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## **Final Draft**

# **HEALTH LITERACY AS A LEARNING OUTCOME IN SCHOOLS**

## **Abstract**

### **Purpose**

To define health literacy as a learning outcome in schools, and to describe the learning conditions that are relevant for targeting health literacy.

### **Design/methodology/approach**

This paper draws on theoretical and empirical educational literature, and also the experiences of the authors.

### **Findings**

Health literacy is defined as consisting of five core components: (1) theoretical knowledge, (2) practical knowledge, (3) critical thinking, (4) self-awareness, and (5) citizenship. The first three components are rather similar to the commonly-accepted health literacy concept, but the definition given in this paper expands the concept via two additional – but essential – components. It is emphasized that when one is aiming to develop students' internal capacity to construct their own meanings regarding health topics, these two additional components are called for. We argue that one of the main aims of health teaching in schools should be to foster students' ability to define their own beliefs, identity and social relations. Moreover, if we wish students to become responsible citizens, acting in an ethically responsible way, competencies such as ethical reflection skills should be developed in schools. We also highlight the fact that the development of certain health literacy components calls for particular kinds of learning conditions.

### **Originality/value**

The paper identifies the core components of health literacy as a learning outcome and gives practical examples of means to achieve a particular target.

## **INTRODUCTION**

During the last decade there has been a good deal of interest in health literacy as a public health goal. Though health literacy has usually been approached within a health care context (e.g. Levin-Zamir and Peterburg, 2001; Mancuso, 2009; Parker, 2000), attention has also been given to the school as a context for developing students' health literacy (e.g. Begoray *et al.*, 2009; Borzekowski, 2009; Deal and Hodges, n. d.; Schmidt *et al.*, 2010; St Leger, 2001; Wu *et al.*, 2010). Indeed, it has been argued that the education system – along with the health system and culture and society – is a central arena for interventions aimed at enhancing health literacy (Institute of Medicine, 2004, p. 32). Kickbusch (2008) emphasizes the role of the school in equipping pupils with the kinds of knowledge that will empower them to make health-enhancing decisions regarding their own health. This has particular validity in view of the fact that the school as an educational institution can reach children at their most impressionable stages (World Health Organization, 1999, p. 5). In the best case, the development of health literacy among school-aged children from diverse backgrounds may inhibit the emergence of health inequalities. Both a whole-school approach to health promotion and subject-specific education in health matters may well serve this purpose.

Health literacy as a concept has been defined in various ways. Frequently quoted definitions include the one given by Ratzan and Parker (2000), and the definition of the World Health Organization, given by Nutbeam (1998). Ratzan and Parker (2000) define health literacy as “the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions (p. vi)”. Writing in the WHO glossary, Nutbeam (1998), takes a broader perspective: “Health literacy implies the achievement of a level of knowledge, personal skills and confidence to take action to improve personal and community health by changing personal lifestyles and living conditions. Thus, health literacy means more than being able to read pamphlets and make appointments” (p. 10).

There are many arguments favouring a broader definition of health literacy (see Abel, 2008; Nutbeam, 2008; Stewart *et al.*, 2008; Zarcadoolas *et al.*, 2005), although critical voices have also

been raised (Tones, 2002). The need to extend the conception comes into special focus when we move from health care or clinical settings to health promotion settings, since – as noted by Abel (2008) – the health promotion field emphasizes broader perspectives, such as general living conditions and individuals’ possibilities to live in a healthy way. Abel (2007) is at one with Nutbeam (1998, 2008) in highlighting the intertwining of health literacy with empowerment. He argues that in enhancing people’s health literacy, one should equip them with the knowledge and skills that may help them to modify conditions affecting their health chances (Abel, 2007). Nutbeam (2008) calls this empowering approach an *asset model*; by contrast, a *risk model* takes as its focus educating people to comply with recommended clinical care.

In defining health literacy, Nutbeam (2000) has proposed a three-level hierarchical structure for health literacy, moving from *basic/functional* literacy (sufficient skills to function effectively in everyday situations) towards *communicative/interactive* literacy (more advanced cognitive and literacy skills, needed to apply information in changing situations and to participate in daily practices), and *critical literacy* (the most advanced-level cognitive skills, for critical analysis of information and the use of it to enhance health). Defining different components of health literacy as having differing degrees of complexity has value from an educational point of view; yet the actual definition of the factors, which might constitute health literacy, remains more or less implicit (see also Tones, 2002). If we aim to develop individuals’ health literacy towards a more advanced level, we need to be clear about what we really intend to develop. Only then will we be able to plan purposeful learning experiences targeted at improving individuals’ health literacy. In current literature there seem to be mixed opinions about what the components of health literacy actually are (note here that we use the term “component” to describe a dimension of health literacy which may involve different kinds of knowledge, skills, capabilities, competencies, etc.). The following components were found in a search of the literature:

- health literate knowledge (Nutbeam, 2000; von Wagner *et al.* 2009);
- personal knowledge and capability (Nutbeam, 2008);
- personal skills (Nutbeam, 2000; Mancuso, 2009);
- social skills (Mancuso, 2009; Nutbeam, 1998, 2008; Nutbeam and Kickbusch, 2000);
- cognitive skills (Mancuso, 2009; Nutbeam, 1998, 2008; Nutbeam and Kickbusch, 2000; von Wagner *et al.*, 2009);
- critical thinking skills (Mancuso, 2009; see also Abel, 2007);
- media literacy skills (Manganello, 2008; Zarcadoolas *et al.* 2005);
- problem-solving skills (Mancuso, 2009);
- the ability to gain access to information and knowledge (Abel, 2007; Kickbusch, 2001; Nutbeam, 2008);

- motivation (Nutbeam, 2000);
- self-efficacy (Nutbeam, 2000);
- understanding and personalizing health information one has obtained (Nutbeam, 2008);
- appropriately applying relevant health information for personal benefit (Nutbeam, 2008);
- understanding the conditions that determine health and knowledge and how to change them (Abel, 2007).

The list covers some of the (rather differing) suggestions as to the factors that constitute health literacy. It may well be the case that some of the factors refer to the same phenomena; however, due to a lack of explicitness in defining the terms, the correspondences/distinctions cannot be identified. To give an example, whereas Mancuso (2009) highlights the *separate* role of critical thinking, Nutbeam (2000, 2008) *includes* it within (more advanced) cognitive skills. Moreover, there are differences regarding what is regarded as a *component* of health literacy and what may follow on from or be associated with health literacy. Thus, Nutbeam includes motivation and self-efficacy as constituent parts of health literacy, whereas von Wagner and his colleagues (2009) see these aspects as merely associated with health literacy.

A thorough consideration of the constituents of health literacy from the perspective of a school student requires one to take into account the role of the school in equipping students to meet the demands of future society. Thus, in defining health literacy we should try to think ahead, to the world that the students will be part of, and to the demands that may in future be made on their overall competence. Wagner (2008) has argued for the teaching of “survival skills” in preparation for 21<sup>st</sup> century citizenship. Such skills are said by Wagner to include critical thinking and problem solving, accessing and analysing information, collaboration, curiosity, imagination, and initiative. However, we also need to see students as citizens in their own right, within their *current* surroundings (see Hill *et al.*, 2004; see also Barrow, 2010). Hence, more immediate expectations and demands should be taken into consideration as well.

To sum up, if we aim to develop and/or assess health literacy within a certain context and within a certain population, we have to be explicit not only in the overall definition of health literacy, but also in differentiating and describing the constituent parts of it (see Abel, 2008). We believe that there is at present a lack of such a definition of health literacy as a learning outcome in schools, and this paper aims to fill this gap. In highlighting the learning aspect, we wish to emphasize the kind of learning that may bring about health literacy. Moreover, the school aspect emphasizes that in this

paper our focus is on health literacy from the point of view of students in basic education or upper secondary school rather than students in other educational institutions.

Defining health literacy as a learning outcome, along with its constituent parts, is important for three reasons: (1) the school is first and foremost an educational institution with educational learning objectives and expected learning outcomes; (2) an explicit description of the core components of health literacy will enable teachers to create learning objectives and to plan conditions that will support the development of health literacy; this will (3) make it easier to assess whether these objectives have been reached or not. Thus, in this paper we shall first give a definition of health literacy as a learning outcome, and secondly, we shall focus on the kinds of learning conditions that are needed in order to develop health literacy in schools. Here we are referring to the aspects that a teacher should seek to put in place when planning teaching-learning situations aimed at targeting health literacy – aspects involving in particular the teacher's role, the students' role, and the nature of knowledge.

## **CONCEPTUALIZING THE HEALTH LITERACY CONCEPT IN THE SCHOOL CONTEXT**

With this background in mind, we wish to add to current definitions of health literacy, making them more explicit, and emphasizing the importance of students being able to construct their own views on health matters (see Nutbeam, 2008) – meaning that they should be able to reflect on health matters from their own perspective, while understanding also the perspectives of others. This requires that students can validate themselves as knowers with regard to their own lives; they become able to reflect on the importance of knowledge in their own lives and to create their personal meanings through such reflection. Moreover, they should be conscious not only about themselves but also about the others, and the world beyond. In the health context, it is only through such awareness that students will be able to take responsible actions to promote their own health and that of others.

Such considerations lead us to adopt the *asset* approach in defining health literacy (see Nutbeam, 2008). We thus define health literacy in the following terms: (1) Health literacy comprises *a broad range of knowledge and competencies that people seek to encompass, evaluate, construct and use.*

(2) Through health literacy competencies people become able to *understand themselves, others and the world in a way that will enable them to make sound health decisions, and to work on and change the factors that constitute their own and others' health chances* (cf. Abel, 2007; Zarcadoolas *et al.*, 2005). This two-fold definition implies that we should become literate about ourselves and the broader context we are part of. Thus, we propose that as a learning outcome to be addressed by schools, health literacy consists of five core components. These are (1) theoretical knowledge, (2) practical knowledge, (3) critical thinking, (4) self-awareness, and (5) citizenship. The components partly overlap, and thus the separation of the components is somewhat artificial. However, through the separation we aim to highlight the main focus of each of the components and the critical differences between them. Generally speaking, the components do not involve single skills, but rather broader competence fields. Also note here that we see basic reading, writing, and speech skills as vital to the development of students' health literacy (see also Borzekowski, 2009; Mancuso, 2009; Nutbeam, 2000; Parker, 2000; von Wagner *et al.*, 2009; Zarcadoolas *et al.*, 2005). However, we do not focus on these in this paper.

**Theoretical knowledge** can be regarded as all-round education on health matters, and it is often described as something explicit, universal, declarative, factual, and formal (see Bereiter and Scardamalia, 1993, p. 45; Tynjälä, 2008a, 2008b). It includes principles, theories, and conceptual models of various health phenomena, and thus it may further be described as abstract (see Bereiter and Scardamalia 1993, p. 44; Tynjälä 2008a; 2008b). If students in schools are able to gain theoretical knowledge, it may enable them to gain a deeper understanding of different health issues and to create links between them. Theoretical knowledge alone is rarely enough to make people take health-promoting actions or to change their health habits, but it does form a necessary basis for other core components of health literacy. Bereiter and Scardamalia (1993, pp. 63–65) argue that formal knowledge is needed to deal with issues of truth and justification, for communication and learning, and for the construction of informal knowledge and skills. Lower level thinking skills such as recalling (e.g. listing, describing or naming) are implicitly acknowledged within this knowledge category because knowledge and experiencing that knowledge cannot be separated.

**Practical knowledge**, also called *procedural knowledge* or skills (Bereiter and Scardamalia, 1993, p. 45; Tynjälä 2008a), is the second core component of health literacy. It includes the basic health-related skills that students should learn in order to behave in a health-promoting way. Compared to theoretical knowledge, which can be seen as decontextualized and thus applicable to many or even to all situations, practical knowledge is often described as usable only in specific situations

(McCormick, 1999). Practical knowledge covers, for example, the ability to take care of one's hygiene, follow safety traffic regulations, search for and navigate health services, seek out health knowledge, give first aid, and clearly communicate one's ideas and thoughts to other people. As the examples show, practical knowledge is experiential and often linked to daily practices. When rooted in people's experiences these skills may turn into daily routines that cannot always be explicitly articulated; the routines often involve tacit, intuitive, or implicit knowledge that is difficult to express verbally (see Tynjälä, 2008a). Many cultural ways of acting concern things that people do not realize they are doing – they have learned to act in certain ways through socialization. Practical knowledge can be understood as a competency or capability to do something, to put theoretical knowledge into practice. Thus, factual knowledge on health issues enables one to gain practical knowledge, and in turn, practical knowledge may help one to apply factual, universal knowledge in daily situations, thus making it concrete and understandable.

Individual **critical thinking**, the third core component of health literacy, covers the aspects of a curious and investigative attitude towards the world, including a bent towards understanding health issues in a deeper way and perhaps, to create something new. Critical thinking skills are important for students if they are to participate as active citizens in society (ten Dam and Volman, 2004). Critical thinking relates also to the ability to distinguish the conditions that promote health from those that do the opposite, since in health promotion practice, as Abel (2007) notes, "health literacy means to understand the conditions that determine health and to know how to change them". In addition, the nature of health knowledge creates its own demands for students. Health knowledge is dynamic and thus it changes all the time. Even everyday scientific research brings new insights into health discussions, and tests current understanding on health matters. This changing understanding can be looked at from various perspectives, not only because of the multidimensional nature of health, but also because health is understood differently in different contexts. Moreover, students get health messages from numerous sources; hence they may gain a fragmented picture of health issues unless they are able to critically create links between diverse pieces of information.

In schools, students should learn to critically evaluate sources of knowledge, looking at who is arguing and for what purposes, what means have been used in trying to convince the audience, what ideology the source represents, and how the message relates to what can be regarded as scientific fact. This kind of thinking is crucial, since health as a phenomenon has good market value, and there are interest groups with their own reasons to use special pleading and perhaps disseminate unreliable information. Students face situations where they need to ask themselves whether a given

source is providing the whole picture or telling only part of the truth. Only through critical thinking will students be able to evaluate the certainty of the knowledge and the underlying assumptions and values, and to differentiate facts from opinions. They may then be able to approach the knowledge from various angles, perhaps looking at different health dimensions or applying ecological systems theory (Bronfenbrenner, 1979). Moreover, critical thinking will allow them to categorize pieces of information based on differences and similarities, to work out causal relationships, to set out firm arguments, conclusions and generalizations, and ultimately, to make sound health decisions (cf. Biggs, 1996; Biggs and Collis, 1982, pp. 17–28; Ohlsson, 1996). Thus, we may argue that critical thinking enables students to deal with large amounts of knowledge and to have power over that knowledge. But to think critically, students need theoretical knowledge. It is this knowledge that will allow them to look at health messages from different perspectives and to notice when some important aspect has been neglected. In addition, students need certain kinds of practical knowledge, as in the case of searching for valid sources or original references.

The fourth core component of health literacy, **self-awareness**, involves the ability to self-reflect. It covers the capability to inquire and evaluate one's thoughts, feelings and behaviour (Grant *et al.*, 2002). In the context of health literacy we wish to distinguish between the self-reflection that focuses on the self in general, and the self-reflection that focuses on the self as a learner.

Self-awareness as the ability to reflect on oneself in general covers being able to become conscious of one's own feelings, needs, motives, values, attitudes, and experiences (cf. Lund, 2009), plus their relation to one's own ways of behaving in a health-enhancing way. In addition, it involves the ability to become aware of one's strengths and weaknesses, and to recognize the physical and psychological messages that the body is sending. Moreover, self-awareness requires being able to link together and describe health topics from one's own personal perspectives, and to examine reasons for one's ways of behaving and thinking in a particular way. This form of health literacy makes possible personal meaning-making in health issues. In addition, reflection may help students to make their implicit routines explicit, that is, they may become conscious of something that they have not realized before. They may, for instance, become able to separate their own hopes and wishes from that of their parents or friends, and through that strengthen their own internal voice (cf. Baxter Magolda, 2001, p. 94). If the students succeed in balancing the expectations of others with their own aspirations, or as Baxter Magolda (2001) puts it "letting go of external control and beginning to replace it with one's internal voice" (p. 94), they will become able to think critically

and define their own values. Trusting one's own internal voice is needed in planning learning goals for oneself and in monitoring the process (metacognition, see below).

Self-awareness as the ability to reflect on the self as a learner refers to *metacognitive knowledge*, also called self-regulatory knowledge (Bereiter and Scardamalia, 1993); this involves knowledge of how to set about attaining goals. After students have recognized (for example) some health skills that they wish to develop, or certain personal ways of behaving that they wish to change, metacognitive knowledge enables them to set meaningful and manageable goals, to create and initiate purposeful strategies for attaining the goals, to evaluate and monitor their progress, to reconstruct their physical and social surroundings to meet the needs of the goals, to manage the time needed, to attribute causation, and to adopt future strategies (see Zimmermann, 2002; see also Greeno *et al.*, 1999). Thus, this knowledge enables students to recognize not only what they know and what they do not know about the object of learning, but also how they can reach the learning objective they have set themselves. Consequently, metacognitive knowledge is an important part of life-long learning skills (Zimmerman, 2002), an element which, it has been argued, helps students “to react in an active and flexible way in a diversity of social situations” (ten Dam and Volman, 2004, p. 376). Moreover, metacognition has been found to be associated with a sense of self-efficacy among students; indeed, Coutinho and Neuman (2008) found that self-efficacy was the strongest predictor of metacognition. This would imply that self-efficacy will be an important factor in improving students' health literacy, at least with regard to self-awareness as a core component.

**Citizenship** – the ability to act in an ethically-responsible way and take social responsibility – is the fifth core component of health literacy. This highlights the importance of students being able to understand their rights and responsibilities, and also to be aware of the effects of their thoughts and actions on other people and the world at large. The point is that students should be able to consider health matters beyond their own perspective: to think of what *other people* or *we* (as a group or as a society) regard as important, what could be done to improve *their* or *our* health and well-being. In other words, students should become health literate about themselves in relation to others, understanding the perspectives of others and of the collective. All this relates to the ethical viewpoint of social responsibility which, as Secchi (2009) argues, allows students to belong to a social world and “to understand what is right and wrong for them and society” (Secchi, 2009, p. 569).

The kind of awareness described above is important for students if they are to participate in health-promoting actions at different levels, that is, moving from individual behaviour changes towards wider changes such as organizational changes (Simovska and Sheehan, 2000). Thus, this component is identified in the argument that health literacy is a central resource for people in promoting community-level health (Abel, 2007) and in advocating both personal and community health (Deal and Hodges, n.d.).

## **LEARNING FOR HEALTH LITERACY**

Learning for health literacy is an on-going process (e.g. von Wagner *et al.*, 2009; Zarcadoolas *et al.*, 2005). When teachers are aiming to develop health literacy among their students, they should have an idea of the kind of learning they are striving for, and the kinds of learning conditions they are aiming to create. After all, not all conditions support the kind of learning that will bring about self-awareness, the ability to think critically, or the ability to take ethically responsible actions. Thus, it is important to consider both learning *per se* and the kind of learning conditions needed to achieve the five core components of health literacy.

Before elaborating health literacy further, we shall here make some remarks on how, in broad terms, we perceive learning. We see learning as involving a change in ways of understanding, experiencing, or seeing the object of learning. The learning may become evident in, for example, the ways that a person is able to relate new aspects to his or her understanding of the object of learning, and/or to describe more or better links between the aspects (see Cope and Prosser, 2005). Thus, people may understand the same target phenomenon in qualitatively different ways. Those people who have a more complex, advanced, or powerful way of understanding the object of learning are able to differentiate and identify more aspects of the same phenomenon, or to create better links between aspects. In a similar manner, learning itself can be understood in qualitatively different ways. Instead of seeing learning merely as a matter of knowledge acquisition, memorization, or application, one can move towards seeing learning as one or more of the following: developing meaning, a change in a person's thinking, a change as a person, or collective meaning making (see Marton *et al.*, 1993; Paakkari *et al.*, 2010a; van Rossum and Hamer, 2010). The first three ways of understanding learning (as acquisition, memorization, application) can be said to be less complex ways of understanding, since the constitution of meaning is absent: students are not aiming to construct their own personal meanings concerning health topics. However, in the

four last ways of seeing learning, the constitution of meaning is central (cf. Marton *et al.*, 1993). Correspondingly, the first three ways of seeing learning are in line with a more or less teacher- or content-focused understanding of *teaching* (with a focus on the transmission of knowledge), while the four last ways of seeing learning involve understanding teaching in a pupil-focused way (i.e. as action supporting pupils' individual and collective thinking and meaning-making processes) (cf. van Hamer and Rossum, 2010).

The following descriptions of learning conditions are constructed in such a way that they move towards greater complexity – i.e. towards a student-focused approach. Thus, the later conditions may include aspects of the previous conditions, but not vice-versa. This procedure may in some respects be artificial, since a teaching/learning situation often includes different components of health literacy and various ways of approaching the topic. However, it has heuristic value in terms of describing how learning for health literacy may be supported within a movement towards greater complexity.

The necessary learning conditions for each of the core components of health literacy will be looked at from the following viewpoints: the role of teachers, the role of students, and the nature of knowledge. However, additional aspects that are important for a given component will be introduced as required. After each description there is a summary box, which includes a short practical example, plus a summary of the essential learning objectives, contents, and teaching methods, which could be related to each of the core components. The examples all relate to a single health topic – smoking – and the notional target group consists of high school students.

### **Conditions to promote the learning of theoretical knowledge**

Learning theoretical knowledge about health matters could be described as memorizing or reproducing health knowledge which does not include aspects such as application, critical thinking, or reflection (Paakkari *et al.*, 2010a). The aim in such a case is that students should repeat what they have read from a book or remember what the teacher said earlier in the lesson; hence remembering becomes an end itself rather than a means to an end (Meyer, 2002). The teacher functions as an expert, presenting knowledge that he or she has selected and structured for the purposes of the target group. The students are not being challenged to actively process or criticize the knowledge, and though they may ask questions from the teachers, they are mainly seen as knowledge recipients (Paakkari *et al.*, 2010b). This means that the knowledge dealt with will not be made problematic or complex, but rather taken for granted. To the extent that there are question-and-answer sessions, the

students become slightly more involved (van Rossum and Hamer, 2010, p. 10). Such an approach to learning may well increase students' factual knowledge capital, and there is no doubt that remembering health information is important in problem solving and other more complex tasks (Meyer, 2002). However, as Borzekowski (2009) notes, a focus on rote-learning together with a lack of support for critical thinking immobilizes large population groups and tends to leave socio-political power in the hands of the few.

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**PRACTICAL EXAMPLE.** The aim of the teaching-learning situation is that the students should get information on and memorize general reasons not to smoke. The teacher starts by showing diagrams with the proportions of the people who smoke and do not smoke in various age groups. Then she/he introduces the generally-accepted ideas concerning why people should not smoke. Students are allowed to ask questions and the teacher is ready to give answers. However, students are not asked to apply the information further or to question the information they have received. At the end of the session the teacher gives a quiz to summarize the essential information, and to check that the students have “understood” everything.

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Learning objective	Content	Teaching-learning methods
To memorize the main aspects, gain more information about smoking	<ul style="list-style-type: none"> <li>• Statistics on smoking (i.e. prevalence)</li> <li>• Historical perspectives</li> <li>• Constituents of tobacco and their biological mechanisms</li> <li>• Health impacts</li> <li>• General reasons for smoking, non-smoking, and quitting smoking</li> <li>• General benefits of non-smoking</li> </ul>	Receiving information from the teacher and from books, activities focusing on rote-learning (e.g. tests), teacher-led discussions

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### **Conditions to promote the learning of practical knowledge**

When teaching-learning situations are planned so as to develop students' health-related skills, anticipating students' daily practices and decision-making processes (see Paakkari *et al.*, 2010c), learning involves the ability to *apply* health knowledge to situations which, for the time being, remain *hypothetical* (Paakkari *et al.*, 2010a). Learning is supported through up-to-date examples and cases from real life (van Rossum and Hamer, 2010, p. 11). The idea is that pupils need only develop health skills *for later use* (cf. Marton *et al.*, 1993). The result is that the knowledge acquired during these learning situations stays more or less non-problematic; it is something that

will only be taken and used on some indefinite future occasion. It is nevertheless practical and concrete (Paakkari *et al.*, 2010c). In this way of approaching learning we may find similarities with the concept of *token participation* introduced by Simovska (2000; 2004): even if during the teaching-learning situation there is an active exercise of various health skills and the making of health-related choices, these activities are conducted within the framework of what the teacher has planned and what he or she aims to achieve (with ready-planned outcomes). Thus, the teacher may be seen as an organizer, and the student (in the best case) as an active participant (Paakkari *et al.*, 2010b). The main differences from the previous conditions are that the teacher lets the students participate more, and that the students are asked to apply knowledge (through the instructions in the role descriptions).

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**PRACTICAL EXAMPLE.** The aim of the teaching-learning situation is that students should gain the capabilities to resist smoking. The teacher introduces the topic by asking students to think about the negative effects of smoking and the factors that might contribute to a positive image of non-smoking. After hearing some suggestions, the teacher shows (on PowerPoint or OHP) the “right answers”, collected from sources she/he has regarded as valid. At this point students’ comments are not reflected on further or included in the “list of right answers”. The teacher then organizes a role-play to practise resistance to smoking. Students are divided into smaller groups. Each member of the group gets a role (e.g. non-smoker, smoker, friend of the smoker) and a role outline (what he/she is expected to do or say). Students play the roles. The teacher gives some general feedback.

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Learning objective	Content	Teaching-learning methods
To apply theoretical knowledge in practice	<ul style="list-style-type: none"> <li>• Capabilities to resist smoking</li> <li>• Knowledge on how to quit smoking, how to seek help</li> <li>• Information retrieval skills</li> </ul>	Practical exercises, role-play, hands-on (practical) exams

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### **Conditions to promote the learning of critical thinking**

The promotion of students’ critical thinking regarding what is said or written calls for conditions in which students are encouraged to have doubts about the certainty of knowledge and to be open to multiple perspectives (see Baxter Magolda, 2004). The focus here is on conditions where knowledge is seen by nature as something uncertain, complex, or problematic. This calls for a safe and accepting atmosphere where there is room for various interpretations, critical thoughts, and the creation of new ideas (Paakkari *et al.*, 2010c).

Teachers as facilitators should validate students as knowers – i.e. acknowledge that students may indeed be able to hold a perspective of their own (Baxter Magolda, 1999, p. 27) – and they should support students in critically evaluating the acceptance of authority; students are thus encouraged to question truisms, raise doubts, explore situations, and probe alternatives both at school and in daily life (Barak *et al.*, 2007). Open-ended questions such as “Could this be understood in another way? Are there other solutions for this problem, and why?” serve as a practical tool for the teacher to facilitate students’ critical and creative thinking (see Potts, 1994). However, as Potts (1994) emphasizes, students (as critical thinkers) should be allowed enough time to mull matters over, since after all, thoroughly weighed-up argument or comment is seldom arrived at quickly. Here, the use of a variety of conceptual frameworks may promote conceptual understanding. Being subject to prejudice, partiality, and bias, such frameworks are never neutral or objective (Milligan and Wood, 2010), and thus they can serve well as teaching-learning devices to promote critical thinking. A thorough analysis of various health-related concepts, with perhaps even the creation of new ones, can help students to see how they themselves relate to the social world they are part of (cf. Milligan and Wood, 2010).

Students should learn to listen, truly hear other students’ comments, and see these comments as a potential arena for achieving new perspectives and therefore as a way of transforming their own thinking. Thus, the promotion of interaction between students is important (Potts, 1994). Moreover, Kuhn (2010) argues that one of the most crucial steps in learning argumentation is to increase “students’ ability and willingness to attend critically to another’s argument”, adding that “until this happens, no genuine argumentation has occurred” (p. 816). As a result, learning may become manifest as a development of meanings, and perhaps as a transformation of thinking; this can happen through, for example, linking separate facts with each other to form coherent entities and formulating one’s own perspectives (see Paakkari *et al.*, 2010a). The main differences from the previous conditions are that the teaching approach becomes less teacher-focused (with the teacher becoming merely a facilitator of the learning process), that knowledge becomes uncertain and thus complex, that students are validated as knowers, that students’ critical inquiry is crucial, and that a safe and accepting atmosphere becomes paramount.

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**PRACTICAL EXAMPLE.** The aim is that students should learn to reflect on and evaluate smoking as a phenomenon from various perspectives, to build links between the various pieces of knowledge, and to evaluate the validity of knowledge about smoking. The teacher organizes a

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debate on the following topic: Advantages and disadvantages of smoking – Why do people start to smoke? Before the debate, the students have access to various kinds of material (e.g. research articles, leaflets, brochures) and are given time to prepare their claims and arguments. The teacher gives some practical advice about how to debate, and encourages the expression of opinions, irrespective of whether they are well argued. The important thing is not to “win” but to build an argument based on evidence, to draw conclusions, and to evaluate arguments. The teacher’s role is to keep the debate on-topic if necessary, but otherwise to stay in the background. At the end of the debate there is evaluation of the evidence that was used, the perspectives that were brought up, and the quality of the arguments that were put forward.

Learning objective	Content	Teaching-learning methods
To have control over knowledge: to create links, to have new perspectives and to build up coherent pictures, to assess topics from various perspectives, to evaluate sources of knowledge	<ul style="list-style-type: none"> <li>• Critical evaluation of the reliability of smoking-related information</li> <li>• Comparison of potential costs and benefits of smoking at different ages</li> <li>• Analysis of social norms and values related to smoking</li> <li>• Analysis of peer-group pressure on smoking, the need to follow the herd</li> <li>• Media-literacy: skills to critically interpret smoking-related media messages</li> </ul>	Mind-mapping, concept-mapping, debating, conflict situations, systematic analysis of texts and pictures, evaluating arguments, justifying claims, collaborative ranking and listing, collective problem-solving, student data-gathering and synthesis, round-table discussions

### Conditions to promote the learning of self-awareness

Self-awareness as a health literacy component calls for teaching-learning situations in which learning is truly situated within the students’ experiences of the self in general and the self as a learner. The teachers should challenge students to think of various *how* and *what* questions linked to their lives (descriptive reflection), for example “*How* do these health issues relate to my life?” “*What* is my current way of thinking or behaving with regard to ... (the target phenomenon)?” “How have I proceeded in my learning task, and in what way could I learn more effectively?” Critical *why*-questions (*why* do I behave or think as do) relate to critical reflection, which enables students “to recognize the underlying assumptions and values of their ways of behaving and thinking, and/or to strengthen their own opinion” (Paakkari *et al.*, 2010a). Students need descriptive reflection in starting to *develop* their own personal meanings concerning their health, and critical reflection in the process of *changing* their ways of thinking. Learning as the development of meanings and as the transformation of thinking undoubtedly needs an environment in which students deliberate on issues with others, that is, with the perspectives of others serving as a mirror for their own thoughts (Paakkari *et al.*, 2010a).

This way of approaching learning regards knowledge as something complex or problematic: since learning is situated in students' experiences, the knowledge is highly personal and relational, and it does not only include merely right or wrong answers (see Baxter Magolda, 2004; Paakkari *et al.*, 2010a). The knowledge dealt with during the teaching-learning situations should be evaluated and tested in two ways. First of all, students should test their own opinions and ways of behaving against theoretical knowledge (and the perspectives of the others), and secondly, they should test theoretical knowledge against their own perspectives, wishes, preferences, and ways of behaving.

Of course, it is all to the good if the teaching-learning situation includes delivering knowledge that is factual or practical, but that is not enough, since the aim is to support students' descriptive and critical reflection and their personal meaning-making processes. In this kind of learning process the students can be described as reflective inquirers, in parallel with their teachers being seen as facilitators or mentors (Paakkari *et al.*, 2010b). In addition, as in the learning conditions for critical thinking, a trusting and accepting atmosphere during the teaching-learning situation plays a crucial role (Paakkari *et al.*, 2010b).

Support for the development of students' metacognitive knowledge takes place in the context of learning other components of health literacy, and it calls for an environment where students are supported so that they reflect on their beliefs about learning, build learning goals for themselves, plan strategies for how to reach these goals, and reflect on the actual learning process. To begin with the teacher's support and feedback will be crucial, but subsequently, step by step, the students' will have a greater role in monitoring their own learning processes.

The main differences from the previous conditions are that the role of descriptive and critical reflection in the learning process is emphasized, that learning is genuinely situated within the students' experiences, and that students are seen as (self) reflective inquirers.

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**PRACTICAL EXAMPLE.** To increase students' self-awareness concerning the factors that influence their health behaviour, and their smoking habits in particular. Students are first asked to look at smoking-related pictures that the teacher has placed on the walls, and to think of the kinds of images and adjectives that the pictures evoke. The teacher then steers the discussion to (subliminal) smoking advertising: what kinds of values does (subliminal) advertising transmit, and in what ways? Students are asked to ponder the ways in which such pictures might influence their

ways of thinking and behaving. They reflect on their own values, and consider in particular which of the values could predispose them/inhibit them/support them in their efforts to quit smoking, and why.

Learning objective	Content	Teaching-learning methods
To reflect on health matters from the perspective of one's own life, to critically examine one's own thoughts and ways of behaving, to set learning goals and monitor learning processes	Personal <ul style="list-style-type: none"> <li>• conceptions, impressions and experiences of smoking</li> <li>• underlying values and assumptions in current understanding of smoking</li> <li>• analysing internal and external influences on one's smoking-related decisions (reasons for smoking and quitting smoking, motives for resistance to smoking)</li> <li>• strategies to resist or quit smoking</li> </ul>	Learning diaries and portfolios, self-evaluation

### **Conditions to promote the learning of citizenship**

Ethical reflection skills are vitally important if students are to evaluate the effects of their ways of behaving and thinking on other people. In addition, these skills make it possible for students to ponder the appropriateness of a variety of health-related practices (including the possible consequences of these practices on themselves and the world) and to show empathy when trying to understand something from the point of view of others. Thus, schools should serve as a learning context where there is a possibility to take part in ethical discussions on various health issues and – once again – to think not only of right versus wrong dimensions, but also of right versus right (Leming, 2001). Only then can we expect the students to gain sensitivity in understanding ethical matters, and to take ethically-responsible actions. In addition, since citizenship in its personal and cultural aspects covers the idea of belonging to a society, schools need to encourage dialogue conjoined with peer collaboration (cf. Osler and Starkey, 2003). Collective reflection, that is, a meaning negotiation within a dialogue (cf. De Lawter and Sosin, 2000), enables participants to define *our* responsibilities and the best actions for *our* community or society (see Osler and Starkey, 2003). The creation of something that is *ours*, instead of something *mine*, calls for conditions in which knowledge (and meaning) is seen as mutually or socially constructed and in which all the members' perspectives are seen as valuable (hence a tolerant atmosphere). The teacher participates, in company with the students, in putting people's conceptions together and in considering both evidence and experience in constructing knowledge (Baxter Magolda, 1999, p. 28).

The crucial element here is *participation* in conjunction with *dialogue*, a conception, which has been strongly emphasized in health promotion literature (e.g. King and Occleston, 1998; Simovska, 2000, 2004; Simovska and Jensen, 2009; Wong *et al.*, 2010). At this level, participation has elements of the genuine participation referred to by Simovska (2000; 2004). If students are thus engaged it can enhance their autonomy, critical consciousness, and competence to act in a creative, free, and socially responsible way. However, the key point is, as Hill *et al.* (2004; see also Osler and Starkey, 2003) argue, to let the students exert influence as citizens in their own right, and thus to put their views on the agenda (see Hill *et al.* 2004; King and Occleston, 1998). Moreover, schools should give students rights to participate in decision-making in the present, acknowledging their existing citizenship rights, and not merely focusing on developing their skills for future participation as active citizens (Barrow, 2010). Learning should happen in “extended classrooms”, both within and outside the school. However, it should happen within sites in which students feel valued and respected such as in schools, parks, shopping centres, community centres, or libraries (Osler and Starkey, 2003). Moreover, when planning for learning through participation and action, teachers should ask themselves whether they are able to take into account different kinds of students with different personal characteristics, competencies, and capabilities – the aim being to avoid doing harm and to make sure that students have equal possibilities to participate. Lund’s (2009) study on self-awareness among shy people revealed that negative self-awareness is associated with increased loneliness and fear of participation “in the absence of support and from someone who can help to reflect, rehearse and challenge such negative patterns of self-appraisal” (p. 393). This is clearly an important finding in respect of the aims of teachers and other school staff to foster participation in schools, including decision-making processes.

Learning related to ethically responsible ways of acting encompasses the notion of a change in a person through a transformation in thinking (Paakkari *et al.*, 2010a). Every time a student goes through an ethical thinking process, he or she changes as a person (cf. Kwak, 2007; Williams, 1985). In addition, genuine participation (see Simovska, 2000, 2004), or active transformative engagement (Kress, 2008), may produce changes in students’ resources, just as on a broader scale engagement in society can transform society (Kress, 2008). The main differences from the previous conditions are that the teacher’s role expands to cover aspects of being a fellow-learner, and that the student’s role expands to cover aspects of being a responsible member, with knowledge becoming mutually constructed.

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**PRACTICAL EXAMPLE.** The aim of the teaching learning session is to evaluate individually and collectively the various consequences of the individual’s smoking habits, and the rights and responsibilities of a smoker. Prior to this, students have been assigned a homework task in which they are asked to think about smoking from the perspective of various interest groups, represented by e.g. a smoker, a non-smoker, the owner of a cigarette factory, a smoking farmer, a doctor, a smoking pregnant women, and a foetus. The teaching starts with a division of opinion: the teacher has put the signs “agree” and “disagree” on opposite sides of the classroom with an imaginary line stretching from one side to the other. The teacher reads out statements about smoking (e.g. “the tobacco industry should be preserved since it is an important employer”, “it is for the individual to decide when and where he/she smokes”, “the costs of smoking fall only on the individual smoker”), and asks students to move to the point on the line which corresponds best to their opinion of the statement. In the middle there is a neutral zone. The teacher challenges students on various points on the line to declare and argue their opinion. Later, the situation is opened up for free discussion. Thereafter, students in smaller groups are instructed to write a short essay on the topic “Is smoking a personal affair?” The local newspaper has been contacted, and has undertaken to publish one essay they regard as particular well argued.

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Learning objective	Content	Teaching-learning methods
To evaluate the consequence of one’s behaviour on others, to evaluate individually and collectively the appropriateness of various health issues for people in general (ethical reflection, collective reflection), to argue in favour of something	<ul style="list-style-type: none"> <li>• Human rights and responsibilities with regard to smoking</li> <li>• Evaluation of one’s own rights against the rights of others (passive smoking, society-level costs of smoking, global costs of smoking, e.g. pollution, growing tobacco instead of food)</li> <li>• Peer support for non-smoking</li> <li>• Arguing in favour of personal and community health (collective planning and action on smoke-free areas as important sites for young people)</li> </ul>	Drama, panel discussions, role-playing, projects, peer assessment

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## CONCLUSIONS

In this paper we have highlighted health literacy as a competency which includes a blend of theoretical and practical health knowledge, critical thinking, self-awareness, and citizenship, and which forms a basis for purposeful ways of acting in health-related questions. These five components describe how health literacy moves from mere literacy on certain health topics towards literacy concerning oneself, others, and the world. In the best possible situation *all* the components are intertwined with each other to form the highest level of health literacy.

The reader may notice that we have not included social skills *per se* among the core components, even though their role has been widely emphasized (e.g. Mancuso, 2009; Nutbeam, 1998, 2008; Nutbeam and Kickbusch, 2000). Our perspective is that they include aspects from different core components, and as such do not represent one particular core component. The same is true of communication skills and information-gathering skills. Moving beyond this, we would regard motivation, self-esteem, self-respect, tolerance, and perceived self-efficacy as important factors that can give support to, result from, and/or evolve in parallel with the enhancement of health literacy. Nevertheless, in our view they do not represent core components or key areas for the teaching of health literacy. In particular, if teachers have to assess and give grades to students based on their health literacy level, these aspects should not be included within the grading.

In describing the learning conditions for developing the health literacy of students in a school we have aimed to give some ideas about how – through diversifying learning conditions in more student-focused directions – teachers will be better able to support the development of various dimensions of health literacy. A crucial point, as we have argued above, is that not all learning conditions support the development of all the components of health literacy. The descriptions of the components and the learning conditions may serve as a tool in planning for the future, and in evaluating current teaching-learning situations in which the aim is to enhance students' health literacy. Of course, when planning for these learning conditions, teachers will have to take into account the age of the students. In primary school, the focus of learning for health literacy is often more on the self as a person (“Who am I, and how am I able to behave in a health enhancing way?”). When students enter secondary school, we may expect them to focus on wider perspectives and go deeper into ethical considerations. Nevertheless, for all the students in the different age groups the learning conditions may well include aspects of each of the components – though always with due account taken of the needs and characteristics of the age group in question.

We have focused on health literacy as an individual competency, on the grounds that learning at school most frequently takes place at an individual level. However, we would accept that there is a need for research and theoretical discussion, which would extend the focus beyond individuals, especially when we are considering health literacy in a health promotion context (von Wagner *et al.*, 2009). The ways, in which health literacy is manifested at an organizational or community level, or as a professional learning outcome, do indeed merit study. Within education, there is ongoing discussion about the kinds of learning that may exist beyond the individual level (e.g. Garavan and McCarthy, 2008; de Laat and Simons, 2002). Moreover, the present conceptual paper

does not attempt to address the varying contexts in which schools operate. There is thus a need for research on what it means to be a health-literate student in different contexts, and on the kinds of learning that are appropriate to these contexts.

## REFERENCES

Abel, T. (2007), “Cultural capital in health promotion” in McQueen, D.V. and Kickbusch, I. (ed.), *Health and modernity. The role of theory in health promotion*. Springer, New York, pp. 43—73.

Abel, T. (2008), “Measuring health literacy: moving towards a health -promotion perspective”, *International Journal of Public Health*, Vol. 53 No. 4, pp. 169—170.

Barak, M., Ben-Chaim, D. and Zoller, U. (2007), ”Purposely teaching for the promotion of higher-order thinking skills: A case of critical thinking”, *Research in Science Education*, Vol. 37, pp. 353—369.

Barrow, W. (2010), ”Dialogic, participation and the potential for philosophy for children”, *Thinking Skills and Creativity*, Vol. 5, pp. 61—69.

Baxter Magolda, M.B. (1999), *Creating Contexts for Learning and Self-Authorship – Constructive-Development Pedagogy*. Vanderbilt University Press, Nashville.

Baxter Magolda, M.B. (2001), *Making their own way – Narratives for transforming higher education to promote self-development*, Stylus Publishing, Sterling.

Baxter Magolda, M.B. (2004), “Evolution of a constructivist conceptualization of epistemological reflection”, *Educational Psychologist*, Vol. 39 No. 1, pp. 31—42.

Bereiter, C., and Scardamalia, M. (1993), *Surpassing ourselves —An inquiry into the nature and implications of expertise*, Open Court, Chicago.

Begoray, D.L., Wharf-Higgins, J. and MacDonald, M. (2009), “High school health curriculum and health literacy: Canadian students voices”, *Global Health Promotion* Vol. 16. No. 4, pp. 35—42.

Biggs, J. (1996), “Enhancing teaching through constructive alignment”, *Higher Education*, Vol. 32, pp. 347—364.

Biggs, J. B. and Collis, K. F. (1982), *Evaluating the Quality of Learning*, Academic Press, New York.

Borzekowski, D.L.G. (2009), “Considering Children and Health Literacy: A Theoretical Approach”. *Pediatrics*, Vol. 124 Suppl. 3, S282—288.

Bronfenbrenner, U. (1979), *The Ecology of Human Development: Experiments by Nature and Design*, Harvard University Press, Cambridge.

Cope, C. and Prosser, M. (2005), “Identifying didactic knowledge: An empirical study of the educationally critical aspects of learning about information systems”, *Higher Education*, Vol. 49, 345–372.

Coutinho, S.A. and Neuman, G. (2008), “A model of metacognition, achievement goal orientation, learning style and self-efficacy”, *Learning Environments Research*, Vol. 11 No. 2, pp. 131—151.

de Laat, M. and Simons, R-J. (2002), “Collective learning: Theoretical perspectives and ways to support networked learning”, *European Journal for Vocational Training*, Vol. 27 No. 3, pp. 13—24.

Deal, T.B. and Hodges, B. (n.d.), *Role of 21<sup>st</sup> Century Schools in Promoting Health Literacy*, National Education Association Health Information Network, available at: <http://www.neahin.org/educator-resources/health-literacy/benhamdeal-hodges-paper.pdf> (accessed 26 October, 2010).

De Lawter, K. and Sosin, A. (2000), *A Self-Study in Teacher Education: Collective Reflection as Negotiated Meaning*, Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, Los Angeles, April 24-26, 2000.

Garavan, T.N. and McCarthy, A. (2008), “Collective learning processes and human resource development”, *Advances in Developing Human Resources*, Vol. 10 No. 4, pp. 451—471.

Grant, A.M., Franklin, J. and Langford, P. (2002), “The self-reflection and insight scale: A new measure of private self-consciousness”, *Social Behavior and Personality*, Vol. 30 No. 8, pp. 821—836.

Greeno, J.G., Pearson, P.D. and Schoenfeld, A.H. (1999), “Achievement and theories of knowing and learning”, in McCormick, R. and Paechter C. (Ed.). *Learning and Knowledge*, SAGE Publications, London, pp. 136—153.

Hill, M., Davis, J., Prout, A. and Tisdall, K. (2004), “Moving the participation agenda forward”, *Children & Society*, Vol. 18, pp. 77-96.

Institute of Medicine (2004), *Health Literacy: A Prescription to End Confusion*, National Academies Press, Washington, DC.

Jensen, B.B., Schnack, K. and Simovska, V. (2000) (Ed.), *Critical Environmental and Health Education*, The Danish University of Education, Copenhagen

Kickbusch, I.S. (2001), “Health literacy: addressing the health and education divide”, *Health Promotion International*, Vol. 16 No. 3, pp. 289—297.

Kickbusch, I. (2008), “Health literacy: an essential skill for the twenty-first century”, *Health Education*, Vol. 108 No. 2, pp. 101—104.

King, P. and Occleston, P. (1998), “Shared learning in action: children can make a difference”, *Health Education*, Vol. 98 No. 3, pp. 100—106.

Kress, G. (2008), “Meaning and learning in a world of instability and multiplicity”, *Studies in Philosophy and Education*, Vol. 27, pp. 253—266.

Kuhn, D. (2010),” Teaching and Learning Science as Argument”, *Science Education*, Vol. 94 No. 5, pp. 810—824.

Kwak, D-J. (2007), “Re-conceptualizing critical thinking for moral education in culturally

plural societies”, *Educational Philosophy and Theory*, Vol. 39 No. 4, pp. 460—470.

Leming, J.S. (2001), “Integrating a structured ethical reflection curriculum into high school community service experiences: Impact on students’ sociomoral development”, *Adolescence*, Vol. 36 No 141, pp. 35—45.

Levin-Zamir, D. and Peterburg, Y. (2001), “Health literacy in health systems: perspectives on patient self-management in Israel”, *Health Promotion International*, Vol. 16 No. 1, pp. 87—94.

Lund, I. (2009), “An exploration of self-awareness among shy people”, *Young*, Vol. 17 No. 4, pp. 375—397.

Mancuso, J.M. (2009), “Assessment and measurement of health literacy: An integrative review of the literature” *Nursing and Health Sciences*, Vol. 11, pp. 77—89.

Manganello, J.A. (2008), “Health literacy and adolescents: a framework and agenda for future research”, *Health Education Research*, Vol. 23 No. 5, pp. 840—847.

Marton, F., Dall’Alba, G. and Beaty, E. (1993), “Conceptions of learning”, *International Journal of Educational Research*, Vol. 19 No. 3, pp. 277—300.

Mayer, R.E. (2002), “Rote Versus Meaningful Learning”, *Theory into Practise*, Vol. 41 No. 4, pp. 226—232.

McQueen, D.V. and Kickbusch, I. (2007) (ed.), *Health and Modernity. The Role of Theory in Health Promotion*. Springer, New York.

McCormic, R. (1999), “Practical Knowledge: A View of the Snooker Table” In McCormick, R. and Paechter, C. (Ed.), *Learning and Knowledge*, SAGE Publications, London, pp. 112—135.

McCormick, R. and Paechter C. (1999) (Ed.). *Learning and Knowledge*, SAGE Publications, London.

Milligan, A. and Wood, B. (2010), “Conceptual understandings as transition points: making sense of complex world”, *Journal of Curriculum Studies*, Vol. 42 No. 4, pp. 487—501.

Nutbeam, D. (1998), *Health Promotion Glossary*, World Health Organization, Geneva.

Nutbeam, D. (2000), “Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21<sup>st</sup> century”, *Health Promotion International*, Vol. 15. No. 3, pp. 259—267.

Nutbeam, D. (2008), “The evolving concept of health literacy”, *Social Science & Medicine*, Vol. 67 No. 12, pp. 2072—2078.

Nutbeam, D. and Kickbusch I. (2000), “Advancing health literacy: a global challenge for the 21<sup>st</sup> century”, *Health Promotion International*, Vol. 15 No. 3, pp. 183-184.

Ohlsson, S. (1996), “Learning to do and learning to understand: A lesson and a challenge for cognitive modeling” in Reimann, P. and Spada, H. (Ed.), *Learning in Humans and Machines. Towards an Interdisciplinary Learning Science*, Pergamon, Oxford, pp. 37—62.

Osler, A. and Starkey, H. (2003), “Learning for cosmopolitan citizenship: theoretical debates and young people’s experiences”, *Educational Review*, Vol. 55 No. 3, pp. 243—254.

Paakkari L, Tynjälä P and Kannas L. (2010a), “Critical aspects in of student teachers’ conceptions of learning”, *Learning and Instruction*, Vol. 21 No. 6, pp. 705— 714.

Paakkari, L., Tynjälä, P. and Kannas, L. (2010b), ”Student teachers’ way of experiencing the teaching of health education”, *Studies in Higher Education*, Vol. 35 No. 8, pp. 905—920.

Paakkari, L., Tynjälä, P. and Kannas, L. (2010c), ”Student teachers’ ways of experiencing the objective of health education as a school subject: A phenomenographic study”, *Teaching and Teacher Education*, Vol. 26 No. 4, pp. 941—948.

Parker, R. (2000), “Health literacy: a challenge for American patients and their health care providers”, *Health Promotion International*, Vol. 15 No. 4, pp. 277—283.

Potts, B. (1994), “Strategies for teaching critical thinking”, *Practical Assessment, Research & Evaluation*, Vol. 4. No. 3, Available at: <http://PAREonline.net/getvn.asp?v=4&n=3> (accessed 26 January 2011).

Ratzan, S.C., and Parker, R.M. (2000), “Introduction” in Selden C.R., Zorn M., Ratzan S.C. and Parker R.M. (Ed.), *Current Bibliographies in Medicine — Health Literacy*, National Library of Medicine, Bethesda, pp. v—vi.

Reimann, P. and Spada, H. (1996) (Ed.), *Learning in Humans and Machines. Towards an Interdisciplinary Learning Science*, Pergamon, Oxford.

Schmidt, C.O., Fahland, R.A., Franze, M., Splieth, C., Thyrian, J.R., Plachta-Danielzik, S., Hoffman, W. and Kohlmann, T. (2010), “Health-related behaviour, knowledge, attitudes, communication and social status in school children in Eastern Germany”, *Health Education Research*, Vol. 25 No. 4, pp. 542—551.

Secchi, D. (2009), “The cognitive side of social responsibility”, *Journal of Business Ethics*, Vol. 88, pp. 565—581.

Selden C.R., Zorn M., Ratzan S.C. and Parker R.M. (2000) (Ed.), *Current Bibliographies in Medicine — Health Literacy*, National Library of Medicine, Bethesda,

Simovska, V. (2000), “Exploring student participation within health education and health promoting schools”, in Jensen, B.B., Schnack, K. and Simovska, V. (Ed.), *Critical Environmental and Health Education*, The Danish University of Education, Copenhagen, 29—43.

Simovska, V. (2004), “Student participation: a democratic education perspective—experience from the health-promoting schools in Macedonia”, *Health Education Research*, Vol. 19 No. 2, pp. 198—207.

Simovska, V. and Jensen, B.B. (2009), *Conceptualizing Participation – The Health of Children and Young People*, WHO, Copenhagen.

Simovska, V. and Sheehan, M. (2000), “Worlds apart or of like minds? Mental health promotion in Macedonian and Australian schools”, *Health Education*, Vol. 100 No. 5, pp. 216—222.

St Leger, L. (2001), “Schools, health literacy and public health: possibilities and challenges”, *Health Promotion International*, Vol. 16 No. 2, pp. 197—205.

Stenström M.-L. and Tynjälä P. (2008) (Ed.) *Towards Integration of Work and Learning. Strategies for Connectivity and Transformation*, Springer, Dordrecht

Stewart, S., Riecken, T., Scott, T., Tanaka, M. and Riecken, J. (2008), “Expanding Health Literacy - Indigenous Youth Creating Videos”, *Journal of Health Psychology*, Vol. 13 No. 2, pp. 180—189.

ten Dam, G. and Volman, M. (2004), “Critical thinking as a citizenship competence: teaching strategies”, *Learning and Instruction*, Vol. 14, pp. 359—379.

Tones, K. (2002), “Health literacy: new wine in old bottles?”, *Health Education Research*, Vol. 17 No. 3, pp. 287—290.

Tynjälä, P. (2008a), “Connectivity and transformation in work-related learning – Theoretical foundations”, In Stenström M.-L. and Tynjälä P. (Ed.) *Towards Integration of Work and Learning. Strategies for Connectivity and Transformation*, Springer, Dordrecht, pp. 11—37.

Tynjälä, P. (2008b), “Perspectives into learning at the workplace”, *Educational Research Review*, Vol. 3, pp. 130—154.

van Rossum, E. J. & Hamer, R. (2010), *The meaning of learning and knowing*. Sense Publishers, Rotterdam.

von Wagner, C., Steptoe, A., Wolf, M.S. and Wardle, J. (2009), “Health literacy and health actions: a review and a framework from health psychology”, *Health Education & Behavior*, Vol. 36 No. 5, pp. 860—877.

Wagner, T. (2008), “Rigor redefined”, *Educational Leadership*, Vol. 66 No. 2, pp. 20—24.

Williams, B. (1985), *Ethics and the limits of philosophy*, Harvard University Press, Cambridge.

Wong, N.T., Zimmerman, M.A. and Parker, E.A. (2010), “A typology on youth participation and empowerment for child and adolescent health promotion”, *American Journal of Community Psychology*, Vol. 46, pp. 100—114.

World Health Organization. (1999), *Improving Health through Schools: National and International Strategies*. World Health Organization, Geneva.

Wu, A.D., Begoray, D.L., Macdonald, M., Higgins, J.W., Frankish, J., Kwan, B., Fung, W. and Rootman, I. (2010), “Developing and evaluating a relevant and feasible instrument for measuring health literacy of Canadian high school students”, *Health Promotion International*, Vol. 5 No. 4, 444—452.

Zarcadoolas, C., Pleasant, A. and Greer, D. (2005), “Understanding health literacy: an expanded model”, *Health Promotion International*, Vol. 20 No. 2, pp. 195—203.

Zimmerman, B.J. (2002), “Becoming a self-regulated learner: an overview”, *Theory Into Practice*, Vol. 41 No. 2, pp. 64—7

