 226-275                | Sorting through distractions                         | 26% of Canadians are at level 2       |
| 3     | 276-325                | Integrate information from dense text                | 33% of Canadians are at level 3       |
| 4     | 326-375                | Multiple steps to find solution to abstract problems | 20% of Canadians are at levels 4 or 5 |

*The U.K. Government*

The Department of Health (2010) is designed to improve the health and well-being of people in England. The Department of Health is aware of research conducted in the U.S. which has shown that “people with low health literacy have less understanding about their health, poorer health, and higher mortality than people with adequate health literacy” (as cited in Health Literacy Group, 2010a, para. 1). To address this, the Department funds the Health Literacy Group which is “committed to working to provide evidence [for] understanding more about the impact of low [health literacy] and ways to reduce that impact on peoples’ health” in England (as cited in Health Literacy Group, 2010b, para. 3).

The Health Literacy Group (2010a) also takes a sectoral approach where it builds a network of people who are “interested in building the evidence base for health literacy and its impact on people and their lives, and in supporting national policy to reduce inequalities” (para. 1). The Group works together with diverse sectors and settings “to discuss and develop new research ideas, run research projects, write reports and research papers, and support implementation of research findings into practice” for health literacy in England (para. 2).

*The U.S. Government*

Previously, the promotion of health literacy falls under one of the 18 divisions, called the Office of Public Health and Science (OPHS). On August 31, 2010, the OPHS was renamed as the Office of the Assistant Secretary for Health (ASH), which has 12 public health offices and the Commissioned Corps. Within ASH, there is the Office of Disease

Prevention and Health Promotion (ODPHP) which “provides leadership, coordination and policy development for public health and prevention activities” (Department of Health and Human Services, 2010, para. 1). The U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion (2010) recently published a report, entitled *National Action Plan to Improve Health Literacy*, which “seeks to engage organizations, professionals, policymakers, communities, individuals, and families in a linked, multisector effort to improve health literacy” (p. 1).

In summary, this section is integral for the following discussion as it illustrates how various governments raise the awareness of health literacy. The changes made to their health policies and services by the governments reflect their understanding that they have the capacity to affect social change within the domain of health education, disease prevention, and promotion.

**Illustration: Applying a Health Literacy Framework to Diabetes**

Health literacy is not just about the individuals, but also about the system and context which people come to navigate and practice in identifying and satisfying their health needs. While Vamos (2010) devised a health literacy framework, which conceptualizes health literacy as a dynamic scaffolding (Appendix A), this paper will focus on the four health literacy domains and their associated indicators and skill cues pertaining to the example of diabetes as presented in Table 2.

**Table 2: Conceptual Level of Health Literacy**

| Domain      | Domain Indicator Example(s)  | Skill Cue Example(s)   |
|-------------|--|--|
| Access      | <ul style="list-style-type: none"> <li>Retrieve valid and credible health information pertaining to diabetes</li> </ul>                                      | <ul style="list-style-type: none"> <li>Identify credible and current sources regarding symptoms relevant to diabetes</li> </ul>  |
| Comprehend  | <ul style="list-style-type: none"> <li>Identify health behaviours (e.g., understand how diabetes works in one’s body)</li> </ul>                             | <ul style="list-style-type: none"> <li>Demonstrate ability to practice protective health behaviours in relation to diabetes</li> </ul>                                   |
| Evaluate    | <ul style="list-style-type: none"> <li>Evaluate influences on health (e.g., how to control one’s craving for sugary foods)</li> </ul>                        | <ul style="list-style-type: none"> <li>Identify and analyze external factors such as media, culture, technology, social, etc.</li> </ul>                                 |
| Communicate | <ul style="list-style-type: none"> <li>Promote health-related positions (e.g., how to inform others who like to eat sugary foods when dining out)</li> </ul> | <ul style="list-style-type: none"> <li>Support/encourage others in making healthy choices (e.g., inform others how to become more aware of what they consume)</li> </ul> |

To further illustrate the domain indicators above, the following section offers a discussion on the application of the four domains to both users and

practitioners. Specifically, the discussion will focus on practitioners' support to users to improve their health.

***Domain Indicator: Access***

| Users ( <b>Example</b> )   | Practitioners ( <b>Example</b> )  |
|--|---|
| <ul style="list-style-type: none"> <li>Explore health-promoting products, resources, and services that are available in the home, school, workplace, and community in order to meet specific health needs</li> </ul> | <ul style="list-style-type: none"> <li>Lack of health products, resources, and services, coupled with stressors associated with a complex health care system, can impinge on users who seek health information (e.g., types of diabetes)</li> </ul> |

Practitioners need to know a broad spectrum of methods to help inform users about how to *access* the health products, resources, and services. If users do not access health information relevant to meet their health needs, it is unlikely that they will act on the

health information provided by their practitioners. Hence, a health care system must take into account empowering people to access and use health information so that it will assist users in taking more control over their health.

***Domain Indicator: Comprehend***

| Users ( <b>Example</b> )   | Practitioners ( <b>Example</b> )   |
|--|--|
| <ul style="list-style-type: none"> <li>Demonstrate fundamental health concepts (e.g., know the relationships drawn among intake of basic foods and risk factors relevant to diabetes)</li> </ul> | <ul style="list-style-type: none"> <li>Comprehension health products, resources, and services relevant to a user's diabetes is a didactic process</li> </ul> |

Comprehending health products, resources, and services relevant to a user's diabetes can be a challenging task. As Maximus (2010) pointed out, "almost half of the [North] American public...has difficulty understanding and using information above the eighth-grade reading level. However, most health-related materials are written at a tenth-

grade level or even higher" (para. 1). Therefore, it is important to involve policy-makers, practitioners, and service providers in adopting culturally appropriate and relevant language to help users to encode, process, and interpret their health information and needs (diabetes in this case).

***Domain Indicator: Evaluate***

| Users ( <b>Example</b> )   | Practitioners ( <b>Example</b> )   |
|--|--|
| <ul style="list-style-type: none"> <li>Show appraisal through the decision-making process (e.g., identify healthy decision to be made, consider options and consequences, and evaluate and reflect upon actions pertaining to their diabetes)</li> </ul> | <ul style="list-style-type: none"> <li>Show cultural sensitivity when evaluating users' health needs, knowledge, and skills</li> </ul> |

Both practitioners and health service providers must go beyond thinking that in order to help users

they must adhere to a set of medical instructions and apply them accordingly. It is believed that biological,

psychological, social, and cultural factors should be at the core of the interpretation of users' health

needs, knowledge, and skills.

**Domain Indicator: Communicate**

| Users (Example)  | Practitioners (Example)   |
|--|---|
| <ul style="list-style-type: none"> <li>Communication (either verbally or non-verbally) to individuals and groups pertaining to diabetes</li> </ul> | <ul style="list-style-type: none"> <li>Recognize that diabetes is not a static 'text' from which users can simply memorize a set of 'medical/clinical instructions' and apply it accordingly</li> </ul> |

To avoid miscommunication of what users need, it is paramount for practitioners to clearly communicate their understanding of users' health needs and situations. For example, practitioners must be conscious of users' communication clues that they may not understand advice due to their limited health literacy (Rootman & Gordon-El-Bihbey, 2008).

In summary, while literacy emphasizes a generic set of technical skills acquired by people, health literacy emphasizes the social dimensions of accessing, comprehending, evaluating, and communicating users' health needs (Vamos, 2010).

**Skill Cues: Eight Critical Skills for Health Literacy**

Limited health literacy, common in patients with diabetes, has been associated with worse diabetes outcomes (Kim, Love, Quistberg, & Shea, 2004). While patients with limited health literacy have worse diabetes knowledge, knowledge does not necessarily predict outcomes. The following list of skill cues represent a guide to assist both users and practitioners in developing individual and professional skills/strategies that are necessary to enhance health literacy (as mentioned in the preceding section).

**Skill #1: Accessing Health Information and Disease Prevention Methods to Enhance Health**

| Users (Example)   | Practitioners (Example)   |
|---|---|
| <ul style="list-style-type: none"> <li>Develop skills to access plain language materials and visual symbols in communications when addressing diabetes</li> </ul> | <ul style="list-style-type: none"> <li>Recognize that there are multiple sources and depths of health information relevant to diabetes</li> </ul> |

The information that practitioners provide must be appropriate to users' proficiency levels and also be culturally relevant. International research on literacy has affirmed the relationship between users' reading proficiency and health outcomes – most

noticeably in the area of accessing health-related information embedded in a complex environment such as the health care system (Rudd, Anderson, Oppenheimer, & Nath, 2007).

**Skill #2: Comprehension of Health Information and Disease Prevention Methods to Enhance Health**

| Users (Example)   | Practitioners (Example)   |
|---|---|
| <ul style="list-style-type: none"> <li>Acquire basic reading and numerical tasks</li> </ul> | <ul style="list-style-type: none"> <li>Describe various ways to comprehend health information (e.g., diabetes)</li> </ul> |

Practitioners must recognize that even when users are able to access health information, they are

confronted with other challenges, such as complicated print material. To avoid this, physicians

may adopt a “Teach-Back” technique as a means to help patients to comprehend health information (e.g., tell me how to use and take insulin). Hence, practitioners must keep in mind the degree to which

users have the capacity to access and comprehend basic health products, resources, and services pertaining to diabetes.

***Skill #3: Analyze Socio-Historical and Socio-Cultural Factors’ Effects on Health Information and Disease Prevention Methods of Enhancing Health***

| Users (Example)  | Practitioners (Example)   |
|--|---|
| <ul style="list-style-type: none"> <li>Analyze different self-care activities (e.g., diet, self-glucose monitoring, exercise, and medication adherence)</li> </ul> | <ul style="list-style-type: none"> <li>Analyze the relationship between chronic conditions and personal health</li> </ul> |

Creating a safe “space” for users to analyze the potential severity of diabetes is important. Practitioners must keep in mind that there is a strong connection between low levels of literacy and shame (Parikh, Parker, Nurss, Baker, & Williams, 1996). For example, Parikh et al. (1996) explored the notion of shame through patients who have low levels of health literacy living in an inner city in the U.S.:

Shame is very personal and often times unspoken; it is a very complex and painful

emotion [felt by] individuals who feel inadequate and exposed. Because shame is so painful, its source is often denied or disavowed. [This] leads to a profound secrecy about shame and the perceived defect giving rise to it. (p. 34)

Practitioners need to learn how to work with users to analyze health-related influences without making them feel shamed due to their low level of health literacy.

***Skill #4: Communication of Health Information and Disease Prevention to Health Professionals***

| Users (Example)   | Practitioners (Example)   |
|---|---|
| <ul style="list-style-type: none"> <li>Demonstrate how to ask for assistance to enhance their health</li> </ul> | <ul style="list-style-type: none"> <li>Communicate healthy behaviours through collaboration, negotiation, and refusal skills</li> </ul> |

As Woolf et al. (2005) stated, both the health care system and practitioners may not be “equipped to inform [people] in a manner that is timely, easily understood, and jargon-free, nor [do they]

encourage people to consider consequences, to ask questions, to clarify values, [or] to express preferences” (p. 295).

***Skill #5: Using Health Information and Disease Prevention Methods to Make Health Decisions***

| Users (Example)  | Practitioners (Example)   |
|--|---|
| <ul style="list-style-type: none"> <li>Use health information to make informed choices with living, learning, playing and working</li> </ul> | <ul style="list-style-type: none"> <li>Use evidence-based health information without harming users</li> </ul> |

Practitioners must work with users to develop a decision-making process in using health-

related information and apply it to their long-term personal health goals.

***Skill #6: Set Goals in Using New Health Information and Disease Prevention Methods to Enhance Health***

| Users (Example)  | Practitioners (Example)  |
|--|--|
| <ul style="list-style-type: none"> <li>• Make health-related changes based on new-found health information and disease prevention methods</li> </ul> | <ul style="list-style-type: none"> <li>• Take the initiative in goal-setting, and work on whatever health issues users may have</li> </ul> |

When practitioners work with users to identify goals, especially small step-by-step goals, users may not feel as overwhelmed by what seems to be an insurmountable task in using new health

information and disease prevention methods to make changes.

***Skill #7: Practice New Self-Care Behaviours to Reduce Health Risks***

| Users (Example)  | Practitioners (Example)  |
|--|--|
| <ul style="list-style-type: none"> <li>• Demonstrate health literacy and behaviours to maintain and improve personal health</li> </ul> | <ul style="list-style-type: none"> <li>• Model how users can take responsibility for enhancing health</li> </ul> |

Practitioners must keep in mind that on the surface, users may have changed their behaviour (e.g., sugar intake), but underneath the surface, their thoughts and feelings regarding their behaviour

(e.g., craving for sugary foods) may not have changed. Behavioural change occurs when users accept and integrate their new thoughts, feelings, and actions toward the new self-care management.

***Skills #8: Advocate for the Importance of Health Literacy at Home, School, Work, and in the Local Community***

| Users (Example)   | Practitioners (Example)  |
|---|--|
| <ul style="list-style-type: none"> <li>• Demonstrate how to influence and support others to make positive health goals and choices</li> </ul> | <ul style="list-style-type: none"> <li>• State a health-enhancing position on diabetes and support it with accurate information</li> </ul> |

Abel (2007) noted that “[h]igh or low health literacy improves or hampers not only the health choices of individuals and their opportunities for certain health-relevant behaviours, but it also promotes shared perceptions of health, attitudes and orientations often typical for different social groups” (p. 60). Once users believe they can make health-related changes, they can learn how to gain new knowledge and skills and develop a positive attitude

toward making positive lifestyle changes in the future.

**Summary**

As Vamos (2010) state, health literacy is a concept, a process, an outcome, and a public health goal. To achieve this, we need to find an effective means to enable Canadians to incorporate health literacy into their daily lives. Health literacy cannot

*Umwelt und Gesundheit Online*, 2011; 4, 18-29.  
<http://www.electronic-health-journal.com/>

solve all the health-related challenges; however, it is a step in the right direction if Canada wants to effectively manage its health care system and allocate more resources for strengthening health education, disease prevention and promotion in the long run.

## References

Abel, T. (2007). Cultural capital in health promotion. In D.V. McQueen, & I. Kickbusch (eds.), *Health and modernity: The role of theory in health promotion* (pp. 43-73). New York, NY: Springer.

Coveney, J., Adams, B., & Brown, J. (2009). *Joint submission to the national primary health care strategy discussion paper*. Retrieved July 22, 2011 from: <http://www.phaa.net.au/documents/PHCStrategySubmission27Feb2009F.pdf>.

Department of Health. (2010). *About the department*. Retrieved July 22, 2011 from: [http://www.dh.gov.uk/en/Aboutus/HowDHworks/DH\\_4106148](http://www.dh.gov.uk/en/Aboutus/HowDHworks/DH_4106148).

Department of Health. (2008). *Promoting health in Hong Kong: a strategic framework for prevention and control of non-communicable diseases*. Retrieved July 22, 2011 from: [http://www.dh.gov.hk/english/pub\\_rec/pub\\_rec\\_ar/pdf/ncd/ENG%20whole%20DOC%2016-10-08.pdf](http://www.dh.gov.hk/english/pub_rec/pub_rec_ar/pdf/ncd/ENG%20whole%20DOC%2016-10-08.pdf).

Department of Health and Ageing. (2008). *Primary health strategy*. Retrieved July 22, 2011 from: <http://www.health.gov.au/internet/main/publishing.nsf/Content/Primary+Health+Strategy-1>.

Health Literacy Group. (2010a). *Welcome to the health literacy group website*. Retrieved July 22, 2011 from: <http://www.healthliteracy.org.uk/>.

Health Literacy Group. (2010b). *Why is health literacy important?* Retrieved July 22, 2011 from: <http://www.healthliteracy.org.uk/>.

Kim, S., Love, F., Quistberg, D.A., & Shea, J.A. (2004). Association of health literacy with self-management behavior in patients with diabetes. *Diabetes Care*, 27(12), 2980-2982.

Maximus. (2010). *Communicating health information in plain language*. Retrieved July 22, 2011 from: <http://www.maximus.com/services/health/Health-Literacy/Writing-design-web-design>.

Murray, T.S., Hagey, J., Willms, D. Shillington, R., & Desjardins, R. (2008). *Health literacy in Canada: a healthy understanding*. Retrieved July 22, 2011 from: <http://www.ccl-cca.ca/ccl/Reports/HealthLiteracy.html>.

Murray, T. S., Rudd, R., Kirsch, I., Yamamoto, K., & Grenier, S. (2007). *Health literacy in Canada: initial results from the International Adult Literacy and Skills Survey*. Retrieved July 22, 2011 from: <http://www.ccl-cca.ca/pdfs/HealthLiteracy/HealthLiteracyinCanada.pdf>.

Parikh, N.S., Parker, R.M., Nurss, J.R., Baker, D.W., & Williams, M.V. (1996). Shame and health literacy: the unspoken connection. *Patient Education and Counselling*, 27(1), 33-9.

Rootman, I., & Gordon-El-Bihbety, D. (2008). *A vision for a health literate Canada: report of the expert panel on health literacy*. Retrieved July 22, 2011 from: [http://www.douglas.bc.ca/\\_shared/assets/Executive\\_Summary\\_A\\_Vision\\_for\\_Health\\_Literacy\\_revised56745.pdf](http://www.douglas.bc.ca/_shared/assets/Executive_Summary_A_Vision_for_Health_Literacy_revised56745.pdf), p. 4.

Rudd, R. E., Anderson, J. E., Oppenheimer, S., & Nath, C. (2007). Health literacy: an update of medical and public health literature. In J.P. Comings, B. Garner, & C. Smith (eds.), *Review of adult learning and literacy* (pp. 175-203). Mahwah, N. J.: Lawrence Erlbaum Associates.

U.S. Department of Health and Human Services. (2010). *Office of the assistant secretary for health*. Retrieved July 22, 2011 from: <http://www.hhs.gov/ophs/>.

U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. (2010). *National action plan to improve health literacy*. Retrieved July 22, 2011 from: [http://www.health.gov/communication/HLActionPlan/pdf/Health\\_Literacy\\_Action\\_Plan.pdf](http://www.health.gov/communication/HLActionPlan/pdf/Health_Literacy_Action_Plan.pdf).

Vamos, S. (2010). *A health literacy framework*. PowerPoint delivered at the First CCDPC Health Literacy Think Tank, Vancouver, BC.

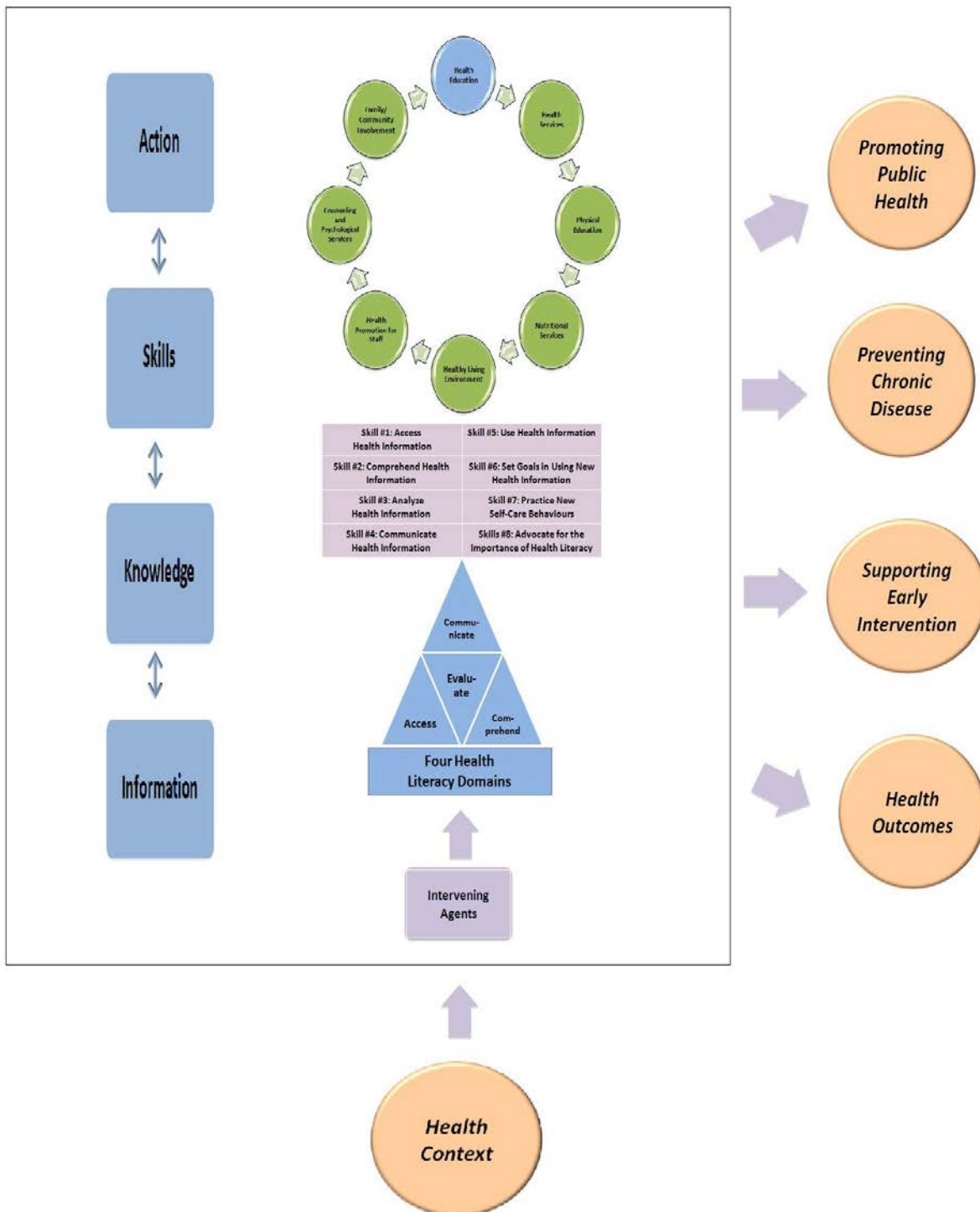
Windsor, R., Clark, N., Body, N.R., & Goodman, R.M. (2004). *Evaluation of health promotion, health education, and disease prevention programs* (3rd ed.). Boston: McGraw-Hill.

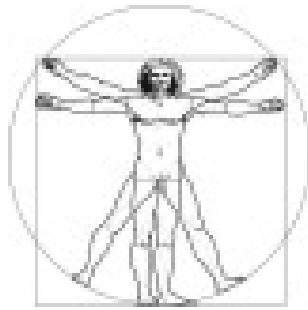
Woolf, S.H., Chan, E.C.Y., Harris, R., Sheridan, S.L., Braddock III, C.H., Kaplan, R.M. et al. (2005). Promoting informed choice: transforming health care to dispense knowledge for decision making. *Annals of Internal Medicine*, 143(4), 293-300.

World Health Organization. (2005). *Global health promotion scaling up for 2015: a brief review of major impacts and developments over the past 20 years and challenges for 2015*. Retrieved July 22, 2011 from: <http://www.docstoc.com/docs/54863023/hpr-conference-background>.



Appendix A. The Relationship among Health Contexts, Health Literacy, and Health Outcomes





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