Health Education Teachers' Contributions to Students' Multiliteracy Learning

Tuula Nygård[a*], Noora Hirvonen[b], Sari Räisänen[c], and Riitta-Liisa Korkeamäki[a]

a Faculty of Education, University of Oulu, P.O.Box 2000 FI-90014 University of Oulu, Oulu, Finland; b Information Studies, University of Oulu, P.O.Box 2000 FI-90014 University of Oulu, Oulu, Finland; c Oulu University Teacher Training School, Faculty of Education, University of Oulu, P.O.Box 2000 FI-90014 University of Oulu, Oulu, Finland

*corresponding author

Tuula Nygård

tuula.nygard@oulu.fi

+358 40 55 31 675

Faculty of Education

P. O. Box 2000

FI-90014 University of Oulu

Finland

Health Education Teachers' Contributions to Students' Multiliteracy Learning

This article describes how Finnish health education teachers reflect on their views of multiliteracy and the instructional practices they used to implement it. Narrative interviews were conducted among eight junior high school and high school teachers. Nexus analysis was used to guide the analysis on the teachers' views and practices. The results indicate that the study participants considered the promotion of multiliteracy to be part of their work as a health education teacher and they implemented multiliteracy instruction in diverse ways, such as assigning information-seeking and production tasks, or by creating role-playing games. However, the study revealed tensions between need-based literacy teaching and curriculum-steered multiliteracy promotion as well as common and novel teaching practices. At its best, reflecting on these tensions can serve as a steppingstone towards professional change and development.

Keywords: discourses in place, health education, literacy, multiliteracy, reflection

Introduction

Multimodal texts have become more commonplace in the context of the contemporary flood of information, which has increased exponentially. Teachers meet these challenges and adapt their teaching practices to the demands of modern media environments. To handle the multitude and complexity of information people need advanced literacy skills. More than 20 years ago, The New London Group (1996) introduced the concept of multiliteracy to describe a literacy instruction that considers diverse cultural and linguistic characteristics, and the increasing variety of text forms associated with the multiplicity of communications and media. The multiliteracy instruction focused not only on language, but on the broader aspects of representations, such as, visual, aural, and spatial modes of meaning-making (Cope & Kalantzis, 2000). It also aimed at supporting the development of critical thinking and learning skills (Palsa & Ruokamo, 2015). Then, communicational and technological change, strong

growth in multimodality, and global access to information were visible and predictable (Kress, 2003). Over time, the situation has further intensified, and contemporary technologies are common in literacy education (Leu, Forzani, Timbrell, & Maykel, 2015) and their use enforced in national curricula in several countries (Leu at al., 2017).

The Finnish National Core Curriculum for basic education (FNBE, 2016) highlights the importance of multiliteracy as a transversal competence, which means that its development ought to be supported in all subjects. According to the Core Curriculum (2016), multiliteracy is the competence to interpret, produce, and evaluate a variety of different texts and text forms. At the junior high school level, the emphasis of multiliteracy instruction is in training students' analytical, critical, and cultural literacy, but it also considers the promotion of students' basic literacy skills (Halinen et al., 2015; Rasi et al., 2019). It is argued in the curriculum, that students need multiliteracy to understand the world in which they live and its diversity (FNBE, 2016).

The context of this study is health education in Finnish schools. Health education is a mandatory and independent subject in the junior high school in Finland and, like all other subjects, includes promoting multiliteracy (Aira et al., 2014). Multiliteracy skills can be considered crucial in the health context because inadequate literacy skills can cause misunderstandings and, at worst, lead to detrimental choices in health-related issues, such as health-compromising dietary choices or refusal of vaccines. In addition to the transversal competency areas, health and well-being related phenomena should be, according to the core curriculum, studied in health education in age-appropriate ways to support students' individual and collaborative information-seeking, evaluation, and use, as well as knowledge construction (FNBE, 2016). The aim of the subject is to enhance students' competences regarding health, well-being, and

safety, thus improving their ability to take responsibility for their own health and the health of others (FNBE, 2016; Aira et al., 2014).

The purpose of this study was to examine Finnish health education teachers' reflections by analyzing their narratives of their views on multiliteracy instruction and the teaching practices they used to implement that instruction. By doing so, it contributes to the pedagogical discussion on the competence needs of young people in terms of multiliteracy and how to promote it.

Theoretical Framework

The theoretical framework of this study draws from perspectives of multiliteracy and teacher reflection. Several overlapping concepts are used to describe the literacy skills that are needed today. These include digital literacy, information literacy, media literacy, new literacies, and multiliteracy. In the following chapters below, we focus on multiliteracy, one of the main concepts of the study. The other concept is reflection which guides the analysis of the teachers' narratives. It is scrutinized specifically from a nexus analytical viewpoint, viewing it as social action that combines discourses in place, interaction order, and historical body (see Research design and Method).

The Diversity of Multiliteracy

The concepts of multiliteracy and new literacies are often understood as being synonyms; but they have different perspectives on literacy. Knobel and Lankshear (2014) explained the idea of new literacies as a shift from analogue to digital representations, and they claimed that in comparison to traditional literacies, new literacies are more participatory and collaborative. Although new literacies are not limited to technology changes and online spaces, they invite participants to learn on the Internet through social practices in meaning-making and problem-solving, sharing, and

ongoing cycles of feedback (Knobel & Lankshear, 2014; Leu, Forzani, Rhoads et al., 2015). In turn, the concept of multiliteracy encompasses the idea of integrating the modes of meaning-making, where the textual interfaces with other modes of meaning, such as visual, aural, gestural, tactile, and spatial (Kalantzis et al., 2010; The New London Group, 1996).

Multiliteracy has been studied from various perspectives in the field of education. In their systematic review, Kulju et al. (2018) scrutinized how the concept of multiliteracy has been used and understood in the primary school context in Finland. They found that previous studies have often considered both the multimodality in texts and the diversity of learners. However, in Finland, reading has mainly been studied from the perspective of text analysis, and the focus has not yet been in students' reading skills (Kulju et al., 2018).

Other studies (e.g., Serafini, 2015; Serafini & Gee, 2017) have shown that there is a need to facilitate and develop students' meaning-making skills and their multiliteracy strategies of interpreting different types of texts. Thus, multimodal ensembles, including visual, written, and graphic design elements, would provide students with an opportunity to participate in successive processes of meaning-making and knowledge construction (Serafini, 2015; Serafini & Ladd, 2008). Furthermore, learning literacies through kinesthetic practices by incorporating physical activities and performances would support the students' audio, visual, kinesthetic, and spatial modes of expression, and improve learning outcomes (Butler, 2017; Hardiana & Syuata, 2018).

Previous multiliteracy studies on language learning show that implementing multiliteracy instruction may contribute to literacy and language development (Paesani, 2016), enhance students' understanding of the subject content, and support their identity and knowledge construction (Choi & Yi, 2016). Teachers' willingness to utilize

multimodality and digital technology in their teaching has yielded conflicting results in research. Choi and Yi (2016) noted that teachers, even with limited experience, could holistically utilize multiliteracy practices in the classroom. In contrast, Farías and Véliz (2019) reported that the actual use of multimodal texts in teaching was scarce, despite awareness of the role of multimodality in Chilean English language teacher education. Yet, teachers' enthusiasm to implement multiliteracy instruction is considered to be crucial for facilitating sustainable change in classroom practices (Tan & Guo, 2014).

Previous research has shown that embedding multiliteracy practices in everyday schoolwork is not an easy task. The mismatch between the plan and the implementation is likely to occur when the teachers' espoused and enacted beliefs and views create tensions between traditional literacy practices and their involvement in multiliteracies (Kitson et al., 2007; Zhang et al., 2019). Furthermore, the lack of education about how to deploy multimodal resources and design learning environments, as well as insufficient, inappropriate, or missing learning materials, affects how teachers can implement multiliteracy instruction (Heydon et al., 2015; Zhang et al., 2019).

The way teachers understand the concept of multiliteracy forms the basis of teaching it. Tanhua-Piiroinen et al. (2020) noted that Finnish teachers comprehended multiliteracy more narrowly than the way it is defined in the curriculum for basic education. The interviewed teachers viewed multiliteracy primarily as a critical approach to interpreting different types of texts, images, and charts. According to these teachers, students practiced critical thinking by comparing different information sources with each other and determining what is the most credible and why. Teaching a more critical stance towards information was not the teachers' priority, because they saw that young people recognized fake news and alternative information (Tanhua-Piiroinen et al., 2020).

Information evaluation is one of the key aspects of both multiliteracy and new literacies (Leu et al., 2011; Rasi et al., 2019). In online environments, critical information evaluation can be considered to involve the abilities to read and evaluate the accuracy, reliability, and bias of information (Leu et al., 2011). It is argued that assessing information credibility should be taught broadly, and that students must learn to critically scrutinize not only online sources but also textbooks and learning materials provided by their teachers (Rasi et al., 2019). To deepen their judgements of information credibility and to be guided towards credible information sources, students need teachers' scaffolding (Nygård et al., 2020a; Kiili et al., 2019).

Students' basic literacy skills – reading and writing – have been the focus of several multiliteracy and new literacy studies (e.g., Briere & Wilson, 2018; Forzani & Leu, 2012), the latter focusing specifically on online reading. Coiro (2011) stated that the Internet has entailed new technologies, which has challenged students' reading skills and their ability to understand information texts. Online reading processes require skills that are both similar to and more complex than those needed when reading and comprehending offline information texts (Coiro, 2011). Thus, a literate person should not only learn to read, but also learn to read online (Leu, Forzani, Timbrell, & Maykel, 2015). In Finland, there are concerns about adolescents' declining literacy skills, including multiliteracy (OECD, 2019).

Few studies have examined health education from the perspective of multiliteracy. Tarnanen et al. (2019) examined Finnish students', teachers', and student teachers' multiliteracy in the interdisciplinary learning module Healthy Life. The study revealed that students needed guidance in producing new kinds of texts, such as questionnaires and diagrams, although they were quite fluent in terms of their ability to interpret and produce multimodal texts. Promoting multiliteracy was found to be

complex and demanding for both students and teachers and therefore, the authors

argued that it is important to increase self-assessment and reflection skills (Tarnanen et

al., 2019).

In their study of students' information evaluation during online inquiry, Kiili et

al. (2018) found that students have limited abilities to evaluate the credibility of online

health information. Kiili et al. (2018) also reported that the students found it difficult to

recognize the commercial purposes of an online information source, and few had the

ability to critically evaluate different sources and carefully explore their content.

Moreover, Hirvonen's and Palmgren-Neuvonen's (2019) study of health education shed

light on students' information practices and knowledge construction from the

perspective of curriculum-based multiliteracy. The findings indicated that students were

encouraged to use a wide variety of sources, but they evaluated the credibility of the

information only when the sources included clearly contradictory information. Based on

their findings, the researchers suggested that conflicting health information may evoke

critical thinking and meaning-making processes among students and empower them to

develop their views based on information derived from various sources.

To some extent, the concept of multiliteracy is ambiguous because it serves as

an umbrella for many forms of literacy. Different researchers give this concept a variety

of meanings and therefore it is difficult to define unequivocally. This study focuses on

teachers' views of the concept, which come from the Finnish National Core Curriculum

and therefore is likely to guide also teachers' reflections on multiliteracy. Multiliteracy

thus in FNBE (2016) includes multimodality (e.g. Kulju et al., 2018; The New London

Group, 1996), reading and writing (e.g. Briere & Wilson, 2018; Kitson et al., 2007),

meaning-making and knowledge construction (e.g. Hirvonen & Palmgren-Neuvonen,

2019; Kalantzis et al., 2010), critical thinking and learning (Palsa & Ruokamo, 2015),

and information interpretation, evaluation, and production (e.g. Nygård et al., 2020a; Tanhua-Piiroinen et al., 2020) are in this study taken into account as its elements. Some elements of new literacies have also been highlighted in the curriculum and considered in this study, most importantly information-seeking and evaluation (e.g. Kiili et al., 2019; Leu et al., 2011), and online reading (e.g. Coiro, 2011; Leu Forzani, Timbrell et al., 2015). In Finland, the curriculum determines the educational contents and objectives, including multiliteracy as a transversal competence, and teachers can freely choose their teaching methods. Therefore, multiliteracy instruction can be implemented in many ways and, in the case of health education, from various perspectives due to the teachers' diverse educational backgrounds.

Discourses as Means of Reflection

Reflection refers to a contextual processing activity, which challenges implicit assumptions and taken-for-granted practices and directs towards goals, such as changing teaching practices and developing professionalism (Boud et al., 1987; Ulvik et al., 2018; Webster-Wright, 2009). It recognizes that teachers' voices can improve the teaching of all instructors through an active and intentional reflection of their own ideas, beliefs, and theories (Zeichner & Liston, 2014). In this study, the teachers' voice was mediated specifically by their talk, although, seen through a broad concept of text, voice could also be an idea or an image, for instance (see Bakhtin, 1986; Wertsch, 1991). In turn, narratives can contribute to provoking, inspiring, and initiating discussions and dialogues, which is essential for reflecting on practices and development (Moen, 2006).

Teachers have traditionally valued reflection as a functional method to develop their professionalism by making sense of situations, criticizing their former understandings, and constructing a new description of those situations (Schön, 1983). Graham and Phelps (2003) emphasized reflection and metacognitive processes as a

foundation of teachers' life-long learning, and "being a teacher". Reflection in a deep sense encompasses not only actions, but also underlying beliefs, ideas, knowledge, and goals that are thoroughly challenged and questioned (Kelchtermans, 2009). Teachers' self-reflection relates to character or personality and includes dimensions of self-regulation, self-examination, and self-construction (Shpeizer, 2018). Mezirow (1998) claimed that critical self-reflection of assumptions and validation of beliefs, intentions, values, and emotions through discourse promote learning to think and can lead to social and personal transformations. This kind of exploration of understandings through reflection and metacognition enables teachers to change their classroom instructional practices.

Previous research (e.g., Dineen, 2017) exploring reflection and dialogue with the goal of promoting students' learning has emphasized the significance of collegial dialogue in supporting students' development and making instructional decisions. For example, online discussion platforms have been found to contribute to teachers' shared reflection and problem-solving; thus, creating an experience-based repository of strategies to utilize in the teachers' work (McPhee, 2015). In the context of health education, a study of teacher competency revealed that the teachers' ability to reflect on their own practices and to accept responsibility for their own professional development were considered to be crucial competences (Moynihan et al., 2015). Specifically, with respect to health and well-being, the possibilities for reflection seem to be limited during busy school days (Byrne et al., 2018). Yet, teachers need time to reflect on their practices and take a critical look at what they do and why they do it in order to develop their professional knowledge and values.

Research Questions

This study focused on examining Finnish health education teachers' reflections of their views of multiliteracy instruction and the teachers' role and practices they used to implement that instruction. It addressed the following research questions:

1. How do the health education teachers talk about students' multiliteracy skills?

2. How do the health education teachers reflect on their role and the teaching practices they use in contributing to students' multiliteracy skills?

Research Design and Methods

Site and participants

The data for this study were collected in Northern Finland through narrative interviews ranging in length from 56 to 80 minutes. Eight health education teachers in three junior high schools and one high school participated in the study. The first interviewee was contacted through the first author's professional network, and further interviewees were recruited using snowball sampling (Goodman, 1961), in which each interviewee was asked to suggest other health education teachers who may be interested in participating in the study. Each teacher was interviewed once, and recruitment was continued until no new interviews were needed due to data saturation. Every teacher nominated by another teacher was contacted by Author 1 by an email, in which the research purposes and environment as well as data collection methods and schedule were outlined. The interviews were conducted at locations chosen by the teachers, mostly in their schools.

The participant group was heterogeneous; it included female and male teachers with various educational and professional backgrounds (see Appendix A). In accordance with Finnish teacher training, all the teachers had at least a master's degree. Some of the teachers had more training, with one teacher being a licentiate, another engaged in postgraduate studies, and two having previous training and work experience in the healthcare sector. Six of the eight teachers had completed the health education teacher qualification; one teacher was completing these studies at the time of the interview. The teachers' primary teaching subjects were health education, physical education, home economics, biology, geography, history, and social studies, and one worked as a primary school teacher. Only one teacher taught health education as her primary teaching subject. In this article, all the participants' names are pseudonyms.

Research Process

The interviews were conducted in an unstructured and narrative manner (Hua, 2016). This data collection method was chosen to encourage the teachers' to freely talk about their reflections of multiliteracy, students' multiliteracy skills, the ways teachers can promote these skills, as well as their teacher roles and identities (see Nygård et al., 2020b). Through their narrative stories, the teachers constructed their teaching by reflecting on their past, present, and future practices and experiences, that is, reflections of their historical body (Scollon & Scollon, 2004). The interviews were broadly constructed on themes, such as teaching subjects, health education, and multiliteracy. However, instead of the interviewer asking specific questions, each interview developed situationally through the discussion process (Hua, 2016). To engage the participants in storytelling, the questions started with words such as "tell" or "reflect". The interviews proceeded on the basis of the topics raised by the interviewees (Wengraf, 2001), which enabled them to share their unique and individual thoughts in their interactions with the

researcher. These reflective discourses paved the way for improving and transforming their teaching practice in relation to multiliteracies (McIntosh, 2010; Mezirow, 2000).

This study is grounded on nexus analysis and focuses on the teachers' voice in reflecting their thoughts, views, and practices in social action. According to this approach, three main components are intertwined in social action: discourses in place (discourses circulating in material places), interaction order (social arrangements that enable the formation of social relationships), and historical body (the social actor's life experiences) (Scollon & Scollon, 2004). Although all these elements are considered to be present in any social action, in this multiliteracy study, the focus was specifically on the discourses, which are broadly understood to include "all forms of meaningful semiotic human activity seen in connection with social, cultural, and historical patterns and developments of use" (Blommaert, 2005, p. 3). In line with a broad concept of text, discourses also consist of diverse content, such as interactional (talk) and written texts, images, logos, and symbols (Blommaert, 2005).

The data-driven analysis concentrated on the teachers' narratives of multiliteracy instruction and how they implement it in their work according to the curriculum (FNBE, 2016). The qualitative analysis software NVivo was utilized in transcribing and coding the interviews. The transcription was mainly carried out word for word, excluding filler words, pauses, insignificant vocalizations, and the chatting from non-participants, such as students, who entered the classroom during one of the interviews. For reason of anonymity, teachers were given pseudonyms already at the transcription phase. The coding of the data started on the basis of broader interview themes and proceeded according to the phenomena that emerged from the data. Coding and undergoing of the data continued repeatedly until no new phenomena appeared and the categorization was complete.

Data Analysis

In nexus analysis, reflection and analysis processes resemiotize or transform actions into new actions for both the researcher and the participants (Norris & Jones, 2005). Actions work their way through discourse, and discourse permeates actions in the form of resemiotization (Iedema, 2001; Jones & Norris, 2005; Scollon, 2005). Through resemiotizing, official steering documents, such as the curriculum, may have an opportunity to achieve the status, clarity, and significance of the practical teaching guidelines (Iedema, 2001). In the interviews, the curriculum with its phrases, instructions, and theoretical terms were discussed; thus, it was brought to the everyday level (see Scollon, 2005).

The relationship between discourse and action is considered to be dynamic, and it often manifests as tension between potential actions and actual actions (Jones & Norris, 2005). The tension emerges between the kinds of actions afforded by mediational means and the ways people mix those means in actual situations to respond to their immediate circumstances (Jones & Norris, 2005). In this study, the analysis process aimed at making visible the tension between the teachers' thoughts, views, and practices. In some of the interviews, the tension occurred as a "change" in the discussion between the researcher (Author 1) and the interviewee, possibly transforming the teachers' instructional practices and their teacher identity. According to Goffman (1959), "change" means the moments when customary practices are found to be inadequate and thus need to be re-evaluated. These are the key points, where the discourse most likely leads to the transformation of action (Scollon & Scollon, 2004). Thus, disrupting traditional norms and stagnant practices would create a transformative nexus of practice (Peppler & Wohlwend, 2018).

Results

The teachers' narratives of understanding and implementing multiliteracy instruction are discussed in the following sections. First the students' multiliteracy skills from the teachers' point of view will be inspected. Then the ways the teachers described their teaching methods to promote students' multiliteracy skills will be examined.

Students' [multi]literacy skills through the teachers' talk

In discussing the students' multiliteracy skills, the teachers were, perhaps surprisingly, most concerned about the students' *basic literacy skills—reading and writing*. Based on public literacy discourse they had followed and their own observations, students' abilities to read and write were noted to be weaker than that had been in the past. Rick stated that "for some students, reading comprehension is somewhat difficult so that small print is not easy … it may be that at picture and a brief introduction, whenever it is displayed, easier [to understand]." Similarly, Karen had paid attention to the students' weakened literacy skills. She reflected her concern by saying: "it [writing] is a really good exercise, because it feels that writing skills are somehow declining, therefore writing should be practiced in all subjects. All these basic skills come a bit through the particular subject." Annie had noticed the change in the students' literacy skills throughout her years as a teacher. As seen in the excerpt below, Annie reasoned that this decline in literacy was due to today's instant messaging culture.

> Annie: Actually, 15 years ago when we started to make PowerPoints and some articles with students, the basic document templates were much more clearly mastered than what it is today.
> Researcher: Yes. What is the reason for that?
> Annie: [Hesitantly] it's that language. What they [students] do and write, it's that language that has turned pretty poor.
> Researcher: So that the writing itself has deteriorated?

Annie: Exactly so. Writing skills, self-expression on paper, and then that writing skill is, in a way, just saving characters; thus, that kind of capital is forgotten. Information capital … I think that is one reason. And when those technological skills are lacking and they are no longer really needed, so when a person doesn't write much then s/he cannot read correctly either.

The teachers had internalized that multiliteracy is not a separate set of skills; rather, it is part of literacy and requires instruction accordingly. They were unified in saying that if students are expected to be able to interpret various forms of texts, their basic literacy skills must also be fostered.

Additionally, the teachers were concerned about their students' difficulties in interpreting different kinds of texts. The teachers included *information-seeking and evaluation* in the concept of multiliteracy, and they saw room for improvement in these skills. Laura described students' skills from this perspective as follows:

There is a lot to practice. Many of them [the students] consider tabloids credible because they are read frequently. We have, for instance, interpreted the ads, health ads, during the lesson. In a way, the lack of criticality is clearly the prevailing thing for students. In a sense, they do not necessarily understand that those ads are just advertising phrases to arouse the need for that product. In my opinion, it [interpreting different types of texts] is pretty weak.

Matthew had noticed the heterogeneity in students' critical thinking as some students have a more natural critical perspective and a more varied interpretation of different matters. Other students needed more support and guidance from their teacher to more deeply think about phenomena. According to the teachers, critical thinking and criticality in this context meant, first, the skills to interpret different kinds of texts, and second, the skills to understand texts more profoundly. However, this was seen to improve over time. Nancy justified this point by saying:

Probably information-seeking and criticality have not yet been taught enough; they have done less that type of tasks and those skills of information management, information-seeking, information processing are generally still immature, which is of course understandable.

The teachers had noticed that while the students' information evaluation skills and a critical perspective on the information acquired were still evolving, the students were somewhat aware that not everything should be trusted, especially in online environments.

The teachers perceived differences in the students' competence in *evaluating diverse forms of texts*, but they also agreed that students need continuous practice to interpret all kinds of texts. According to Lenny:

At that stage [in the 7th grade] a lot of practice is needed, of course, in basic interpretation of texts. There is still room for improvement. For instance, in the 7th graders' health education test, it came out that understanding the basics from the written text requires practice at that stage. But diagrams really require a lot of practice at that point, while interpretation of pictures is perhaps what helps then.

Lenny recognized that it was difficult for students to read charts; they were more familiar with interpreting images. At first in the interview, he was unable to point out the potential reasons why this was the case, but the ensuing conversation with the researcher (Author 1) brought him a new perspective:

Lenny: In the test, there was a picture, and the task was to name physical, mental, and social factors that promote health. They dug well from that picture … I think they generally have image interpretation skills at that stage.
Researcher: Why is that?
Lenny: I can't say why that is; but I think an image is easier to understand compared to the text.
Researcher: One can, of course, think about what kind of an effect these channels [Instagram, Snapchat] have on their own communication, as quite a large part of adolescents' communication is pictorial.

Lenny: True, if you think about Instagram and Snapchat, which they nowadays use, it is pictorial communication only … that is true, yes, that was a good point.

During this discussion, Lenny began to reflect on the reasons for students' good skills in interpreting images, which could have an impact on transforming his future teaching practices. Karen also noticed this. She said that it was quite easy for students to interpret images, but "there are big differences in how diagrams and such [are interpreted], when looking at health statistics and the like, and digging from there, facts come to light, but statistics are such that students inherently skip them if they only can." Similarly, Nancy said that students tend to perceive textual information as "correct" information, but they are not able to utilize charts in knowledge construction on their own. However, she noted that "when you show them a diagram and tell them to have a look and write five sentences of its main points, they will then succeed. But you must guide them to do so." It is likely that without teachers' guidance, the statistical texts would probably be bypassed; thus, the skill of reading them would not be practiced.

Teachers' reflections on students' [multi]literacy promotion

The interviewed teachers described multiliteracy as an important competence that should be considered in all school subjects, particularly in health education. Nancy stated:

[Multiliteracy] is quite essential and specifically related to the teaching health education. And it is precisely this kind of critical multiliteracy, and the fact that it is perceived as not only in acquiring texts or information, but also in producing it.

Nancy described multiliteracy in line with the curriculum, not only as *information-seeking and evaluation* of diverse texts, but also considering the *production* aspect of it.

Moreover, she used the term critical multiliteracy to refer to criticality in interpreting confusing and complex health communication.

The teachers had adopted the challenging concept of multiliteracy, although, it was designated in the curriculum as a new concept, *transversal competence*. Annie explained opportunities to implement multiliteracy instruction in health education using examples from her daily work as a teacher:

> Well, in health education it's extremely easy. As a concept, it is like, oh no, what is that?! But that's nothing more than that I take, for instance, some picture, we take a look at that … listen to some song and reflect on it, watch a video, hold debates, build a kind of role-playing game with some situation in it … multiliteracy is a tricky term if you don't explain it to yourself, [but it is] just that basic teacher job.

Annie, whose primary teaching subject was physical education, described multiliteracy as a transversal skill, and she emphasized *kinesthetic teaching methods*: "It is what has always been done. If you think all these kinesthetic things in multiliteracy … condom to banana, resuscitation skills … measuring your heart rate … brushing teeth, these all are kind of multiliteracy, learning things differently." According to Annie, in that respect, the new curriculum has brought nothing novel; she has used this kind of teaching methods—multiliteracy instruction—as part of her teaching for years. Rick brought forth the same point accentuating learning-by-doing and kinesthetic learning methods, for instance, in teaching first aid skills. He thought that, in this way, it was possible to obtain better learning results, but because he was also concerned about the students' health, he strove to reduce the amount of time that students sat during the school day. He found it interesting to integrate *different methods* into his teaching, and he said, "we combined doing and information from the blackboard and maybe some video clips about how an arm has been broken, what is first aid of that, and then we act

accordingly." He wanted to visualize the subject content and, in this way, transform theoretical issues written in the textbook into everyday practices.

As discussed in the previous section, the teachers had paid attention to the students' declining literacy skills. Therefore, they had added *actions to promote literacy* in their health education toolkit. Julia considered her teaching from the perspective of contributing the students' literacy in this way:

> There has been much talk that literacy skills have weakened; I really have put an effort into it. Sometimes, we just read and exercise it, make mind-maps of the matter … we just must forget the functional learning and such, because the basic skills start to deteriorate. So, our school now also wants to focus on that basic literacy.

To develop literacy skills, the teachers preferred to give written assignments to their students. Karen said that she usually had to encourage students to "write standard language … kind of formal text." The teacher had to remind the students about grammar issues, such as sentence structure and compound words. Additionally, terminology and defining concepts are challenging for some students. Karen noted: "I ask what that means and then we always discuss together, how it could be said in another way. And evade those learned borrowings or the ones they do not understand."

Laura had promoted students' multiliteracy with *information-seeking tasks* in which students had to find information about the flu, for example. She said that the students "needed to write down, where they sought the information and doing so first, evaluate information credibility themselves. Then we discussed how they justified the credibility." In teaching information evaluation, Laura highlighted the importance of introducing diverse information sources:

> In health education, we aim at using diverse sources; I always mention the source from which I have taken the particular information. Or when we have had quite a

lot of group work and used different sources, for instance, press articles and such, [I ask the] students to see what kinds of sources exist. We have attempted to discuss what a credible source is like. The topic of a credible source of health information has been addressed as its own lesson.

Also, Julia expressed that the key issue in multiliteracy as being that students learn to find and combine credible information by themselves. Therefore, she made use of various online sources in her teaching so that "students must excerpt the most important facts from there and to give examples where to find information on this matter." However, in the interview, Julia noticed that she had not sufficiently discussed unreliable sources with her students, and she decided to transform her teaching practices regarding this matter. Similarly, Matthew had not paid much attention to teaching about evaluating information in health education unlike his other teaching subjects. The tension to change the nexus of practice—to transform his teaching—became visible when he noted that "perhaps inspired by this [interview] I could handle it more."

Lenny had emphasized the significance of *source criticism of various text types* in his teaching: "as they watch a lot of videos, also in that, source criticism. You should always remember what you are watching and who is talking, is s/he an authority, whom to trust and what to believe and on what grounds." According to Nancy, students were able to choose credible sources quite well. In teaching about evaluating information from different sources and media, she had utilized news about current phenomena, such as intoxicants, genetic testing, sexual identity, or harassment. She said she uses "[these kinds] of current issues, which you don't need to seek or invent, because they have been pre-edited there. We just watch that video and the discussion starts from there." In Nancy's opinion, another good way of teaching information evaluation is to bring fake news to the lesson, find factual errors in them, and correct them. She considered the health education textbook to be a good tool, because:

…there is a really good set of questions, which we use if we analyze, for instance, advertisement or press article or such. There are questions, like who the publisher is, where it is published, why it is published, whether there are any private interests. Totally clear. With this set of questions, students go through the text and write an analysis of it. This way, we systematically process different text types, various things related to health or illness.

In the extract above the teachers saw that interaction in the classroom and joint discussions that sparked the students and the teacher to reflect on various information sources, specifically on the Internet which promoted learning and critical thinking.

The teachers had taken *different forms of texts* into consideration: "various diagrams, which we interpret and utilize … and of course, the basic skills to interpret written texts, and then, different pictures, too. We strive to comprehensively approach the issue from different perspectives." In this regard, Rick and Nancy had similar teaching methods. Rick noted: "showing the core issue graphically and then discussing it. It may stick in the mind rather than a huge amount of text … A monologue is not necessarily good." The teachers had focused on teaching to interpret difficult forms of texts because their students did not voluntarily make use of graphical texts, for instance.

The teachers declared to be eager to apply versatile means to utilize their own learning environment to promote multiliteracy in health education but commented that it was not possible due to the insufficient of number of teaching hours. Julia made use of multiliteracy instruction to make students aware of health-promoting aspects in their own environment, such as jogging paths and jungle gyms. She said: "for instance, I have had a task to take a photo of an environment, a place, which promotes health, and [have the students to] show me the picture." This type of task proficiently includes the aspect of production, which can be considered as one part of multiliteracy. Production may sometimes be difficult to include in health education due to the limited number of

weekly learning hours. Matthew analyzed the reasons for the limited contribution of multiliteracy in health education by saying:

> …on average, there is less multiliteracy in health education; therefore, perhaps fewer outputs are made. Also, there is less time to implement any projects, because there are so many things [that] should be handled during the course.

According to Matthew, there was only one health education course in each grade, while there were two history courses in each grade. This factor alone reduced the possibilities of including, for example, transversal skills of the curriculum, in the everyday teaching work, although teacher qualifications have an impact on this matter.

Discussion

This study sought to increase understanding of instruction in multiliteracies and students' multiliteracy skills by examining Finnish health education teachers' intentional reflections of their beliefs, ideas, and theories (Zeichner & Liston, 2014). The interviews proved to be considerable and inspiring, which is essential for reflecting on practices and their development (Moen, 2006). The teachers identified students' strengths and weaknesses in multiliteracies (RQ 1) and their narratives of their means of promoting multiliteracy also considered the problem areas in this context (RQ 2).

Health education teachers talk about students' multiliteracy skills

The results of the current study indicate that the teachers were concerned about both the students' multiliteracy skills and their traditional print literacy skills. This finding is in line with the results reported in previous studies, which have highlighted the significance of multiliteracy instruction in learning basic literacy skills (e.g., Briere & Wilson, 2018; Choi & Yi, 2016; Forzani & Leu, 2012; Paesani, 2016; Rasi et al., 2019). In addition, some of the teachers had found that the increased use of technology had not

improved students' reading and writing skills but impoverished them. Because of the teachers' concerns about the students' basic literacy skills, focusing on the promotion of multiliteracy was not necessarily motivating in their view. The relationship between need-based literacy teaching and promoting curriculum-steered multiliteracy was reflected in the tension between the teachers' discourse and actions (see Jones & Norris, 2005; Kitson et al., 2007; Zhang et al., 2019). In the interviews, the teachers reflected on the concept of multiliteracy from a perspective similar to the one presented in the curriculum. The talk about the curriculum can be regarded to be a form of resemiotizing (Iedema, 2001; Jones & Norris, 2005; Scollon, 2005), which can permeate the teacher's actions in the classroom, thus triggering the tension that had arisen between the teacher's goals and actions.

The teachers emphasized elements such as interpretation, production, and assessment of different text forms as crucial to meet competence in multiliteracy (Tarnanen et al., 2019). In fact, some texts such as statistics illustrated in diagrams, proved to be challenging for students and they did not attract the student's attention. The teachers viewed that the use of diagrams as an information source was mainly a result of a teacher-led instruction, and teacher guidance was central in understanding them. Developing the students' understanding of statistical information can be considered important since it can enable them to correctly interpret graphical health information and avoid detrimental misunderstandings. However, according to the teachers, the students were already skilful in interpreting images and videos, and they also liked to use written texts to obtain information. Promoting skills to understand and utilize different forms of texts, as well as employing digital technology and multimodal practices, would contribute to the students' knowledge construction and processes of meaning-making (Halinen et al., 2015; Serafini, 2015; Serafini & Ladd, 2008; Tarnanen

et al., 2019). Although children and adolescents use digital technology frequently, their expertise can still be quite inadequate, and the promotion of digitalization should focus on both technological skills and understanding of content.

According to the results, the teachers characterised information evaluation and criticality as key areas of multiliteracy (see Leu et al., 2011; Rasi et al., 2019). Criticality is needed in the selection of credible information sources, but also when seeking a deeper understanding of information. Teachers had found that students tend to believe that the more they read or hear something, the more credible it is. Moreover, they were often considered not to look beyond "face value" and lack the ability to identify marketing or manipulative communication. As ever younger children face issues of assessing the accuracy, reliability, and bias of information due to the strong growth in multimodality, and global access to information (Kress, 2003; Leu et al., 2011), it is important to teach information evaluation and critical approach in all school subjects. This finding is supported by the results reported in previous studies (see Nygård et al., 2020a; Kiili et al., 2019), which have suggested that teachers have an important role in guiding students towards credible information sources and teaching information evaluation skills.

Health education teachers' reflections on their role and practices in contributing to students' multiliteracy skills

The results of this study showed that the interviewed teachers considered the promotion of multiliteracy as a part of their work as a health education teacher. They depicted themselves as subject teachers, but also as teachers of reading and writing (see also FNBE, 2016; Savitz, 2020). The teachers highlighted teaching methods that could be used to develop reading and writing skills (Farías & Véliz, 2019; Halinen et al., 2015; Paesani, 2016; Rasi et al., 2019), and related skills, such as summarizing and producing

grammatically correct text. Some of the teachers regretted the decrease in reading among young people, and the consequent decline in reading comprehension. This is an important finding, because it suggests that teachers can include other important, literacy-related competence objectives in their work in addition to the subject content. To promote literacy diversely, they said to give students assignments related to news, advertisements, and other types of text. The teachers considered these kinds of tasks to contribute to the students' basic reading and writing skills, and compounded with information-seeking, also the criticality and skills needed to evaluate information credibility.

In contrast to Tanhua-Piironen's (2020) findings, in this study some of the teachers had utilized various kinds of sources—advertisements and purposefully selected unreliable sources—to promote their students' skills to choose between health information sources. At the time of the interviews some of the teachers did not use different sources in their teaching as described above. However, the reflective discussion (McIntosh, 2010; Mezirow, 2000) with the researcher foregrounded the importance of using multiple sources. This created a tension between their customary teaching practices and the new practices, which needed to be re-evaluated (Goffman, 1959). The interviews provoked a small change, which laid the foundation for opportunities to transform the nexus of practice, that is, teaching information evaluation (Peppler & Wohlwend, 2018).

Even though multiliteracy encompasses a large learning area to be covered in each subject, the teachers in this study made insightful observations of it and they strove to deploy multiliteracy in health education. Joint classroom discussions were seen as an effective teaching method, first, to broaden the students' knowledge of health terminology, and second, to enable them to learn how to assess the credibility of the

information sources used. According to the analysis, the teachers said to choose the teaching methods that developed literacy extensively, that is, in line with the spirit of the curriculum, integrating transversal skills into each subject (FNBE, 2016; Halinen et al., 2015). They implemented multiliteracy instruction in diverse ways, such as assigning information-seeking and production tasks and creating and implementing a role-playing game. These teaching methods supported learning, for instance, in aural, visual, spatial, and kinesthetic ways, which the teachers claimed to improve learning outcomes, reduce the amount of time the students were sitting, and bring variability to the school days. Although these kinds of multiliteracy strategies are considered functional in several studies (see Butler, 2017; Hardiana & Syuata, 2018), their use is still likely to be unusual for theoretical school subjects other than health education.

Some limitations of the study are worth considering. The results of this study were based on one round of interviews, and a supplemental period of observations in health education lessons would have deepened understanding of the phenomenon. However, the purpose of the study was to explore the current situation with a focus on teacher perspectives and it would be important to the future to follow how the situation develops. The relatively small number of teachers (8) in four schools makes generalization difficult, but the results offer an interesting perspective and new knowledge on teachers' views and instructional practices of promoting multiliteracy in health education.

Research guided by nexus analysis can enable change even at the data collection stage (Scollon & Scollon, 2004). In this study, the participants had learned about the researcher's (Author 1) background and research interests in advance. They knew the researcher's central themes, such as teacher's informational authority roles and the significance of evaluating credible information. Therefore, it is possible that, in the

discussions, these themes had a more prominent position in the teachers' talk than what could have happened if someone else had acted as the interviewer. However, this may have also contributed to the tension between the teacher's previous activities and their new perspectives. Thus, the discourses in place generated by the interview set-up played an important role in enabling the change.

Implications

The main conclusion of this study is that although teachers are familiar with the concept of multiliteracy consistent with the curriculum, it is not self-evident for them to be able to successfully implement multiliteracy instruction in terms of learning. Corresponding to the latest Programme for International Student Assessment (PISA) results (OECD, 2019), the study highlighted concerns about students' declining literacy skills. Based on the PISA results, the literacy skills of Finnish adolescents are above average in comparison to teens in Organisation for Economic Co-operation and Development (OECD) countries, but they are declining (OECD, 2019). While the situation is still considered good, action is needed to halt this trend, making it important to see all subject teachers as [multi]literacy teachers. Moreover, multiliteracy skills have not yet been included among the test criteria in the PISA tests, but on the PISA 2025 "Learning in the Digital World" they will be considered (OECD, n.d.).

The results presented in this article lead to important implications for teachers. Firstly, subject teachers can consider employing variable teaching methods that support learning both multiliteracies and subject content, for instance, by combining kinesthetic and bodily practices with visual or theoretical, written contents. Secondly, the use of technology and digitality is common in today's classrooms, but the computer is still often a pen replacement. By creating multimodal content, students can achieve better understanding of the subject content and make well justified choices between

information sources (Choi & Yi, 2016). Reading and writing online would benefit from the improvement of these basic skills, which in turn would contribute to the development of thinking critically. Thirdly, the promotion of information-seeking and evaluation skills should be more strongly included in subject teaching, as this is key to receiving relevant information and avoiding propaganda and misinformation. Too strict instruction will not promote information evaluation skills when information is retrieved from a "correct", pre-determined source and is not genuinely sought and evaluated. Finally, teachers' professional development requires continual reflection and discussion, in which former assumptions, understandings, and practices are challenged and can thus lead to personal and social transformations (Boud et al., 1985; Mezirow, 1998; Ulvik et al., 2018; Webster-Wright, 2009).

Further research is needed to increase knowledge about what is required to improve teacher education and in-service training to promote the use of functional [multi]literacy teaching methods. Health education teachers who participated in this study were concerned about students' declined literacy, and it would be necessary to monitor the development of the situation through a longitudinal study. In addition, future research using action research approach and extended to other subject teachers would provide further insights into the findings presented in this article.

Disclosure Statement

Acknowledgements

References

Aira, T., Välimaa, R., Paakkari, L., Villberg, J., & Kannas, L. (2014). Finnish pupils'
perceptions of health education as a school subject. *Global Health Promotion*,
21(3), 6–18. https://doi.org/10.1177/1757975914523481

Bakhtin, M. (1986). *Speech genres & other late essays.* University of Texas Press.

Blommaert, J. (2005). *Discourse : A Critical Introduction.* Cambridge University Press.

Boud, D., Keogh, R., & Walker, D. (1987). *Reflection: Turning experience into
learning* (Repr.). Kogan Page.

Briere, J. L., & Wilson, J. R. (2018). Reading Ability and Multiliteracy among Rural
Saskatchewan High School Students. *Journal of Literacy and Technology, 19*(2).

Butler, J. (2017). Bodies in Composition: Teaching Writing through Kinesthetic
Performance. *Composition Studies, 45*(2), pp. 73–90.

Byrne, J., Rietdijk, W., & Pickett, K. (2018). Teachers as health promoters: Factors that
influence early career teachers to engage with health and wellbeing education.
Teaching and Teacher Education, 69, 289–299.
https://doi.org/10.1016/j.tate.2017.10.020

Choi, J., & Yi, Y. (2016). Teachers' integration of multimodality into classroom
practices for English language learners. *Tesol Journal, 7*(2), 304–327.
https://doi.org/10.1002/tesj.204

Coiro, J. (2011). Predicting reading comprehension on the Internet: Contributions of
offline reading skills, online reading skills, and prior knowledge. *Journal of
Literacy Research, 43*(4), 352–392. https://doi.org/10.1177/1086296X11421979

Cope, B., & Kalantzis, M. (2000). Introduction. In B. Cope & M. Kalantzis (Eds.),
Multiliteracies: Literacy learning and the design of social futures (pp. 3–8).
Routledge.

Dineen, A. (2017). Shifting the focus from teaching to learning. Thinking about what matters for the learner. In K. Smith, & J. Loughran (Eds.), *Quality learning: Teachers changing their practice* (pp. 9–17). Brill | Sense.

Farías, M., & Véliz, L. (2019). Multimodal texts in Chilean English teaching education: Experiences from educators and pre-service teachers. *Profile: Issues in Teachers' Professional Development, 21*(2), 13–27. https://doi.org/10.15446/profile.v21n2.75172

FNBE. (2016). *National Core Curriculum for basic education 2014.* Finnish National Board of Education.

Forzani, E., & Leu, D. J. (2012, October). New literacies for new learners: The need for digital technologies in primary classrooms. *The Educational Forum, 76*(4), 421–424. http://dx.doi.org/10.1080/00131725.2012.708623

Goffman, E. (1959). *The presentation of self in everyday life.* Penguin.

Goodman, L. A. (1961). Snowball sampling. *The Annals of Mathematical Statistics, 32*(1), 148–170. https://doi.org/10.1214/aoms/1177705148

Graham, A., & Phelps, R. (2003). 'Being a teacher': Developing teacher identity and enhancing practice through metacognitive and reflective learning processes. *The Australian Journal of Teacher Education, 27*(2), 11–24. https://doi.org/10.14221/ajte.2002v27n2.2

Halinen, I., Harmanen, M., & Mattila, P. (2015). Making Sense of Complexity of the World Today: Why Finland Is Introducing Multiliteracy in Teaching and Learning. In V. Bozsik (Ed.), *Improving Literacy Skills across Learning* (pp. 136–153). CIDREE Yearbook 2015. HIERD. Retrieved from https://www.schooleducationgateway.eu/en/pub/resources/publications/improving_literacy_skills_acro.htm

Hardiana, M. T. A. N., & Suyata, P. (2018). The effectiveness of VAK (visual, auditory, kinesthetic) model in learning summary writing. *Pedagogies: An International Journal*, *5*, 43–49.

Heydon, R., Moffatt, L., & Iannacci, L. (2015). 'Every day he has a dream to tell': classroom literacy curriculum in a full-day kindergarten. *Journal of Curriculum Studies, 47*(2), 171–202. https://doi.org/10.1080/00220272.2014.1000381

Hirvonen, N., & Palmgren-Neuvonen, L. (2019). Cognitive authorities in health education classrooms: A nexus analysis on group-based learning tasks. *Library & Information Science Research, 41*(3), 100964. https://doi.org/10.1016/j.lisr.2019.100964

Hua, Z. (2016). *Research methods in intercultural communication: A practical guide*. Wiley Blackwell.

Iedema, R. (2001). Resemiotization, *Semiotica*, *2001*(137), 23–39. https://doi.org/10.1515/semi.2001.106

Jones, R. H., & Norris, S. (2005). Discourse as action/discourse in action. In S. Norris & R. H. Jones (Eds.), *Discourse in Action* (pp. 15–26). Routledge.

Kalantzis, M., Cope, B., & Cloonan, A. (2010). A multiliteracies perspective on the new literacies. In E. A. Baker (Ed.), *New literacies: multiple perspectives on research and practice* (pp. 61–87). The Guilford Press.

Kelchtermans, G. (2009). Who I am in how I teach is the message: self-understanding, vulnerability and reflection. *Teachers and Teaching: Theory and Practice*, *15*(2), 257–272. https://doi.org/10.1080/13540600902875332

Kiili, C., Coiro, J., & Räikkönen, E. (2019). Students' evaluation of information during online inquiry: Working individually or in pairs. *Australian Journal of Language and Literacy, 42*(3). Retrieved from https://jyx.jyu.fi/handle/123456789/65909

Kiili, C., Leu, D. J., Marttunen, M., Hautala, J., & Leppänen, P. H. (2018). Exploring

    early adolescents' evaluation of academic and commercial online resources

    related to health. *Reading and Writing, 31*(3), 533–557.

    https://doi.org/10.1007/s11145-019-09944-9

Kitson, L., Fletcher, M., & Kearney, J. (2007). Continuity and change in literacy

    practices: A move towards multiliteracies. *The Journal of Classroom Interaction,*

    41/42 (2/1), 29–41. Retrieved from https://www.jstor.org/stable/23869446

Knobel, M., & Lankshear, C. (2014). Studying New Literacies. *Journal of Adolescent &*

    Adult Literacy, 58(2), 97–101. https://doi.org/10.1002/jaal.314

Kress, G. (2003). *Literacy in the new media age*. Routledge.

Kulju, P., Kupiainen, R., Wiseman, A. M., Jyrkiäinen, A., Koskinen-Sinisalo, K. L., &

    Mäkinen, M. (2018). A Review of multiliteracies pedagogy in primary

    classrooms. *Language and Literacy, 20*(2), 80–101.

    https://doi.org/10.20360/langandlit29333

Leu, D. J., Forzani, E., Rhoads, C., Maykel, C., Kennedy, C., & Timbrell, N. (2015).

    The New Literacies of online research and comprehension: Rethinking the

    reading achievement gap. *Reading Research Quarterly, 50*(1), 37–59.

    https://doi.org/10.1002/rrq.85

Leu, D. J., Forzani, E., Timbrell, N., & Maykel, C. (2015). Seeing the Forest, Not the

    Trees: Essential Technologies for Literacy in the Primary-Grade and Upper

    Elementary-Grade Classroom. *The Reading Teacher, 69*(2), 139–145.

    https://doi.org/10.1002/trtr.1406

Leu, D. J., Kinzer, C. K., Coiro, J., Castek, J., & Henry, L. A. (2017). New literacies: A

    dual-level theory of the changing nature of literacy, instruction, and assessment.

Journal of Education, 197(2), 1–18.

https://doi.org/10.1177/002205741719700202

Leu, D. J., McVerry, J. G., O'Byrne, W. I., Kiili, C., Zawilinski, L., Everett-Cacopardo, H., ... & Forzani, E. (2011). The new literacies of online reading comprehension: Expanding the literacy and learning curriculum. *Journal of Adolescent & Adult Literacy, 55*(1), 5–14. https://doi.org/10.1598/JAAL.55.1.1

McPhee, E. (2015). Learning through talking: Web forum conversations as facilitation for instrumental teacher professional development. *Australian Journal of Music Education,* (2), 107–117.

McIntosh, P. (2010). *Action research and reflective practice: Creative and visual methods to facilitate reflection and learning*. Routledge.

McPhee, E. (2015). Learning through talking: Web forum conversations as facilitation for instrumental teacher professional development. *Australian Journal of Music Education,* (2), 107–117.

Mezirow, J. (1998). On Critical Reflection. *Adult Education Quarterly (American Association for Adult and Continuing Education), 48*(3), 185–198. https://doi.org/10.1177/074171369804800305

Mezirow, J. (2000). Learning to think like an adult. Core concepts of transformation theory. In J. Mezirow, R. Kegan, M. F. Belenky, A. V. Stanton, L. A. P. Daloz, S. Brookfield, . . . C. A. Smith (Eds.), *Learning as transformation: Critical perspectives on a theory in progress* (pp. 3–33). Jossey-Bass.

Moen, T. (2006). Reflections on the Narrative Research Approach. *International Journal of Qualitative Methods, 5*(4), 56–69. https://doi.org/10.1177/160940690600500405

Moynihan, S., Paakkari, L., Välimaa, R., Jourdan, D., & Mannix-McNamara, P. (2015). Teacher competencies in health education: Results of a Delphi Study. *Pedagogies: An International Journal, 10*(12), p. e0143703. https://doi.org/10.1371/journal.pone.0143703

The New London Group. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review, 66*(1), 60–93. https://doi.org/10.17763/haer.66.1.17370n67v22j160u

Norris, S., & Jones, R. D. (2005). Methodological principles and new directions in MDA. In S. Norris & R. H. Jones (Eds.), *Discourse in Action* (pp. 201–206). Routledge.

Nygård, T., Hirvonen, N., Räisänen, S., & Korkeamäki, R.-L. (2020a). Ask your mother! Teachers' informational authority roles in information-seeking and evaluation tasks in health education lessons. *Scandinavian Journal of Educational Research, 65*(6), 972–985. https://doi.org/10.1080/00313831.2020.1788145

Nygård, T., Hirvonen, N., Räisänen, S., & Korkeamäki, R.-L. (2020b). Health education teachers' historical bodies: constructing teacher identity and teaching information evaluation. *Health Education, 121*(1), 59–74. https://doi.org/10.1108/HE-10-2020-0096

OECD. (2019). *PISA 2018 Results (Volume I): What Students Know and Can Do, PISA*. OECD Publishing. https://doi.org/10.1787/5f07c754-en

OECD. (n. d.). *What is PISA?* https://www.oecd.org/pisa/

Paesani, K. (2016). Investigating connections among reading, writing, and language development: A multiliteracies perspective. *Reading in a Foreign Language, 28*(2), 266–289. Retrieved from https://eric.ed.gov/?id=EJ1117240

Palsa, L., & Ruokamo, H. (2015). Behind the concepts of multiliteracies and media literacy in the renewed Finnish core curriculum: A systematic literature review of peer-reviewed research. *Seminar.net – International Journal of Media, Technology and Lifelong Learning, 11*(2), 101–119. Retrieved from https://journals.oslomet.no/index.php/seminar/ article/view/2354

Peppler, K., & Wohlwend, K. (2018). Theorizing the nexus of STEAM practice. *Arts Education Policy Review: Gathering STE(A)M: Policy, Curricular and Programmatic Developments in Arts-based Science, Technology, Engineering and Mathematics Education, 119*(2), 88–99. https://doi.org/10.1080/10632913.2017.1316331

Rasi, P., Kangas, M., & Ruokamo, H. (2019). Promoting multiliteracy in the Finnish educational system. In M. Paksuniemi & P. Keskitalo (Eds.), *Introduction to the Finnish educational system* (pp. 97–111). Brill Sense.

Savitz, R. S. (2020). A School-Wide Attack on Reading Problems: Ways Secondary Teachers Can Support Striving Readers–Then and Now. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas, 93*(3), 125–134. https://doi.org/10.1080/00098655.2020.1743136

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action.* Basic Books.

Scollon, R. (2005). The rhythmic integration of action and discourse: work, the body and the earth. In S. Norris & R. H. Jones (Eds.), *Discourse in Action* (pp. 20–31). Routledge.

Scollon, R., & Scollon, S.W. (2004). *Nexus analysis. Discourse and the emerging internet.* Routledge.

Serafini, F. (2015). Developing Students' Interpretive Repertoires. *Language & Literacy (Kingston, Ont.), 17*(3), 118–133. https://doi.org/10.20360/G2459V

Serafini, F., & Gee, E. (2017). Introduction. In F. Serafini & E. Gee (Eds.), *Remixing multiliteracies: Theory and practice from new London to new times* (pp. 1–18). Teachers College Press.

Serafini, F., & Ladd, S. M. (2008). The challenge of moving beyond the literal in literature discussions. *Journal of Language and Literacy Education [Online], 4*(2), 6–20. Retrieved from https://eric.ed.gov/?id=EJ1068186

Shpeizer, R. (2018). Teaching critical thinking as a vehicle for personal and social transformation. *Research in Education, 100*(1), 32–49. https://doi.org/10.1177/0034523718762176

Tanhua-Piiroinen, E., Kaarakainen, S. S., Kaarakainen, M. T., & Viteli, J. (2020). *Digiajan peruskoulu II. [Comprehensive Schools in the Digital Age II].* The Ministry of Education and Culture.

Tan, L., & Guo, L. (2014). Multiliteracies in an outcome-driven curriculum: Where is its fit?. *The Asia-Pacific Education Researcher, 23*(1), 29–36. https://doi.org/10.1007/s40299-013-0082-0

Tarnanen, M. J., Kaukonen, V., Kostiainen, E., & Toikka, T. (2019). Mitä opin? Monilukutaitoa ja tutkivaa oppimista monialaisessa oppimiskokonaisuudessa. [What did I learn? Multiliteracy and exploratory learning in an interdisciplinary learning module]. *Ainedidaktiikka, 3*(2). https://doi.org/10.23988/ad.81941

Ulvik, M., Helleve, I., & Smith, K. (2018). What and how student teachers learn during their practicum as a foundation for further professional development. *Professional Development in Education*, *44*(5), 638–649. https://doi.org/10.1080/19415257.2017.1388271

Webster-Wright, A. (2009). Reframing professional development through understanding authentic professional learning. *Review of Educational Research*, *79*(2),

7   02–739. https://doi.org/10.3102/0034654308330970

Wengraf, T. (2001). Preparing lightly-structured depth interviews: a design for a BNIM-type biographic-narrative interview. In T. Wengraf (Ed.), *Qualitative research interviewing* (pp. 111–151). SAGE Publications. https://doi.org/10.4135/9781849209717

Wertsch, J. V. (1991). *Voices of the mind: A sociocultural approach to mediated action* (1st Harvard University Press pbk. ed.). Harvard University Press.

Zeichner, K. M., & Liston, D. P. (2014). *Reflective teaching: An introduction* (2nd ed.). Routledge.

Zhang, Z., Nagle, J., McKishnie, B., Lin, Z., & Li, W. (2019). Scientific strengths and reported effectiveness: a systematic review of multiliteracies studies. *Pedagogies: An International Journal, 14*(1), 33–61. https://doi.org/10.1080/1554480X.2018.1537188

Appendix A.

Teachers' educational and professional backgrounds (Nygård et al., 2020b).

Teacher	Subjects	Teaching Years	Former Profession	HE qualification	Further Studies
Annie	**Physical education** Health education	16	Primary teacher	x	Licentiate degree
Julia	**Geography** **Biology** Health education	6 2 (full-time)	—	Health education studies in progress	—
Karen	**Health education** Student counselling	16	Nurse Vocational teacher	x	—
Laura	**Home economics** Health education	<1	—	x	Foreign language stud in progress
Lenny	**Geography** **Biology** Health education	2	—	x	—
Matthew	**History** **Social studies** Religion Ethics Health education	5	—	—	Psychology studies i progress
Nancy	**Geography** **Biology** Health education	19	—	x	Doctoral studies in progress
Rick	**Primary teacher** Health education	16	Physiotherapist	x	—

Note. Primary teaching subjects are indicated in bold.