

Editorial

Discourse and Communication for Sustainable Education (DCSE) published by Institute of Sustainable Education is an international, peer-reviewed journal that provides a forum for the examination of policies, theories and practices related to discourse and communication for sustainable education. Since contemporary discourse study has extended its field to the study of multifaceted contexts of discourse, it is able to be integrated in the broader study of the phenomena of communication in relation to sustainable education.

The DCSE publishes research articles and reviews. Its diversity is apparent in the variety of its theories, methods and approaches, thus avoiding the frequent limitation to one school, approach, academic branch. The only criteria will be the quality and the originality of its papers. The DCSE welcomes papers which explore inspirational ideas in sustainable education, are written in innovative ways or are presented in experimental ways.

The first issue of the DCSE consists of ten papers. The first paper by Gerretson and her colleagues provides the research data that describe practical self-regulated learning strategies for students and documents outcomes and impacts related to teacher professional development. The research was carried out in Latvia using the global curricular topic – patterns in nature.

The paper by Skrinda determines the effectiveness of the direct acquisition of vocabulary (through memorisation) and the indirect acquisition of vocabulary (through context) and suggests a meaningful context-based approach to foreign language vocabulary acquisition which is aimed at achieving an adequate balance between the direct and the indirect acquisition of foreign language vocabulary. The author acknowledges that it has to be a holistic process in which the learners both as individuals and in groups can receive maximum opportunity to develop.

The paper by Hogan and English on breastfeeding examines adult learning enhanced by intervention of health care workers and availability of information on breastfeeding. Barriers to learning include a notable lack of support from health professionals and family, as well as societal and workplace barriers. The authors urge lactation consultants to examine informal adult learning more closely given its importance to sustaining the family.

The paper by Grišāne focuses on increasing teachers and pupils' understanding of sustainable education, which can be achieved under favourable conditions – creating a school environment where the teacher becomes involved as a researcher of the process and the pupils acquire knowledge, develop skills of its application, gain practical experience and manage to unite knowledge and skills, thus obtaining life-wisdom that is grounded in the application of the principles of sustainability.

The paper by Makrakis distinguishes a newly advanced concept of WikiQuESD, which could be used as a scaffolding hypermedia tool to enhance pre-service teacher education for sustainable development (ESD) in the context of project-based learning. WikiQuESD allows pre-service teachers to design and upload interactive ESD projects online through collecting, assessing and integrating digital material available on the Web.

The paper by Bakutytė and Ušėckienė focuses on in-service training of pedagogues. The objective of the research is to analyse the motives and needs satisfaction in in-service training of pre-school pedagogues in Lithuania. The research methods used are both qualitative and quantitative: analysis of literature, questionnaires for pre-school pedagogues, interviews and statistical analysis.

The paper by Kravale-Pauliņa and Kokina provides the results of research within the project “Inspire School Education by Non-formal Learning”. The paper dwells upon an evaluation of out-of-school learning places and their integration perspectives into school curricula in the context of sustainable education. The paper is concerned with the part of the project related to the integration of formal and non-formal education in out-of-school learning places and teacher training for work within non-formal education.

The paper by Zakrajšek and Purg provides an overview on the possibilities of sustainable development in relation to information and communication technologies in primary and secondary schools in Slovenia from the perspective of media ecology. The study analyses the reasons for a reorientation of the educational system and new programmes towards sustainability and relates these developments to the activities of Eco-schools in Slovenia.

The paper by Zariņa examines the methods of reading acquisition frequently applied in pre-school, discusses teachers' views on reading acquisition in pre-school in Latvia and provides suggestions for reading literacy development of 5–6 years old children based on the keystones of sustainable development. The article is a contribution in the construction of a theoretically grounded and sustainable model of reading acquisition for 5–6 year-old children meeting global educational challenges and Latvian local needs.

The paper by Belousa and Stakle focuses on the issues of intercultural and media literacy as a metacontent of teacher education. The paper introduces teachers' views and experience of intercultural and media education in Latvia and comes up with several suggestions to implement intercultural and media literacy in teacher education curriculum.

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SUSTAINING SELF-REGULATED STUDENTS' LEARNING THROUGH INQUIRY-DRIVEN MATHEMATICS AND SCIENCE INSTRUCTION

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Abstract

The term sustainability is often only applied to environmental and community issues. Yet to redefine education, the term can also be applied to creating an atmosphere in the classroom that promotes independent skills and attitudes that can sustain the need for life-long learning. It is a given that teachers are under pressure to cover mandated curriculum standards so that students meet learning expectations. However, students are concerned about having relevant experiences that bridge the classroom and the real world. One way to promote these connections is to create a sustainable classroom community through the teaching of self-regulated learning (SRL) skills. We present research data that describe practical self-regulated learning strategies for students and documents outcomes and impacts related to teacher professional development. The research was carried out in Latvia using the global curricular topic – patterns in nature. University professors, pre-service and in-service teachers attended an initial workshop where they were introduced to several mathematical and scientific inquiry-driven instructional strategies. A number of classroom K-12 teachers volunteered to allow their observations and reflections to be collected, translated and analysed throughout the academic year. Many of those teachers posited that their students were hesitant to monitor their own learning, rationalizing that it was due to their students' undeveloped metacognitive skills. In response, the researchers created a hierarchical guide, entitled Learning Evaluation Guide for Understanding Progress (LEG-UP) to go with SRL. The guide monitors the levels of sustained motivation and inquiry-driven activities by their students in science and mathematics. This paper addresses: 1) background for the research and the workshop of Patterns in Nature; 2) methodology of the research; 3) understanding self-regulated learning; 4) development of the LEG-UP Guide; 5) data analysis and recommendations.

Key words: *sustainability, self-regulated learning, inquiry-based teaching, science, mathematics*

Background for the research and workshop: Patterns in nature

The Latvia and USA collaboration reported in this paper was premised on a previous collegial effort among two USA university professors, in cooperation with several Daugavpils University faculty members, who organized a series of one-day teacher professional development workshops for mathematics and science teachers. The main objective of this continued international study in the following year was to better understand global similarities of how the professional development of mathematics and science teacher educators can be redefined in light of increased pedagogical knowledge and inquiry-driven instruction strategies. University administrators, college professors, pre-service and in-service teachers attended the environmental workshops. In addition, it was important to track the extent to which participants sustained the use of the new strategies over the academic year. Therefore, classroom teachers volunteered to be part of the research.

The initial workshop focused on the universal theme – patterns in nature (Cobern, Gibson, & Underwood, 1999). Workshop topics addressed Nature’s scientific patterns as seen in seashells, animals and plants, as well as mathematical patterns of minimal surfaces of bubbles, Fibonacci numbers and the Golden Ratio. These topics advanced the Latvian National Standards for Basics of Technology and Science (2006) which require primary schools to provide opportunities for acquiring the basic knowledge about regularities of mathematics and natural sciences and the understanding of the wholeness of nature, encompassing Mathematics, Nature studies, Physics, Chemistry, Biology, Geography and Instructional technology.

The researchers posited that students’ natural curiosity and imagination about nature can be stimulated on the way to the classroom when Mother Nature’s sense of beauty is found in rich colour patterns and repeated shapes, such as honeycombs with their regular hexagons, patterns on shells and leaves and ripple patterns in sand. However, once in school, teachers often ostracize such connections about Nature by teaching definitive science concepts and/or abstract mathematical procedures. Neither formulas in mathematics nor scientific principles and facts can reveal the extreme diversity and similarities found in the artefacts of nature. To address this disconnection between school-based instruction and a real world context, teachers can use Nature’s patterns as starting points to engage students in critical thinking and decision-making using the theory of self-regulated learning.

Methodology of the research

Methodology

To put the theory of teaching about SRL into the context of activities associated with the *Patterns in Nature* workshop, two major qualitative questions were posed for research:

1. To what extent does a one-day, intensive workshop, using a translator from Latvian to English, result in point-in-time outcomes that evidence changes in inquiry-based, context-driven strategies for classroom teachers of mathematics and science in a host country?
2. To what extent does a year-long follow-up provide evidence of long-term *impacts* on teacher practice and beliefs regarding an inquiry approach to teaching and an awareness of the teacher’s own self-regulated learning, as well as their students’ abilities for SRL?

Participants

Workshops were held at the Daugavpils University campus, the Daugavpils State Gymnasium and university outreach towns of Dobele, Madona and Rezekne. The attendees of the workshops were classroom teachers working with kindergarten to undergraduate students. All attendees of the workshops completed the survey. Workshop volunteers participated in the academic year interviews.

Procedure

A survey was distributed to the teachers at the beginning of the workshop that they filled in during the course of the workshop. The survey solicited information about which activities were similar to those they already used, which activities were new and how those would fit into their mandated curriculum. At the end of the daylong workshops, volunteers were solicited to participate in the long-term study during the academic school year and informed that they would be interviewed about their use of the *Patterns of Nature* workshop materials and instructional strategies of SRL, especially in reference to integration into their normal teaching schedule. Out of one hundred and twenty three workshop research participants, thirty volunteered for the long-term study. Of those thirty volunteers, twenty-five were interviewed on three occasions. In addition to quantitative data from the surveys, qualitative responses were collected using the interview questions:

1. How do you evaluate what you have learned at the workshop after using the activities in your classroom?
2. What are your reflections about advantages for learners and yourself for incorporating new methodologies in your teaching practice?

Understanding self-regulated learning (SRL)

The audience was introduced to the theory of self-regulated learning (Paris & Winograd, 2001) as a way to motivate learners to become independent and self-directed. SRL promotes the aim of education as a life-long endeavour as students are taught skills for taking more personal interest in their learning subjects than are in the mandated curriculum and to extend that motivation for learning more about various investigations in mathematics and science. Teachers were encouraged to use this method as a way to create a sustainable classroom community of self-regulated learners.

Research on students' regulation of their learning activities was initiated by social cognitive theorist Bandura (1986) who stated that students themselves can activate and sustain cognition and can direct their own learning. By filtering, analysing, recognizing and transforming information, learners create new information. According to Zimmerman & Martinez-Pons (1989), self-regulated learners are intrinsically motivated, able to select strategically, can structure environments that optimize their learning processes. SRL cannot be perceived as a list of steps to follow or certain strategies to apply. It can be viewed as a complex set of dynamic actions, such as setting up appropriate goals chosen by the individual learner, time and resource management, setting priorities, overcoming obstacles and persisting to task completion, reviewing one's learning, reviewing the approach or a strategy and even starting anew (Butler & Winne, 1995). The complexity of the interconnectivity of various aspects of SRL does not allow assessing separately each of the components listed below.

- ◁ Motivation – that which assists learners to monitor one’s learning.
- ◁ Epistemic beliefs – that which learners believe about the nature of learning.
- ◁ Metacognition – that which provides learners with the knowledge to chose the appropriate learning strategies.
- ◁ Prior-knowledge – that which the student brings to the classroom.

SRL represents the highest form of cognitive engagement and is epitomized by the task appropriate use of information acquisition and transformation skills, as well as metacognitive processes. Corno and Mandinach (1983) define SRL as an effort to deepen and manipulate the associative network in a particular area and to monitor and improve this process. Boekaerts (1997) also defines SRL as a complex, interactive process involving motivational, as well as cognitive aspects, which can be seen as consisting of levels of goals, strategies and is domain specific. Furthermore, Boekaerts (1999) provides a very clear picture of the regulatory mechanisms involved in SRL and points to three systems which are involved in SRL: the regulation of the self (choice of goals and resources), the regulation of the learning processes (use of metacognitive knowledge and skills to direct one’s learning) and the regulation of information processing modes. As the literature suggests, self-regulated learning is influenced by environmental (the aggregate of cultural and social conditions surrounding an individual) and personal (the compilation of an individual character, conduct and motives) factors (Bandura, 1986).

It is understood that classroom teachers in many countries are under pressure to assure instruction has covered curriculum standards so that students show proficiency on summative assessments. With mandated curricula standards in place, learners are required to know and be able to demonstrate workmanship skills, such as setting goals, seeking help, evaluating one’s own performance, using available resources, in addition to revising and correcting work. However, global changes in social structures and work activities reflect the need to evaluate teaching pedagogy, thereby making self-directed learning an unavoidable issue for teachers. Educators can refine their teaching by presenting interesting problems for investigation, not only in the immediate lesson, but also with extensions that can be carried out by students because of their own sustained interest. Students may then become self-motivated to know their own possibilities and limitations in order to control and adjust their learning process for the task’s objectives.

For teachers who have learned strategies of SRL and have attempted to incorporate it into their classroom instruction, the main difficulties they reflect on are letting the learners set their own learning goals. This becomes not only a time and classroom management issue, but also one of relinquishing traditional teacher control. Most teachers have been accustomed to setting the learning goals, sequencing their curriculum materials in a linear manner and leading their students through lessons in a lock-step manner (Iliško, 2007; Salīte & Pipere, 2006). With implementation of inquiry-driven instruction, classroom management becomes more complicated when students have a choice of how to investigate the topic and the teacher takes on the role of guiding the learners and helping them to organize their knowledge. However, contextually based lessons present opportunities for teachers to support students’ self-regulation and consider all the components of self-regulated learning in action.

The impetus to focus on contextualized learning was brought about by the researchers pondering whether mathematics teachers ever review science facts and if science teachers ever explain the background mathematics that might intrigue students to further investigate topics taught in class. The same kind of concern is expressed in teaching of scientific and mathematical principles (Camazine, 1993). One example from the *Patterns*

in Nature workshop that both teachers of science and mathematics can use with their mandated curriculum is the nautilus, one of the oldest living fossils. Students taking the course “Integrated Science” may learn that the nautilus has a shell composed of two layers separated into chambers. As the nautilus matures, its body moves forward, sealing the chamber behind it. In a mathematics course, students can look at a cross-sectional view of the Nautilus shell associated with a plethora of geometric patterns that link to numerical sequences and series. Mathematics teachers can point out that nature uses structural patterns that function most efficiently and that these patterns can have a predictive ability. At the primary level, students can review facts about the nautilus followed by a simple mathematics activity to create a logarithmic spiral that is drawn on graph paper using a compass. If we called the pattern of arcs a Golden Spiral instead of a logarithmic spiral, perhaps the biological and artistic connotation would inspire students to consider mathematics as a study of patterns, relationships and change as opposed to defining mathematics as formulae and procedures.

In a self-regulated learning environment, more advanced students can come to understand that the logarithmic spiral of the Nautilus shell is an example of the mathematical formula for the plane curve. This pattern is a good example of the parametric equations $x(\theta) = a \cos(\theta e^{\cot \alpha})$ and $y(\theta) = a \sin(\theta e^{\cot \alpha})$ where a is an arbitrary constant and θ is a constant angle made between the radial vector to any point on the curve and the tangent line at that point. Using the example of the nautilus in both mathematics and science can lead to inquiry at higher levels if students choose to investigate mathematical patterns in another setting. The curve of the bighorn sheep, the proportional drawing of the human body by Leonardo da Vinci, or the idea of quotients of consecutive Fibonacci numbers associated with the spiral that approach the fixed value $(1 + \sqrt{5}) / 2$, termed the Golden Ratio, are exceptional topics for further study. These examples illustrate how new notions of self-regulated learning can be practically implemented and can change educators’ perceptions about teaching and students’ perceptions of learning.

Development of the LEG–UP guide: A response to teachers’ needs

During the course of the interviews with teachers throughout the academic year, an additional need became apparent. As the teachers struggled with reforming their instruction, we understood our responsibility to respond to the need for a structure to assist implementation. Consequently, a rubric was developed to guide students through levels of self-regulated learning and make them aware of the meta-cognitive stages possible. *The Learning Evaluation Guide for Understanding Progress* (LEG–UP) rubric is based on the workshop activities presented to the teachers and a modified instrument to evaluate Stages of Concerns (Hall & Hord, 1987; Guskey, 2000). The LEG–UP rubric (Table 1) shows a grid where the individual student may attempt more involved experiments that are based on an initial teacher directed activity. During the classroom inquiry investigation, students can be involved on three levels from lowest to highest meta-cognitive engagement.

Table 1. Learner's evaluation guide for understanding progress (LEG -UP) rubric

Context	Activities according to the level of concern with respect to self-regulation		
Bubbles	Explaining where bubbles are found in nature; blowing clusters of 1–5 bubbles and drawing the number of possible patterns.	Blowing bubbles under a plastic cover, drawing and measuring the angles of approximately 120°. Blow a cylinder-shaped bubble. Understand the formula for volume of a cylinder $V=r^2 d h$	Understanding the advantage of minimal surfaces in biology, such as cell vacuoles. Make soap films on wire forms that are similar in structure. Evaluation of bubble patterns using polyhedrons and other geometric shapes.
Level	2 – Personal 1 – Information 0 – Awareness	4 – Consequences 3 – Management	6 – Refocusing 5 – Collaboration

Additionally, students are given descriptors of the levels (Table 2) to assist comprehension. Level 0 is normally what teachers would expect from students who pay attention in class, while Level 1 is gained when students are engaged in the activity and remember the main mathematics and science concepts. Level 2 is when students become interested enough to seek some relevance of the activity to their own lives outside of school. If students choose, with the teacher's permission, to proceed on their own time, there are suggestions in the middle column of the table to extend the activity. At this stage, they can show skills of Level 3. As they investigate further, perhaps by computer search, they may find Level 4, essentially the purpose for which the science or mathematics concepts are used in the real world setting. For those who are genuinely intrigued by the classroom activity and pursue it further, the last column on the chart suggests sophisticated extensions of knowledge. At this point, the students may want to join other students in Level 5 activity, doing further research or experimentation. Finally, these students may reach a meta-cognitive leap where they are attaining Level 6, questioning and transferring the information they have learned through self-motivation to a similar problem in a different area.

Table 2. Descriptors of levels of concern with respect to self-regulation

Stage	Level	Descriptor
Refocusing	6	I will take this information and make changes or adaptations to it to make it more useful in a different situation.
Collaboration	5	My team can use this information to understand where and how to apply this knowledge.
Consequences	4	When I understand this topic well, I can use it in other situations.
Management	3	I like the process of learning about the topic and can use the information for this class.
Personal	2	I am interested in the topic and learning more about it could be fun and useful.
Information	1	I want to learn more details about the topic – what is it, how it works.
Awareness	0	I know about this topic, but I am not concerned about learning much more.

Data analysis and recommendations

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Researchers are aware that one-day workshops can only give evidence about point-in time outcomes. Teacher information about previous use of inquiry techniques that support their required curricula can only be inferred from information expressed by the participants within their evaluations. Knowing this, the research questions posed were: "How do you evaluate what you have learned at the workshop after using the activities in your classroom?" and "What are your reflections about advantages for learners and yourself for incorporating new methodologies in your teaching practice?"

At the conclusion of the workshop, the teacher participants were asked to reflect back on the activities that they had just experienced. The relevancy of the new science and mathematics activities presented during the workshop indicate an untapped awareness with respect to the teacher observations. A high school teacher commented that:

The seminar helped me to reflect on my teaching more. It gave me an opportunity to engage in self-reflection. Seminars made me think that I need to be more thoughtful and reflective about my teaching and my students to become more autonomous, strategic and motivated in their learning and me in my teaching. I have been familiarized with how to use a series of cognitive strategies that help students control and direct their own learning. After the seminar I allowed children to make the same smaller choices in regards to topics.

In comparison, a primary school teacher reflected that

New methodologies I have learned at the seminar have helped students to connect what they have learned to real-life contexts, situations. I have learned how to use the surroundings and nature as a resource for learning. I have learned how to integrate two or three subjects, such as Math and Nature studies. I have learned that to manage learning, teachers can find useful materials, which are not very expensive and available.

University faculty member contributed these thoughts:

I have implemented the idea of making connections between math and biology. The new curriculum requires integration between subjects. This was an excellent way to connect math and patterns in nature. I use the idea of connecting math with patterns in nature.

I liked finding mathematical patterns like spirals, meadows, branching and explosion in nature. I can use that in my biology lessons because it is interesting and also because it is a good example of integration which is required by the curriculum.

Through participant responses, it is evident that the facilitators of the seminar/workshops gave practical strategies, using inexpensive or natural materials that integrated mathematics and science, as well as pictorial slides for other examples. The Latvian educators were

receptive to the pedagogical modelling of cognitive strategies and curricular topics that students could extend on their own for deeper self-regulated explorations.

Analysis of the understanding of self-regulated learning

Because redefining teacher education often starts at the university level, it is a unique feature for this international collaborative research effort that several Daugavpils University Education and Management Faculty attended the *Patterns in Nature* workshops. The Education faculty included mathematics, biology and pedagogy professors that teach pre-service education students; they offered their unique reflections about the advantages of self-regulated learning in respect to themselves and the strategies for incorporating new methodologies in their own teaching practices. They noted that

Self-regulated learning helps learners gradually become agents of their own behaviour. At the beginning stage of implementing new methods, there were many behaviour problems because students perceived the new type of teaching as a play, because they are not used to such kind of learning. They did not consider it seriously at all. Only gradually, they slowly understood the essence of such learning. However, not all students are ready to study this way. After the use of self-regulated strategies, I have discovered that students simply do not follow the plan of action, they adapt to changing conditions.

Similar to the classroom teachers they train, the faculty are moving from a teacher-directed model to a student-centred pedagogy. The faculty also noted the pros and cons of the new teaching techniques.

One of the advantages of self-regulated teaching is in providing learners some control over their learning. Learners acquire how to learn, know their possibilities, limitations, control, regulate their own learning process in order to adjust themselves to the task objectives, to optimize their performance. Before in my teaching I had been giving fewer chances to students to monitor their learning; therefore, they lacked appropriate metacognitive abilities. I taught them how to plan, control and direct their mental processes towards the achievement of personal goals, but still students are used to the teacher directed teaching style and at the beginning felt uncomfortable.

Continued research throughout the academic year

Due to the diligence of the Latvian colleague, twenty-five of the thirty workshop participants participated in the academic year research, and they were able to help answer two further research questions:

- ◁ Did you notice any difference after implementing new strategies with your students?
- ◁ What are the gains of self-regulated teaching and learning?

The teachers integrated the activities from the *Patterns in Nature* workshop into their mandated curriculum and they introduced self-regulated learning to their students when feasible. As with the evaluation of one-day workshops, outcomes were determined through follow-up interviews about the workshop lessons taught with consideration of their students' responses. More important, were the impacts, that is, the longer-term effects,

such as the participants' intentions to improve or to make potential changes in their teaching. These impacts embody shifts in teacher's beliefs, attitudes and actions for teaching and learning mathematics and science over several years. Would they continue to implement the new inquiry strategies and encourage their students in the principals of self-regulated learning over time? The causal link between the outcomes and impacts regarding the effects of professional development and teacher change could only be evaluated over time through repeated contacts with the participants. Therefore, the Latvian colleague collected data through a repeated questionnaire/interview throughout the academic school year. The professor contacted the 30 participants from twelve schools to solicit answers to the research questions.

Results from the year-long interviews

During the academic year, the researchers had a chance to follow up on how teachers were modelling and promoting self-regulated learning for their students using the activities learned in the workshop and aided by the rubric provided to them. Teachers who lived in Daugavpils were available for face-to-face interviews; other participants agreed to telephone interviews. Asked about their willingness to incorporate new methods learned during the workshop into their teaching practice, twenty teachers said that they planned to do so at the beginning of a school year and by six months later they had indeed integrated at least one new activity. In addition, the teachers believe that they had achieved gains by implementing SRL. Twenty of the thirty teachers mentioned that students participate more in class discussions and eighteen mentioned more collaboration with peers. More than half of the interviewees observed higher students' interest in finishing tasks. Half of the teachers reported that students learn to be less helpless in monitoring their progress, most showing more persistence in completing their tasks. Ten respondents noted that SRL helps students monitor their own progress, with a few of the interviewees noting that students learned to appropriately modify their actions to suit changes during a task.

The teachers who participated in the academic year research were asked their opinions of the various activities from the workshop and to explain to the researcher when and how the activities fit into their own mandated curricula. Data from the surveys and responses from academic year interviews were analysed using a Grounded Theory approach (Strauss & Corbin, 1998) in that written and oral interview data were coded for key ideas, grouped into reasonable categories and, from further refinement, crystallized into major constructs. The categories included: teacher responses about SRL, teaching styles, learning styles, motivation, skills for learning, speed of learning, depth of knowledge, self evaluation, appropriateness and barriers to SRL.

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Because teachers were asked to link the practical activities about patterns in nature to the theory of self-regulated learning, it was important to understand what self-regulated learning meant to the teachers as both a language translation and a conceptual term. The majority of the teacher participants understand the term as giving individual students or small groups the opportunity of having some control over their own learning, across contexts, relationships and situations as exemplified by the following statement:

I have learned that a student can learn to self-motivate, to better and limitations while working, can learn to control and regulate the learning

process in order to adjust to the task objectives and to the context, but unfortunately the dominant mode of linear teaching in Latvia does not allow teachers to try these new pedagogical strategies.

This linear thinking is associated with a history of teacher-centred instruction. One of the problems that teachers identified was the inability of learners to monitor their own learning because of a lack of appropriate meta-cognitive ability. Recipient learners did not make use of meta-cognitive strategies or engage in high level of acquisition of knowledge.

- ◁ *Teaching styles.* Some teachers responded that SRL allows them to choose methods of work while they assume the role of the teacher as a facilitator. Others said that it depends on teacher decisions of whether or not to implement self-regulated learning pedagogy, in addition to considering how motivated and creative the teachers were who tried. One respondent noted that SRL reminded him/her of the system of Waldorf school where children of different ages choose their own activities.
- ◁ *Learning styles.* Responses indicated that SRL is a student-centred approach that occurs when each student can develop their own learning style and their preferences are respected giving a better result. It was noted several times that students can choose to learn what they want according to their individual abilities and needs.
- ◁ *Motivation.* SRL gives a child higher motivation to acquire material. One respondent stated, "It's the best way of reaching high results, as it fosters students' motivation to learn." Teachers stressed the need for responsibility for one's own action as one learns self-development and to determine priorities for what is and what is not important for them. Teachers admitted to themselves that much of what they have taught to students seems of little relevance to their students.
- ◁ *Skills and speed of learning.* Teachers understood that students may be motivated to learn beyond the teacher's lesson, but that students would need to spend more time to acquire skills they might lack. This idea of skill is coupled with the speed of learning since often a classroom lesson might bore one student and go too fast for another. As one teacher stated, "SRL is a chance for the student to choose his/her own speed of learning, as well as approaches to learning." Learning to set priorities can go beyond the classroom as one respondent noted, "It's a good way to learn to plan one's time and action plan, which is highly demanded in our society." Another teacher pointed out that SRL means setting one's own time to work, study and, importantly, to rest.
- ◁ *Depth of knowledge and self-evaluation.* The depth of knowledge pursued by individual students seems to be part of self-evaluation. One participant noted, "Nowadays, when we have lots of sources of information available, students need to learn to study autonomously in finding appropriate sources." In addition to evaluating what is important for oneself and what is not, SRL can help students set their goal, become more independent, learn self-control, take responsibility for what they are doing, become actively involved in planning and evaluate their own learning process. All of these skills of self-evaluation can help a "student to understand the significance of learning, be able to evaluate personal progress, be able to evaluate personal skills".
- ◁ *Appropriateness.* There were diverse opinions on whether SRL is possible in Latvian schools while another said, "Self regulated learning can be used for out of

school learning activities successfully, but not during the classes.” One teacher thought once or twice a week while another thought, “Self-regulated learning can be practiced once a month, not more.” Some thought the idea is possible in Latvia in elementary schools while others disagree, saying, “I think it is possible only in adulthood when the person has reached some level of maturity, when a person understands what he/she wants.”

- ◁ *Barriers to using SRL.* The barriers to making SRL resonate internationally, as some teachers pointed out, is that “it is difficult to do where I work because state standards require us to teach a lot, no time for such a luxury. ...in preschools, it is not possible since teaching needs to be teacher-directed till the child comprehends what he/she needs”. According to some teachers who are accustomed to direct instruction in their classes, it is difficult to apply inquiry-driven instruction strategies. It was difficult for these teachers to change their role from the one who gives instructions to the one who is present to answer questions, guide learners and help them organize their knowledge. These teachers faced difficulties related to the inability of learners to monitor their own learning because of a lack of appropriate meta-cognitive ability. For example, many teachers said that although students found an activity, such as bubble, for instance, enjoyable, it resulted in a lot of noise. Many teachers also felt the reasoning required by the activity was too complicated; learners are not used to this type of learning. Others said that they cannot offer these activities often, because they must cover the curriculum.

Discussion of the results

From the sub-themes above, several major concepts that emerged using Grounded Theory methodology have been distilled from the research data of the one-day workshops and the academic year participation. Firstly, the practice of implementing self-regulated activities is very fragmentary in both primary and secondary schools in Latvia. There are a few attempts being made to implement self-regulated learning activities. Teachers admit that their students have not reached the highest levels of thinking, such as synthesis, and they believe that SRL would be an effective way to help them learn those critical thinking skills in mathematics and science. However, the changes will take place very slowly, because teachers have had a long history of teaching in a linear way and there are time and curricular constraints. Secondly, subject integration in Latvian practice is quite a new idea. Therefore, combining ideas of scientific patterns in nature with the mathematical formulas that underpin them is a new approach to integrated courses for many teachers. They are struggling daily with administrative duties and have less energy for creativity and experimentation. They are afraid that they will not be able to cover curriculum demands; therefore, they try out self-regulated activities about patterns only seldom and, most likely, during project week. They worry that at the end of the semester their students' academic knowledge will be lower than when the students learn in a traditional classroom management style. Thirdly, teachers mentioned as a positive advantage that students were more engaged when they were doing inquiry-driven, contextually relevant activities. However, they pointed to drastic demands for testing by local, national and European Union standards, which does not allow much time for learning through interesting and self-regulated activities. The teachers enjoyed implementing the activities, but at the same time, felt guilty that that it would appear that they were wasting time instead of teaching the standards required by the curriculum.

Lastly, at a global level, the researchers posit that teachers have similar perceptions no matter in which country they teach. Although the following is specific to describing the workshop participants in Latvia, we believe that the description rings true in the USA as well. With regards to the younger teachers who participated at the seminar and the pre-service teachers, as university students, the difference is that they are more energetic and enthusiastic about implementing new ideas related to self-regulated learning. This may change since they have had little or no classroom teaching experience. Additionally, younger practitioners are more open to experimenting with the many teaching methods they are currently learning. They have not come across rigid administrative requirements. Experienced teachers, on the other hand, may understand curriculum demands as a need for *telling* and *imposing knowledge* therefore, being less willing to devote time for inquiry activities that allow students to continue to study a topic in greater depth.

The research data indicate that some teachers consider that the new methods will cause fragmentation of their curriculum timeframe and result in discipline problems because students do not have much experience working in non-traditional classroom settings. Consequently, in this case, these teachers may be viewed as a product of their earlier training and this may be considered as an obstacle to accepting new pedagogies. However, experienced teachers, who have good classroom management, are less inhibited about trying the new educational approaches presented at the workshop. This can be seen as an advantage, especially if they become role models or mentors for novice teachers. These experienced teachers have tried out new methods and found them effective. In summary, the research data reveal the majority of teachers theoretically understood that the workshop strategies for teaching about patterns in nature using SRL were valuable. For those teachers who participated in the year-long study and actually used the activities in their classrooms when and where they fit in with the specific curriculum needs, their new educational approach can be regarded as successful.

Conclusions and recommendations

This international collegial research collaboration, based on similar teaching standards for teachers in the USA and teachers in Latvia, demonstrated some new strategies and models of teaching, while honouring the best educational pedagogy pertinent for an individual country. The challenges Latvian teachers face are not unique to the Baltic area and we have found counterpart challenges in the USA, as well as in some parts of Asia. To meet the requirements of citizenship and curriculum standards globally, learning in schools must become more authentic, more useful and more contextualized for students. Previous standards and the way textbooks present the curricula do not help students acquire the knowledge and skills that are essential for life outside schools and in the workplace. Little time has been spent in teaching our charges strategies of self-regulated learning and situating them in a variety of meaningful contexts beyond the school academics.

Three major findings with further recommendations emerged during this research. Firstly, several of the Education and Management faculty of the University of Daugavpils attended the presentations to further their own professional development and enrichment. In addition, they were willing to be part of the year-long interview process. Further research could address the outcomes and impacts of professional development for faculty of education personnel that work with teacher preparation and in-service training. Additionally, the research could track the long-term effects of professional development as it cascades from the faculty who attended the original workshop to their university students

and when those students, in turn, become classroom teachers. Another question for research concerns the tracking of philosophical changes for university personnel who teach future teachers. Do they value collaborative international work? Because of the workshops, did they themselves change with regards to their beliefs and teaching methodology? Do they believe in using self-regulated learning at the university level? Do they think it is important for their university students to use these strategies when they move into the real world of teaching? Some of the comments made during this study show that university faculty understand the pedagogy of SRL, know its possibilities and limitations and are willing to give up some control so that students may regulate their own learning process in order to adjust themselves to task objectives. The university professors understand that learning how to learn requires not just new strategies, but knowledge of strategies that can optimize the performance of their students for when they become future teachers. How can university faculty professional development regarding self-regulated learning enhance the pre-service training program so that university students learn not simply how to make and follow a plan of action, but to adapt their plans to changing conditions? All these questions were spawned from this study as areas for further research.

Secondly, it is important in qualitative research that the researchers be responsive to the needs of the participants. That is, teacher education researchers must reflect on the enactment of the research intervention. In this case, the researcher needed to generate a learning evaluation instrument that would guide the teachers and students through levels of self-regulated learning and make them aware of the meta-cognitive stages that were developing. Some teacher participants informally reviewed the ensuing *Learning Evaluation Guide for Understanding Progress* (LEG-UP) rubric. However, the need became apparent late into the study and therefore the guide requires further validation.

Thirdly, the qualitative comments from teachers involved in the year-long study show that they did use and adapt activities from the initial *Patterns in Nature* workshops. They also came to value SRL. However, teachers globally understand that moving from traditional teaching to allowing students full engagement in inquiry-based learning that goes beyond introduction can be time-consuming for teachers and students. This is a concern, but has attendant rewards. Comparable research results can be found in similar approaches, such as problem-based learning (Kwan & So, 2008). In the current atmosphere of international students' assessment, the full use of self-regulated learning, while an idealistic goal, may be a strategy to work towards slowly in order to make students move beyond competent technologists that traditional schools normally foster. Instead, we aim to engender the love of science and mathematics in students so that they will be willing to overcome tradition and move towards SRL to think through problems and solutions on their own with the facilitation and guidance of teachers who use inquiry-based science and mathematics. This is one approach recommended for sustainability in teaching and learning.

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A MEANINGFUL CONTEXT-BASED APPROACH TO FOREIGN LANGUAGE VOCABULARY ACQUISITION AT THE TERTIARY LEVEL

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Abstract

Among advanced learners, the acquisition of vocabulary has long been felt to be a crucial component of communicative competence development. Though there is still the obvious need to widen advanced learners' vocabulary themselves and they can cope with the situations that are beyond the customary scenarios. This research determines the effectiveness of the direct acquisition of vocabulary (through memorisation) and the indirect acquisition of vocabulary (through context) and suggests a meaningful context-based approach to foreign language vocabulary acquisition which is aimed at achieving an adequate balance between the direct and the indirect acquisition of foreign language vocabulary. It has to be a holistic process in which the learners both as individuals and in groups can receive maximum opportunity to develop.

A meaningful context-based approach to foreign language vocabulary acquisition forms a sound basis for the didactic model of competence development through indirect learning and teaching of foreign language vocabulary. The nucleus of this didactic model is formed by general didactic regularities which determine the structure of the study process organisation. The structure of the model of communicative competence improvement integrates three sub-models: the sub-model of teaching, the sub-model of learning and the social sub-model. The didactic model has been elaborated on and approbated within an experimental project in higher education. This research provides an in-depth analysis of the results of the experimental project in higher education.

Key words: *foreign language vocabulary acquisition, meaningful context-based approach, communicative competence, communicative competence development*

Introduction

The field of foreign language acquisition has grown enormously, with the quantity and quality of published research increasing annually. In recent years, foreign language vocabulary acquisition has become an increasingly interesting topic of discussion for researchers, teachers, curriculum designers, theorists and others involved in the field. There has also been a renewed interest in the role of vocabulary in foreign language.

Word knowledge is an essential component of communicative competence, as it is important for production and comprehension in a foreign language (Coady & Huckin, 1997). Therefore, in the process of foreign language acquisition, foreign language learners devote assiduous attention to the enrichment of vocabulary.

A framework of vocabulary knowledge should contain four dimensions: vocabulary size, depth of vocabulary knowledge, lexical organization and automaticity of

receptive and productive vocabulary knowledge. The dimension of the depth of vocabulary knowledge comprises several aspects of lexical characteristics, such as phonemic, graphemic, morphemic, syntactic, semantic, collocational and phraseological properties (Qian, 2002). Taken together, this amounts to a substantial lexical learning challenge, one which many foreign language learners fail to meet. Besides, there are a number of objective conditions in learning foreign languages which are caused by the intensity and spread of language use. For instance, the English language in Latvia has the status of a foreign, not second, language. This means that in Latvia this language is scarcely used in everyday communication; therefore, the results of learning it are not always satisfactory. This becomes obvious in the first year of university or college studies, when a number of students show insufficient knowledge of lexis, making it difficult to proceed with their studies and limits their ability to use professional literature in English.

According to Schmitt (2008), to facilitate adequate vocabulary learning, four vocabulary learning partners (foreign language learners, teachers, materials writers and researchers) need to contribute to the learning process. The overriding principle for maximizing vocabulary learning is to increase the amount of engagement the foreign language learners have with lexical items. Hence this research goal is to elaborate on the didactic model of students' communicative competence development in the mastery of foreign language vocabulary, providing it with theoretical grounds and testing it empirically.

Vocabulary knowledge and the use of vocabulary are closely related to thinking. Vygotsky's (Выготский, 1934) research on the unity of thinking and language initiated many significant investigations in education which are used in this research. According to Vygotsky's theory, in the course of a cultured person's development, the unity of natural and social development, acquired cultural values and especially language, facilitate human thinking and provide for intentional control of one's action. Meaningful use of language is an important aspect of the unconscious, undifferentiated identity with the ecological, social and cultural environment that instigate creativity and flexibility of thinking. It is manifested in the ability of language use which is adequate to the given situation.

All language skills are closely interrelated and their roots go deep down into the grounds of the feeling of language and its meaningful use. These grounds are imagination, intuition, inspiration and revelation. That is why, for goal-oriented and meaningful learning of the foreign language, its philological content must be essentially integrated with the pedagogical means of facilitating thinking. Meaningful learning – active, constructive, cumulative, self-regulated and goal-oriented – is related to understanding language, i.e. the development of thinking. This approach has been studied and is known in Europe as *the Thinking approach*. However, this notion is too general and difficult to investigate in the sphere of education. Therefore, the subject of this research has been particularized; the idea of the Thinking approach has been narrowed to meaningful and personally significant language learning.

A meaningful approach to mastering foreign language and vocabulary in particular entails intensive use of thinking abilities in the process of searching and investigation while building a system of language. It entails the mastering of lexical units in a meaningful and personally significant context, rousing students' intellectual and emotional activity in real communication. This is the deepest level of lexis, which provides the possibility to master foreign language in a conscious and meaningful approach – acquiring the lexis of general use and special terminology.

No methodological approach and methods elaborated on its basis are better than any others, but each of them gives an opportunity to regard the problem from a different

perspective. This is the objective need for diverse methods in education that may be used for different experiences and levels of communication.

Meaningful context-based approach to foreign language vocabulary acquisition: Theoretical background

Along with the development of democracy, the pluralism of ideas and actions, the problems of communication become more and more significant both in theory and in practice, as human relations and contacts gain greater diversity. The quality of communication is determined by the individual's communicative competence quality, and lexical competence is at the heart of communicative competence. Therefore, this research regards the mastering of foreign language vocabulary as an intrinsic part of the student's communicative competence development.

In this research, the structural models of communicative competence as a theoretical and practical category elaborated on by the western linguists are highlighted (Chomsky, 1965; Hymes, 1972; Canale & Swain, 1980; Canale, 1983). The diverse structural variants of communicative competence are investigated, bringing out the essence of this category with the aim of creating a didactic model of communicative competence development for well-trained foreign language specialists. The complex structure of communicative competence proves that it is a multi-component category, with linguistic competence being just one of its elements. Contemporary views are more likely to incorporate Hymes' (1972) discussion of communicative competence, which considers whether something is formally possible, whether it is appropriate, whether it is feasible psychologically and whether it is done. Hymes argue that communicative competence must include not only the linguistic forms of a language but also knowledge of them, how and to whom it is appropriate to use these forms. Hymes view is a definite challenge to Chomsky's (1965) linguistic competence with its exclusive attention to formal linguistic elements. Canale and Swain (1980) propose a model of communicative competence which distinguishes four subcompetences: grammatical or linguistic, sociolinguistic, discourse and strategic. The mastery of the forms of a language constitutes the aspect of a foreign language that can be referred to as linguistic competence, i.e., competence with reference to formal and semantic features of the language. The linguistic performance of the foreign language learner – applying his or her knowledge in the context of actual, true, authentic communication – is conditioned because it is affected by a number of conditions limiting the application of knowledge. The mastery of sociolinguistic competence entails the communicative ability to use and interpret language forms appropriately. The context – who is communicating with whom, about what, where, for what purpose – determines the choice of language forms. Discourse competence, that is, the communicative ability to perceive and achieve coherence of separate utterances in meaningful communication patterns, is another aspect of communicative competence. The dimension of strategic competence entails the ability to effectively transmit and receive information to particular address.

As elaborated by the author of the research, the criteria of communicative competence as a theoretical and practical category – linguistic competence, discourse competence, sociolinguistic competence, strategic competence, the balance of automatized skills and mind controlled action, the ability to overcome social and language barriers and the capability to perceive the sense and to express what is significant transferring of

attention from linguistically insignificant phenomena to significant ones – are objective indicators of the dynamics of students' communicative competence development.

As a result of theoretical analysis, the principles of mastering lexical units have been singled out, actualizing the learning strategies developed or selected by the foreign language learner for achieving the aim of mastering the foreign language:

- ⟨ The language learner relates lexical units to the surrounding world;
- ⟨ The language learner relates lexical units of the foreign language to other lexical units of the same language that are familiar to him or her;
- ⟨ The language learner relates lexical units of the foreign language to those of his or her own native language (Allen, 1983; Carter & McCarthy, 1988; McCarthy, 1990; McCarthy & O'Dell, 1994; Harmer, 2003).

This is a creative process in which the language learner, by forming and testing hypotheses, perceiving information, processing and revising it thus gradually builds a system of foreign language (Cook, 2001; Lynch, 2003).

In turn, educators of foreign language specialists select the forms and methods of the organizational study process which are personality-oriented and respect the high demands of the would-be specialists. Therefore, in this research, the mastering of lexis is regarded as an intrinsic part of a student's communicative competence development, emphasizing the role of meaningful context in the initial learning of lexical units, the consolidation of knowledge and the active use of lexical units in situations of real communication or those approximated to real communication.

This research elaborates on the didactic model of students' communicative competence development. The novelty of the didactic model of students' communicative competence development is manifested in the choice of two interdependent approaches for determining the character of the interaction between subject and object. In the study process, the educator carries out a meaningful context-based approach, the theoretical basis of which is task oriented education facilitating students' intellectual and emotional activity in real communication. The tasks of speech and thinking facilitate the development of thinking, providing a transition from language learning to the use of language in real communication.

There are three sub-models integrated in the communicative competence improvement model:

- ⟨ The sub-model of teaching – a meaningful context-based approach to mastering lexis of the foreign language;
- ⟨ The sub-model of learning – learning as cognition which is manifested as the intellectual and emotional activity of the language learner;
- ⟨ The social sub-model – human relations of the student and the educator.

The sub-model of teaching as a goal-oriented strategy of the foreign language educator in relation to the study content and process is applied in the pedagogical environment. The formation of the sub-model of learning is based on the ideas of contemporary theories of education about learning as a process of cognition in a meaningful and personally significant context – the environment of authentic communication. The ideas of theories of the human paradigm of education about the characteristics of pedagogical interaction form the theoretical standpoints of the social sub-model envisage an assessment of the limiting conditions of applying the individual knowledge and

coordination of the teaching strategy of the educator and the learning strategy of the language learner.

The pedagogical environment is the place of action in which the educator, in cooperation with the language learner, set the goal of studies, debate its essence, validity, personal significance and context, agree on the procedure of reaching the goal and both subjects' positions and interaction in this process, carry out study self-monitoring, monitoring and correction, produce the assessment and self-assessment of the results (educating, developing and upbringing) and design the next stage of studies. The linguistic environment is formed each time the language learner intentionally uses foreign language to achieve a particular communicative aim. This process is related to the intellectual and emotional activity of the language learner.

The pedagogical, linguistic and socio-cultural environments mutually overlap, forming the environment of an interactive study process and creating optimal conditions for the growth of a lingually competent personality in the process of thinking. The interactive study process, which is the basis for the study methods of meaningful context-based learning of foreign language lexis, provides the necessary conditions for the development of the language learner's communicative competence (Figure 1).

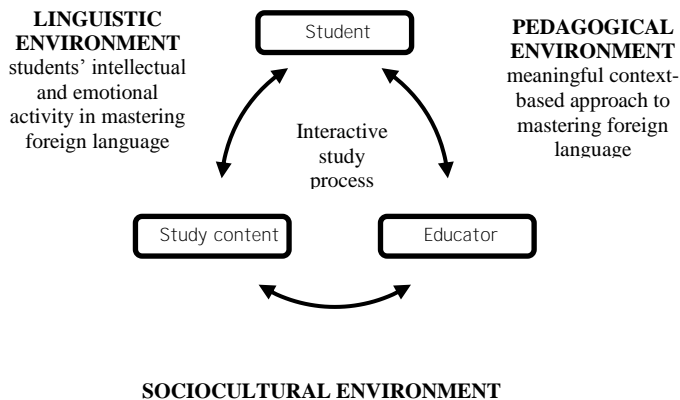


Figure 1. The model of students' communicative competence improvement

The practical application of the model of communicative competence improvement is based on the didactic principles which help the educator make strategic decisions. In this context, a significant factor is the high degree of professionalism of the educator, along with flexibility in constantly changing pedagogical situations and the ability to select an appropriate strategy.

- ◁ *The principle of wholeness.* The mastering of lexis is closely related to the mastering of all four language skills, as well as phonetics and grammar. Hence, such spheres of action as thinking development and creative experience enrichment are to be carried out in mutual relation, or simultaneously, with the aim of using diverse language means – in accordance with the goal of communication.

- ◁ *The principle of adequacy and compliance in study content selection and planning.* Speech and thinking task oriented pedagogy is especially appropriate for the age group of youth as it facilitates young people's intellectual and emotional activity, which is characteristic of the actual communication of professionals.
- ◁ *The principle of free creative activity.* It is essential to coordinate the situations planned by the educator with the youths' needs for self-actualization.
- ◁ *The principle of topicality.* The modern process of study must integrate all topicalities of modern society that are indispensable for the provision of a high quality, modern process of study.

Research methodology

This research is based on an experimental project – a debate project which was executed when Daugavpils University entered the national level debate project. The goal of the national level project was to promote the consolidation of the strivings for education by youth; to give young people the possibility of familiarizing themselves with the experience of democracy; to facilitate the participation by youth in building a civic and integrated society; to help young people acquire new knowledge, skills and competences; and to encourage them to assume initiative. The main task of this research, within the framework of the experimental project, is investigating the dynamics of students' communicative competence development in the situation of real, authentic communication, actualizing the significance of meaningful context in mastering lexis – the testing of positive tendencies within the dynamics of students' communicative competence development in the process of learning English that is maximally approximated to real, authentic communication. Each resolution of the debate is an argumentative task of speech and thinking which envisages selecting lexical units, processing them and applying them in a meaningful context. The performance of each resolution is the realization of communicative competence, i.e. linguistic and non-linguistic knowledge in the situation of real communication.

The preparation stage entails intensive research work, organizing the affirming and the opposing cases for the implementation of a particular communicative goal. Conscious selection of lexical units with the aim of their application in real communication guarantees success in reaching this goal. This is based on the research work of learners, the educator being actively involved in this process as an adviser.

The performance of the resolution entails the application of linguistic and non-linguistic knowledge within the context of real, authentic, veritable communication. This context – the situation of real communication, or that approximated to real communication – is meaningful, and lexical units are the instrument for reaching the goal.

At the final stage, the educator provides the assessment, and learners provide a self-assessment of the resulting language performance; they also determine the factors limiting their application of knowledge which are, in fact, impairing factors of individuality. This is a significant stage for setting further goals and tasks. Hence, there are three stages of work: the preparatory stage, the linguistic performance stage – the real use of language in the situation of real, authentic communication and the stage of assessment and self-assessment of the results. Lexical units are foregrounded at each stage, especially the first two. The major focus is on lexical units in a meaningful context instead of individual, isolated words.

The major stages in mastering lexis within the experimental project in higher education are as follows: 1) selecting and grasping the necessary lexical units, including

terms; 2) the intentional use of lexical units in a meaningful context; 3) the active use of lexical units in the sphere of professional action.

In the course of the experimental project implementation, foreign language learner communicative competence was assessed twice, using the communicative competence criteria elaborated on by the author. For a static analysis of the positive tendencies of each learner's communicative competence or lack thereof, the following conditional coefficients were used: H (high) corresponding to 3, M (medium) corresponding to 2, L (low) corresponding to 1. The static assessment was produced before the experimental project implementation in order to state the student's initial level according to the indicators of the communicative competence criteria (assessment: H – high level, M – medium level, L – low level). The second dynamic assessment was produced after the experimental project implementation in order to state the dynamics of each learner's communicative competence development according to the communicative competence criteria. The communicative competence development dynamics was assessed according to the following scale: 3 – the level is significantly improving; 2 – the level has a tendency to improve; 1 – the level is unchanging. The comparison of the static and the dynamic assessments demonstrates the effectiveness of the meaningful context-based approach action in relation to each learner (the horizontal assessment) and in relation to each communicative competence criterion and the study process as a whole (the vertical assessment).

Assessing the student's communicative competence development dynamics at the final stage of the project implementation, the following conditional coefficients were given: 1 – the competence level is unchangingly high, medium, or low; 2 – the competence level has a tendency to improve; 3 – the competence level is significantly improving. 1 corresponds to 0; 2 corresponds to 0.4; 3 corresponds to 0.8.

Results and discussion

Detailed statistical analysis and characteristics of the acquired initial data and data acquired by the end of the project implementation have been provided for three groups of project participants. In the first group (group 1), the average initial coefficient (IC) at the beginning of the project implementation is 16, whereas the coefficient (IK+LGC) at the end of the project implementation is 21.2. In the second group (group 2), the average initial coefficient (IC) at the beginning of the project implementation is 15, whereas the coefficient (IK+LGC) at the end of the project implementation is 20.4. In the third group (group 3), the average initial coefficient (IC) at the beginning of the project implementation is 18, whereas the coefficient (IK+LGC) at the end of the project implementation is 22.4.

Foreign language learner communicative competence average coefficients reflect positive tendencies in its developmental dynamics. Positive tendencies in the communicative competence development dynamics indicate that the communicative competence is developing in a meaningful foreign language acquisition process which is maximally approximated to real communication. The unity of speech and thinking tasks stimulate positive changes in the competence dynamics of language learners.

When interpreting the obtained results, one must not deny the significance of external factors, for instance, the subjective knowledge of each learner that is acquired in the process of improving one's linguistic and non-linguistic skills. Besides, average indicators are not universal, as features with equal average indicators may differ within the range and character of varying. From the statistical point of view, varying is close to the following notions: the spread of the results, density, homogeneousness and variability. They all characterize the same phenomenon, i.e. the varying of a feature or differences of

individual results. Smaller variations are characterized by smaller differences of the individual results. This is why varying indicators are used along with average indicators to characterize a feature. Feature varying is characterized by investigating the spread of variants around the mean arithmetical. This assessment of varying is based on the central aberrations of variants calculating the average quadratic aberration or standard aberration.

Along with the growth of feature varying, the value of standard aberration grows, whereas smaller standard aberration corresponds to denser and more homogeneous results. It was also made out whether the acquired empirical data correspond to normal distribution, which is characterized by the fact that cardinal values of the feature are rather scarce, whereas those close to the average are rather widespread. While the normal distribution is theoretical, as it is described by a particular mathematical function, empirical data never totally coincide with any theoretical distribution; they may only come close to it. The empirical data gained within this research correspond to a normal distribution.

To clarify whether the results acquired before the experimental project implementation (IC) show a statistically valid difference from those acquired after the project implementation (IC+LGC), the *Studecnitarians* for independent groups has been used. In this particular case, measures were taken in the same groups at different times – before the experimental project implementation and after it. In this particular case, $t \ddagger t_{U,b}$. If $t \ddagger t_{U,b}$, the differences are statistically significant ($U \cup 0.05$), whereas for $t \cup t_{U,b}$, the differences of the results cannot be considered as significant and one must assume their incidental character.

It is also important to determine the dynamics of the students' attitude in order to state whether, in the course of the experimental project implementation, the students' attitude towards the study process – an educational environment intentionally created by the educator and the students – has changed. It must be emphasized that factual knowledge can be assessed by means of tests, yet students' attitude is a complex matter, therefore alternative research methods are most suitable for its assessment, best of all combining self-assessment with the assessment of others.

The dynamics of learners' attitude may be analysed by educators in the form of an observation over a longer time period, comparing the assessment of several educators and the students' self-assessment. Carrying out systematic and long-term observation of individual learners in the course of the experimental project implementation, educators pay greater attention to their needs and problems that interfere with active and productive learning, both in class and independently, as foreign language learning is a continuous process. Forming mutual human relations and investigating individual cases make it possible to go deeper into the study of the dynamics of language learners' attitude. It is important for learners to be aware of the personal significance of foreign language learning, and getting involved in advanced foreign language learning projects is an effective solution. Mutual trust, positive contact and efficient cooperation facilitate a meaningful learning process, relying on the support of the educator and other learners, as team work is most significant for attaining victory.

In the course of the experimental project implementation, 12 foreign language learners were selected for systematic and long-term observation. The hypothetical prognosis of the observation is that the study process takes place in an educational environment intentionally created by the educator and the students where the accomplishment of the suggested or selected tasks rouses students' intellectual and emotional activity, providing a transition from language learning to the use of language in real communication.

The foreign language learners' characteristics acquired during the course of the experimental project implementation, by means of systematic observation, make it possible to reach the following conclusions regarding the tendencies of the efficiency of meaningful context-based approach to mastering of foreign language lexis:

1. The learners' intellectual and emotional activity, which is necessary for the performance of a strictly defined speech and thinking task along with the positive experience in the course of meaningful learning of foreign language lexis, and satisfaction with their academic success secure the transition from language learning to language use approximated to real communication or already constituting real communication.
2. In the meaningful learning process, foreign language learners are offered a wider range of possibilities to realize their potential talents and abilities, thus proving their capability in different spheres; and satisfaction with their success and creation motivates students for further cognition, providing a situation for adequate communication.
3. If foreign language learners are offered greater freedom of choice regarding the forms of foreign language learning, a positive change in their attitude occurs as they perceive the content of learning as personally significant.
4. If the educator diversifies the forms of foreign language learning, actively involving foreign language learner in out-of-class work, foreign language learner participation in personally significant language learning is more efficient.

To assess the experimental project implementation, in its final stage the foreign language learners expressed their attitudes by stating their achievements which would provide the basis for judging the efficiency of the experimental project. The project members were asked to analyse the project implementation course and to provide their personal assessment, commenting on the dynamics of the communicative competence development according to the criteria suggested by the author of this research.

The statements of those foreign language learners involved in the experimental project implementation make it possible to reach the following conclusions:

1. The united speech and thinking tasks provide students with the possibility to become aware of the sense and significance of their action in building their personality, which in turn facilitates an awareness of the personal significance of the study content.
2. Foreign language learner research work, the goal-oriented awareness of their performed work and the assessment and self-assessment of their success are not only an important part of the study process, but also meet the needs for students' self-expression and self-actualization in their awareness of the further necessity of personal improvement.
3. An intensive, saturated and rich study process, by using foreign language learners' experience and by enriching it in socio-cultural interaction among foreign language learners and with the educator, goal-oriented cognition with information, secure the transition from language learning to the use of foreign language and stimulate positive changes within the dynamics of foreign language learners communicative competence development.
4. Foreign language learners prefer active and diverse learning activities combined with research because these offer the possibility for simultaneous thinking, acting and using language; however, intense out-of-class work, when engaging in an

experimental project, demands extra energy. Foreign language learner involvement in experimental projects, with the aim of improving their communicative skills, must not interfere with their study process in general, which is why it is preferable to integrate meaningful context-based approach standpoints in the content of diverse academic courses when working with students in class. Hence, it is a pressing necessity to integrate the experience gained within the experimental project implementation of working with students in the classroom and matching that with the content of different academic courses.

5. Foreign language learners give a positive evaluation of the opportunity provided by the educator to act in a rich, educating environment by using the ways of research-based learning, diverse ways of knowledge assessment and a chance to participate in the building of the study process.

Conclusions

Nowadays foreign language mastering is regarded as a creative process, in which the language learner gradually builds a system of language by perceiving information, processing and revising it. Foreign language vocabulary is an essential part of this system. In this research, mastering the foreign language vocabulary is regarded as an intrinsic part of the student's communicative competence development, emphasizing the role of meaningful context in learning, consolidating and the active use of lexical units.

This research suggests a didactic model facilitating students' communicative competence development in learning foreign language lexis. The model has been elaborated on and approbated within an experimental project. The nucleus of this didactic model is formed by general didactic regularities which determine the structure of the study process organization.

The results of the experimental project in higher education are positive tendencies within the dynamics of students' communicative competence development, which testify to the fact that students' communicative competence is developing in a meaningful foreign language acquisition process, in which the accomplishment of the suggested or selected tasks facilitates students' intellectual and emotional activity, being characteristic of real professional communication.

The students' characteristics acquired during the course of the experimental project implementation, by means of systematic observation, made it possible to arrive at a conclusion that students prefer an active and diverse study process, combined with research elements. A meaningful context-based approach to foreign language acquisition rouses students' intellectual and emotional activity characteristic of authentic, professional communication, providing a transition from language learning to the use of language in real communication. A meaningful context-based approach to foreign language acquisition provides students with the possibility to become aware of the sense and significance of their action in building their personality, which in turn facilitates an awareness of the personal significance of the study content, according to the analysis of the statements of those students involved in the experimental project implementation. Therefore, it is a pressing necessity to integrate the experience gained within the experimental project implementation of working with students in the classroom and matching that with the content of different academic study courses.

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SUSTAINING THE FAMILY: SUPPORTS AND BARRIERS TO INFORMAL LEARNING ABOUT BREASTFEEDING

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Abstract

Breastfeeding sustains the family emotionally, economically and healthwise. The decision to breastfeed, preferably for 6 months, is determined largely by what parents have learned informally and incidentally about breastfeeding, its effects, complication and social acceptance. This learning results from a complex interplay of experiences in their day-to-day lives. A 28-item questionnaire about factors that contributed to learning or constituted barriers to learning was administered to 70 participants (67 female, 3 male, mean age 44.8 years). Themes of informal and incidental learning, as well as conditions that supported or limited this learning were assessed. Results showed adult learning was enhanced by intervention of health care workers and availability of information on breastfeeding. Barriers to learning included lack of support from health professionals and family and societal and workplace barriers. Aspects of informal and incidental learning theory examined the informal and incidental learning that occurred. Authors urge lactation consultants to examine informal adult learning more closely given its importance to sustaining the family.

Key words: family, sustainability, informal learning, incidental learning, health education

Introduction

Health care education is often carried out in formal settings, such as university departments, or with students in a clinical or community setting. In turn, community and client education has been facilitated by physicians, nurses, lactation consultants, dietician/nutritionists and other health professionals in formal and non-formal settings. This article examines how and what community members in one geographic region learned about breastfeeding and the factors that supported or limited their learning. Breastfeeding sustains the family emotionally, economically and healthwise. How they learned, both informally and incidentally, to manage breastfeeding, find support for it and continue for 6 months is the central focus of this work. Considering that breastfeeding is directly related to improved immune status, as well as improved psychological well being and health of both infant and mother; how and if clients learn about breastfeeding is relevant to the practice of health educators, especially those who work in lactation. This paper discusses community informal learning in light of the relevant adult education frameworks and its links to sustainability.

Related literature

Several bodies of literature support this study. The first is the health literature. The second is the adult education theory on formal, non-formal and informal learning. Each is discussed here as a way of contextualizing the study.

Health literature

The long-term effects of breastfeeding are widely known and supported, lending credence to the belief that there needs to be increased attention to the learning and teaching about this nutrition practice in the community (Abbott et al., 2006; Hogan, 2001; Moran et al., 2004; McFadden et al., 2006). From a lactation professional's perspective, Lawrence and Howard (2001), Moreland and Coombs (2000), as well as Spangler (2000) have focused on fostering breastfeeding practice. Yet, neither nutrition nor lactation researchers have closely examined breastfeeding as an adult learning issue and have typically viewed it more as an issue of medical knowledge and attitudes. Cognate disciplines, such as nursing, however, have begun to look at the possibilities of informal and incidental learning as ways of informing their practice (Abbott et al., 2006). Fowler and Lee (2007), in particular, have looked at how one woman has negotiated competing interests in learning about breastfeeding. In other qualitative studies, Keeping and English (2001) and Hasselkus and Ray (1988) studied caregivers of sick family members, in order to examine the role of informal learning that enables them to cope with their home situations. Plumb and Romanow (2002) confirmed the role of informal learning for AIDS workers and clients, although they refer to it as indigenous learning. This study builds on the learning aspect of these studies while concentrating on the healthy newborn and the preventative power of breastfeeding. In particular, this study focuses on the supports and the barriers to learning about breastfeeding and, unlike previous work in this area, uses questionnaires with a significant size group (n=70) to compile data.

The theories of informal learning, non-formal, formal and incidental learning

The distinctions among formal, informal, incidental and non-formal learning have been delineated by Coombs (1985) and developed for the workplace by writers, such as Livingstone (1999) and Sawchuk (2008), albeit generally from a quantitative and organizational perspective. The distinctions have been further articulated by adult educators Watkins and Marsick (1990, 1992) in their seminal work on learning in the workplace. Formal learning occurs in formal institutions and is usually rewarded by credit, diplomas, or degrees. Non-formal learning occurs outside formal institutions and usually occurs in a workshop or seminar format. Continuing education often falls within this category. Informal learning is often intentional; it happens in the everyday world of experience. Informal learning includes learning how to breastfeed, take medications on schedule and become knowledgeable about a medical condition. This is often assisted by mentoring, dialoguing, coaching and self-directed learning projects (English, 2000). Incidental learning is a by-product of informal learning –there is no intention to learn but the learning happens anyway. For instance, in learning about breast-cancer symptoms and treatments, you might find out that your mother and your aunt have never been screened. Learning is distinguished from education in that learning can occur anywhere, whereas education is usually institutionally based and centred on distinct roles for the teacher and learner.

Learning includes the acquisition of knowledge, skills and attitudes (Vella, Berardinelli, & Burrow, 1998).

Informal and incidental learning theory has a number of dimensions that will be explored here in relation to the study data in order to draw the relationship between what occurred among these participants and if the factors that contributed to their learning were consistent with those that Watkins and Marsick (1992) discuss. We draw on their work because it has been clearly sequenced and theorized and applied previously to areas of health education (Keeping & English, 2001). As well, its focus on socio-cultural factors is particularly appealing when dealing with community issues. Watkins and Marsick's theory is that informal learning is affected by a number of factors: (a) the participants' experience of the situation; (b) how the participants "make sense" of the situation they find themselves in; (c) the context in which the learning happened; (d) the action and activities that were involved in learning (in this case, the choices to engage or not to engage in breastfeeding and to decide how long to be engaged); (e) the presence of non-routine conditions; (f) the tacit dimensions of learning –elements of proactivity, creativity and critical reflection. This paper discusses the factors that influenced and limited the learning of the participants and examines each of the factors as they relate to the informal learning theory.

Informal and incidental learning theory is useful because it prioritises experience and helps us see the value of learning that occurs outside institutions (including the workplace and organizations). It also shows that not all people learn from experience. As Jarvis (1990) reports, there can be both meaningful and meaningless experiences. This theory of informal and incidental learning provides a significant means of understanding the adult learning that occurs in the lives of expectant mothers and their families, how culture and society shape attitudes and work for and against the learning that might occur otherwise. Arguably, the lactation consultant's greatest hope is in understanding how learning occurs, how it can be supported and, if misinformation is involved, how it can be delimited.

Informal learning theory has its roots in the belief that people learn best from experience, an axiom of adult learning research. Early in the 20th century, educational theorist John Dewey established his reputation with a book entitled "Education and Experience" (Dewey, 1938). Certainly adult education researchers have long been interested in the variety of ways that people learn informally, most notable of which is Malcolm Knowles who wrote a book on informal learning (Knowles, 1950). Further study in this area was carried out by a Canadian, Allan Tough, who investigated the learning process of adults who undertook significant and individualized learning projects (Tough, 1979). Tough found that 70% of the 66 adults he studied had, over the previous year, been involved in a learning project that they had developed themselves. One of Tough's conclusions was that most adults are learning continuously and that many choose to undertake specific learning projects in their daily lives. Through a similar line of inquiry, Livingstone (1999) found that 90% of adults are involved in informal learning for employment purposes or for general interest and that the average amount of time they spend on such learning is 6 hours per week. This observation, though seemingly innocuous, has implications for health education, implying that support for self-directed and informal learning is a good thing. As a result of this finding, perhaps more energy and resources should be committed to informal and incidental learning in the community and into enhancing professional's ways of dealing with it. Research, perhaps, should be focused on how people learn and what factors facilitate learning, or maybe institutions should spend more time on helping people learn on their own. These ideas and theories form the basis for the assumption of this study, that the most significant learning about breastfeeding occurred incidentally and informally in the community, an assumption that was confirmed by our

data. This study goes further to examine the supports and barriers to learning and the influence of the social context in which learning occurred. As Hasselkus and Ray (1988) point out, knowing the social context is extremely important for understanding learning and the means of sustaining it.

Methods and resources

After ethical approval by a Human Ethics Committee at St. Francis Xavier University, 150 people were telephoned and invited to participate in the study. Participants were selected by systematic random sampling from the telephone directory, because no census data were available. Of these, 100 people agreed to complete the study questionnaire. However, when mailed the questionnaire accompanied by a letter explaining the study and a consent form, only 70 people responded. Of those who responded, 67 were female and 3 were male, aged 21 – 80 years with a mean age of 44.8+14.1 years. Eighty percent were mothers. The questionnaire consisted of open-ended and closed-ended questions. Open-ended questions included comments on reasons for feeding choices and suggestions for community and hospital-based programs that would address the barriers to breastfeeding. The close-ended questions elicited questions on barriers to breastfeeding in general and barriers to exclusive breastfeeding for 6 months.

There were 28 questions with 2 questions that were intended to solicit qualitative data. The participants, who came from the counties of Guysborough, Antigonish, Richmond and Inverness in rural north-eastern Nova Scotia, were asked to describe their attitudes, family history, behaviours and knowledge about breastfeeding. All data were analysed using the statistical package from the social sciences (SPSS 8.0) (Norusis, 1998). Frequency data are presented.

Results and discussion

This study gathered considerable data, important for understanding how women learn about their health as mothers with infants. The data are presented below in relation to the theory of Watkins and Marsick (1992). Our point is to illustrate the supports and barriers to learning about breastfeeding.

Supports for learning about breastfeeding

The data fell into several categories, revealing that the participants were in a continuous learning mode, which ultimately influenced whether or not they supported breastfeeding. There was a spectrum of intentionality on their part to learn about breastfeeding, and this learning was influenced by a number of factors. They learned about breastfeeding from the home, parents, community and health professionals, and they were either convinced of it or deterred based on a number of factors. We report below on the factors supporting learning and consequent practice.

Intervention of health care professionals

One of the key supports for learning was the health care professionals. When participants were asked who supported them or their partner while they were breastfeeding, 50% said that the family physician supported and suggested breastfeeding. Qualitative comments from participants on how breastfeeding could be encouraged suggested that further intervention of health care participants is needed to increase the learning and practice of breastfeeding. Participants noted “that doctors should suggest breastfeeding” and that “if the family doctor, nurses...supported the mothers, there would be more mothers breastfeeding.” Asked if they needed lactation consultants to come to the home to educate and support parents on breastfeeding, a staggering 88.3% answered in the affirmative (as opposed to only 60% who agreed it was necessary to introduce the subject in junior and senior high). There was also concern about the effect of limited and rushed hospital stays for mothers which tended to decrease the opportunity for supported learning about breastfeeding. One mother suggested a “very relaxing hospital stay for mothers-to-be; not 2 or 3 days and mother /baby sent home. It should be 5 –6 days.” As well, a participant suggested “counselling before leaving the hospital with a new baby.” Unfortunately, this study did not look at exactly how many contacts the client had with each professional.

The adult learning that occurred among these participants provides sufficient evidence that informal and incidental learning has taken place. One key factor noted by Watkins and Marsick (1992) that influenced learning in this case was an admixture of proactivity, creativity and critical reflection. Most participants learned when they had the opportunity to: (a) think about their attitudes to breastfeeding; (b) be creative about where and how to breastfeed; (c) manage work schedules; (d) deal with societal attitudes to breastfeeding. Learning was also supported by networking and dialogue with other mothers and family members, which supports the theory of Watkins and Marsick (1992) that learning occurs in the everyday. This learning is important to sustain the family’s economic status, health and wellbeing.

Availability of information and informal teaching on the topic

A strong theme in the quantitative and qualitative data was the need for information and informal teaching on breastfeeding. In the questionnaire data, there was considerable support demonstrated for informal learning strategies to support breastfeeding. Although only 60% suggested that breastfeeding be introduced and discussed in junior and senior high, some 98.5% agreed that prenatal *nutrition* classes be offered to all expectant mothers and their partners. When asked about the need for a video or slide tape show followed by discussion of related problems, 87.1% thought this would be a good idea. Finally, 87.1% thought it useful to have a health care professional telephone the mothers 4–5 days following the birth to check on breastfeeding management. There was clear support for non-formal activities like classes and seminars and informal learning strategies like mentoring and peer support. Community-based informal and non-formal teaching and learning were seen as optimal. In the qualitative data, participants were even more specific about the actual informal learning strategies that supported the direct provision of information. They suggested: a) pamphlets be given by prenatal care givers; (b) support and encouragement be provided from moms who have already breastfed; (c) more public sessions be given “for the entire family”; and (d) a list of nutritional benefits for child and mom be made available.

Watkins and Marsick's (1992) theory points out that there is a role for adult educators in facilitating informal and incidental learning. Although informal learning does not necessarily occur in a school or a college, this study indicates a preference for informal methods. The participants self-identified that they would benefit from prenatal nutrition classes and mentoring support from health care workers. The demanding nature of the tasks of breastfeeding and parenting likely contributes to the preference for ad hoc means of learning, such as occasional classes and for periodic personal supports.

Barriers to learning

There were a number of factors that either negated or slowed the adult learning that was taking place with this group of participants. Some of these barriers already have been studied on a regional basis and include unplanned teenage pregnancy, low educational status and income level, lack of support, date of return to work and low attendance at prenatal class (Matthews et al., 1995). These barriers are confirmed by this study and are delineated below.

Education and income

At the time of this study, participants lived in a region of economic restraint; 38% of the study participants earn less than \$20,000 a year compared to the provincial statistic of 17.4%. (Amaoka-Tuffour, 1993). The educational level is basically the same as the provincial average; approximately 47% have greater than a high school education, compared to 42% provincially. We know that higher educational and income levels correlate with increased practice of breastfeeding (Matthews et al., 1995; Amaoko-Tuffour, 1993; Milligan et al., 2000). This may also relate to the notion of Watkins and Marsick (1992) that the capacity to learn is often influenced by the ability to frame the issue at hand. An increased educational background might have influenced their ability to frame and reframe an issue, or, in the words of Schön (1983), the ability to be reflective, to address a problem (to breastfeed or not) and to act on one's decision.

Lack of support from family

Family history appeared to be an influencing factor. Of the 70 respondents, only 33% had mothers who breastfed their children and only 46% had children who were breastfed. Only 22% said the grandmother had breastfed; however, about 50% of the respondents did not know this history. When asked if other members of your family breastfed, only 53% said yes. This lack of a role model or mentor presumably affected and increased a resistance to breastfeeding. When asked if a family member discouraged breastfeeding, 10.5% said their mother discouraged them and 5.3% said a female friend discouraged them. The fact that these significant-other females discouraged them is quite significant since one would expect them to be a major supplier of information and ongoing support. Other participants learned through discussions with family members. Yet, as Jarvis (1988) noted, even with discussion, people may or may not learn from their experience. For learning to occur, there has to be some element of reflection on action, which discussion can facilitate (Jarvis, 1988).

As Watkins and Marsick (1992) note, informal learning is concerned with how people learn from the everyday experience of life. In the case of breastfeeding, the learning focus is on how parents learn and how this learning can be increased. This study addresses

the issue of how participants learn to breastfeed or not, where they actually do it, how it can be supported. Though there is much in this data that reflect attitudes and socio-cultural aspects, our focus is always on learning.

A key learning factor in Watkins and Marsick's (1992) informal and incidental learning theory is action, or the belief that people learn by doing, which is one of the main premises of experiential learning theory (Boud & Miller, 1996). Even though their parents' record of breastfeeding was low (33%) and 10.5% of mothers discouraged them, a full 46% of participants had breastfed their children. The experience of having children, coupled with the knowledge of the benefits of breastfeeding, served to support breastfeeding to some degree.

Society and workplace barriers

When asked the biggest barrier for exclusive breastfeeding for duration of 6 months, 76.5% said returning to work was a major problem; 39.2% said lack of support in general; and 27.5% said they were never taught to breastfeed. When data in the open-ended questions were examined, typical comments that emerged were:

...babies are not bottle-fed in the work place and I do not believe that babies should be breast-fed in the workplace either. Mothers should be taught to use breast pumps at home.

I am not a supporter of breastfeeding. I feel women who breastfeed like to take and get a d v a n t a g e s i n t h e w o r k p l a c e a n d o t h e r a r e a s h e a l t h y a n d s t r o n g .

Another woman said, "My own observations on breastfed babies – the baby doesn't seem to be a 'happy baby', very fretful and fussy and will not go to anyone else." Another said that breastfeeding at work "would be too distracting". These negative findings support the assertion of Hasselkus and Ray (1988) that the social context is an integral part of learning. The context in which this study was conducted militated against breastfeeding. The attitudes displayed by some of these participants are reflective of the larger culture and show clearly the major barriers to increasing breastfeeding practice.

A further interesting point relating to the social context of the study participants is the common belief that breastfeeding is optional and that parents have the sole right to decide whether or not to breastfeed. Despite the fact that society has constructed norms to limit drinking, smoking, unprotected sex, spread of AIDS and sexually transmitted disease, a full 44% of the participants in this study were "reluctant to influence a best friend to breastfeed," saying that "it should be her decision." Whereas family and friends would be concerned about prenatal smoking, they do not necessarily have the same concerns about bottle-feeding.

Discussion and conclusion

The emphasis in this study was on the community and not just on the breast-feeder and child, broadening the notion of who ought to be educated and why. The findings confirm the considerable emphasis that Hasselkus and Ray (1988), Plumb and Romanow (2002) place on the socio-cultural dimensions of adult informal learning and the complexity of learning to breastfeed that Fowler and Lee (2007) explicate. Because the study was carried out in the community, there is insight into the larger and more formative ways that the

community educates its members (Hasselkus & Ray, 1988; Plumb & Romanow, 2002). This has considerable bearing on the learning and teaching strategies of health care providers and how they conceptualise their role. This study also supports the idea that learning about health is a continuous activity in the community and that it needs to be further understood and fostered in a sustainable way, especially if the move away from an institutional focus is to be achieved.

Another significant factor affecting learning, according to Watkins and Marsick (1992), is the presence of non-routine conditions. Given the increasing international trend to small family size, breastfeeding at home or work would constitute a non-routine or infrequent condition for either the mother, the public, or the co-workers. This situation may account for some of the misinformation about breastfeeding that some of the participants had, such as the belief that breastfeeding is problematic or makes babies unhappy. As well, the relative rareness of breastfeeding in this society may serve to teach these negative beliefs.

Given that these erroneous beliefs exist, it is imperative that health care professionals, such as nutritionists and lactation consultants work with the non-routine conditions to teach positive views and perspectives and to increase correct knowledge. We argue that all health care professionals need to take a more active role in fostering informal and incidental learning – this community and societal learning is obviously far more influential than courses can ever be. As well, adult educators who practice in the community in a variety of non-profit organizations, such as women's centres and support groups need to be aware of the range of issues affecting people's health and the ways that they as lay professionals can assist in sponsoring learning.

Implications for health educators

The learning that occurred here is best described as informal and incidental. There was little or no mention of formal education at the hospital from professionals. Most of the learning was carried out in the homeplace and in the community, generally not in institutions. The trend towards increased hiring of lactation consultants is obviously warranted and ought to be continued given the implications for sustaining the health of the family. Following the collection of this data, a lactation consultant was hired, resulting in an increase in the initiation rate of breastfeeding from 41% to 60.5%, as well as a significant increase in the duration rate at 4 months (Hogan, 2001). There is evidence that offering more breastfeeding programs and teaching sessions, as well as providing mentoring support, increases the level of compliance (that is, the increase in breastfeeding). These are all tasks of a lactation consultant, one of many health education roles). There may well be inadequate information about the potential role or benefit of the consultant and the possibility that he or she could positively influence learning in the area of breastfeeding.

There is evidence that when the community, society, family and the workplace support breastfeeding, it can happen. In this case, the presence of a supportive partner increased the rate of breastfeeding; some 90.6% of partners supported breastfeeding. It could be that increased efforts could be made to involve the partner in any informal teaching and learning that might occur, rather than increase attention and pressure on the mother. Yet, informal teaching and learning are not a panacea for low rates of breastfeeding in populations, such as this one. Embedded deep within cultures are taboos, misconceptions about infant health and the mother's role in infant care. These socio-cultural dimensions cannot be dismissed, but they can be raised to the level of discussion so that attempts can be

made to analyse and assess them. This is especially important given the implications for sustainability.

Need for further research

The informal learning documented in this study is occurring continuously among expectant mothers and fathers, among community members and among health professionals (Dykes, 2006; Wallace & Kosmala-Anderson, 2006). This informal learning can become a significant educative force if opportunities to reflect critically on its implications for health educators are encouraged and supported.

Health educators could learn a great deal about the processes of adult teaching and learning if they were to apply the lens of adult learning theory to their study of issues, such as breastfeeding. Investigating the forces that support and serve as barriers to learning might be useful to them in understanding their role in education of the public. Given the increased rate of breastfeeding after this study and following the hiring of a lactation consultant for this geographic region, lactation consultants are obviously involved in increasing learning. Further research in how they facilitate learning is needed.

Of course, this study was regional so it is difficult to tell if it reflects the larger national or international landscape. Certainly, Fowler and Lee's (2007) Australian study, though based on a single case, suggests that there may be similarities in terms of barriers and supports, though a more intensive study would be required to ascertain certainty. Future studies might also investigate whether or not geographical location plays a role in the learning that occurs around breastfeeding. Other studies might also attempt to explore gender differences that might exist in the community. Given the implications for the sustainability of the family and its health, this is crucial.

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SUSTAINABILITY IN PUPILS' RESEARCH ACTIVITY BY INTEGRATING OPPORTUNITIES OF FORMAL AND NON-FORMAL EDUCATION IN SECONDARY SCHOOL

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Abstract

Increasing teachers and pupils achievements under the following conditions –creating a school environment where the teacher becomes involved as a researcher of the process and his or her pupils acquire knowledge, develop skills of its application, gain practical experience and manage to unite knowledge and skills, thus obtaining life-wisdom that is grounded in the application of the principles of sustainability.

This article aims to identify the conditions of the experiences of integrating formal and non-formal education in an educational institution (state secondary school) by creating an environment of academic optimism that scientific research skills. The research approach is viewed in the context of sustainable education.

In the present article, the opportunities provided by formal education are examined in the following aspects: (a) formation of research skills while acquiring the contents of school subjects in the study process.

Opportunities for non-formal education are investigated in the context of (a) tendencies of pupils (Grišāne, 2007a, 2007b, 2008) and (b) evaluation of their scientific research works. Opportunities provided by non-formal education promote the development of teachers and pupils individual/collective frames of sustainability in the context of research experience.

Action research was conducted in an educational institution. This article contains an analysis of the data that were obtained (a) in the observed lessons and (b) from a survey of the evaluation of their research interests and skills.

Key words: *formal and non-formal education skills, sustainability of education*

Introduction

The sustainability of a society is determined by the level and quality of education. Nowadays, it is possible to achieve a high level of education, but that does not guarantee quality education. Diversity of lifestyles and opinions generates different understandings of the ways to obtain education, as well as about its content and meaning.

A purposeful organisation of the pupils' inquiry can form the basis for ensuring sustainable high-quality activity. Care for the development of research skills is one of the features of sustainable education.

For more than ten years, action research has been conducted in one of the Latvian educational institutions, focusing on the analysis of the secondary school environment that helps develop the pupils' research skills by using the opportunities afforded by formal and non-formal education.

The research was conducted in three stages: (1) during the first stage (from 1999 to 2004) the pupils' choice of research topics and its correspondence to the education programme mastered by the students were studied alongside the research approaches that the pupils applied for their research; (2) during the second stage (from 2005 to 2007) the contexts of the principles of sustainability were identified alongside with the features of global and local content and metacontent contexts in the pupils' research work; (3) the third stage (from 2007) aimed to evaluate pupils and teachers' communication experience in formal and non-formal action environment, by enhancing the development of thinking skills, research skills and reflection skills of the participants of the teaching-learning process.

During the first stage, the pupils' research skills were evaluated based on the assumption that secondary school pupils are ready to conduct conscious and purposeful research work. Sustainability in secondary school pupils' scientific research work was identified, proceeding from the interpretation of the notion of sustainability (Litke, 2004; Macer, 2004), according to the research approaches applied by pupils, goal-oriented contexts, content of the work and the orientation of metacontent and content in research conclusions.

Most of the typical choices of pupils' research topics and their correspondence to the process of learning during the lessons were identified. One of the findings was the following (Grishane, 2007b): the more active and varied the teaching methods applied by teachers are during the lessons, the more actively pupils choose research topics in these disciplines.

The development of research skills was evaluated in the context of implementing sustainability as a contemporary educational principle (Grishane, 2007c; Grišāne, 2008). In the course of the study, frames of reference (Mezirow & Associates, 2000) were sought that characterise the activity of educational institution as a joint process for the creation of an environment of academic optimism. The conditions that ensure the pupils' growth, by creating the environment of academic optimism, were evaluated (Hoy, Tarter, & Kottkamp, 1991).

After the evaluation of the approaches which the pupils apply to their scientific research work, four typical research approaches were identified (Grishane, 2007a, 2007b). The results are summarised in Table 1.

Table 1. Approaches applied in pupils' scientific research work

	1999-2004	2005-2007	2009*
Research approach	Number of pupils' works (n=1216) %	Number of pupils' works (n=201) %	Number of pupils' works (n=85) %

Sequel to Table 1 see on p. 41.

Sequel to Table 1.

Qualitative phenomenological research	41	20	26
Qualitative research of concrete experience	27	44	24
Quantitative research of concrete experience	16	20	24
Quantitative phenomenological research	16	16	26

*Data for the year 2009 are based on pupils' self-evaluation.

An analysis of pupils' scientific research work permits us to conclude that: (1) the number of studies in natural sciences increases as the number of students who acquire the exact education programme grows; (2) interest in researching the core principles of sustainability (ecology, integrity, spirituality) is constant; (3) with time, the use of the local and global contexts in researching the problem slightly changed, due to an increase in the amount of local research.

An analysis of the development of pupils' research skills was based on the identification of the developing types of environment. Consequently, seven types of research environment were selected, where the mutual interrelation of various criteria was identified (three major criteria were identified for all types of environment), which indicates the relation between research approaches and the corresponding inner techniques of research activity (Grišāne, 2008).

Self-evaluation experience becomes included in the context of enriching the experience of learning skills and research. Therefore, during the third research stage, a frame of reference was sought, which would permit us to evaluate this experience. While evaluating the environment of research activity, the study emphasised construction of knowledge, improvement of thinking skills and the exploration of external experiences, which enhances the development of research skills, in the context of formal and non-formal educational environments.

An accumulation of experience fosters the development of teachers and pupils' cooperation skills, research skills and reflection skills. Pupils become more precise in identifying their research objects, pose achievable and significant research problems with an aim to affect, change and make their own propositions for improving the existing situation, while teachers gain experience in creating a sustainable research environment.

Realising that knowledge is created from the generalisation of the story content, dialogue and discourse of various issues, observations and action interpretations (Hayden, 2009), action research was continued by formulating research questions that were oriented towards a deeper interpretation of teachers and pupils' subjective experiences and exploring the internalisation of external experiences or internal awareness.

The objective of the third research stage was to identify the conditions that promote the development of thinking and research skills through social interaction, i.e., cooperation between teachers and pupils and reflection on this cooperation.

Description of the sample

During the first measurement (from 1999 to 2004), 1216 scientific research works were evaluated; during the second measurement (from 2005 to 2007) 201 pupils' works were

evaluated alongside the activities of formal and non-formal educational environments, which promote the development of research skills.

The third research stage focused on the analysis of the cooperation among teachers and pupils, which was identified during the observed lessons, as well as on the analysis of pupils' self-evaluation skills.

The evaluation of formal and non-formal educational environments was based on the analysis of purposefully selected (n=10) lessons, conducted by the teachers of the very subjects at the studied educational institution. The selection was determined by the fact that new educational content is being introduced in science subjects in the studied educational institution (according to the state normative documents) and new learning methods are approved, which are oriented towards the development of research skills.

This article contains an evaluation of the data obtained from secondary school pupils' (n=85) self-evaluation surveys. The respondents have practical experience in scientific research work, because they all have defended one or two scientific research works. The survey questions are aimed at evaluating both formal education and non-formal activity. Self-evaluation is grounded on content evaluation criteria and parameters, which were identified in pupils' research works.

Participants of the second survey (n=184) reflected on communication during school lessons by examining the sustainability contexts of the educational content.

Design and methods

While conducting action research, a communication frame of reference was sought and criteria were identified, on the grounds of which it is possible to analyse teachers' and pupils' cooperation in formal and non-formal educational environments, oriented towards developing pupils' thinking and research skills, as well as gaining self-evaluation experience. Direct impressions were conceptualised during the study on the basis of the existing experience, action and possibilities for broadening this experience. Both qualitative and quantitative analyses were applied to data evaluation.

Over several years, the pupils' self-evaluation skills and experience were purposefully developed in the studied educational institution. Consequently, pupils can adequately evaluate their knowledge and skills.

Lesson observations permitted us to identify actions that promote pupils' research skills and establish criteria that permit an analysis of the purposefulness of teachers' activities and evaluate pupils' thinking skills that are applied for acquisition of subject content during the lessons. In order to evaluate the cooperation, the concepts that characterise thinking activities were explored. Data from lesson observations were categorised according to the basic categories that characterise thinking skills and are generally accepted in pedagogical practice: (a) comparison, (b) analysis, (c) synthesis, (d) abstraction, (e) generalisation. Lesson observations were focused on the evaluation of both the teacher's and the pupils' activity.

The pupils' self evaluations of their scientific research work, conducted in a non-formal educational environment, were evaluated. All secondary school pupils involved in the study conduct scientific research work. Each pupil writes two scientific research works during his/her three years at secondary school.

Secondary school pupils evaluated their skills on the grounds of several criteria:

1. their research skills, by selecting one of the suggested skills descriptions;

2. on the basis of their subjective choice the subject(s) in which, in pupils' own opinion, their thinking skills are actively developed;
3. according to their personal interests, the pupils selected the subjects that broadened their views on the principles of sustainable development.

Results

Pupils' and teachers' cooperation can be identified in the process of acquiring subject content and related skills. Educational content, mutual influence of the group, trust and learning activities that foster the development of research skills interact during the lessons.

Most typical features in teachers' and pupils' cooperation during the lesson, aimed at promoting the development of thinking skills, were identified in the course of the present study. The lesson analysis worksheet was created for the purpose of the study. Lesson observations were aimed at identifying actions that are directed towards development of thinking skills in formal learning environment.

10 lessons were evaluated in the exact sciences – mathematics (4), physics (2), chemistry (2), biology (1), natural sciences (1). The selection of the lessons to be observed was determined by the wish to attend the lessons of all ten teachers of exact sciences, employed in the studied educational institution.

Observations were aimed at evaluating how, alongside the development of basic skills and elementary thinking operations, pupils are encouraged to activate thinking skills, think systemically, understand broader contexts, content and metacontent. Actions performed by the teacher and pupils during one lesson were noted on the lesson analysis worksheet, proceeding from the following observation criteria (Table 2).

Table 2. Observation criteria according to action parameters

Action parameter	Criterion
comparison	teachers' and pupils' actions oriented towards identifying the similarities and differences of the features and characteristics of objects and phenomena,
analysis	teachers' and pupils' actions oriented towards splitting a complex phenomenon into simpler, more elementary component parts,
synthesis	teachers' and pupils' actions oriented towards thinking activities that reconstruct the whole, complete and complex phenomenon from separate component parts,
abstraction	teachers' and pupils' actions oriented towards the ability to distinguish the most significant ones among a set of phenomenon features,
generalisation	teachers' and pupils' actions oriented towards consolidating objects and phenomena in a group on the grounds of significant common features and properties.

Concrete examples of actions and commentaries characterising the actions performed during the lessons, were noted during the observation. The obtained descriptions of observations formed the basis of interpretation that revealed the features of thinking activities during the lessons.

The following findings characterise teachers' and pupils' cooperation:

1. Where lesson aims are defined precisely and clearly explained to pupils, the work is more purposeful. The broader the aim set by the teacher, the more organised the pupils' activities are. Pupils willingly and actively engage in the activities suggested by the teacher that enhance the development of thinking skills (perform intellectually active actions).
2. All the observed lessons are structured similarly: introduction, basic activity and conclusions (summary and/or reflection).
3. The majority of the observed lessons (8) permitted to identify purposeful teachers' activities aimed at activating all types of pupils' thinking skills. Focus on the development of such skills as comparison, analysis and synthesis is particularly pronounced. Activities aimed at developing such thinking skills as abstraction and generalisation were less frequently used.
4. During the majority of the observed lessons, teachers used additional materials (worksheets, handouts, PowerPoint presentations) for the activation of the pupils' thinking skills and the promotion of active participation.
5. In some of the lessons (2), it was observed that pupils start working actively only after intensive teacher's input (weak independent work skills). In some cases teachers assume the initiative and are not particularly concerned whether pupils follow the course of their thought. In this subject, pupils have more difficulties in completing analytical tasks during state examinations.
6. During the observed lessons, the application of wider contexts for content exposition was only identified as a casual activity. Generalisation was not set as an aim for the lesson. Teachers are not in the habit of relating text to context, partly because teachers believe the broader contexts to be self-evident and partly because the time limit (lesson duration) does not permit for sustained discussions.
7. Pupils' actions can be characterised by the following phrases – becomes involved in a dialogue, expresses his/her opinion, substantiates his/her opinion in detail, names elements of the process, characterises features, draws conclusions, predicts, etc. At the same time, one can also observe a simplified understanding, brief commentaries or short answers to questions. Pupils' actions are also characterised by such skills as making notes, doing measurements and calculations, drawing conclusions, using tables, graphs and other additional materials.
8. Pupils' opinions on the lessons can be described by using their own words – "These lessons seem to fly away!" and, upon leaving the classroom, pupils tell their teacher, "Thank you for the lesson!".

An analysis of the observed lessons indicates that teachers, whose research thinking is well-developed, are able to organise pupils' work in such a way which affects the development of pupils' thinking and research skills. The teacher's subjective interests in contact with the pupil's subjective interests create an objective learning environment, which is oriented towards research activities and sustains an environment of academic optimism in the teaching and learning process.

For several years, teachers and pupils from the studied educational institution mastered varied self-evaluation techniques and developed their self-evaluation skills in the learning process.

Teachers explored the theoretical grounds of self-evaluation, compiled experiential materials and shared their experiences of the methods of self-evaluation. Pupils were

included in the joint activity of the development of self-evaluation skills. Pupils' skills and their interest in the opportunities for self-evaluation increased. In all school subjects, teachers offer pupils varied activities in order to obtain information about the quality of the work done, determine their skills and knowledge. The majority of pupils have acquired self-evaluation skills and are able to adequately evaluate their knowledge, skills, as well as the significance of their creative work in the aspects of content, form and context.

The survey contains questions that help pupils (a) evaluate their research skills, (b) analyse their individual understanding of the principles of sustainability, (c) evaluate the opportunities for acquiring more extensive information about sustainability in the learning process.

The number of pupils who selected the lowest criterion for the evaluation of their skills, expressed with a phrase "still difficult", was small. Only in 8 cases out of 1014 pupils evaluated their skills as such that pose difficulties.

Criteria for the evaluation of pupils' scientific research skills and the distribution of choices (n=1006) are as follows:

- < "managed with effort" (75 cases);
- < "average" (275 cases);
- < "managed well" (455 cases);
- < "very well" (201 cases).

The pupils' evaluation of their skills according to the given parameters leads to the results which are depicted in Table 3.

Table 3. The pupils' evaluation of their skills according to the given parameters

Description of skills parameter	Evaluation criterion	Percentage of respondents
Identify research object	managed well	51.8
Propose hypothesis or research question	managed well	48.2
Select texts for theoretical substantiation	managed well	48.2
Create own (author's) text on the topic	managed well	52.9
Find a new idea	average	47.1
Conduct a corresponding research	managed well	50.6
Make a comparison	managed well	52.9
Perform content (problem) analysis	managed well	45.9
Synthesise new ideas	average	50.6
Draw conclusions about research results	managed well	47.1
Process and classify data	managed well	47.1
Create appropriate design of the work according to the set requirements	very well	42.4

This table depicts pupils' choices according to the evaluation criteria only in those cases when the choices in question dominated in each of the parameters. The distribution of evaluation percentages in parameters where pupils described their skills with the phrase "manage with effort" is insignificant, which is why it is not included in the present list.

Pupils indicate their ability to create appropriate design for their work according to the set requirements as very well developed. A significant proportion of pupils finds new ideas and synthesises new ideas from the obtained data with considerable difficulties.

Generally, all skills are judged as being quite good in the pupils' self-evaluation. The adequacy of the self-evaluation is confirmed by the data from pupils' marks for the defence,

because nearly all scientific research works are assessed as good, excellent and outstanding. Some of the works participated in city and state level competitions and scored high results. The respondents evaluated the content context of their research problems.

Evaluative frame of reference was composed of 24 features characterising the principles of sustainability and were identified in the pupils' scientific research works that had been written during the previous years ($n=1216$ and $n=201$). In this survey, pupils ($n=85$) selected the most characteristic features which, in their opinion, correspond to the research work in question.

The findings from pupils' ($n=85$) self-evaluation reveal that each pupil identified several of the 24 features in their work and, in total, 274 features in different combinations were named. The features selected by the pupils were grouped according to the principles of sustainability.

The results confirm that a balanced learning environment has been created in the studied educational institution, which positively affects pupils' choice to study problems in one of the contexts of sustainability:

- ◁ problems of ecology were mentioned in 93 cases (34%);
- ◁ problems of social integrity were mentioned in 74 cases (27%);
- ◁ problems of the context of spirituality were mentioned in 106 cases (39%).

Pupils evaluated the content and learning methods of which subjects give a broader understanding of the content of sustainability and form experience of creative work by integrating the experience of sustainable thinking. Pupils ($n=85$) named 159 school subjects, which were grouped as humanities and science subjects. The obtained results are illustrated in Table 4.

Table 4. The pupils' evaluation

Subject group	Form	Percentage out of total number of choices
Humanities	11	69
Humanities	12	71
Sciences	11	30
Sciences	12	29

Pupils tend to choose humanities in both 11th and 12th form. Certainly, this tendency is affected by the specifics of the subjects, but it also indicates that, possibly, the opportunities afforded by exact sciences were not fully realised. Lesson observations also confirm that in exact sciences, teachers hardly ever suggested generalisations or content analysis in the context of sustainability.

To gain a broader insight into pupils' opinions about understanding the contexts of education content, a repeated survey was conducted. 184 pupils participated in the repeated survey, where they were asked to give their subjective evaluations, whether the content of school subjects is related to the context of the principles of sustainability. The number of choices indicates the number of times that the subjects were mentioned.

Out of all school subjects studied in secondary school, pupils freely selected those which, in their opinion, broaden their understanding of sustainability. The selection of evaluation criteria was determined by the interpretation of the notion of sustainability that had been applied in the studies, which pupils conducted within their scientific research works. The pupils selected the subject whose teacher offers the above-mentioned content

context. The pupils' points of view on the content context of school lessons are reflected in Table 5.

Table 5. Frequency of choices for the features of sustainability

Evaluation criterion	Number of choices
Equal opportunities	83
Role of innovations	102
Sense of belonging	108
Development of a positive attitude	110
Social participation	114
Values system	116
Tendencies and consequences of cultural integration	116
Promotion of cooperation	120
Preservation of cultural and natural heritage	123
Moral norms	125
Development of attitude	127
Immaterial cultural heritage	131
Preservation of life	136
Influence of physical factors on health	137
Prudent use of resources and economy	147
Human/environment-friendly action	149
Life quality of the present and future generations	153
TOTAL:	2097

As seen from Table 5, the most frequently used contexts for content exposition are “Life quality of the present and future generations”, “Human/environment-friendly action” and “Prudent use of resources and economy”.

Bearing in mind that in recent years the dominant tendency in Latvia is the intensive acquisition of exact sciences, two significant conditions for the implementation of the principles of sustainable education arise: (1) reorientation of exact school subject teachers towards a deeper coordination of educational content and methods with the principles of sustainability in the teaching and learning process and (2) seeking ways to balance education in the exact sciences and the humanities.

This issue is partly being addressed by each educational institution, depending on their aim and development strategy. Also this problem could partly be solved by creating more balanced educational programmes to be implemented in the educational institutions, which would include both exact sciences and humanities.

Optional subjects are also included in educational programmes. To balance the humanities and exact science directions of education, these are mainly humanities (psychology, ethics, philosophy, third foreign language, etc.). Until now, pupils actively selected and acquired these subjects. If the pupils' load permitted, even more would select some of these as additional subjects.

Interest in the acquisition of educational content, as well as the environment that fosters the development of certain skills, are characterised by academic achievement. They can be divided in two parts – indicators of formal and non-formal education. By integrating

formal and non-formal education, the educational institution creates an environment favourable to research activity.

The 'end product' of formal education is the day-to-day achievement of secondary school pupils and the results of centralised state examinations. In the studied educational institution, the mean grades range from 6.43 to 7.61 in secondary school classes (10 point grading scale). Every year, the educational institution has graduates whose mean grade in the certificate for secondary education well exceeds 9. Already for several years, no less than 88% of graduates are awarded ABC levels in centralised state examinations.

The pupils' demands corresponding to their research interests can partly be satisfied by suggesting broad non-formal educational opportunities. The educational institution, where the present action research is conducted, has long-term experience in the integration of what formal and non-formal education has to offer.

By attracting municipal funding and parental support, pupils can select additional classes in some of the school subjects, use the opportunity to develop artistic and athletic skills in various programmes of interest education, as well as gain new experience and develop important life skills in a wide range of special courses. The special courses are delivered by university staff and/or renowned specialists who are not employed as teachers in the studied educational institution. Some of them are present or former pupils' parents. The most popular special courses are "Applied Etiquette", "Art of Communication", "Social Relations" and "Art Philosophy". The practically necessary special course "Fundamentals of Scientific Research Work" is available to all pupils.

Non-formal educational activities also provide insight into pupils' attitude towards educational content. The selection of special courses indicates that pupils are interested in acquiring skills, which will be necessary in the labour market. The wide opportunities afforded by non-formal education (debate club, two choirs, soloist groups, dance groups, sports sections, drama club, etc.) enable everyone to develop varied skills.

While acquiring the content of separate school subjects, a knowledge base is created and varied skills in applying knowledge are developed, which are supplemented by non-formal educational activities. While conducting scientific research work, pupils have an opportunity to re-evaluate their knowledge and, based on the acquired skills, create their own frames of reference and understanding of the mutual connection between humans and the world. Pupils' research synthesises teachers' input and pupils' life experience, research skills and subjectively meaningful content.

Conclusions

Research skills, innovative thinking and skills of cognitive activity are attainable in various ways. Pupils' scientific research work and its organisation is a sphere where it is possible to implement integration of formal and non-formal education, thus promoting the reorientation of education towards the aim of sustainable development.

On the grounds of productive cooperation among teachers and pupils, research work develops skills to research an issue, which is chosen by the researcher, in a broader context, integrating the knowledge that has been gained in various school subjects and the skills of analytical problem evaluation.

This study permitted us to discover the interrelation between (a) what the teacher and pupils do at the lessons, how successful their cooperation is and how precisely it is oriented towards development of thinking and research skills and (b) the way pupils, when evaluating their skills, become aware, which subject content and teaching and learning methods enhance understanding of broader contexts and enrich research experience.

Lesson observations of exact school subjects reveal that not all thinking skills are activated during the lessons, and this finding is confirmed in pupils' self-evaluation, which indicates that generalisation and understanding of broader contexts are acquired in the humanities.

A contemporary secondary school student can be characterised in two significant aspects: the ability to learn and ability to analyse and research problems. The role of the conceptual approach, selected and pursued by each educational institution, is decisive in creating an educational environment, which is typical for the particular school and where pupils can develop their creative abilities, research skills, as well as the ability to reflect on the experience that has been gained in the learning process.

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THE CHALLENGE OF WIKIQUESD AS AN ENVIRONMENT FOR CONSTRUCTING KNOWLEDGE IN TEACHING AND LEARNING FOR SUSTAINABLE DEVELOPMENT

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Abstract

The purpose of this paper is to reveal how a newly advanced concept of WikiQuESD which could be used as a scaffolding hypermedia tool to enhance pre-service teacher education for sustainable development (ESD) within the context of project-based learning (PBL). WikiQuESD allowed pre-service teachers to design and upload interactive ESD projects online through collecting, assessing and integrating digital material available on the Web. They could also brainstorm, share and discuss their project ideas, while the instructor could make comments and monitor the development process. These results imply that the learning power of the WikiQuESD and Wiki technology in general can transform teachers from software users to hypermedia authors.

Key words: WikiQuESD, teacher education, education for sustainable development, constructivism

Introduction

Three of the major forces shaping and driving the 21st century are the following: 1) the development and diffusion of information and communication technologies (ICT); 2) the increasing demand for new educational approaches and pedagogies that foster transformative and lifelong learning and 3) the drive towards sustainable development (SD) through reorienting higher education. The link between ICT, transformative learning and ESD is being addressed by extensive debates and research which recognize the challenge new technologies bring to the reorientation of education towards learning to live sustainably (Combes, 2005; Makrakis, 2006; Makrakis, 2008). Education is seen as a critical means in the process of achieving sustainable development. However, this entails that traditional systems and methodologies need to be re-oriented and re-engineered (Hopkins & McKeown, 2002; Fien, 2002; 1996; Huckle & Sterling, 1996). Paas (2008) emphasizes that ICT play an important role in advancing ESD in two ways: a) by increasing access to educational materials about sustainability (for instance, via distance learning, educational networks and databases); b) by helping to promote new ways of interactive learning called for in ESD that emphasizes not just knowledge, but choices, values and actions.

Indeed, there has been increasing recognition of the critical role of education in promoting sustainable development ideas and changing attitudes and behaviour of people as individuals, as producers and as consumers. According to Bonnett (2002, pp. 14–15), “education for sustainability can be seen as a frame of mind to reconnect people and

reform". Within this context, the UNESCO Chair ICT in ESD at the University of Crete has set up a project in cooperation with local and regional school authorities to merge ICT with ESD and respond to the UN Decade of Education for Sustainable Development (2005–2014) and UNESCO's quest to re-orient teacher education to address sustainability. Using an open source platform for e-learning (Wikidot), the WebQuest idea and a distributed and transformative problem-based learning approach, a virtual learning and authoring environment entitled WikiQuESD has been conceptualized for building the capacity of pre-service and in-service teachers to design and develop web-based instructional material addressing sustainability issues of local and global concern. Wiki technology is an open source web-based software that allows quick and easy change of the content and adhering to the general model of socio-constructivist learning hypothesis that knowledge construction is a social process that occurs through collaboration with others. Wikis are thus defined as a tool for collaborative authoring and web-content construction. WikiQuESD is extended to be defined as a tool for collaborative learning and problem/project-based web-content construction of real-life problems addressing the issues for sustainable development. WikiQuESD applications are being designed to use multimedia (images, text and sound), various mindtools and open education learning objects to promote collaboration, connectivity, "real-world" learning-based change and systems thinking, which are emerging as key pedagogical methods conducive to education for sustainability.

The structure and theoretical background of WikiQuESD

The authoring window of WikiQuESD is divided into three parts. The left hand side displays five main nodes: 1) activation; 2) learning tasks; 3) learning processes; 4) reflective feedback/assessment; 5) extensions, each of which can be used for planning and constructing WikiQuESD lesson interventions. There are also secondary nodes, which provide information about the sources (learning objects) used and creators. The main right pane is the screen that holds the HTML content associated with each node. In the upper bar space, the creators place the title of the instructional project and in the right part, the UNESCO Chair's logo, as well as additional nodes related to online tools can be used, such as ePortfolios, Cmap, Blog and Databases. These mind tools repurpose ICT to engage learners in critical and reflective thinking (Jonassen, 1996; Jonassen & Reeves, 1996) and education for sustainable development (Vanhear & Pace, 2008). The use of ICT, thus, can offer new exciting possibilities to promote the changes in teaching methodologies called for in ESD. However, when looking specifically for research on the use of ICT in Education for Sustainable Development, including educational policies, pedagogical approaches and classroom uses of ICT for ESD, there is not much available to date (Tella & Adu, 2009). WikiQuESD is envisioned to bridge this gap.

WikiQuESD is based on theoretical insights from critical or emancipatory constructivist research and transformative/reflective learning with particular reference to education for sustainability. Emancipatory constructivism implies that meaning is shaped and knowledge is constructed through discussion with peers and teachers and through reflection that leads to learning-based change. Teachers are encouraged to reflect on their knowledge, personal learning theories and teaching practices. The principal idea behind WikiQuESD is that the starting point for learning should be a real-life problem that the learner wishes to tackle. It is, thus, a learner-centred approach, where the learner takes responsibility for his/her own learning through full participation in all stages of the WikiQuESD process. That includes activation though brainstorming, using virtually-based

concept mapping, discussion forums, problem identification, identification of learning needs and tasks, processing and refinement of needs and tasks, construction and reconstruction of new knowledge and continuous reflection. The teacher in WikiQuESD becomes a “facilitator” and “mentor” and guides learner’s WikiQuESD problem-solving through all stages of the cycle. The main technological and pedagogical characteristics built into WikiQuESD can be summarized as follows:

- ◁ **Multiple types and levels of scaffolding.** Support comes from online instructional material (www.wikitipsgr.wikidot.com) that is monitored by a mentor or facilitator to assist our pre-service teachers’ engagement in producing WikiQuESD learning activities. Some of the examples include templates, descriptive assessment rubrics and guidelines that help them develop and design their WikiQuESD instructional projects.
- ◁ **Authentic content, curriculum and learning tasks.** To ensure that content is authentic and learning is meaningful, pre-service teachers are encouraged to select and/or negotiate an ESD local/global topic and engage in learning tasks which are real-world and situated within realistic contexts. Content is thus learner-generated, inter-disciplinary and hypermedia based, largely build through multimodal open education resources available in the Web.
- ◁ **Multimodal texts and literacies.** Using the affordances available in the source social software of the WikiQuESD learning and authoring environment, pre-service and in-service teachers are guided to develop web-based instructional interventions merging various modes of representation, such as spoken and written language, still or moving images, sounds, designs, animation and videos.
- ◁ **Reflective feedback/assessment.** Through a set of guiding questions, pre-service and in-service teachers are empowered to monitor and take ownership of their learning guided by prompt questions.
- ◁ **Active constructive and meaning making reflective process.** Pre-service and in-service teachers are guided to actively engage in knowledge and meaning construction through reflection.
- ◁ **Meaningful cooperation, collaboration and communication.** This process engages pre-service and in-service teachers to learn to negotiate, compromise, compare, share, revise and scaffold each others’ learning.
- ◁ **Transferability and replicability.** Pre-service and in-service teachers working within the WikiQuESD learning and authoring environment produce multimodal content that can be up-scaled, adopted and adapted to various settings and to suit social, cultural and language learners’ needs and make learning more customized.

Assessing the potential of WikiQuESD

Target groups and beneficiaries

The WikiQuESD innovation has been targeted to pre-service and in-service teachers and teacher educators at all levels. The end beneficiaries are students across all education levels, as well as learners in non-formal education domains.

Method of assessment

The WikiQuESD innovation was assessed through a combined participatory action research and phenomenographic research approach. In this particular context, participatory action research (Salite, 2008) was used to create learning-based change for sustainability through the participation of 48 pre-service teachers at the Department of Education at the University of Crete in the academic year 2008–2009, seeking to improve their teaching practice and address real-life issues concerned with ESD.

Phenomenography was used to tackle “questions of relevance to learning and understanding in an educational setting” (Marton & Booth, 1997, p. 111) and to describe “the limited number of qualitatively different ways in which we experience phenomena and present this variation in terms of logically related categories of description” (Martin, Trigwell, Prosser & Ramsden, 2003, p. 249). The development of the categories of meaning was the result of a repeated exposure to the subjects’ utterances and to the full data transcripts produced through participation, empowerment and reflection. The research participants examined and constructed, then evaluated and reconstructed their concerns, conceptions and experiences, working on their WikiQuESD instructional projects which were put into practice. In this study, this process included: (1) analysis of the textual data to elicit major concepts; (2) condensation of the statements most significantly representing the emerging concepts; (3) comparison of significant statements to determine differences or agreement; (4) grouping of similar statements into tentative categories; (5) articulation of the essence of the similarity within each category; (6) grouping, labelling and assessing the categories appropriately. Through this process, five categories emerged. Each category of description was labelled as a description of a conception which pre-service teachers held of their WikiQuESD experience. The five categories of description derived were: (1) growth in self-esteem; (2) growth in professional skills and competencies; (3) growth of metacognitive skills; (4) growth in skill transfer and (5) paradigm shift.

Results of the study

Growth in self-esteem

This category focuses on the changes in self-perceptions leading to growth in self-esteem in pre-service teachers who, prior to the WikiQuESD experience, for the most part felt anxiety and a sense of not being able to achieve the objectives set. Analysis of utterances reveals that growth in self-esteem was motivated by three major factors: 1) scaffolding provided; 2) affordances of the WikiQuESD; 3) the effect of the socio-constructivist approach applied. It was evidenced that the WikiQuESD enabled participants to perform tasks that they could not perform independently.

Growth in professional skills and competencies

The reflective accounts provided wide-ranging evidence of the acquired professional expertise. Five categories of variation in relation to the growth of pre-service teachers’ teaching and learning expertise were identified, (a) gaining more expertise in using alternative forms of cooperation; (c) engaging more in problem and project-based learning activities; (d) gaining more interaction with a wide variety of multimodal open education resources and developing strategies for utilizing these resources to address ESD; (e) getting involved in mutual interaction and a shared understanding of constructing knowledge. All

these types of acquired expertise reflected the 18 WikiQuESD instructional projects designed by teams of 2–3 among the 48 pre-service teachers participating in the WikiQuESD experience. These projects ranged in the following ESD themes in a hierarchic order: (1) environmental (for instance, water, energy, waste, climate change); (2) economic (for instance, poverty, fair trade, hunger) and (3) socio-cultural (for instance, racism, children’s rights, cultural diversity). In these projects, there was simultaneous use of visual (text, pictures, videos, animation, etc.) and auditory (narratives, interactive exercises, music, etc.) formats.

Growth in skill transfer

Perceptions of the transfer of pre-service teachers WikiQuESD skills were evidenced at three domains: 1) the future employment domain; 2) the study programme domain; 3) the social life domain. All the participants stated that what they have learned is directly applicable to the teaching practice and some clearly stated that it opens new avenues in their professional development. It seems that it was highly facilitated by the fact that the strategy adopted was contextual, experiential and favoured curriculum connections, instead of relying on a single discipline. Evidence also shows a strong connection of the acquired skills and, more notably, those of virtual communication skills, to social networking.

Growth of metacognitive skills

Growth of metacognitive skills is critical not only in school, but throughout life. Four categories have been identified that describe the variation in the learning of the metacognitive skills experienced by the pre-service teachers participating in the assessment of the WikiQuESD, namely: a) growth in systemic and planetary thinking; b) growth in learning-based change behaviour; c) growth in investigative skills; and d) growth in self-directed learner control.

Paradigm shift

The intent behind a participatory action research is change, at the personal and social level. Interest was thus to assess if and what kind of personal change can be attributed to the WikiQuESD experience. Examples of the changes respondents made included a shift from an instructivist to a constructivist learning paradigm. This was substantiated by a pre and meta-assessment of the perceived definitions of what teaching and learning is and how it is applied. Additionally, the group tackled the question of whether the WikiQuESD can be an effective tool for raising environmental and social responsibility. There was strong evidence to assume that, through this experience, participating pre-service teachers raised their consciousness to active citizenship and realized that change is within their own power. Thus, they are further able to assess their own beliefs and practices as they continue their personal development.

Discussion and implications

Higher education has been one of the slowest sectors to take up the challenge to ESD. It is essential that universities make considerable innovative efforts: 1) to improve their own sustainability profile by developing “learning environments” conducive to ESD supported by ICT and 2) to respond to the increasing needs of educational practitioners who want to

play a key role in moving forward the issue of ESD. WikiQuESD is such a learning environment which, as the assessment results revealed, can empower target groups (pre-service and in-service teachers) to shift from a positivist-empiricist view of knowledge and pedagogy to a critical constructive and transformative pedagogy that is more suitable to respond to the UNESCO quest for re-orienting teaching and learning to address sustainable development.

It is an innovation conceived on identified critical education and social needs, built on sound socio-constructivist learning theories and assessed through a combination of participatory action research and phenomenographic methods. It is perhaps the first attempt that the new and emerging wiki technology and the Web-Quest idea are merged to address the UN Decade of Education for Sustainable Development (2005–2014) and UNESCO quest to re-orient teacher education to address sustainability. The main merits of WikiQuESD as a Web 2 environment for constructing knowledge in the field of ESD are:

- ◁ viewing WikiQuESD as a process which enables learners to critically reflect upon their own values and develop their action competence;
- ◁ building the capacity of teachers to make the necessary transformations in their personal theories and pedagogical practices in order to help reach the goals, values and visions underpinned by ESD;
- ◁ producing a virtual learning and authoring environment composed of various interoperable tools which are compliant with an innovative pedagogical model built upon a social-constructivist approach;
- ◁ paying greater attention to the sociopolitical dimensions of teachers' change and agency, in particular, to the way in which they can use the WikiQuESD virtual learning and authoring environment to effect change and less to its technology affordances;
- ◁ enabling the educational experience to be not just learner-centred but also learner-controlled and self-regulated;
- ◁ allowing teachers to edit, review, revise and share web-based instructional material working in groups at distance;
- ◁ engaging teachers in collaborative, web-based problem/project-based learning in complex and real-world problems, dealing with ESD issues.

The development of the WikiQuESD virtual learning and authoring environment is based on open source learning systems, compatible ICT tools and the utilization of open educational resources. This highly contributes to the optimization of resources (material and human). Scalability and replicability are two related concepts that have been an integral part of the WikiQuESD system planning and design process. WikiQuESD is scalable as it can be collaboratively used to edit, share and revise the constructed web-based instructional material to suit changing conditions without alterations to the core system structure. Also, due to its open and free access and the scaffolding provided online, its scalability has high potential. In terms of replicability, WikiQuESD allows others to adopt and implement the same system using similar approaches and procedures. This is highly facilitated by the common authoring language of the source software (wikidot). This also facilitates smoother transitions when the system needs to be integrated into other wiki authoring tools.

The WikiQuESD virtual learning and authoring environment integrates two domains, ICT and ESD, both of which are interdisciplinary and cross-disciplinary by nature. ICT-enabled ESD encourages an interdisciplinary and holistic approach to teaching and learning and promotes critical and creative thinking in the educational process.

Learning in the two merged domains enables target groups to focus on the task to be accomplished rather than on the technology and ESD.

WikiQuESD is at hand to assist in ensuring that interconnections between disciplines take place all the time. The ESD themes, integrated into the 18 WikiQuESD instructional projects developed by 48 pre-service teachers who participated in the assessment study, reflect connections to diverse disciplines, such as mathematics, language and social studies. Inter/cross disciplinarity is in any case the philosophy that drives WikiQuESD activities, and a considerable emphasis is, thus, put on cross-curricular projects and social competencies rather than on a single discipline. The WikiQuESD initiative allows teachers to co-edit, share, revise and replicate learning activities and apply them in class, as well as to other social, cultural, geographic and educational contexts. The WikiQuESD affordances (for instance, virtual communion means, virtual peer-mentoring, synchronous and asynchronous co-editing) enable teachers to access learning and integrate open education resources available in the Web in various formats.

The WikiQuESD as a wiki-type innovation is freely accessible online, thus enhancing access to learning opportunities independent of temporal and geographical restriction. The online scaffolding help provided enhances access to learning and contributes to teacher professional development without restrictions. As WikiQuESD activities are produced, assessed and implemented by those affected, it does not only strengthen its sustainability but also empowers people to actively participate in meaningful learning activities.

Providing WikiQuESD users with competencies to search for, organize and analyse information, communicate and express their ideas in a variety of media forms, new opportunities arise for accessing and personal learning. The WikiQuESD by itself incorporates the new and emerging Web 2 technologies that can better support the merging of new pedagogical methods and global educational initiatives, such as ESD with ICT. Through this innovation participants are motivated to be more independent, creative and innovative, to negotiate, construct and reflect. It allows them to be co-constructors and thus gives them a sense of ownership of their learning and moving closer to a fully social critical and emancipatory constructivist mode of learning. Perhaps, the most important point revealed by participants in the assessment study is that the WikiQuESD can give both teachers and students in the class a voice that is often neglected in education. Due to the continued expansion and use of Web 2 technologies incorporated in the WikiQuESD initiative, the merge with ESD will lead to reaching greater numbers of teachers and learners, as well as facilitating new ways of learning and understanding that will be required to implement the complex solutions required to infuse education for sustainability.

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IN-SERVICE TRAINING OF PRE-SCHOOL PEDAGOGUES AS A WAY TOWARDS SUSTAINABLE DEVELOPMENT

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Abstract

In-service training of pedagogues is very important while we are thinking about the ability of the new generation to find their place in society in the future. The objective of the research is to analyse the motives and needs satisfaction in in-service training of pre-school pedagogues in Lithuania. The research methods used are as follows: analysis of literature, questionnaires for pre-school pedagogues, interviews and statistical analysis. Randomly selected participants of the poll included 188 preschool pedagogues from Lithuania. The research showed that 56% of the respondents have not fulfilled their needs for refreshing their qualification. The major factors that influence pedagogues to take in-service courses are the needs for the development of personality. Social security motivates educationalists that live in the district centre to seek improvements. Fluctuation factor is the main factor for stimulating pedagogues-supervisors to seek personal improvement. The main obstacle for in-service training is the lack of finances and the shortage of time.

Key words: *pre-school pedagogues, in-service training, motives for education, needs in in-service training, sustainable development*

Introduction

The goal of the United Nations Decade of Education for Sustainable Development (2005–2014, DESD) (The International Implementation Scheme for the DESD, 2006), for which UNESCO is the lead agency, is to integrate the principles, values and practices of sustainable development into all aspects of education and learning. This educational effort will encourage changes in behaviour that will create a more sustainable future in terms of environmental integrity and economic viability.

This situation raises new challenges for pedagogues as well. At the moment it is recognized that, while performing a new professional role, pedagogues have to develop their professional competence, the maturity of their personality standard should be high to enable them to realize themselves professionally. While the teacher's role shifts, the conception of a professional skill shifts as well. Professional mastery is achieved not only by the pedagogue who knows his/her subject well, but by the one who constantly develops his/her skills. Thus, the in-service training system should be oriented towards continual development of pedagogues' qualifications in various stages of their professional achievement.

In the process of the educational reform the in-service training system of pedagogues has changed as well. The process of the decentralization of in-service training, which took place in 1992, permitted the establishment of regional educational centres

attached to some centralized in-service institutes and in-service training faculties (later – institutes, centres) at universities. At the moment Lithuanian pedagogues have a possibility to improve their qualifications in a three-level system: in a formal way (to retrain in professional post graduate studies), in an informal way, by participating in the seminars and courses organized by in-service training institutions, seminars and by means of self-education.

To meet the growing needs for in-service, retraining, assessment and continuing education, a variety of different types of in-service training institutions are being founded in different municipalities and counties. The already existing ones are expanding their activities. Siauliai University Continuing Studies Institute pays great attention to continuing education in Northern Lithuania. The institute seeks to direct in-service development programmes towards rendering the moral attitudes, general skills and competences that are needed for the professional and which could enable him/her to fulfil his/her professional mission in the open and constantly changing modern society.

However, to assure the successful process of continuing adult training (refinement, in-service and self-education), it is necessary to investigate the peculiarities and the main factors of the process. Continuing studies have been analysed from different angles in scientific literature in the last decades. The psychological aspects of adult education have been researched by Beresnevičienė (2000). She has defined the psychological parameters of adult education: the psychological characteristics of adult students, the creation of learning environment, the development of the teacher's personality and self-education/individual study.

The forms of cooperative learning and counselling for teachers qualification development have been researched by Kveseliene, Vengaliene, Zuzevičiute (2000). The scientists have concluded that counselling as a form of cooperation could be applied as a form of learning for adults, especially teachers.

Lithuanian scientists interested in continuing studies focus their attention on the present situation of continuing studies and their development. Andrulevičienė (2000), while investigating the scope of in-service training in Alytus district, found out that adults (including teachers) study most successfully, when andragogic methods are applied during in-service training (cooperation activities, team/group work implementing various projects); in-service training activities organized in the region save personal and budget funds and time and permit more people to attend them.

Zilinskiene (2000), surveying young teachers' needs in Mazeikiai district, whose seniority is up to 5 years, emphasizes that only 1/3 of young teachers take part in in-service training events. The corresponding number of teachers does not attend and has no opportunity to enrol. She has deduced that young teachers study for the ambition to become better specialists.

The factors of self-education of Lithuanian pedagogues under the circumstances of educational policy shift have been investigated by Bulajeva (2001). She states that modern pedagogues feel the need to educate themselves and they assess self-education skills positively. The scientist identified that the most influential factor challenging self-education/individual study is the need to perfect professional competence. Meanwhile, the main factors interfering with self-education are institutional environment factors related to the culture of the organization, working conditions and lack of information accessibility.

Buzinskas, Ignatavicius and Tamosiunas (2003) analysed the shift of Lithuanian in-service training system. They have deduced that the motivation of in-service training of Lithuanian pedagogues is sufficiently high. The educational centres organize the activities under rather complicated conditions: limited funds, material facilities and human resources,

lack of municipal assistance, little support from the Ministry of Education. The selection of qualified lecturers is problematic as well. Pedagogues most often expect more modern information in the subject field, better application of the knowledge in practice, a more vigorous investigation of their needs.

As we see, the problems of continuing studies in the region of Northern Lithuania lack detailed investigation. These fragmentary investigations into the problem are not sufficient to obtain the picture of the real situation of adult training/self-education in Lithuania.

The objective of the research is to reveal the state and the motives of in-service training of pre-school pedagogues.

Research methods and sample

Research methods are numerous: analysis of scientific literature; analysis of documents on education; surveying; standardized oral interviews; distributional, graphic, correlation analysis employing χ^2 when $p < 0.05$ and other analysis methods. The data were analysed applying SPSS computer program.

The sample

189 Lithuanian pedagogues of pre-school education participated in the research by random sample. 141 pedagogues (74.5% of all respondents) filled in the questionnaires, 48 respondents (25.5%) agreed to be interviewed. During the investigation only female respondents were interviewed. The respondents' age range: 58% of the respondents are 41–65 years old. Fewer respondents (42%) are from 22 to 40 years old.

The majority of the respondents under consideration live in the centre of the county (questionnaires – 69.3%, interviews – 58.3% pedagogues). 18.6% of the pedagogues who answered the questionnaires and 27.1% of the interviewed ones live in district centres, and respectively 12.1% and 14.6% of the respondents are town dwellers. Educational level of the respondents varies considerably: 63.6% of the questionnaire respondents and 77.1% of the interviewed respondents have higher education. One-fifth (18.6%) of the questionnaire respondents and 12.5% of the interviewed ones have further education certificates. A less considerable number (9.3% – questionnaire respondents and 8.3% interview respondents) of the respondents have acquired special education. The respondents having unfinished higher education constitute 4.3% of all the questionnaire respondents. The same percentage (4.3%) of the questionnaire respondents and 2.1% of the interviewed pedagogues have a master's degree.

The majority of the questionnaire respondents hold positions of educators, speech therapists, music teachers and only 5.7% hold appointments as directors or deputy directors. More than half of the interview respondents work as educators, speech therapists and music teachers (64.6%). Supervising/managing positions are held by 35.4% of the orally interviewed respondents. While discussing working seniority of the respondents, it has been defined that a more considerable group (62.1% of the questionnaire respondents and 75% of the interviewed ones) of the respondents have been working in pre-school education field over 15 years. One-third of the questionnaire respondents (34.3%) and one-fifth (18.8%) of the interviewed pedagogues have been working from 6 to 15 years. The least number of the respondents (3.6% of the questionnaire participants and 6.2% of the interviewed) have experience in the field only up to 5 years.

The distribution of the respondents according to their age, living place, education, qualification category, job position and seniority enables to define the sample of the pedagogues as not diverging from the general social–demographic tendencies.

The satisfaction of needs and preclusions for in-service training of preschool pedagogues

During the interview the respondents were asked whether their in-service training needs were met. The following results have been obtained (Figure 1).

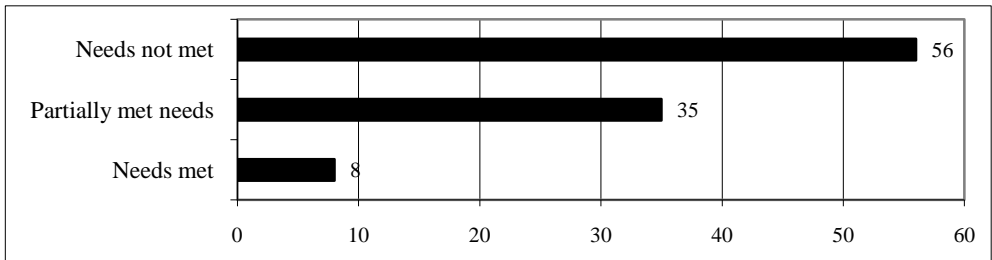


Figure 1. Meeting the needs of in-service training (n=48)

The obtained data indicate that a little more than half of the respondents admit that their professional development needs were not met. One-third of the respondents (35%) indicate their needs were met only partially, and only 8% of the respondents state that their in-service training needs were met. More than half (68%) of the respondents having higher-education, 70% of the respondents qualified as educators, senior educators having a category of qualification and a similar number of the respondents (71%) holding positions of educators, speech therapists or music teachers admit their in-service training needs were not met at all. It can be assumed that the pedagogues have failed to find proper courses or seminars directly linked to their main working activities. The tendency exposing the need for in-service training in Lithuania is vivid.

Having defined such tendencies, the question, why the in-service needs of the pedagogues were not met, arises. The respondents were asked what factors prevented them from raising their qualification. The obtained information is depicted in Figure 2.

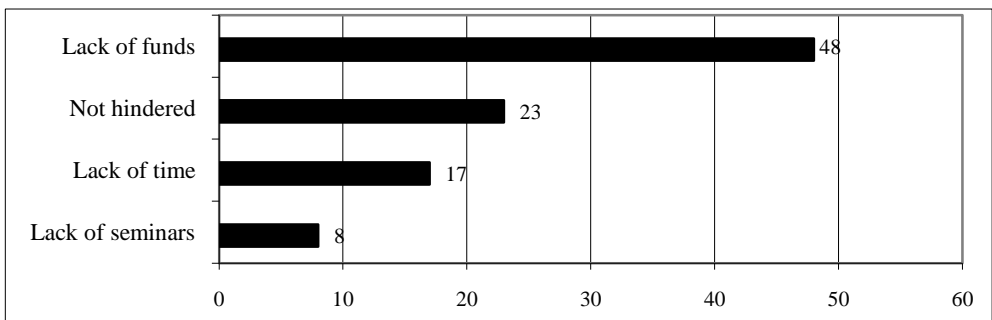


Figure2. Preclusions for in-service training of pedagogues (n=48)

Almost half (48%) of the respondents maintain that the major preclusion for in-service training is the shortage of funds. Municipalities do not allocate any funds for pre-school pedagogues' in-service training or allocate too little. This tendency is peculiar to the one-fifth of the respondents in Bulajeva's (2001) research and to more than one-third of the respondents in Zuzeviciute and Tereseviciene's (2008) research. It is possible to state that the lack of funds has become a problem for in-service training of Lithuanian pedagogues. Fewer respondents (17%) admit that their in-service training was hindered by the lack of time. Thus, innovative ways of training must be found to provide educational services not distracting the pedagogues from their work. Nevertheless, 28% of the respondents state that nothing interferes with in-service training. A smaller number of the pedagogues maintain they miss significant seminars: especially for pre-school musical education teachers, speech therapists and pedagogues working with early age children. Having analysed the programmes of in-service institutions, it is obvious this kind of specialists have been offered various in-service training seminars and courses. Thus, we can postulate that pedagogues have referred to the lack of seminars, because they get little information about the courses and seminars organized at the in-service training institutions.

Eliminating all these reasons, people should be taught to organize their time and distribute funds more rationally. On the other hand, in-service training institutions should organize more seminars for pre-school education music teachers, speech therapists, early age children's education pedagogues and advertise these events and activities in pre-school institutions, information editions and the internet.

More than half (67%) of the respondents having insignificant seniority (up to 5 years) assume that the number of seminars is too limited. It allows us to think that the expectations of the respondents with insignificant seniority to perfect their qualifications at in-service training seminars and courses have been inadequate so far. The assumption can be made that professional training at higher schools or colleges and practice activities organized at the pre-school institutions are insufficient. Though, this should be verified by a deeper research.

Preschool pedagogues' attitude towards in-service training

While attempting to define the pedagogues' attitudes towards in-service training, some questions concerning in-service training courses and seminars were submitted (Figure 3).

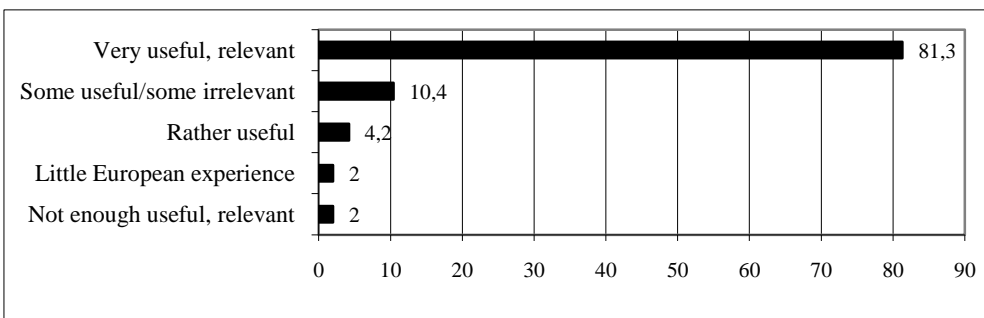


Figure 3. Pedagogues' attitude towards the relevance and usefulness of in-service training courses and seminars (n=48)

It is obvious, that the pedagogues' attitudes towards in-service training activities are positive. The majority of the respondents (81.3%) states the seminars are relevant and, most importantly, they are useful. It has been noticed that the usefulness of the seminars is mentioned by the respondents when theoretical material is linked with practical activities, when the focus is made on the essential issues and when they receive the most up-to-date information. These data coincide with the conclusions of the research made by Buzinskas and others (2003) pedagogues usually request newer subject knowledge, more attention to its application in practical activities, etc. One-third of the respondents admit that there are useful and not really relevant in-service training courses. Even fewer respondents (4.2%) maintain that the courses and seminars are not bad. An insignificant part (2%) of the pedagogues misses European experience at in-service training activities, other 2% state that the courses and seminars are of little significance for their qualification.

Factors encouraging pedagogues' self-education

Our last step was to state the factors which are encouraging pedagogues' in-service training. Having analysed the array of the respondents' sentences and having encoded them, we have distinguished 4 categories, that is, meaningful items and factors, which have been named by the respondents as the factors encouraging in-service training. The obtained data are revealed in Figure 4.

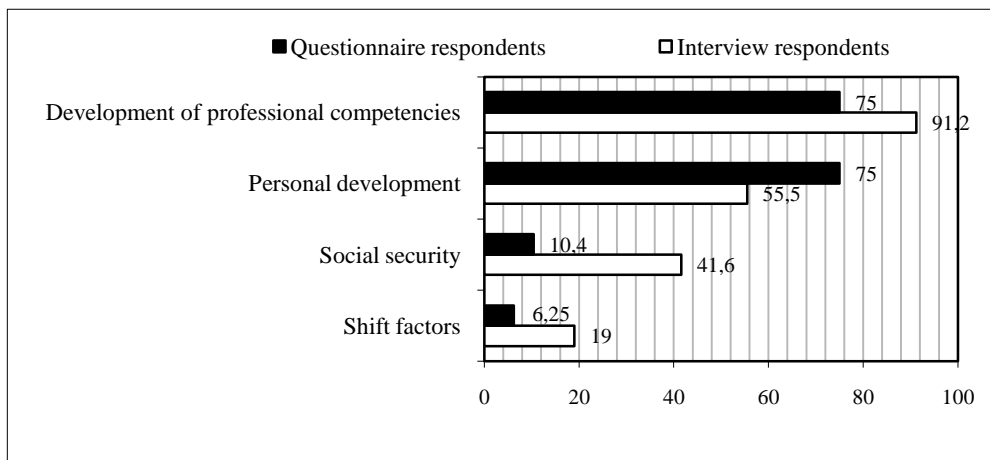


Figure 4. Factors encouraging the pedagogues' self-education (n=140 (questionnaires), n=48 (interviews))

The majority of the interviewed respondents point out the importance of professional competence development as an essential factor of self-education/education. Among the factors mentioned in this group they emphasized the wish "to get to know novelties", "to acquire new knowledge", a want "to perform on high level", "to develop professional competence". Half of the respondents (55.5%) indicated such factors as personal development, unambiguously stating, that they are driven by the wish to improve and develop. A less considerable number (41.6%) of the respondents mark social security, that is the wish "to retain a job", "to improve financial situation", "rivalry". These results can be supported by Illeris' (2003) conclusions, that the motivations of adults are closely related to

the need to retain present jobs. These people hope “to enrich” themselves as personalities and actively participate in professional activities.

Having analysed the interface between the respondents’ living places and social security, a statistically significant correlation has been defined ($\chi^2=9.12$, $p<0.01$). Half of the pedagogues living in the county centres admit they are driven by the factor of social security. Thus, tougher rivalry and higher living standards in the country centres influence the professional development of the pre-school pedagogues. Another less important (19%) group of factors is related to the shift: “the reform of education”, “a wish not to stay behind transformations in society”, “requirements of life”, “continual change”.

The data considering age, education, job position, qualification category and work seniority aspects revealed no statistically significant links between the aforementioned parameters and the factors stimulating the respondents’ in-service training.

A more significant part of the interviewed respondents (75%) consider the development of professional competence and personal development to be major factors stimulating education/learning. The factors of social security (10.4%) and shift (6.25%) are considered to be of much less importance. Similar tendencies have been singled out in Bulajeva’s (2001) research. She has established the factor of professional competence development (42%) as the main factor stimulating self-education/individual study of Lithuanian pedagogues. Less important are the factors of shift (26%), social security (11.5%), responsibility factors/social environment factors (11%) and personal development (10.5%) factors. Thus it is possible to state that the major factor stimulating self-education of Lithuanian pedagogues is the development of professional competence.

A more thorough analysis has testified that more of middle-aged (41–65 years old) respondents state they are stimulated by social security (13%) and shift (10%). Thus, it may be presumed that these people are more willing to change in order to retain their jobs. Moreover, Jarvis (2001) also affirms that during the last years some shift is expected from employees and pensioners.

The motivation for the pedagogues’ in-service training is sufficiently high. It is not confined to formal (certification) requirements. The pedagogues strive for new knowledge, skills and abilities, versatile personal development. It allows us to state, that Knowles’ (1990) presumptions that adults are prompted to study by inner motivations (the wish to feel more satisfaction at work, self-esteem, life quality), but not external ones, have been proved. Nevertheless, a certain group of the respondents yet distinguish definite subjects as external motivators: (directors of institutions, pre-school staff) and “I myself”.

Conclusions

The research data analysis allows to state that in-service training activities have not met the in-service needs of more than a half (56%) of the researched Lithuanian pre-school pedagogues. One-third (35%) state their needs have been met only partially. This might have been determined by the lack of information about the in-service training events organized at educational institutions.

The attitude of the interviewed pedagogues of Northern Lithuania towards in-service training activities is positive: a major part (81.3%) of the respondents admits the events they attended are useful.

The main factors stimulating the pedagogues’ in-service motivation are the development of the professional competence and versatile personal development. Less important are shift factors (life shift and the reform of education). More considerable

factors influencing self-education are the social security factors. The pedagogues living in county centres are mainly motivated by the social security factor. The pedagogues having an educator-methodologist category and second management category are influenced by the shift factors.

The main factor hindering professional in-service training is funds. Another less significant factor is time.

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THE INTEGRATION OF FORMAL AND NON-FORMAL EDUCATION IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT: VIEWS OF LATVIAN EDUCATORS

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Abstract

This article reflects and analyses the results of Latvian research within the project “Inspire School Education by Non-formal Learning”. Project implementation was supported by the “Lifelong Learning Program” of the European Union. The article presents an evaluation of out-of-school learning places and their integration perspectives into school curricula in the context of sustainable education. Although project content is related to energy topics, this article will be concerned with the part of the project which was related to integration of formal and non-formal education in out-of-school learning places and teacher training for work within non-formal education. Interview and survey were used as methods of research. In order to describe the integration of formal and non-formal education, 20 interviews with out-of-school education experts were conducted and 50 surveys were administered to teachers. Qualitative and quantitative data analysis was used in the research. Research data indicate that teachers who work in formal education or outside formal education institutions are open for integration of education. Yet, the resources and cooperation opportunities in non-formal education still have not been fully realized.

Key words: formal education, non-formal education, out-of-school places, teachers, experts, sustainable development

Introduction

The article reflects and analyses results of Latvian research within the project “Inspire School Education by Non-formal Learning”. Project implementation was supported by “Lifelong Learning Program” of the European Union. The article presents evaluation of out-of-school learning places and their integration perspectives into school curricula in the context of sustainable education. The main objective of the INSPIRE project is to create synergies and links between out-of-school places of learning and curricular learning, thus improving the base of knowledge of European pupils on matters related to education for sustainable development. In addition, it aims to prepare a set of materials which may support teacher training on renewable energy and climate issues, as well as test such materials with a view to a subsequent use in support of informal education (<http://www.inspire-project.eu/objectives.html>). It is also possible to learn about other results of the project, which are published in the 7th International JTEFS/BBC conference “Sustainable Learning: Development of Lifelong Learning” (Pipere, J. & Kokina, Irēna, Grabovska, & Kravale-Pauliņa, 2009).

In recent years, UNESCO moved towards lifelong education and the notion of the learning society that culminated in *Learning to Be* (UNESCO, 1972). Lifelong learning became the ‘master concept’ that should shape educational systems (UNESCO, 1972).

What emerged was an influential tripartite categorization of learning systems. Its best known statement comes from the work of Coombs with Prosser and Ahmed (1973):

- ◁ *Formal education*: the hierarchically structured, chronologically graded ‘education system’, running from primary school through the university and including, in addition to general academic studies, a variety of specialized programs and institutions for full-time technical and professional training.
- ◁ *Informal education*: the truly lifelong process whereby every individual acquires attitudes, values, skills and knowledge from daily experience and educational influences and resources in his or her environment – from family and neighbours, from work and play, from the market place, the library and the mass media.
- ◁ *Non-formal education*: any organized educational activity outside the established formal system – whether operating separately or as an important feature of some broader activity – that is intended to serve identifiable learning clientele and learning objectives.

The research produced in other countries outlines the following basically administrative distinction that is particularly characteristic of southern developing countries: formal education there is related to schools and education establishments, non-formal – to community groups and other organizations, while informal education covers the rest, for instance, interactions with friends, family and work colleagues (see Coombs & Ahmed, 1974). The problem with this is that people often organize educational events as part of their everyday experience and so the lines blur rapidly. As Fordham (1993) comments, these definitions do not imply hard and fast categories. In particular, there may well be some overlap (and confusion) between the informal and the non-formal education.

During the last couple of years, a number of initiatives (EC, 2003) have been taken at national and European levels supporting the development of new approaches to validate non-formal and informal learning. Under the Objectives work program, *developing ways for the official validation of non-formal learning experiences* has been identified as a key issue in making learning more attractive and relevant for the individual. By providing an overview of the different approaches, systems and methodologies, the European Inventory (EC, 2003) will be instrumental in monitoring how the overarching principles are actually followed up. This will provide an important basis for cooperation at the political level, which necessarily has to follow an agreement on common European principles. Several types of synergistic relationships between formal and non-formal education are thus emerging, with various degrees of domination, or centrality of the formal system. They can be found at all levels of education provision, from primary, secondary and vocational levels to higher education.

Non-formal education: Main trends of development in theory and practice

The situation of non-formal education in out-of-school places is described in different projects, guidelines, handbooks, books, etc.

Many reviews on this topic deal with the issues of developing countries and adult education. These discussions promote national strategies in school education. For instance, during a GTZ-conference (Gesellschaft fuer technische Zusammenarbeit – German Development Agency) (Lange, 1998) the leading question was:

what content is needed to enable school children and young students to better cope with their present and future situation. The question encompasses the criticism that in its current structure school does not make sense for a lot of school children in many countries and regions. It does not prepare them for life-long learning in a constantly changing world.

One of the enduring themes in the literature on non-formal education, according to Fordham (1993), has been that the education provided should be interesting to the learners and that organization and curriculum planning should preferably be undertaken by the learners themselves: that it should be 'bottom up'. It is also often argued that this should empower learners to understand and if necessary change the social structure around them. The second theme in the literature on non-formal education relates to the importance of nurturing the skills necessary for a scientifically literate society (Carlson & Maxa, 1997) to encourage understanding of science and technology, address guidelines from a non-formal perspective and assure that non-formal guidelines are compatible with other science standards.

The third important thread is the debate about non-formal education concepts and traces (Rogers, 2005) describing a number of programs in different parts of the world from their origins in 1968 which call themselves 'non-formal'. This debate provided a wide range of views concerning the definition of non-formal education.

The fourth theme is learning in different places. A book by Bekerma, Burbules and Silberman Keller (2005) presents a wealth of ideas from a wide variety of disciplinary fields and methodological approaches covering multiple learning landscapes in museums, workplaces, classrooms and places of recreation in a variety of political, social and cultural contexts around the world. These discussions and studies (Bekerma, Burbules, & Silberman Keller, 2005; Cross, 2006) can introduce academic, professional and lay readers to the field of informal learning/education and its potential to transform present educational thinking and how to leverage informal learning. They continue to push our thinking on the transformational forces of knowledge, learning and moving our focus from the classroom to the workplace and, in doing so, reframe what to do in ways that much more closely reflect how people actually learn and perform on the job. These studies provide an opportunity of analysing the social, cultural, political, historical and economic contexts and major validation initiatives of the public, private and other sectors within which informal learning develops or which must be criticized, discussing their institutional structures and summarising key outcomes.

The fifth motif in the literature on non-formal education is recognition of non-formal learning. This emphasis has led to an increasing number of political and practical initiatives, gradually shifting the issue from the stage of pure experimentation to that of early implementation. The importance of establishing systems for the recognition and accreditation of various forms of prior learning, in particular informal and non-formal learning, is also an issue of a study in France and Scotland (Gallacher & Feutrie, 2003). For instance, in the TRANSFINE project (Davies, 2003) many European countries try to make a transfer between formal, informal and non-formal education. There was a willingness and interest in experimenting, collaborating and co-operating; and clearly with support from Ministries. However, considerable obstacles were foreseen, in particular the wide variation in existing policy and practice, the clash of educational cultures, suspicion, lack of trust and competition between institutions, the widespread ignorance about the idea of recognition and legal constraints in some countries. The main concerns of countries having experience with accreditation of non-formal learning in the vocational sector are:

- ◁ Information and guidance: identifying skills, coaching, exploring possibilities for complementary formal vocational training;
- ◁ Evaluation methods: issues of validity, reliability, feasibility, transparency;
- ◁ Social approval: the recognition of non-formal learning should lead to socially approved certificates.

Further research is necessary to identify the ‘essentials’ of counselling, to improve evaluation methods and to do follow-up studies of individuals. There is a need to work together across sectors and countries. One example of good practice is a project “Non-formal education through outdoor activities” (NFE, 2004) whose overall aim is to bring together experts in the field of social development and change, educators, social workers, outdoor facilitators, youth from youth organizations and researchers in order to create a “Non-formal educational framework” (NFEF), which constitutes the main element of a European Training Centre of Excellence within the European Institute of Outdoor Adventure Education and Experiential Learning (EOE). The project partners from 12 countries have identified best practices in the field of non-formal education through outdoor adventure activities in the area of social integration, created Training Centre of Excellence, which, in addition to theoretical preparation, will provide high quality practical preparation of facilitators, instructors and social workers, produce manuals and e-learning materials.

The mentioned projects have numerous problems with recognizing non-formal learning: The focus on individuals may be problematic for institutions since they are increasingly required to demonstrate results to external stakeholders and thus demand evidence internally. However, the results of a process of recognition of non-formal and informal learning may not be immediate, direct or easily measurable; they could be indirect, long-term and about personal confidence and personal growth. Such learning contains aspects that are more difficult to evidence from an institutional point of view and, therefore, makes it more difficult to justify its financial and staff needs. Also, there is an issue around ethics and confidentiality. Non-formal and informal learning, particularly some ‘soft skills’ or ‘behavioural competences’, come very close to being personality traits.

Integration of non-formal and formal education

One of the goals of education is to prepare persons for comparatively complicated and variable conditions of life. This goal can only be successfully realized if we can integrate educational content, which in turn can be achieved by combining the opportunities provided by formal and non-formal education. Yet, research of formal education course books and manuals, as well as an analysis of the results of practical activity and pedagogical experience in different schools, leads us to believe that many issues still remain unsolved in this sphere. Unfortunately, contemporary didactics cannot yet unequivocally define integration of educational content because the integration aspects of the learning process are not sufficiently researched, theoretically and have not been sufficiently proved in practice. The connection with possibilities afforded by non-formal education has not been researched at all.

Integration is usually interpreted as a combination of separate parts into a whole. In this research, we consider the following view of integration: integration is the process and result of the formation of the unified, the whole and the inseparably linked. A still more interesting explanation is that integration is a way of thinking (Clark, 1997). Therefore, we can practically regard integration as the mosaic formation of every individual’s personal

life views by combining every individual's personal experience conclusions drawn from various school subjects with the conclusions offered by non-formal education.

In Latvia non-formal education is only just emerging. In 2006, Kravale (2006) conducted research related to the doctoral thesis "Non-formal Education of Youth in Latvia", which established that different ministries and boards are still preparing and specifying the conception, structure and procedural forms of non-formal education. Documents of the Ministry of Children and Family Affairs reveal that non-formal education is implemented by various institutions, physical and legal persons, higher education institutions and NGOs, one of whose target groups is youth who have difficulties integrating themselves into formal educational settings. It is desirable that every individual in Latvia, by successfully overcoming the challenges that have arisen in the process of social change, consider non-formal education as a set of specific opportunities.

Non-formal education should not only help individuals integrate into the formal educational system, but also meet their goals and develop practical skills that the current situation requires. Therefore, we need to achieve integration of education in order to insure that every individual's needs are met. Education ought to be united and holistic. A holistic view of knowledge is when knowledge is treated more like a process than a product, more like quality than quantity, more like something dependant on values than neutral, a process where theory and practice go hand in hand, something that results from the learning process where the general is viewed specifically and memorization of information becomes understanding, thus increasing motivation (Jutvik, 2008).

In Latvia the traditions of integrating formal and non-formal education are not yet firmly established. Currently, we are in the process of searching for new ways to define roles, functions, approaches and methods. Thus, for instance, partial integration of educational content is currently reflected in various experimental teaching aids for primary school, while on the basic and secondary school level, such integration is most frequently realised in project work, days and weeks of integrated subjects. Such activities:

- < focus on the subject matter;
- < reduce students' workload during classes and save time;
- < systematize and transfer students' knowledge;
- < provide a multi-perspective view on problems;
- < increase positive students' motivation for enquiry;
- < develop different students' skills;
- < provide opportunities for students and teachers to innovate collaboratively.

The present environment is a place where various spheres of knowledge and problems are not separate. Instead, it creates a complex whole that requires complex solutions. We believe that this integrated approach to acquisition of educational content will best promote acquisition of knowledge, skills and attitudes for life. The corresponding survey and interview questions were created to study teacher and expert views on this issue.

UNESCO's Faure commission states that informal learning represents about 70 % of all human learning processes. Thus, strengthening informal learning in schools is likely to improve the overall impact of school education. To date, there have been few studies that quantify and qualify the positive impacts of informal learning, a learning which often takes place out of class and in locations, such as museums, centres of environmental education or sciences centres, which are known to foster learning and knowledge transfer by means of entertainment and hands-on experiences.

When one considers themes which are of relevance and great importance to students, such as renewable energy or climate change, it can be seen that informal education can offer a welcome complement to the usual classroom-based programmes. Climate change and, connected to climate change, the efficient use of energy, have become important issues, especially after the latest IPCC-reports and the climate change conferences in Bali (December 2007) and Bangkok (April 2008). It is on the basis of the perceived need to foster informal learning on renewable energy and climate change that the project "Inspire School Education by Non-formal Learning" (INSPIRE) has been conceived.

The efficient use of energy, renewable energies and climate issues will serve as the subject matter for this project, which will highlight the current potential and information/material needs on these issues and create tailor-made training materials and organise training courses for teachers. The approach of energy and climate issues covers social and scientific competences and, regarding the threat of the climate change, also outlines some of the European problems to be solved. In addition to being a concrete project in the field of education for sustainable development, one unique feature of the INSPIRE project is that it reinforces the contribution of lifelong learning to social cohesion, active citizenship, intercultural dialogue, gender equality and personal fulfilment.

Although project content is related to energy topics, this article will concern itself with the part of the project that was related of integration of formal and non-formal education in out-of-school learning places and teacher training for work within non-formal education.

The research question was stated thus: What are Latvian teachers' views on formal and non-formal education and opportunities for their integration in the context of sustainable development?

Method

Sample

For research purposes, the authors created two samples: out-of-school education experts were invited for interviews, while teachers were involved in a survey.

The interview sample of experts (N=20) consisted of 5 males and 15 females and represented teacher training institutions (TTI) (n=5), out-of-school educational places (n=7) and different schools (n=8) from all regions of Latvia. The specialities of experts were natural sciences (n=15), social sciences (n=3), engineering (n=1) and agronomy (n=1). The work experience of teacher educators on average was more than 31 years. Teachers' pedagogical experience was on average 28 years. Three teachers were doctoral students. The pedagogical experience of out-of-school educational places experts was on average 11 years. The majority of the experts had some administrative experience.

The teachers (N=50) involved in the survey (6% male, 94% female) represented different types of schools: primary schools (12%), basic schools (20%), secondary schools (58%) and other schools (10%) from all regions of Latvia. Their pedagogical experience was from 1 to 40 years (on average 18 years). Approximately half of the sample consisted of natural sciences teachers, the other half of teachers specialised in other disciplines.

Instruments, procedure and data analysis

Interview. The aim of the interviews was to reveal the real situation concerning the integration of out-of-school learning places and school curricula in relation to energy education; to discover the impact of such places on students' learning, especially regarding social competences and knowledge of science and the environment. A structured interview with 14 questions was created by the project team from Latvia. Seven of the interview questions directly concerned the integration of formal and non-formal education. The interview contained questions, such as *How do you understand integration of formal and non-formal education or the acquisition of the curriculum not only in the classroom, but also outside educational institutions?*

The interview time, place and length was coordinated (up to 60 minutes) by the project team. Permission was asked to record the interview. The level of interview confidentiality was decided (the results of interview mainly appear in summarised form; if quoted, respondent identities are preserved as they are only referred to in coded form, etc.). The respondents were briefly informed about the project and research topic, as well as the about the aim of the interview. Before the interviews, demographic data were collected from all of the participants. All interviews were audio-taped and transcribed according to a written protocol. The data were collected both on the premises of Daugavpils University and in out-of-school places.

Since the interview questions were designed according to the research goal and tasks, the data analysis was simple enough to allow the creation of sub-themes that were related by the same research aim and tasks. Similar individual themes were clustered and appropriate language to describe them was selected. Interview data later were triangulated with data from the teacher survey.

Survey. The survey conducted in this study was applied to obtain both quantitative and qualitative information from the teachers so that it could be used to complement the data and add some specificity to the main data set obtained from the interviews with experts. The structured 18-item survey consisted of 9 open-ended and 9 closed questions that were designed by the Latvian project team. A total of 15 survey questions directly concerned the integration of formal and non-formal education. An example of a survey question is: "*What are the obstacles that impede a classroom but also in out-of-school learning?*" Interviewees were then asked to name three major factors or problems.

Respondents then gave consent and the project team agreed to protect the confidentiality and anonymity of their answers. The answers on the survey questions were collected both in hard-paper and electronic form. The data were collected during in-service courses for teachers at Daugavpils University, contacting the National Meeting of Environmental Educators and in electronic form. The survey began with respondent demographic data. Both qualitative and quantitative data analysis methods were applied.

Results

Research data were analysed and only the most significant data aspects were illustrated by quantitative data.

V g c e j g t u ø " w p t l f e i n t e g r a t i o n o f f o r m a l a n d n o n - f o r m a l l e a r n i n g

Research data indicate that all groups of respondents see the interaction of formal and informal learning differently, beginning with those who view their relationship as complementary to those who consider out-of-school learning as being completely independent. Teachers and teacher trainers see more problems related to integrating learning than those who promote out-of-school learning. All groups mention the connection with real life and enhancement of students' knowledge, skills and attitudes, if they are motivated to learn. The aims defined in formal education do not always relate to practical everyday life, which is why teachers particularly emphasize that educational processes ought to be interesting, motivating and engaging for students.

Half of the teachers define integration in terms of a place where non-formal education takes place – one fifth of respondents see it as an educational hobby and school clubs. Even a smaller number of the sample defines it by attending out-of-school places. The second part of the teachers define integration as the deeper and more practical acquisition of school topics, especial pedagogy of non-formal education and collaboration with experts.

When discussing a successful integration process, teachers mention several related problems. With regards to formal and non-formal learning, teachers mostly highlighted the imperfections of the national education system and legislation. Answers given by representatives of teacher training institutions revealed a broader vision than teachers and representatives of out-of-school learning places. All in all, similar problems were identified at various levels:

- ◁ at a national level – legislation/system, research, curricula, hypercentralization, funding, lack of out-of-school learning places;
- ◁ at a teacher level – the importance of pre-service and in-service teacher training, motivation, time, teaching materials and aids, cooperation with out-of-school learning places;
- ◁ at a student's level – motivation, responsibility, self-discipline, time;
- ◁ at an out-of-school learning level – equipment, training of teaching staff, teaching aids, motivation, coordination of supply with students' needs, interests and the curriculum, management, self-publicity, cooperation between schools, time;
- ◁ at a community level – parents' interest and motivation, family traditions.

Hence, research data indicate that the integration of formal and non-formal education is highly necessary, although this process is not easy because of the numerous problems.

Integration is possible if executors of formal and non-formal education wish to cooperate. Research data reveal the same idea because teachers who represent both formal and out-of-school education identify various obstacles that inhibit the process of integration.

As far as the current state of integration, all groups involved repeatedly recognized the lack of formal pre-service teacher training related to the integration of formal and non-formal education, though there is some in-service training for out-of-school educational personnel. Depending on personality and personal interests, teachers can contribute to the integration of formal and non-formal education. For students, their motivation and attitude should be improved and more out-of-school places are needed for those who are interested in science and technology. Schools need more information about out-of-school learning spaces, motivation and strategic planning. For principals, parents and

school staff, the way to compensate for the extra time, work and resources required to better integrate out-of-class informal learning need to be created. Although, there are currently more teaching materials available, they need to be placed in special places and made available for wider readership; it is also necessary to investigate the needs for such materials. Out-of-school places lack time, resources, fresh ideas about how to promote themselves and knowledge about how to integrate what they offer with present school curriculum. The community needs to re-evaluate its values and understand that children learn not only at school but also beyond it.

Out-of-school places

Although knowledge and skills obtained at out-of-school learning places are not adequately recognized and highlighted in Latvia, there are many implementers of formal and non-formal education who emphasize the need to better integrate education. In this project, 20 experts from teacher education institutes and out-of-school learning places were located, and the majority of these experts (n=16) have participated in the integration of formal and non-formal education. Their participation, however, is substantially different in both content and forms: experiences include camps, projects, excursions, museum attendance and different hobby groups, which is a special feature of Latvia. None of mentioned out-of-school places could be regarded as specifically created places solely for educational purposes. Teachers and their students most frequently attend such out-of-school places as libraries, interest centres and sport/art/music schools. All out-of-school places mentioned by participants have some other tasks besides education. For some of them, education is just a voluntary or secondary activity. The main difficulty to overcome appears to be the lack of out-of-school places for science and technology, plus the lack of materials, financing, time, motivation, theoretical justification and integration of formal and non-formal activities. The lack of teaching materials can be eliminated by creating such materials by teachers themselves.

Higher education institutions, natural science centres, zoological gardens and arboretums are visited quite rarely. The majority of students would like to visit out-of-school places more frequently. Teachers mostly coordinate the visit some days before actually going, showing that there may be a lack of long-term strategic planning for the whole year. Unfortunately, only a small fraction of respondents meet with out-of-school personnel before actual visits.

It is interesting that while everybody recognized the need for teacher training in this topic, teachers evaluated the need for additional knowledge and skills as a lowest (probably because of their pedagogical experience), while support, cooperation with parents, administration and colleagues and increased salaries were seen as the most necessary factors necessary to promote the integration of formal and non-formal learning (Table 1).

Teachers involved in formal education are not always informed about the specifics of out-of-school institutions, often resulting in unsuccessful collaboration. Sometimes, we can observe a substantial gap between formal and non-formal education if their executors fail to identify the common aim of education or are oriented towards unhealthy competition. Moreover, successful integration of formal and non-formal education requires students' and parental understanding, interest and motivation.

Table 1. Integration factors of formal and non-formal education

Needs	Rank	Average score
Parental support (incl. financial) and cooperation	1	1.60
Cooperation and support from school administration	2	1.58
Greater salaries	3	1.54
Interest and support from the municipality	4	1.52
Steady information flow from out-of-school institutions	5	1.48
Close cooperation with out-of-school learning places on the class/school level	6	1.32
Accessible literature (handbooks, teacher's books, course books, sample lesson plans, etc.)	7	1.30
More time for lesson planning	8	1.28
Constant professional development	9	1.20
Online information about out-of-school places and the activities they offer	10	1.16
Changes in the national education standards	11	1.16
Additional knowledge and skills	12	1.02

Support from parents, school administration and colleagues and increasing salaries were mentioned as the crucial factors for integrating learning in school and out-of-school learning places.

Integrating formal and non-formal education is highly necessary because it would ensure cooperation and more effective exchange of information among professionals who provide educational services. The aim of any education is to develop the individual. Therefore, irrespective of the type of education provided, it should help individuals survive changing social processes, promote the interests of the learner and assist him/her with acquiring the required knowledge.

Teaching materials for integration of formal and non-formal education

Evaluation of respondent answers on the integration of formal and non-formal education permits us to conclude that teaching materials form one of the most important components of integration. In fact, research indicates that, when speaking about the greatest obstacle of integration, educators mention material resources and excessive workload of both teachers and students, as well as a lack of time, motivation, cooperation and parental support. In order to promote cooperation and integration among institutions, teachers name 85 different variables that out-of-school places should take into consideration. So it is out-of-school learning places that should ensure that the curriculum meets students' needs, provide material and technical supply and logistics, as well as information about the services supplied by out-of-school places.

Thus, teaching materials represent an essential integrating component although the opinion of teachers and out of-school places differs. Since teacher trainers are not involved in the integration of non-formal learning, they did not mention any specific materials. Teachers and personnel of out-of-school places named rather similar types of materials. The scope of materials included both printed materials (books, brochures, posters) and electronic media (CDs, video, movies). The problems mentioned were: adaptation of materials to the local context, curriculum and students' age, scientific and technical relevance of materials. Available teaching materials do not consider students' social (socially pragmatic) competences, knowledge on science and environmental responsibility.

Accessibility of teaching materials was evaluated in the middle of 12 factors necessary to integrate formal and non-formal education. The teachers see the teaching materials as the least important determinant for the topics mastered in out-of-school places. Teacher initiative is the main factor that determines what topic will be mastered.

Survey data also indicate that acquisition of the curriculum not only in the classroom but also in out-of-school places is chiefly impeded by the lack of material resources (25), excessive overload of teachers/students (18), lack of time and a too extensive curriculum (17), followed by indicators, such as a lack of motivation of both students and teachers, cooperation and support.

The obtained results indicate that material resources are crucial in promoting integration, but in order for successful integration to take place, there is a need to review curricula and weigh the priorities of each education executor.

Therefore, in order to successfully implement integration in Latvia, we still need material resources and substantial explanatory and transformational work. Moreover, we need to supplement and re-structure the curricula, so that education programmes can be implemented more effectively and in coordination with one another.

Conclusions

Non-formal education, as a wider aspect of education, is reflected in many forms: articles, books, Internet resources, etc.

Presently, the legislation and policy of non-formal education in Latvia are in the developing stage – different ministries are responsible for it and it is still understood as mainly youth education or interest education. On the one hand, this is the traditional approach in Latvia having its positive results. On the other, this approach differs from that used in the majority of countries. However, the present research reveals that education in Latvia makes a good use of the non-formal education in the form of visits to out-of-school places and realise their educating potential on diverse levels. Teachers and their learners visit museums, libraries, art/sport/music schools and some out-of-school places in the framework of environmental education and education for sustainable development.

Teacher trainers, teachers and staff of out-of-school places have different views on the integration of formal and non-formal education – from complementary to absolutely separate and officially acknowledged learning in out-of-school places. Teachers and teacher trainers identify more integration-related problems than representatives of out-of-school places. All mention the connection with real life and the enhancement of students' knowledge, skills and attitudes if they are motivated to learn.

All parties involved repeatedly mentioned the lack of teacher training regarding the integration of formal and non-formal education. Yet, there are some courses for training of out-of-school educational staff. Depending on their personality and interest, teachers can help promote integration of formal and non-formal education in different ways. Students' motivation and attitudes should be developed; we need more out-of-school places for those who are interested in science and technology. Schools need motivation and strategic planning, as well as information about the opportunities provided by out-of-school places. We have to find a way to compensate for the additional time, work and resources spent by school administration, parents and teaching staff. Although the amount of accessible teaching materials has increased, they need to be summarized in special places and spread, and the need for such materials ought to be studied. Out-of-school places lack time, resources and novel ideas to publicize themselves, as well as the knowledge of how to

integrate the supply of out-of-school places with school curriculum and students' needs. Society should also re-evaluate its values and be ready for children being out of school.

It is interesting that while everybody acknowledged the need for pre-service teacher training on this topic, in-service teachers evaluated the need for additional knowledge and skills as lowest (possibly because of their great pedagogical experience), whereas support and cooperation with parents, school administration and colleagues and a pay raise were viewed as the crucial factors to promote integration of formal and non-formal learning.

Greater attention ought to be paid to teacher training that integrates formal and non-formal education, increases cooperation with out-of-school places and promotes teacher readiness to involve activities oriented towards sustainable development in school. Constructive change in the development can be observed upon introducing the newest changes in the natural science (physics, chemistry, biology) and mathematics curricula in secondary school, thus connecting educational content with the real-life issue and help make teachers and students get used to learning that is oriented towards inquiry and experience.

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SUSTAINABLE DEVELOPMENT AND ICT IN SLOVENIAN PRIMARY AND SECONDARY SCHOOLS: MEDIA-ECOLOGICAL PERSPECTIVE

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Abstract

The goal of the research was to get an overview on the possibilities of sustainable development in relation to information and communication technologies in primary and secondary schools in Slovenia from the perspective of media ecology. The study analyses the reasons for a reorientation of the educational system and new programmes towards sustainability and relates these developments to the activities of Eco-schools in Slovenia. The findings show that the guidelines of sustainable development are included in the programmes, yet they do not encompass the possibilities opening up by new technologies. Contemporary teaching methods are not widespread due to the inadequate education and training of teachers. At the same time, numerous problems arising from the introduction of new technologies and equipment into schools are neither anticipated nor tackled in the renewed curricula, thus failing to integrate a contemporary media-ecological perspective. Judging from the roadmap documents, even after the renewal process will have been finished, the situation will hardly change unless major changes are introduced into the planned concept of renovation and additional investments of funds for equipment, the preparation of materials and, above all, teacher education are secured.

Key words: *information and communication technologies, primary and secondary education, Eco-schools, sustainable development, media-ecological perspective*

Introduction

The goal of this article is to define the opportunities that information and communication technologies (ICT) present in the field of teaching under consideration of the principles of sustainable development in the educational system. It also seeks to establish how these elements are included in developmental and operational programmes of the Slovene primary and secondary educational system and to what extent the school management is familiar with them. The study also poses the question whether the new programmes and especially the everyday school practice takes into account the problems that arise from the introduction new technologies and equipment. New forms and possibilities of education stimulate the adaptation of schools in terms of programmes, as well as concrete transactions: building new work spaces, buying and maintaining equipment, consumption of energy, waste management, equipment recycling, etc.

In the programming documents of the Slovene educational system, environmental education is specified as a special subject with the purpose to educate on sustainable development. The programme is designed in accordance with the recent principles of UNECE (United Nations Economic Commission for Europe), which declared the period of 2005–2014 as a decade of education for sustainable development (UNESCO, 2006). The

Slovene programme for primary schools was accepted in 2009 (National Education Institute of Slovenia, 2009b) and for the renovated secondary schools as early as in 2008 (National Education Institute of Slovenia, 2008b).

In this article the first research phase covers an analysis of the previously mentioned accepted documents and other secondary data collected, whereas the second phase investigates the real situation in the field with the help of a survey conducted among principals of Slovenian primary and secondary schools. The results are compared to their equivalents in the field of education in more developed EU countries. The study also draws on the phenomenon of Eco-schools which in Slovenia represent a vital and successful part of the environmental education along the guidelines of education for sustainable development (ESD). In the course of the argumentation, several critical issues concerning media ecology and sustainability are raised accordingly.

Demands and possibilities of sustainable development in Slovenian school programmes

On the highest level of civil organisation, along the lines of the United Nations' activities (for instance, OECD, 2000; WSIS, 2005), the European Union (EC, 2009) defines and seeks to mainstream sustainable development as a high priority for cultural, social and economic development, which especially in the recent years has strongly affected the realm of education. Thus the need to equip young people with the necessary key competences and to improve educational attainment is an essential part of the European Union's strategy for sustainable growth, progress and development in general, as it underlines the objectives set out in the Member States' National Reform Programmes. The demand for competence is two-fold here: rapid technological progress requires high and constantly updated skills, while growing internationalisation and new forms of company organisation, call for a social, communicative, entrepreneurial and cultural competence that helps people adapt to the changing environments (EC, 2007).

Improved educational achievement is important for individuals, because people's achievement in compulsory school has a strong direct impact on their later educational achievement and social status (Rice, 1999). It is also important for society at large, given that increased achievement (as measured by average performance on comparable international students' tests, such as PISA and TIMSS) is strongly linked to economic growth (Maani, 2007). A rise in the overall level of achievement of European high school students is thus expected to improve the Union's competitiveness and economic growth, as well as raise the population's awareness of and sensitivity towards the issues and challenges of sustainable development, notwithstanding its social and ecological dimensions.

We have to be aware of the fact that without equipment, infrastructure, quality materials, as well as educated and qualified teachers, the future of the school looks uncertain – teachers should learn to use ICT-based teaching methods (Praprotnik & Zakrajšek, 2008). The digital divide in terms of equipment, as well as know-how and knowledge is a fact with which many of the less developed EU countries have been facing ever since; so have all the EU accession candidates (Gulati, 2008).

The use of ICT is essential and may be the only possible way to achieve certain goals which have been established by both theoreticians and practitioners. To mention just a few of these areas:

- ◁ effective learning and accessibility of information;

- < (inter)subject cooperation;
- < interactive global communication;
- < reduced and simplified administration;
- < e-materials, learning by distance;
- < transparent preparation and realisation of the educational process;
- < simple and effective checking and grading of knowledge;
- < the possibility of sustained communication – students, teachers, parents;
- < effective cooperation of teachers at home and abroad;
- < accessibility of quality materials and lectures to all students.

Last but not least, with less travelling, less time, energy and space spent or wasted because of partial (blended) e-education by distance, more equal opportunities open up through virtual access or the combination of virtual and concrete human interactions, by experiencing different places and cultures without the hazardous effects on environment and with the new possibilities of global communication, learning and using foreign languages. This exemplifies the crucial role of media and ICT in implementing the vision and mission aimed at sustainable development. With sensible use of ICT, the consumption of resources can be drastically lowered (paper, colour chemicals, fuels, etc.), as well as the use of energy diminished “smart schools”, e-optimized transport. A very important opportunity that modern technologies offer is to spend less time on unnecessary activities, such as transport or organisation, which assures more free time for (extracurricular) activities that have a positive effect on physical, cultural and social life quality.

The dilemmas and problems of ICT in education

The first scientific articles on dilemmas about the new, electronic ICT in education appeared in the early nineties. In his famous book, *Virtual Community*, Rheingold (1993) exposed the social and communicative qualities of the internet that also pertain to learning, whereas Burnett and Marshall (2003) wrote about to possibilities for groups and communities to form knowledge outside traditional space and time limits. However, the authors also criticised “technological rationality” that forced ICT and especially the Internet with its manifold possibilities to be quickly implemented and integrated into as many fields of everyday life as possible. In the last two decades, the use of the Internet became a major social trend, thus the question of what content or structure would be wise to establish online and in which areas we could use it to maximise social and economic sustainability, is becoming more and more important.

By equipping schools with ICT, with the globalisation and manifold social spreading of the Internet, accessibility to unconfirmed or unedited information, possibilities of misuse and new forms of criminality arise. Especially with the introduction of new working methods, completely new economic and social problems occur, for which solutions are sought especially in the form of different restrictions, anti-criminal sanctions, the locking down of certain websites, censoring contents, etc. On the other hand, ICT equipment is becoming a major investment and maintenance cost for schools, it uses up to 10 % of electric energy and produces 2% of carbon dioxide (EC, 2008). Every three to four years, the computer equipment needs to be changed thus incurring high system maintenance costs. In recent years, marked by many dilemmas about ICT in education, the EU accepted a series of documents where ICT-supported education and schooling of young Europeans

was presented as a key competence for a successful life and society: interactive use of resources, the ability of enriching knowledge and fast or complex exchange of information.

Furthermore, in the search for relevant information to illustrate environmental peculiarities, critical analysis of media technologies and messages can play a vital role (for students and teachers alike) by investigating the sensible use of media technologies (radio, television, World Wide Web, newspapers, popular and scientific writings, video, etc.). Young people increasingly accept different (new) media spaces as normal (default) environments of communication and social exchange (Purg, 2008, WSIS 2005, art. 90n), and these fast developments call for a well-guided and profoundly organised reflexion and critical approach towards media ecology as such (Purg, 2006). The concept of *media ecology* here is referred to firstly in its most traditional understanding in terms of a discipline defined by Postman (1970) as looking into the matter of how the media of communication affect human perception, understanding, feeling, value and how interaction with media facilitates or impedes our chances of survival. Secondly, Nystrom (1973) expected media ecology to study complex communication systems as environments, focusing interest upon interactions of communications media, technology, technique and processes with human feeling, thought, value and behaviour. Whereas Sandbothe (2004) understands the position of media ecology dynamically as one of counterbalance forces, re-establishing the “neglected” media: for educational contexts in the nineties this was beyond doubt ICT – the personal computer and the internet, but nowadays new (and converging) social and mobile media are arguably the ones critically underrepresented in everyday school realities.

The research approach

In the frame of the research, an analysis of the most important documents in the field of sustainable development and ICT in Slovene schools was carried out. Two pieces of research were performed by surveying primary and secondary school principals in order to obtain original data. We compared the results of our research with secondary sources and especially with the UN and EU guidelines and data on the most developed countries in the EU. As basic secondary data material for the research, the official documents were selected, including: Environmental education curriculum as education for sustainable development for primary (National Education Institute of Slovenia, 2009a) and secondary schools (National Education Institute of Slovenia, 2008a), Teaching plan for the optional subject Environmental education for primary (National Education Institute of Slovenia, 2009b) and secondary schools (National Education Institute of Slovenia, 2008b), the Position Paper on Renovation of the High School Program (The Council of Experts, 2007) and the Analysis of the national Pedagogical institute (Grmek 2006). ICT equipment and usage of modern methods of education data were four years old, but still quite reliable and, above all, thorough (Gerlič, 2005). Comparative information about the equipment of schools in Slovenia and the EU was obtained from the Ministry of Education and Sports (Colnar, 2008). Eventually, reference to two original researches is made: Research of the opinions of primary school and high school principals concerning ICT and sustainable development and the research of conditions in the field of ICT in Slovene secondary schools (Zakrajšek, 2009).

Analysis of position papers and programmes of environmental education in Slovenia for primary and secondary schools

In the general environmental education curriculum formulated as “Education for Sustainable Development for Primary Schools” (National Education Institute of Slovenia, 2009a) and “Education for Sustainable Development for High Schools” (National Education Institute of Slovenia, 2008a), three basic dimensions seem to be increasingly interconnected in the programmes: education on environment (general ecology); education in the environment to encourage research and investigation (interactive and investigative approach); education for the environment stressing the importance of seeking and establishing sustainable, co-natural solutions (proactive and productive approach).

In this field, ICT has a very important role because it facilitates international contacts, collaborative projects and direct comparisons, publicity and dissemination, as well as gaining access to up-to-date information and co-producing knowledge. Yet, in a more detailed review of programmes, we could establish that they are oriented in a rather traditional way and that they hardly encompass the possibilities that have arisen from the recent global developments in environmental issues, especially in new technologies that call for essentially different approaches. Interestingly, there is practically no orientation towards changing the habits in sustainable consumerism especially in the (continuously rising) field of ICT hardware and software, as well as media content or messaging.

The programme should be realised, according to the documents at disposal:

- < in individual self-educational subjects;
- < in the frame of the mandatory optional subject “Environmental Education”;
- < in the frame of days of activities, schools’ project weeks and projects;
- < in the frame of supplementary activities or as partial interest activities;
- < as a part of a departmental community or guidance programme;
- < with joining pupils in social activities and in innovation-development projects.

Didactic methods with which the goals of the environmental education would be fulfilled are:

- < direct experience in a natural environment;
- < analysis of everyday life experience and habits from the point of view of environmental influence;
- < students’ group work (working in groups enables, apart from active gaining of new knowledge, also social learning);
- < incorporating dialogic or interactive lessons;
- < project work;
- < role play and simulations;
- < didactic games;
- < environmentally important actions.

We here claim that all the above points (except perhaps for the first one) could be facilitated, accelerated, diversified and, above all, made more attractive and contemporary in both form and topical focus exactly through careful implementation of ICT. Especially in terms of facilitating long-distance multimedia-supported and asynchronous communication this is quite obvious. And even more so, if taken into account that for the realisation of the goals of the environmental education as an education for sustainable development the

documents agree it is important to connect the school with local (through practical experiential environmental activities) and wider environment, connect schools among each other (also in an international aspect) and make them cooperate with external experts.

Even if basic in scope and depth, the propositions for including ICT in the modern class exist outside the ESD programmes, yet a lack of familiarity in the practical and theoretical field can be noted in the realm on the entire national level. The largely unexploited possibilities they provide (Purg, 2006) and the influence that multimedia and ICT already have shown over modern education should in the future hold a much more important, if not the key role in the systemic approach of renewing educational concepts and programmes.

“The Position Paper on Renovation of the High School Program” (2007) starts with an analysis of the state of the art that shows a clear need for change and demands for new and increased capabilities for successful facing with these changes (mostly described in terms of a “challenge”). Among the 13 goals, the ones that clearly relate to the use of ICT and sustainable development, could be the following: to achieve a high quality and diversity of knowledge among students (nowadays hardly possible without the support of ICT); to develop responsibility and ethical treatment of self, natural and social environments among students, to qualify students for constructive solving of life’s problems and situations (i.e. many pertaining to the manifold and new media-scapes), to develop their different levels of literacy, including media literacy, raise them to the level of excellence and to develop their ability for independent, critical thinking and judgement (for instance, within the many data sources available just-for-the-cause and just-in-time).

Protection of all aspects of the natural environment is mentioned as a condition of sustainable development as a development of responsibility in relation to the natural environment – yet the social or psychological or even technological (i.e. media) environment is not mentioned. The realisation of the schedule is directed mostly into achieving content goals, while the principle of goal-oriented learning and development process is not used enough; an insufficient amount of time and space is dedicated to acquiring and processing information and content, as well as to present and analyse the results of these processes.

On this basis, we have furthermore taken into account a “Comparison of the state in the field of ICT in EU” (Colnar, 2008) and have previously conducted a similar own and original analysis for Slovene secondary schools (Zakrajšek, 2009). In EU25, for every 100 students in secondary schools in the year 2006 they had 12.5 computers available, but in EU15 – 15.6. In Norway, this figure was as high as 41, in Sweden – 29, in England – 26, in Finland – 18 and in Slovenia – only 8. According to the information in a poll among high-school principals (Zakrajšek, 2009), in January 2009, Slovene secondary schools still had between 8 and 19 computers per 100 students, alarmingly showing that within the three years (mostly a time of steep economic growth) between the two researches this equipment lag has hardly improved. According to Colnar (2008), the percent of teachers using a computer for conducting a lesson in 2006 was alarming as well. The EU25 average in secondary schools was 73%, in the EU15 76.1%. In Slovenia a computer was used by 54% of teachers – a bottom performance at 22nd place. According to the information from our primary research (Zakrajšek, 2009), three years later the computer was used for lessons by approximately 60% of the teachers in high school, while the use of e-platforms or learning management systems for teaching (mostly Moodle) is still in the beginning, being used in less than a third of all schools.

An underestimation of the possibilities that ICT offers for implementing a high school programme and neglecting the insufficient qualifications of teachers for successful

work with ICT is obviously quite common for this kind of national analyses that usually discuss problems of space and the number of students in groups as the only resource-bound parameters. In order to achieve the aforementioned goals, the most successful methods at hand (all obviously supportable by ICT) are interconnecting subjects, multidisciplinary approaches in relation with interactive correspondence, real-time checking, grading and feedback on the acquired knowledge, etc. On the most part, all this can be importantly enabled or enhanced by interactive and/or multimedia e-materials, social-media based internet portals, various ICT-based games, simulation programmes through different media, etc. Of course, these should be considered partly as additions and mostly as complementary methods and should not be mistaken as guarantees for successful education processes – the immediate local and physical presence will always play a pivotal role, especially in primary and secondary education stages.

Analysis of ICT elements in connection with sustainable development in Slovenian Eco-schools

Eco-schools is a programme of an international association for environmental education (Foundation for Environmental Education, FEE), that is active in schools and kindergartens in 58 countries across the globe. In Slovenia, the programme was named *Eco-school as a way of life*, the operator of the programme being the Slovene Foundation of Environmental Education in Europe. In 2008 and 2009, there were 548 institutions enrolled in the programme nation-wide, (primary and secondary schools, kindergartens and CSOAs, Centres for School and Outdoor Activities), which is certainly a lot for a nation of only 2 million people (with around 850 primary schools and 800 kindergartens in total for the nation). The programme in Slovenia introduces an intentional and holistic environmental education in primary and secondary schools in accordance with the 7-step methodology related to the ISO standard 14001. Environmental education is included as an integral part of the goals and contents of each individual subject or curriculum element. It includes natural science activities for connecting goals and contents among subjects, goals of value in the life of a school, guiding reflections of creativity over new ideas and (re)organising educational work within the school in relation to the locality and decision makers. It also importantly connects young people with their peers from the countries in the rest of Europe and the world.

In 2009 and 2010, numerous projects were taking place in the Slovene Eco-schools.

- < Animals and us.
- < Poverty at home and in the world.
- < We and our past for a permanent future.
- < Where are climate changes leading us?
- < Karst – opportunity for teachers and pupils.
- < Watching and protecting biodiversity.
- < Early natural science.
- < Healthy way of life.
- < Water as life's value.
- < Waste.
- < Effective use of energy in the school.
- < 00 CO₂, Agents of low carbon society in action.

◁ Traffic pollution and sustainable mobility.

Two of the projects explicitly deal with ICT elements and sustainable development, whereas most others presumably also include ICT for communication, documentation and, above all, dissemination goals, but do not treat it topically.

The subject or project within an Eco-school member is usually chosen according to the level of importance for the respective school, in the town or the surroundings. In the programme of Eco-schools sustainable development and sustainable consumption are interestingly not explicitly mentioned. This is probably because the schools were founded in the year 1994, when these paradigms did not exist as such in the prevailing discourse, neither was there education for teachers on sustainable education, nor a dedicated programme for educating teachers. Along with the above considerations on ICT, these elements and recommendations or demands should be entered into the programme of Eco-schools and thus upgraded. In fact, an individual school can enrich its yearly activity programme with various activities from the field of ICT and sustainable development – and some indeed do this directly, for instance, saving energy within use of ICT (mainly computers and other multimedia hardware), safe removal of used ICT equipment, the use of ICT for doing business and education, showing that these goals can also be achieved indirectly, as ICT is becoming an integral part of the school's life, affecting its entire field of practice and programming.

Eco-schools represent a vital part of the education for a sustainable development in the Slovene educational system because they include general and specific concepts and concrete examples of topical actions in schools and their immediate and remote environment. With a systematic introduction of elements of sustainable development which are based also on ICT, some schools have managed already to implement these processes on a relatively large scale. With the help of suitable programmes on national level, especially through educating teachers, the incorporation of an integrated model of ESD and ICT could be viable in the majority of Slovene schools.

The importance of ICT for sustainable development in primary and secondary education in Slovenia

In the period from January until December 2009, research was undertaken in Slovene primary and secondary schools on the connection of information and communication technologies with the concepts and practices of sustainable development in education (Zakrajšek, 2009). The research was done via an online survey among 127 proportionally chosen schools, which means that the schools that answered already use ICT. That is why it needs to be kept in mind that the results obtained are significantly better than if we were to check the opinions of all principals and situations in all schools across Slovenia.

The survey encompassed 33 questions of which there were 9 binary YES/NO questions, 3 questions that demanded data input, 2 multiple-choice questions with three answer options and 17 questions with the level of acceptance; twice the participants had a chance to state their opinions in short essay form. The results below represent a combination of all data acquired. The survey consisted 82 % of primary schools and 18 % of secondary schools, which in total represent about 15% of all the primary schools and around 10% of all secondary schools in Slovenia. 45% of the surveyed schools were part of the Eco-schools network.

The schools surveyed have an average of 58 % of classrooms equipped with a computer and a data projector. The schools have 16 computers per 100 pupils on average. 8.8% of schools' buildings were built according to energy-saving principles and only a couple of them claim to have integrated some kind of a (centrally operated) intelligent or smart house management system. Nonetheless, 35.3% of the principals are planning to bring their schools up to modern standards in terms of ecological sustainability in the near future. In 41.2% of the polled schools, classes are being held with the help of an e-platform – mostly Moodle. In the majority of the schools, this platform is being used by 10% to 20% of the teachers, which is definitely a worrying figure, as these platforms prove efficient only if their use is widespread and well integrated at the school level (Mastnak et al, 2009). Interestingly, only 38.2% of the principals think that the teachers are more burdened by the new technologies. Principals estimate that 64.2% of the pupils are familiar with the principles of sustainable development and sustainable consumerism. 91.1% of schools switch off the computers when they are not being used. Principals have subjectively graded how well their schools are equipped with ICT: 5.9% – very bad, 70.6% – good and 23.5% – excellent.

Results that can be considered positive for using ICT in schools, as related to ESD:

- ◁ 79% of the principals agree that accessibility to information and environmental projects via internet speeds up knowledge transfer and successful solutions in a certain environment.
- ◁ 76.5% of the principals agree that cooperation of the parents via e-mail can drastically decrease the time and fuel spent in comparison to traditional ways of communicating with parents.
- ◁ 72.6% of the principals agree that with the help of modern technologies we can reduce the use of energy, consumption of materials and decrease the pollution of the environment.
- ◁ 67.7% of the principals agree that accessibility to material on the internet increases the accessibility of education in general.

Results that can be considered as negative for using ICT in schools, as related to ESD:

- ◁ Only 20.8% of the principals agree that the use of ICT in education improves the relationship between the teacher and the student, but nobody strongly agrees with that statement
- ◁ Only 29.4% of the principals agree that young people are well equipped for using modern technologies, so they could perform distance education in large numbers, but nobody strongly agrees with that.

Measures to be implemented gradually: It is vital to inform, to raise awareness and to educate principals and teachers for constructive and ESD-compatible use of new technologies with the help of good practice examples, as well as with structured curricula and systematic improvements, including investments.

Results that can be considered as negative for implementing the guidelines of ESD in schools:

- ◁ Only 11.8% of the principals do not agree with the score showing that the elements of sustainable development are not sufficiently encompassed in the

- programme and the goals of the school, most of them (58.8%) are of the opinion that this is true or they are indecisive (29.4%)
- ◁ 56% of the principals admit that they do not master enough (new) teaching methods to be able to prepare a high-quality implementation programme related to education for sustainable development; only 14.7% think that this is not true or claim that they know enough
 - ◁ Only 47.7% of the principals think that there exist enough programmes for educating teachers on implementing elements of sustainable development in schools.

Urgent measures to be taken. Appropriate programmes need to be prepared or renewed for introducing teaching (especially revising teaching methods) according to the concepts of sustainable development, it is also urgent to familiarise principals with the concepts and (good) practices of ESD, as well as systematically educating and qualifying the teachers.

When asked about why they think that introducing modern technologies in schools is slow and difficult, 70.6% of the principals agreed that there are plenty solutions available, but mostly lamented that they need to be continuously renewed and the market is fast-growing, thus it is hard to follow it in terms of equipment and user knowledge. 46.8% of the principals agreed that there are no suitably created applications and no relevant instructions available for pedagogical use, 58.8% of the principals agree that the teachers are not qualified enough to use the existing technologies correctly and efficiently. Nevertheless, an important reason (gathered from open questions) seems to also be massive financial costs that the new technology brings not only in terms of investment, but also in terms of maintenance. Yet, it is still highly important that most (73.6%) principals are well aware that young people want such technologies – and would expect schools to be equipped with them and teachers to know how to use them in class.

Discussion and conclusions

The Slovene educational system has abided by the recommendations of UNECE, where the period 2005–2014 was declared a decade of education for sustainable development (UNESCO 2006). The basic starting point of the Slovene national programme is to place environmental education concerning goals, as well as contents, methods and principles used into all subjects and fields within subjects of primary and secondary school curricula. This is, however, problematic, already if taking into account experience gained from previous experience in other countries, as individual fields have their own specific approaches and demands often resistible to change. That is why it proves sensible to implement elements of sustainable development transversally into all school activities as a component part and in some selected projects specify the necessary actions for successful implementation of the elements of sustainable development, for instance, activities that belong to the framework of Eco-schools and even transversal ICT- or media-(ecology-) related activities, where the media-scape is understood as environment in terms of the traditional ecological metaphor, transposed into the new-media reality.

Our research has shown that principals are mostly familiar with the benefits and in some fields even actively supportive of the use of ICT in schools (for instance, accessibility to information and materials, contacts with parents, decrease of energy and material use), yet that they largely do not understand these developments within the conceptual framework of ESD. They, however, mostly realise that young people want technology in

schools not only for fun or hype, but rather for its practical (education bound) usability and sometimes even for ecological use. Understandably, principals are more reserved when it comes to fields that directly intersect with pedagogical work (for instance, partial distance or blended education forms, relations between pupils and teachers, or teachers and parents). There are many reasons for the above defined lags, but the main ones are obviously unsatisfying and belated programmes, missing usage instructions and guidelines for pedagogical use, lack of educated teachers and not least the massive financial costs connected with new technologies. Beyond this, the principals also stated that there is a problem with sustaining the activities of ESD over longer periods of time, which obviously corresponds to the problems in other similar countries (for instance, Estonia as described by Lukk, Veisson, & Ots, 2008).

For the greater part, the principals admit that they are not familiar enough with the programme of sustainable development, not being involved in the programming and the setting of (external) goals of the school's attainment, they also stress that there is not enough suitable training available for the teachers in the field of ESD. Moreover, for a successful introduction of ICT in accordance with the premises of sustainable development into the Slovene educational system, a lot of additional knowledge, energy and funds will be needed. The previously prepared starting points will need to be revised in certain segments, and the programmes will need to be constantly updated and their implementation determined more precisely. Providing information systematically, raising awareness, educating and training principals and, above all, teachers and ensuring sufficient funds will be needed to sustain a modern educational system.

Programmes should be implemented with modernised concepts more related to the realistic life of every individual in the world permeated by new media forms and contents, instead of recycling traditional concepts of ecology that condemn technology (as opposed to nature or humanism) in principle and with it the beneficial aspects of ICT. Modern trends are orientated towards receiving energy directly from solar sources (be it on vehicles, buildings or mobile appliances) and towards a sustainable consumerism, where the role of the individual is greater and more immediate than in the mass consumerism paradigm (EC, 2009). The same goes for obtaining information directly from the source in the networked paradigm of new media! With every developed procedure all of the direct and the indirect influences on the environment should be defined – on the political and especially on the legal level – to prevent environmentally unfriendly solutions and technologies. In schools, pupils should be involved in the entire scope of processes from planning to execution in order to get familiar with benefits and problems of individual activities concerning the use of natural resources and energy, as well as impacts on the environment. Additionally, the usage periods of equipment will need to be prolonged, assuring upgrades instead of replacements.

Schools should, above all, give bright local examples for power saving in buildings, solving waste problems, rational usage of material, designing healthy diets, arranging and optimising ICT systems and, of course, educating teachers (as primary adults disseminating knowledge) towards all these goals. Practical solutions in the field of sustainable development and consumerism that the schools resolve to should be on the highest level because in such a way they would transfer and mainstream this knowledge via young people into the families. Yet, in most fields this is sadly not the case, and, because of the financial constraints, the education system can only resolve to gradual steps, often leading to stagnation. There is a big problem also in the national union of schools and its normative organisation – dividing education into subjects of traditional form arranged throughout the school year, non-flexible working hours (most teachers in Slovenia work

until 3 PM), low system flexibility, not enough autonomy of the schools within the national union of schools, etc.

The research and study covered by the article have thus shown that Slovene primary and secondary schools are falling behind the developed countries of the EU in the area of ICT equipment and emancipated usage – as equipment capacity should only be the basis for the confident use of ICT with the aim of lifelong learning, even in distance education settings (WSIS, 2005, art. 90c). Besides equipment problems, there is also a severe lack of qualified staff and quality learning materials and, above all, a complete absence of holistic concepts and methods. Sustainable development is incorporated within only a few subjects (chemistry, biology, geography) and predominantly in relation to traditional ecology. It thus completely fails to respond to the contemporary concepts of media ecology (Purg 2006 and 2008) or at least to involve an understanding of the social context of science and technology by adequate teacher training, as pointed out by Jonane (2008). There is a comparatively large number of projects in progress on the subject of protecting the environment in the framework of Eco-schools that include more than half of all Slovene schools, yet a contemporary, ICT-emancipated focus is somewhat missing. In the school year 2009/2010, two projects are being implemented where the reduction of energy in the use of ICT equipment is mentioned explicitly, which could be a sign of improvement of this aspect.

Even after the renovation of primary and secondary schools (according to the planned documents) the situation is not likely to change, unless major shifts are made in the planned concept of renovation and additional investments of funds into equipment, preparation of materials and, above all, teacher education are implemented. With a sustainable implementation of ICT, it is possible drastically to improve school programmes and ensure that everyone remains focused on their technical tasks as much as possible and, at the same time, actively engage in social interaction and knowledge transfer. Pupils and students deserve the modern methodologies and equipment, especially in the light of their talents, as in this way they will more likely gain a competitive position in studies and work and be able fully to realise their potentials – this in accordance with goal 8 of the Millennium Development Goals of the OECD to improve youth learning skills and employability in order to meet the challenges of the knowledge-based global economy of the 21st century (OECD, 2000). With modern organisation and delivery of lessons, it is also possible more easily and adequately to achieve informational, educational and schooling goals along the principles of ESD and give the youth proper skills, habits and values with which they will engage in sustainable living practice and secure it for the coming generations. If carefully implemented in the contemporary concepts of sustainable development by observing the guidelines of (new) media ecology, ICT can enable a lowering of the unnecessary burdens on people and environment and guarantee a more optimal use of resources, as well as a better life and equal opportunities for all humankind. The aforementioned European guidelines commit us to ensuring a quality education for all youth and to qualify and motivate them for life-long learning and acting according to the principles of sustainable development, and, without a doubt, ICT can play an important role in living up to these commitments.

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READING ACQUISITION AMONG 5- TO 6-YEAR-OLD CHILDREN IN THE PROGRAMME OF COMPULSORY PREPARATION FOR SCHOOL

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Abstract

In the context of compulsory education for 5–6 year-old children, the question about reading acquisition is one of fundamental concerns for both pre-school teachers and parents. This article examines the methods of reading acquisition frequently applied in pre-school, discusses the situation at school in Latvia and provides suggestions for reading literacy development of 5–6 years old children based on the keystones of sustainable development. The article is a contribution in the construction of a theoretically grounded and sustainable model of reading acquisition for 5–6 year-old children meeting global educational challenges and Latvian local needs.

Key words: pre-school, reading literacy, reading acquisition, holistic approach, phonics method, sustainability.

Introduction

Contemporary society faces an incessant increase in the amount of information. This situation encourages many scholars across the world to seek new opportunities for improving the quality of reading acquisition. Considerable attention is thus focused on researching the opportunities for reading acquisition among preschoolers (Chan, Juana, & Foon, 2008; Justice, Kaderavek, Fan, Sofka, & Hunt, 2009; Hay & Fielding-Barnsley, 2007; Roberts, Jurgens, & Burchinal, 2005; Horner, 2004; Molfese, 2006). The studies that have been performed thus far indicate that the age from 2 to 6 is the most conducive to reading acquisition and share international experience in the organisation of reading acquisition processes. This article examines the experience of Latvia at the beginning of the 21st century in promoting reading literacy of 5- to 6-year-olds. The study also contains a critical evaluation of the existing situation in the area of reading acquisition, which can be used for organising a purposeful and long-term development oriented reading acquisition process among preschoolers.

Since 1 September 2002, the preparation of 5- to 6-year-old children for the acquisition of basic education is compulsory in Latvia (Izglītības likums 2001. gada 5. jūlija likuma redakcijā). As yet, however, the content to be acquired in preparatory groups for 5- to 6-year-old children is not clearly determined and no methodical suggestions are provided for teachers and parents. Thus each teacher thinks and works as he or she sees fit. Consequently, upon entering school first year pupils' skills differ considerably, which already for many years has provoked dissatisfaction among parents and teachers alike (Anspoka, 2009; Obligātās pirmsskolas un sākumskolas izglītības izvērtējums un pilnveides iespējas, 2009). Lack of a unified content is particularly acute for reading acquisition in groups of 5- to 6-year-olds. Anspoka (2009) admits that Latvia lacks extensive theoretical

and empirical research about reading acquisition opportunities in pre-school and that seeking sustainable solutions for solving the problems of reading acquisition has been unnecessarily delayed. Teachers and parents have no clear answer as to when and how a child should be taught to read, how much he or she should be able to accomplish upon entering school – know the letters in his or her name or even all letters, be able to read by joining sounds into syllables or read fluently. Experience of specialists in pedagogy (Доман & Доман, 2008; Амонашвили, 1996; Chan, Juana, & Foon, 2008) and psychology (Vigotskis, 2002; Puškarevs, 2001; Svence, 1999; Chak, 2007; Horner, 2004) around the world proves that ever since a child is born he or she displays the need to cognise the world.

The present article describes the initial stage of a systematic research that could be used for the systematisation of the content and process of reading acquisition in Latvian pre-school education institutions. In this article, reading literacy is viewed in the context of sustainable development both by analysing the current situation in Latvia and by proposing suggestions for sustainability-oriented development of reading literacy in pre-school education institutions. Such focus was chosen because it is essential to consider not only how to teach a child to read, but also how to help retain interest in reading by creating a positive reading experience and ensure the development of active reader's position at a time when the modern technologies suggest plenty of alternatives for information acquisition and leisure.

The necessity to view reading literacy in the context of sustainable development is confirmed by research on the Progress in International Reading Literacy Study 2006 conducted by the International Association for the Evaluation of Education Achievement, which reveals that in 2006 reading literacy achievements of primary school pupils in Latvia have decreased compared to year 2001 (Geske & Ozola, 2007). It means that at a time when the world discusses reading as a significant life skill (Nurmilaakso, 2009; Prets, 2000), practical experience that has been accumulated by Latvian pre-school teachers during several years of independently teaching reading fails to provide the desired long-term results.

The article is structured inductively, that is, it begins with empirical situation analysis regarding development of reading literacy of 5- to 6-year-old children in compulsory pre-school education groups in Latvia. By examining the opportunities of reorienting reading acquisition in pre-school towards sustainable development, four methods for reading acquisition in the context of sustainable development are analysed. Discussion section contains suggestions that were devised on the grounds of the strong points of the above-mentioned methods and are aimed at promoting sustainable reading acquisition.

Situation analysis

This section of the article examines the period of seven years (from 2002 until 2009) beginning from the introduction of compulsory preparation for acquisition of basic education in Latvia, in order to review the situation regarding reading acquisition in pre-school education institutions.

Content analysis and evaluation of normative documents and methodical suggestions published in 2002 @2009 regarding reading acquisition of 5- to 6-year-old children during their preparation for school.

During this research stage analysis of educational documents was used as data collection method. It helps to review the planned educational content stipulated in standards, guidelines, curricula, educational documents (Geske & Gr̄infelds, 2006). In this article normative, documents and methodical suggestions were analysed qualitatively described verbally (Geske & Gr̄infelds, 2001).

The handbook “Es gribu iet skolā [I Want to Go to School]” (Kaņepēja, 2003a) can be considered as one of the first attempts to supply pre-school teachers with methodical support for working in compulsory preparatory groups. The authors of this book opine that reading acquisition is related to a simplified approach to preparation for school. Although the significance of ‘indirect reading acquisition’ during play lessons is identified (Kaņepēja, 2003b), its interpretation is ambiguous. Kaņepēja (2003b) writes the following about reading acquisition: “When preparing for school, the child ought to be competent in letters and interested in learning them”. This statement is contradictory: on the one hand, knowing letters is required while, on the other hand, it is stated that mere interest in letters is sufficient. When answering the question: “Should the child know how to read?” Kaņepēja argues that “at the final phase of preparation for school children ought to read with comprehension. It means that the child understands what he or she is reading and is able to tell what he or she has read about” (Kaņepēja, 2003b, p. 12). Thus reading literacy in pre-school is perceived as interest in letters, recognising letters, as well as reading and making sense of the text that has been read. It means that pre-school teachers’ responsibility for children’s reading acquisition is not specified and we can observe a lack of successiveness between pre-school education and the 1st form.

Another recommendation document related to preparation of 5- to 6-year-olds for acquisition of basic education is entitled “Pamatprasmes pirmsskolēnam, uzsākot pamatizglītības apguvi [Preschooler’s Basic Skills upon Commencing Acquisition of Basic Education]”, published in 2005 by Latvian Education Content and Examination Centre. This document ought clearly to outline the reading literacy that the child should display upon entering school.

Yet these basic skills also fail clearly to answer the aforementioned question. Reading with comprehension and even the child merely taking up a book or asking about an unknown letter are all considered the beginnings of reading acquisition. It can be deemed positive that the aforementioned requirements respect differences in children’s individual development by admitting that the moment when interest in reading and the need to read arise can vary from child to child. These requirements, however, do not demand a pre-school teacher to assume responsibility for reading acquisition of children while the course books and workbooks for 1st form are designed in such a way as to only be applicable with children who enter school already knowing how to read (Anspoka, 2009). Anspoka (2009) argues that in this case primary school teachers emphasise poor effectiveness of preparation for school of 5- to 6-year-olds whereas pre-school teachers believe that schoolteachers’ demands regarding first formers’ reading literacy are exaggerated.

While the lack of successiveness in pre-school and primary school educational content (Anspoka, 2009) is being debated at pedagogical level and while it is still unclear who should be the one to teach the child how to read – pre-school or primary school teacher, the majority of work remains to be done by parents (teach children how to read) and children themselves (learn to read as soon as possible) (Светловская & Пиче-Оол,

2007). Consequently, the child learns how to read because the teacher and parents demand it and not because he or she is interested and wishes to do so. Such learning is in conflict with constructivism, on which sustainable learning process is grounded (Ojala & Talts, 2007; Stephen, 2003; Watkins, Ruth, Bunce, & Betty, 1996), and the child risks developing an early notion of reading as a dull, tedious and tiresome process (Anspoka, 2009). It means that children who have mastered reading as a purely technical skill, following the demands set by adults, have acquired a negative reader's experience and may in future abandon reading in favour of other means of information and leisure activities.

It is therefore reasonable to talk of an unsustainable approach to reading acquisition in Latvia, which is promoted by the vague position of education policy makers and executive specialists in Latvia regarding the pre-school teachers' responsibility in reading acquisition process. This uncertainty permits each teacher to work according to his subjective preferences, fails to ensure content successiveness in reading acquisition between pre-school and 1st form and prevents children from acquiring an interested reader's experience. Shortcomings in pre-school education, especially compulsory preparation programmes of 5- to 6-year-olds for school, are identified in an auditing report from 7 May 2008 "Pirmsskolas izglītības īstenošanas atbilstība normatīvo aktu prasībām [Implementation of Pre-school Education in Accordance with Requirements of Normative Acts]" prepared by State Control of the Republic of Latvia. In order to improve the present situation, substantial changes ought to be introduced in the pre-school education system. It should be reoriented towards a sustainable development, thus fostering an environment favourable for child development, *inter alia* for the acquisition of a positive reading acquisition experience and grounded not only in teachers' subjective views but also in an objective, theoretically substantiated model (Kraštinā & Salīte, 2009; Fulans, 1999; Ojala & Talts, 2007).

Current initiatives include normative documents drawn by the Ministry of Education and Science and a project called "Obligātās pirmsskolas un sākumskolas izglītības izvērtējums un pilnveides iespējas [Evaluation of Compulsory Pre-school and Primary School Education and Possibilities for Its Improvement]" funded by Ministry of Education and Science and implemented at Daugavpils University. The aforesaid project is a significant conceptual step towards resolving, among other things, the issues of sustainable reading acquisition during 5- to 6-year-olds' compulsory preparation for acquisition of basic education. One of project results is a document entitled "Pamatprasmes bērnam, uzsākot pamatizglītības apguvi [Child's Basic Skills upon Commencing the Acquisition of Basic Education]" (Obligātās pirmsskolas un sākumskolas izglītības izvērtējums un pilnveides iespējas, 2009), which envisages that a child ought to be taught to read in pre-school. In other words, it determines pre-school teachers' responsibility for reading acquisition. Since the delineated basic skills are grounded in social constructivism, reading acquisition is also posited as acquisition of personally meaningful experience in a natural everyday situation (Obligātās pirmsskolas un sākumskolas izglītības izvērtējums un pilnveides iespējas, 2009). Therefore, the aforementioned basic skills are significant for reorienting the reading acquisition process towards sustainable development i.e. for shaping child's long-term interest in reading.

Study of v g c e j g t u o " g z r g t k g p e g " k p " v g c e j to 6-year-olds for acquisition of basic education

Applied research was conducted in October 2008 and November 2009, and, during this study, the activities that teachers proposed for development of reading literacy of 5- to 6-year-olds during pedagogical process in pre-school were analysed.

Description of respondents

25 teachers from all regions of Latvia (Latgale, Zemgale, Vidzeme, Kurzeme and Riga) were involved in the research. They are all part-time students who are taking the study programme “Pre-school Teacher” in Daugavpils University at the Faculty of Education and Management. All respondents are in-service teachers, experienced in working with children from compulsory preparatory groups. The sample was created according to the following criteria: (1) place of residence; (2) age; (3) work experience in pre-school (Table 1).

Table 1. Respondents' place of residence, age and work experience

Place of residence	Kurzeme	5	25
	Vidzeme	5	
	Latgale	5	
	Zemgale	5	
	Riga	5	
Age	under 28 years	6	25
	29–36 years	8	
	37–47 years	9	
	48–61 years	2	
Work experience	under 5 years	10	25
	6–10 years	9	
	above 10 years	6	

The research sample comprises an equal number of research participants from all regions of Latvia, which allows it to be considered representative. Respondents of various ages participated in the research: under 28 years, 29–36 years, 37–47 years and 48–61 years. Respondents attended school during different historical periods and in different educational systems having thus obtained different personal experiences in reading acquisition. Respondents' age can therefore be considered a significant feature of the sample. The third criterion for creating the sample is work experience. Respondents' work experience varies: beginning teachers with work experience below 5 years, teachers whose work experience ranges from 6 to 10 years and teachers whose work experience exceeds 10 years. Since the sample is characterised by three major determinant features, it can be considered representative.

Substantiation of the chosen research method

Since reading acquisition is an understudied topic in pre-school education in Latvia (Pirmsskolas izglītības īstenošanas atbilstība normatīvo aktu prasībām, 2008), qualitative research was selected for investigation of teachers' practical activity because it permits to ground description of the present situation on qualitative data collection and analysis. Quantitative data analysis has secondary importance in the current study; it was used merely to supplement the qualitative results.

Since it was crucial to examine the subjective experience of every teacher, data collection was performed by using methodological essay – an open-form description of the activities that were used to promote reading acquisition during one week. Essay analysis permitted us to reveal the teachers' views on the opportunities for reading acquisition in pre-school education institutions.

Research procedure, data and analysis

At the beginning of this study, respondents were individually asked to choose a particular week and write an essay describing all reading acquisition activities that they had organised for 5- to 6-year-olds during this period.

Then every teacher's essay was analysed qualitatively with an aim to study (1) at which stage of pedagogical process teachers choose to develop children's reading literacy, (2) what are teachers' priorities in teaching reading – learning letters, reading syllables, reading words by syllables, reading entire words, reading entire sentences, reading text, (3) whether the activities that are suggested for reading acquisition are in line with the perspectives of sustainable development, which were defined in the materials of the project "Education for Change", implemented by a team from the Baltic Sea region (Jutvika, 2008): child-centred approach, process-oriented approach, integrated approach, community-oriented approach and pre-school education institution as learning environment. In order to identify the dominant tendencies in the process of reading acquisition, quantitative indicators were also applied – the number of activities used for the development of particular skills was determined.

Research data reveal that during one week, teachers used 274 activities for the development of reading literacy, which signifies that teaching reading is considered an important objective when working with 5- to 6-year-olds. Moreover, teachers identify opportunities for promoting reading acquisition throughout the entire pedagogical process. Reading acquisition activities are chiefly used during play lessons, but although in some cases teachers describe using reading acquisition activities in the morning and in the afternoon, and during walks, their number is limited – only 34 out of 274 activities. Thus it becomes clear that formal teaching dominates and opportunities to learn in a non-formal, natural environment are used but rarely. Therefore it is possible to ascertain that varied environment as an effective condition for sustainable learning is only partially used in pre-school education.

Table 2 contains data from teachers' essays and commentary about development of 5- to 6-year-olds' reading literacy during pedagogical process in pre-school.

Table 2. Reading skills to be acquired by 5- to 6-year-old children

Reading skills to be acquired (number)	Commentary
Learning letters (112)	Activities are varied, suitable for children with various types of perception, related to development of phonematic hearing.
Reading syllables (30)	Albeit integrated in a play situation, it is mainly mechanic reading for mastering reading technique.
Reading words by syllables (24)	Mastering reading technique dominates; although words to be read are almost exclusively related to the topic of the week, their content is of secondary importance.
Reading entire words (65)	The content of the word to be read is crucial; activities are designed so that children simultaneously learn to decode the word, perceive and comprehend its meaning.

Sequel to Table 2 see on p.99.

Sequel to Table 2.

Reading entire sentences (32)	Reading for comprehension dominates, for instance, reading in order to understand task requirements. Reading technique is of secondary importance.
Reading text (11)	Chiefly as a morning report, congratulation or surprise prepared by teacher.

An analysis of the essays allows us to conclude that activities for learning letters related to development of phonematic hearing are among the most frequently used. These activities are varied; they reveal the teacher's creativity and demonstrate that learning letters in a pre-school pedagogical process is addressed with particular care. Such a teacher's choice corresponds to the basic reading skills („Pamatprasmes pirmsskolēnam, uzsākot pamatizglītības apguvi”, 2005), but rouses suspicion whether such work with letters is adequately topical, interesting and personally meaningful for 5- to 6-year-olds. The world that surrounds the child is full of reading material that needs to be read in order to learn, find something out, understand, discover and use it. The letters, however, do not provide information. One can play with them, yet at this particular age children want to grow up sooner, *inter alia* read (Светловская & Пиче-Оол, 2007; Chan, Juana, & Foon, 2008). Essays confirm that teachers do not provide children with such an opportunity, because they focus on ‘the connection between sound and letter’. Such learning can be considered mere rote repetition which can result in the child losing the motivation in learning how to read (Kemba Namdi, 2005). Consequently, this approach to reading acquisition is not child-centred, i.e. it is not based on child's interests and needs. It is not process-, but result-oriented (focused on leaning letters) (Jutvika, 2008). Learning letters cannot be regarded an integrated and community-oriented process in a natural environment, because it is aimed at individual acquisition of a specific and single skill via specially organised learning activities. It means that focus on learning letters does not purport a sustainable reading acquisition process in pre-school.

Research data confirm that with 5- to 6-year-olds, teachers also use activities that envisage reading syllables or reading words by syllables. Several pedagogues maintain that at the moment when the child has learned to blend letters into syllables (Ptičkina, 1997; Ptičkina, 1999; Anspoka, 2008; Hay & Fielding-Barnsley, 2007; Landry, Swank, Smith, Assel, & Gunnewig, 2006), he or she has learned to read. Consequently, it is possible to suggest that in this case teachers assume responsibility for children's reading acquisition. The proposed activities, however, are aimed at developing reading technique, not information gathering, because a syllable is not a meaningful language unit – it is a form that carries no meaning in itself. The short words that the child is encouraged to read are not always personally meaningful and interesting, whereas mere reading in order to master the technique and acquire the skill that adults deem so important might not be considered worthwhile by a preschooler. If the meaning of the word is detached from its form, the child loses the opportunity to think intensively (Выготский, 1997). Such activities cannot be regarded child-centred or process-oriented, or integrated. Neither are they community-oriented nor focused on natural learning, but are grounded in individual, mechanical drilling. Therefore, focus on reading syllables cannot ensure children's long-term interest in reading, which means that it is not oriented towards sustainable development.

Teacher's essays reveal that to promote reading acquisition in pre-school, children are involved in activities that envisage reading words. Such activities have more content value, because they require a comprehension of the read material. Yet they do not provide texts for reading, i.e. do not help children experience reading as an interesting process that uncovers different events related to the child's everyday life, as well as reveal a captivating

fantasy world full of miraculous things (Kemba Namdi, 2005; Beauchat, Blamey, & Walpole, 2009). Consequently, in this case activities are focused on mastering reading technique, because a word, just as a syllable, is not a meaningful language unit and does not convey a complete idea i.e. does not give information. Therefore, word reading activities are little related to the perspectives of sustainable development.

Table 2 reveals that sometimes more extensive units (sentences and text) are suggested for reading in pre-school pedagogical process. In this case, teachers have thought of reading as a whole (Kemba Namdi, 2005; Reyhner, 2008), i.e. have integrated its technical and content aspects, which is a significant feature of sustainable education (Jutvika, 2008). The content of activities that are grounded in reading sentences and texts is broader than required by the document "Preschooler's Basic Skills upon Commencing Acquisition of Basic Education" (Pamatprasmes pirmsskolēnam, uzsākot pamatizglītības apguvi, 2005). Such content corresponds to the skills that were highlighted in a study conducted at Daugavpils University (Obligātās pirmsskolas un sākumskolas izglītības izvērtējums un pilnveides iespējas, 2009) – the child reads and comprehends what has been read according to his or her abilities. Such activities are child-centred and process-oriented because they take into account the child's individual abilities and the learning process is meaningful. Consequently, suggesting more extensive language units for reading (sentence and text) introduces the perspectives of sustainability into reading acquisition process (Jutvika, 2008).

An analysis of the results allows us to conclude that teachers work by taking into consideration the basic skills that are outlined in the methodical material "I Want to Go to School" (Kaņepēja, 2003a) and "Preschooler's Basic Skills upon Commencing the Acquisition of Basic Education" (Pamatprasmes pirmsskolēnam, uzsākot pamatizglītības apguvi, 2005) – fulfil the order of the state in the sphere of teaching reading. At the same time, reading acquisition process as described by respondents cannot generally be regarded as one promoting sustainable development, because teachers chiefly propose activities that are oriented towards mastering reading technique, i.e. a mechanical reading acquisition process that is not grounded in child-centred, integrated, process-oriented, community-oriented approaches and where learning environment is not considered as a condition for learning.

Because qualitative pedagogical activity begins with a clear formulation of aim and objectives (Anspoka, 2009; Fulans, 1999), it is possible to predict that as long as normative documents fail to outline uniform, theoretically substantiated reading skills to be acquired in pre-school, which are grounded in children's development peculiarities, interests and needs, neither successiveness between pre-school and primary school, nor sustainability will be ensured. On the grounds of a model proposed by Sterling (2004), which is based on four pillars (paradigm, aim, policy and practice), educational content and requirements for its acquisition that are determined on the state level (policy) and teachers' practical activity can only be considered as a part of the model that is most visible to the public. Reorienting the process of reading acquisition in pre-school towards sustainable development requires essential changes in the system of education, adopting holistic, systemic and critically-subjective paradigm. Thus, for long-term promotion of children's interest in reading to take place (Kemba Namdi, 2005; Roberts, Jurgens, & Burchinal, 2005), the reading acquisition process ought to be grounded in the paradigm of sustainable education, i.e. in holistic, systemic and critically subjective approaches (Krastiņa & Salīte, 2009).

Changing the paradigm and aim of education requires more extensive research. That is why this article proceeds only with reviewing methods for promoting reading

acquisition and evaluating their correspondence to the perspectives of sustainable development (Jutvika, 2008).

Theoretical review of methods for promoting reading acquisition which are popular in Latvia

Theoretical substantiation of methods for promoting reading acquisition in Latvia is not extensive and is generally targeted at primary school teachers (Anspoka, 2008; Ptičkina 1999). Therefore a critical evaluation of these methods is required to determine the most appropriate method for working with preschoolers.

During the previous decades, two methods for promoting reading acquisition have been extensively used in Latvia and abroad: phonics method and whole language method (Karule, 1997; Ptičkina, 2003; Ptičkina, 1999; Lieģeniece & Nazarova, 1999; Reyhner, 2008).

Phonics method is based on the conclusion that reading is grounded in working with sounds (Элконин, 1974; Landry, Swank, Smith, Assel, & Gunnewig, 2006). This method helps to develop phonematic hearing which is significant for successful acquisition of Latvian spelling and can therefore be considered the strong point of phonics method. It allows us to conclude that the use of this method in the Latvian language is expedient.

By means of phonics method, children initially learn to hear different sounds, then master the letters that correspond to sounds and attempt to read the letters into syllables, words, phrases, sentences. (Элконин, 1974; Ptičkina, 1997; Ptičkina, 1999; Anspoka, 2008; Landry, Swank, Smith, Assel, & Gunnewig, 2006; Bowey, 2006). Therefore, a child who is just beginning to experience the joy of reading reads words or even syllables that contain the letters that have been learned, but these words or syllables often are not interesting and carry no personal meaning to the child. "A word that has no meaning is not a word but mere empty sound" (Vigotskis, 2002). Thus the most pronounced drawback of this method is exceedingly great attention to mastering the technique of reading and little regard for children's interests and needs (Выготский, 1997; Anspoka, 2008; Milosovic, 2007; Jalongo, 1998). Phonics method lays particular emphasis on teacher-centred educational process and mastering the technique of reading as the intended result; cooperation and natural environment play no decisive role. Thus, this method is little related to the perspectives of sustainable development and is not oriented towards acquisition of an interested learner's experience.

Another significant shortcoming of phonics method is the fact that a purposeful acquisition of letters in pre-school is only begun in preparatory groups of 5- to 6-year-olds (Ptičkina, 2003), although children display interest in letters much earlier and by the age of 5 many have already learnt all letters owing to reading-favourable environment and even have begun reading (Anspoka, 2009; Доман & Доман, 2008; Justice, Skibbe, Canning, & Lankford, 2005; Hannon & James, 1990).

An alternative for phonics method in Latvia is whole language method. Its methodological basis is holistic approach (Lieģeniece & Nazarova, 1999; Gutknecht, 1991; Goodman, 1986; Stahl & Kuhn, 1995) that envisages shifting the dominance from teacher as the source of information towards teacher as facilitator and organiser of child's learning. It also emphasises child's motivation to demonstrate own initiative to involve in reading and writing processes. Crucially, the child should desire to read, and reading should become a meaningful activity and child's own free choice. That is why the most significant

aspect of whole language method is the creation of reading-favourable environment (Lieģeniece & Nazarova 1999; Goodman, 1986; Hempenstall, 1997).

Whole language method is grounded in child's interest, but interest in reading material (letters, words, text and book) appears early (Доман & Доман, 2008; Hannon & James, 1990). Therefore, this method envisages that the environment which is favourable for reading acquisition excites a very early interest in reading and its long-term development is enhanced by reading personally meaningful and useful text. It can thus be concluded that whole language method is oriented towards sustainable development. In Latvia the use of whole language method in working with 5- to 7-year-olds has been methodologically substantiated (Lieģeniece & Nazarova, 1999); "Ābecīte pirms skolas [ABC before School]" has been prepared for practical application (Ptičkina, 2003). Yet whole language method is not referred to in the Educational Programme for Pre-school (Pirmsskolas izglītības programma pirmsskolas izglītības iestādēm, 1998) or in the document "Preschooler's Basic Skills upon Commencing Acquisition of Basic Education" (Pamatprasmes pirmsskolēnam, uzsākot pamatizglītības apguvi, 2005). The study that has been outlined in the previous section of this article likewise confirms that in pre-school pedagogical process work is chiefly organised around phonics method. It means that in their everyday work teachers follow recommendations from executive specialists in the field. In order to achieve changes in the sphere of reading acquisition requires much closer cooperation between practicing teachers and academicians when designing normative documents, methodical materials and teaching aids (Anspoka, 2009).

Since the issue of reading acquisition (when to start teaching the child how to read and how to organise the teaching) is becoming more and more topical in Latvia, foreign experience is also gaining popularity – Doman (Доман & Доман, 2008) reading system and ALI active reading acquisition programme.

Doman & Doman (Доман & Доман, 2008) are grounding their arguments in results of medical research. They argue that the most favourable time for development of reading literacy is the period from birth till five years of age. "It is the time in a child's life when his or her brain is open to any information. The child acquires information without conscious effort. It is a period when he or she can easily and naturally learn how to read. During this particular time the child ought to be provided with opportunities to acquire all basic information about reading and writing in order to avoid spending much time and effort on it at the age of six to ten" (Доман & Доман, 2008, pp. 37–38).

Doman & Doman believe that the chief success factors for early reading acquisition are good spirits, respect towards the child, sufficient amount of reading material that is interesting and significant for the child and brief but dynamic and regular lessons. Reading material ought to be prepared by taking into consideration the child's age and individual needs. Working with this material according to the system permits children quickly to learn to read because adults offer a reading game that is interesting and captivating. On no account should the child be forced to learn or his performance tested in order to find out what he or she does not know (Доман & Доман, 2008). Thus it is possible to identify similarities between the method by Doman & Doman, whole language method and the perspectives of sustainability listed by Jutvika (2008). This leads to the conclusion that the child masters reading as an interesting and personally significant pursuit.

Active Reading (ALI) programme (Aktīvās lasīšanas iespēju programmas (ALI programmas), 2007) is suggested to teachers as another alternative for promoting preschoolers' reading acquisition. It is grounded in a belief that reading acquisition cannot be begun before the age of 6. Consequently, the period from 0 till 5 years is meant for preparation for reading acquisition process, i.e. the development of child's cognitive,

linguistic and socially-emotional abilities. The ALI programme is grounded in an adult’s emotional daily interaction with the child, in creating the environment that meets the child’s needs, abilities and interests (child-centred approach, learning environment), in integration of play lessons into daily regime (integrated approach, process-oriented approach), in recognition of child’s achievements, in constant and qualitative dialogue between adult and child (community-oriented approach). Thus, the ALI programme corresponds to the perspectives of sustainability, although it cannot be used as a basic method for promoting preschoolers’ reading acquisition. The ALI programme is grounded in outdated psychological considerations that children can only be offered such learning activities which they can perform independently at their presently achieved development level (Vigotskis, 2002). It means that the ALI programme does not advance children’s development, but uses the existing skills and abilities, already achieved by children in their biological and psychological development.

Evaluation of reading acquisition methods in the context of sustainable development

The summary of the results of this study allows us to conclude that in Latvia one can observe a discrepancy between the most recent local and foreign pedagogical tendencies that are grounded in the perspectives of sustainability and between the approach outlined in the documents that regulate pre-school teachers’ work and the behaviouristic approach to teaching that is still used in pedagogical process. In such a context, it is impossible to identify reading acquisition as a priority in education. At the same time, research within the Programme for International Student Assessment conducted by Organisation for Economic Cooperation and Development includes high reading literacy and interest in reading among the chief success factors. Finnish experience in promoting reading acquisition (Krasovska, 2009) confirms the need for significant changes in Latvia that would be directed towards sustainability-oriented reading literacy development. It means that children already in pre-school ought to learn reading as a meaningful, interesting, personally significant and practically useful skill. In other words, reading acquisition ought to be reoriented towards sustainable development, thus creating a new approach to reading acquisition that would integrate the strong points of already existing reading acquisition methods (Table 3).

Table 3. Strong points of different reading acquisition methods

	Phonics method	Whole language method	Doman method	ALI programme
Strong points	Development of phonematic hearing	Reading acquisition is child-centred, meaningful and personally significant	Child-centred reading acquisition grounded in child’s innate cognitive abilities	Child-centred activities for speech development and development of phonematic hearing in cooperation with an adult in an emotionally favourable environment

When creating a sustainability-oriented approach for reading acquisition in the Latvian context, it is essential to retain the development of phonematic hearing (Ptičkina, 1997; Ptičkina, 1999; Anspoka, 2008), because it guarantees grammatically correct reading and writing in future. This approach ought to be child-centred i.e. it should meet child's interests, needs and abilities (Lieģeniece & Nazarova, 1999; Goodman, 1986; Stahl & Kuhn, 1995). Selection of the reading material is crucially important because, when offered personally meaningful and interesting information in emotionally favourable everyday environment and in cooperation with an adult, the child learns driven by own initiative and finds joy in the process (Lieģeniece & Nazarova, 1999; Ptičkina, 2003; Доман & Доман, 2008; Aktīvās lasīšanas iespēju programmas (ALI programmas), 2007; Goodman, 1986; Hannon & James, 1990). Since the strong points of the aforementioned methods are suggested for application in a sustainability-oriented approach to reading acquisition, they can be called sustainability aspects of reading acquisition methods. Therefore, it is possible to propose some suggestions for organising a sustainable reading acquisition process in pre-school.

Suggestions for organising a sustainable reading acquisition process in pre-school

1. It is essential to proceed from the child's desire to learn and from his or her personal interest and avoid teacher-dominated instruction. The teacher's major task is to provide children with captivating reading material, demonstrate that reading can help obtain useful information and emotional satisfaction and use reading as much as possible during the day, i.e. it is important to create a reading-favourable environment in the group.
2. It is essential to trust children and wait until they display a desire to read, discern the child's interest, support and encourage it and on no account hasten or force him or her to read, but stimulate the desire to read and comprehend written text.
3. It is crucial to be there for the child and help him or her when the child displays a willingness to read; allow each child to choose reading material that corresponds to his or her wishes and needs – alone or in the company of peers or adults. After some preparatory training, parents can also be involved in reading acquisition process.
4. It is important to support the child even when he or she has learned to read and celebrate his or her success. One should not demand that the child reads when the teacher wishes him or her to do so; it is more important to develop a reading-favourable environment.

These suggestions can be used in working with children of various ages – reading-favourable environment can be created for 1.5-year-old children or five-year-olds, each child can learn in his or her own pace, reading literacy is acquired as a meaningful process. Also, children ought to be involved in activities for mastering reading technique, but they should be organised as merry plays.

The aforesaid suggestions (1) incorporate the strong points of reading acquisition methods discussed above; (2) propose ensuring sustainability-oriented reading acquisition process by creating a reading-favourable environment; (3) are directed towards fostering reading literacy in pre-school and its long-term development; (4) constitute an attempt to think of raising a generation of interested and responsible readers; (5) are open for creative complementation from the part of every teacher; (6) match international experience in the area of reading acquisition.

Conclusions

Information that has been obtained during the present study reveals Latvian experience in the area of reading acquisition and allows us to conclude that there is an evident lack of successiveness between reading acquisition in pre-school and basic education. Lack of clear state regulations and requirements regarding 5- to 6-year-olds' reading acquisition in education programmes for compulsory preparation for school results in a situation when the practice of pre-school teachers differs considerably: some teach reading, others only introduce letters. Reading acquisition process in pre-school is generally organised around phonics method which is incorporated in the aforementioned recommendation documents, but is grounded in mechanical drilling and does not excite interest in reading. On the other hand, whole language method, which has a sound sustainability-oriented theoretical substantiation, is not included in the support materials that are specially prepared for pre-school teachers. Moreover, in Latvia reading acquisition is only discussed in the context of compulsory preparation of 5- to 6-year-olds for school. At the same time numerous studies confirm that children display interest in reading as a means of cognising the world ever since their birth. If the child is given an opportunity to act in a reading- favourable environment, reading acquisition proceeds smoothly and with joy. The suggestions that were presented in the previous section could promote sustainable development oriented reading acquisition among preschoolers.

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INTERCULTURAL AND MEDIA LITERACY: GLOBAL TENDENCIES IN METACONTENT OF TEACHER EDUCATION IN LATVIA

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Abstract

Under the influence of processes of globalisation, higher education in the countries of Europe, including Latvia, has been reshaped, restructured, re-evaluated and reoriented towards the establishment of a European higher education area. New issues have emerged at both the content and metacontent level, the most significant of which are intercultural and media literacy matters. Considering the tendencies of globalisation, this article focuses on the issues of intercultural and media literacy as a metacontent of teacher education. The article introduces the teacher and media education in Latvia and frames several suggestions to implement intercultural and media literacy in the teacher education curriculum.

Key words: intercultural literacy, media literacy, metacontent of teacher education, globalisation

Introduction

The discourse about the balancing and harmonisation of national and global trends in education is rather prevalent. Such discourse is both philosophical and pragmatic as it presents challenges, highlights paradoxes and searches for practical solutions. Considering the phenomenon of constant change, educators can be assured that this discourse will resemble a never-ending story. No matter how much educators would argue that education should involve hands-on involvement and applied drive, a strong conceptual foundation is also needed in order to clarify and sustain responses to urgent issues and to create the educator's own competence-based position in order to ensure meaningful practice. Teacher training universities and other higher education institutions are the key initiators and providers of this conceptual discourse.

Globalisation is not a merely philosophical phenomenon. Sooner or later, this process will land on our own doorsteps and have essential influence on our daily lives. The net of challenges created by globalisation can be outlined as increased scope and interrelatedness of economic, social/cultural, political and ecological areas of life. As a single web of interrelated causal relationships, all the familiar global processes can be discerned, such as the internationalisation of business and marketing, the movement of financial capital, economic instability, human migration, awareness of the diverse social and cultural contexts, human segregation, climate change, the decrease of nature resources, ICT development, transfer of information, psychological insecurity and identity crisis, to mention but a few. Within the context of vast discussions about globalisation and its impacts in all the spheres of human activity, we cannot take these processes for granted. They urge us to admit that globalisation re-organises knowledge and changes thinking,

participation and collaboration skills that are crucial for successful living. Thus, educators' awareness and creative involvement in the cognition of global processes, their local impact in education and educational response to them help them not only to review the foundations of their pedagogical mastery, but also to be active and successful authors of educational praxis and development.

Globalisation of higher education in Latvia

Entering into the European Union in May 1, 2004 has initiated the process of change in higher education in Latvia. The ongoing reforms are connected with the reorientation of higher education towards the principles of the Bologna Declaration and activities for creation of a "coherent and cohesive European Higher Education Area" (Realising the European Higher Education Area, 2003). The activities entitled the *Bologna Process* in Latvia is a continuation that "shapes the ongoing ones turning them into the overall stream of higher education reforms in Europe and often filling them with a new or changed content" (Rauhvargers, 2003, p. 19). This European trend initiates processes that represent reshaping and restructurisation of whole field of higher education, including teacher education.

The action lines included in the Bologna declaration have introduced joint objectives and constitutive areas that are crucial for the continuing advancement of higher education. The declaration and main reports on trends and the process of creating a European higher education area acknowledge that "higher education is a public good and a public responsibility" (Realising the European Higher Education Area, 2003, p. 1) – a constitutive area of shaping "the basis of the Europe of Knowledge" (p. 2), "promotion of the European dimension in higher education" (p. 6) and enhancing "the possibilities of lifelong learning" (p. 6). So, the aim together with the creation of a European higher education area is "to preserve Europe's cultural richness and linguistic diversity, based on its heritage of diversified traditions, and to foster its potential of innovation and social and economic development through enhanced co-operation among European Higher Education Institutions" (p. 2). These guidelines also refer to teacher education.

"The National Conception on the Development of Latvian Higher Education and Higher Educational Institutions for the Period until 2010" (Higher Education Council, 2001) is mandated to monitor the purposeful implementation of the action lines of the Bologna declaration. The strategic objective of this conception is to develop the Latvian higher education system with a view of, on the one hand, preserving its national development spirit and, on the other hand, readability and recognition of Latvian degrees and diplomas both for employment on the European labour market and further studies in Europe (Quoted in Rauhvargers, 2003, pp. 24–25).

The objective gives a legitimate hope that the stakeholders who coordinate the Bologna process in Latvia: Ministry of Education and Science with its dependent organisations/institutions – Rector's Council, Higher Education Council, Higher Education Quality Evaluation Centre, Academic Information Centre, Academic Programme Agency and higher education institutions will foster the dimension of education that facilitated the survival of the Latvian nation so that its uniqueness is in balance with global trends and can enrich the European higher education area.

The renovations of the structure of teacher education have necessitated the reforming of education content. Another global trend that initiates re-evaluation and reorientation of higher education in Latvia is influenced by the introduction of the strategy of sustainable development. This strategy has become the key criteria of success and

effectiveness in all the spheres of society. In higher education it echoes the search for implementation of the aims of UN decade of education for sustainable development with the basic vision of the world where “everyone has the opportunity to benefit from education and learn the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation” (UNESCO, 2005c, p. 6).

Three aspects of sustainability are identified as crucial – environment, society (including culture) and economy. All these aspects can be considered as lenses that make us aware of the broadness and complexity of the immediate environment and that encourage changes in our thinking, attitudes and behaviour in order to create a just society and a more sustainable future. Certainly, education reform alone will not accomplish this. It should take a broad and deep effort on the part of many sectors of society. However, education is the realm providing structured and purposeful activities to promote a holistic development of a person. Thus, it implies the message that education lies at the heart of the approach to sustainable development, that education is the key to sustainable development. Therefore, an essential role in the global education community is assigned to the institutions of teacher education – they have “the potential to bring changes within educational systems that will shape the knowledge and skills of future generations ... [they are] the key change agents in transforming education and society” (UNESCO, 2005a, p. 11).

The re-orientation of education in Latvia towards the strategy of sustainable development the content of education should be re-evaluated. Considering that ESD is more than formal information related to society, economy and environment, a teacher should also address skills, perspectives, values and the interrelationships between them (UNESCO, 2005a). Recently, it has been suggested that there is a fragmentation of acquired knowledge and skills, an overlap of material and a lack of systemic interaction between the acquired knowledge and skills in formal education in Latvia (Eglītis, 2004). Emphasis is still placed on the acquirement of the knowledge and skills characteristic to a particular subject on the school curriculum. Based on the gap between national strategic tendencies highlighted in Latvian National Development Plan 2007–2013 (LR Reģionālās Attīstības un Pašvaldību Lietu Ministrija, 2006) and the actual situation in education, the reform of the educational content in schools has started. This reform acknowledges the skills pertaining to the practical application of information and the ability to express and to understand the use of the acquired information for further development. What is crucial in teacher education is that this reform be implemented in the process of teachers’ training.

Geske, Grinfelds, Kangro and Zaķis (2003) assert that one-country or one-nation perspective can no longer be a comprehensive framework for education. Education should be “based on global values which allow for the analysis and access of any field of human activity in a global context” (p. 75). This is a strong suggestion to explore the historical and the current situation in education and to acknowledge its global dimension. To recover its position in society, education has to reclaim a global aim of education (Whitehead, 1929) and addresses issues that are meaningful to people, such as: questions of meaning, identity, to mention but a few.

Reform of educational content

Conceptual discourse about the content of education in Latvia is still rather implicit and is hiding among loud discussions about minority education, education quality, education management, paradigm change in education, etc. However, amid the aforementioned issues, some researchers observe the conflict that is created by school requirements to obtain specific theoretical knowledge on the one hand and labour market needs to master analytic

skills, mobility and adjustment to new conditions on the other (Paņina, 2007). It is pointed out that erudition and mental outlook does not include intellectual, creative, communicative and self-organisational skills (Lavriņenko, 2007) and that education should strike a balance between theoretical knowledge and the skills required to live in a real situation (Valbis, 2005). Although researchers insist that the success of an individual in 21st century depends not only on the acquired knowledge, but also on creative thinking and acting that is “to use the acquired knowledge in a creative way, to be able to adapt to rapid changes in economics, politics and culture and, at the same time, to be able to initiate changes” (Rivža & Krūzumētra, 2007, p. 7), the content of formal education does not become personally meaningful to a child, as what is mainly taught is knowledge – the sum of facts – without acknowledgement of its use in a particular situation (LR Valsts Kontrole, 2007, item 207). These aspects clearly represent the necessity of coherence of education content to societal needs.

Emphasising the lack of systemic interaction between the acquired knowledge and skills in formal education in Latvia (Eglītis, 2004), it has been suggested that there is a gap between theoretical/conceptual and practical/functional understanding of educational content. Briška and other educational researchers (Rubene, Briška, Klišāne, & Maslo, 2006) examine this gap by discussing educational content in terms of competency as its analytical category. They share the notion that formal pre-school and school education practice and educational legislation is still based on understanding of *competency as skill*. This understanding created in the 70's and 80's infers an emphasis on the acquirement of knowledge and skills characteristic to a particular subject of the school curriculum. However, educational content in higher education grounded on obtaining a profession qualification reflects an understanding of *competency as a qualification* created in 80's and 90's (p. 46). Even if these two understandings are conceptually diverse, they share common failings: the fragmentation of acquired knowledge and skills, overlap of information covered by several subjects or study courses and lack of individualisation, to mention but a few. Finally, these two understandings lack a connection with the metacontent of education pertaining to the universal and core issue – a holistic, sustainable development of a person. The practical solution to this imbalance has made it necessary to reform educational content that, according to Grīnuma (2005), has begun in schools from 1 September 2005 and is still ongoing. This reform, the second in the period since 1991, acknowledges the skills of a practical application of information, an ability to express oneself and to understand the use of the acquired information for further development. Content of education, as stated in the reformed school educational programmes, should be related not only to particular knowledge, skills and their practical use, but also to cultural and social experiences, experiences of faith, attitudes and values formation, experiences of emotions, culture and personality formation. However, even if one of the fundamental aims of the educational programmes is to promote pupil's responsible attitude towards himself/herself, family, society, surrounding environment and country, compulsory content that is included in the standards of any school subject mainly include thematic units and skills characteristic only to the particular subject (LR Valsts Kontrole, 2007, Item 206.5). Avoidance of the integration of attitudes as educational content in the standards of school subjects does not facilitate the holistic development of a child's personality and leads to the risk that this aim will not be achieved (Items 15.4.5, 216).

Attitudes are based on universal values and find their expression in the actions of the pupils and the teachers. Attitudes and values, in addition to knowledge and skills, are the fundamental components of educational content. They are the key concepts of pedagogy and the actual subject of education (Beļickis, 2000). Attitude and value building provides

not only the cross-curricular nature of education but also they imply a spiritual potential playing a crucial role in ensuring the continued existence of education as a system and as a process. Pedagogical discourse about this spiritual dimension of education (Belousa, 2000, 2002, 2003, 2005, 2006; Stakle, 2006) has been initiated with the decline of knowledge-oriented or pragmatic paradigms that determined its priorities in education over the last 30 years (Belousa & Stakle, 2007; Stakle, 2006). According to this paradigm, knowledge based on its obviousness, its demonstrative nature and simplified economical evaluation of their acquirement have become the major components of educational content, partly excluding skills and replacing attitudes and values. Yet, knowledge compared to skills, attitudes and values is the simplest fundamental component of educational content and fills the lowest level in educational taxonomies. Moreover, the dominance of knowledge has caused an imbalance of knowledge-oriented educational content and of aims towards holistic development and value-oriented education.

Content and metacontent of education

The reform of educational content in Latvia so far lacks significant success. It has been discussed that the amount of information included in the standards and programmes should be reduced; standards and programmes should be made rather accessible and comprehensible not only to an educator who teaches the particular subject but also to pupils, their parents and other interested parties (Valbis, 2005). However, strategic activities to deal with overcoming the described imbalances and gaps are not initiated in state level.

One of the initiatives to explore the issue of educational content in a rather systemic way can be provided by educational theorists and researchers in terms of the discourse about the metacontent of education. The discourse regarding the metacontent of education should be initiated not only in order to develop awareness of two specific, yet interrelated, aspects of „*content*„, *metacontent*, but also to promote the sharing and creation of practical ideas about development of values and attitudes in all the subjects of school and higher school curricula (Valbis, 2005). The word „*meta*“ has the Greek origin with the meaning „*before*“ and „*above*“. Consequently, metacontent issues provide a more comprehensive view/platform beyond the content of school subject. In order to ensure the successful acquirement of the content of each subject and study course metacontent issues should be interwoven across the content issues, integrated with the content. However, education quality nowadays has not yet been evaluated according to the acquired metacontent of education, that is the attitudes and values, either on an international or on a national level.

The metacontent of education has several dimensions – social, value, character, intercultural, spiritual that are widely discussed as contemporary perspectives of education theories, approaches and curriculum. Educators consider them to be embarrassing because metacontent issues are mainly abstract and complicated to compare. Yet, they can always be evaluated as they are expressed through one's action. Metacontent issues-based learning is a purposeful and conscious integration of the acquirement of knowledge and the development of skills, attitudes and values. Learning what integrates content and metacontent issues is rather more effective than knowledge acquirement-oriented learning (Beļickis, 2000) for it is heading for the highest aim of education – personal and collective happiness (Noddings, 2003).

Metacontent issues-based learning implies the following touchstones:

- ◁ *Holistic understanding* is a platform to view not only educational content (from several aspects, dimensions), but also a pupil, namely, his/her age, personality, ability and culture particularities that shape his/her learning, as the whole in its pedagogical understanding cannot be created by putting together separate parts.
- ◁ *Spiritual interaction-based collaboration* of all three components – pupils, teachers and the content that provides mutual balance, openness, tolerance towards diverse forms of expression and the spiritual enrichment of the pupil and teacher.
- ◁ *Meaningful participation* of both – pupil and teacher – that provides depth of individualization of the acquired content, breadth and creativity of its practical application. This meaningful participation facilitates pupil's active involvement in the implementation of positive changes, hence enabling development of his/her responsibility. Also, it ensures not only the professional but also the personal development of a teacher.
- ◁ *Cross-curricular approach* that urges a teacher to keep to the perspective beyond her/his subject and to encourage the application and value-based evaluation of each issue that is learned.
- ◁ *Spiral perspective of teaching and learning* that is the dynamic circular rotation of pupil's and teacher's interaction with educational content as opposed to the linear perspective based on sequential acquirement of content units by a pupil.
- ◁ *Long-term strategy* that increases not only the understanding and practical application of the learned/acquired content but also responsible participation in order to ensure the sustainability of the implemented changes.

A document about metacontent-related issues with significance to school education programmes and standards of school subjects would help teachers to surface this crucial topic at a conscious level. This document has to include a description of the absolute or universal values and the values related to the particular – national environment and specific period of time. This document should provide a discussion about teaching/learning, evaluation and research methods and strategies to integrate metacontent issues within educational content. Finally, examples of good practice also have to be included.

In higher education, the discussion about the metacontent of education can be reflected as the need both to introduce separate study courses on metacontent issues (for instance, sustainable development of education, intercultural and media dimension of education) and to reorient the content of existing study courses to address metacontent issues. Institutions of higher education that provide teacher training should face this challenge and implement a re-orientation of their study programmes and courses to address metacontent issues in a conscious and constructive way. Thus, both teacher trainers and teachers should admit the necessity for their further education.

Intercultural and media literacy: Emerging issues of metacontent of education

The process of globalisation has made an impact on changes not only in content but also in metacontent of education. One perspective on newly emerging issues is connected with the vast social and cultural environment in EU countries that has undergone significant changes in recent years. Membership in a European and global community has played a significant

role in fostering conditions conducive to pluralism in the society. These changes have brought forward a discussion on issues of successful interaction in diverse multicultural environment. Education theorists also emphasise that the issue of intercultural education is of paramount importance in the twenty-first century (Banks & McGee Banks, 2001) as it represents the current focus of educational controversy. It is recognised that there is a need for conceptual discourse of intercultural education consistent with both local realities and the broad European experience exploring the comparative view on various common and cross-cultural issues. Ethical issues of openness, sensitivity and tolerance to the broad diversity of culture and its incorporation in local educational settings in all EU countries, including Latvia, are some of the major concerns of intercultural education that should be approached in a rather personal and pupil-centred way.

In a global view, education disseminates the values and principles that are the basis of sustainable development. It is stated that education for sustainable development should highlight “the complexity and interdependence of three spheres, the environment, society – broadly defined to include culture – and the economy” (UNESCO, 2005b, 5). These trends have important implications for education (Banks & McGee Banks, 2001) and should be treated in a culturally appropriate way. At its core, education for sustainable development is based on ideals and principles that form the fundamentals of sustainability, such as “intergenerational equity, gender equity, social tolerance, poverty alleviation, environmental preservation and restoration, natural resource conservation, and just and peaceable societies” (UNESCO, 2005c, p. 28). ESD increases civil capacity by enhancing and improving the workforce, social tolerance, environmental stewardship, participation in community-based decision-making and quality of life. Therefore, intercultural literacy is one of the issues that are emerging in education under the conditions of globalisation which has to be considered by educators because it implies education for life in a free and democratic society.

Although the vast conceptual discourse on intercultural education represents different perspectives, types of opinions and positions, their common ground is that intercultural education is not a curriculum, educational programme, school subject or a study course. It is pedagogical approach acknowledging diversity of learning and its benefits in all areas of human life. Intercultural education implies the potential to shape the society where humans with diverse cultural identities can co-exist and live successfully. Thus, intercultural education not only enables the shaping and development of a person’s cultural identity, but also promotes equality and human rights, prevents discrimination and facilitates well-being, coherence and sustainable development of an individual and society. The prevalence and accessibility of media is another impact of globalization that changes the content and role of teacher education because the media “entertain us, socialize us, inform us, educate us, sell things to us (and sell us, as audience, to advertisers) and indoctrinate us – among other things. The media help shape our identities, our attitudes towards racial and ethnic minorities and our attitudes about sexuality” (Berger, 2003, p. 14). Cortes (2000) even argues that the mass media plays a role similar to school curriculum. Media provide a rich source of information as they educate more people about issues regarding society and culture than all other sources of education. McLaren (1998) also confirms that “pedagogy occurs not only in schools but in all cultural sites. The electronic media is perhaps the greatest site of pedagogical production that exists” (p. 297), and it can be considered a form of perpetual pedagogy.

Since 1960’s and 70’s, intercultural and media education are two of the most frequently discussed concepts in teacher education in Western Europe and America. The most significant reason for these discussions is that intercultural and media education are

interdisciplinary concepts that change their constantly evolving meaning and overlap with social, economic and political tendencies in the globalised world. Several theorists observe that intercultural education and media education cannot be separated since they are complementary (Tyner, 1998; Pombo, 2003; Thomon & Tessa, 2005). Both these types of education are based on the development of literacy, each in its own field.

Hirsch (1987) is one of the first authors who described the notion of cultural literacy. However, his understanding of cultural literacy is rather related to knowledge of the cultural symbols of the American white race than to a critical evaluation of cultural identity and search for intercultural connections. Heyward (2002) argues that intercultural literacy is rather extensive for it considers representatives of various cultures living together in a common space. He observes that the acquisition of intercultural literacy enables creating “a safe, sustainable and just global community” that promotes development of an open and tolerant society (p. 11). McLaren (1995, 1997) argues that the aim of intercultural education is to help students to explore the borders of their cultural identity, learn about their race, ethnicity, class and other keystones of identity and to understand other cultural identities. Heyward’s (2002) multidimensional model of intercultural literacy implies six aspects: understanding, competencies, attitudes, participation, language proficiencies and identities. Several other authors (Bennett, 1998; Peterson, 2004; Chen & Starosta, 2005) also argue about the aspects of intercultural literacy. Their suggestions about the components of intercultural literacy can be integrated into three interrelated components – knowledge/understanding, skills/competencies and attitudes/values. These components that frame the foundations of intercultural literacy are particularly described in the suggestions part of the article.

Media literacy is traditionally understood as an ability to “gain access, analyse, evaluate and create messages in a variety of forms – from print to video to the Internet” (Thoman & Tessa, 2005; Stakle & Belousa, 2007, 2008). Carey (1988) argues that each aspect and product of mass media has its own cultural dimension. McQuail (2000) observes that media research has always been grounded in the broader culture-information field. Many theorists highlight that media educate people about their culture and social roles (Barry, 1997), promote the development of new forms and methods of communication (Burnett, 2004; Stakle & Belousa, 2007, 2008; Stakle, 2008; Slevin, 2000) and enable a definition of sexual roles, culture codes, myths and patterns of social behaviour (Barry, 1997; Berger, 2003; Stakle, 2008). Burnett (2004) notes that the creation and communication of images is significant for any culture, and it is impossible to discover anything about social constructions of culture without reference to the culturally created images. Image creation is the way humans visualise themselves and communicate their constructed images (Burnett, 2004). Pombo (2003) asserts that issues of media education are always grounded in politics. For him, the understanding of media messages is based on personal experience, text analysis, political economy and self-reflection thus “the importance is not purely to know the different aspects of how media are constructed (for instance, lighting, sound), but how knowledge/meaning is constructed and interpreted within unequal relations in society” (p. 100). Consequently, as media literacy cannot be successfully acquired without intercultural literacy, intercultural literacy cannot be fully understood without using the knowledge and skills of media literacy.

Schools and universities cannot be neutral in terms of transferring social and cultural values and ways of behaviour expressed in attitudes. Issues of metacontent are always in educators’ agendas either in explicit or implicit form (Banks, 2005). Intentional efforts to recognise intercultural and media literacy as metacontent issues and its public

validation would represent responsible attitude and sustainable vision acknowledged by an educational institution.

Teachers' view and experience of intercultural and media education in Latvia

Context of the study, the sample and data collection

The current reality of education in Latvia occurs in the context of increased interest in the role of culture in society and the gradually emerging discussions, studies and methodological solutions of intercultural education at all its levels from kindergarten to university. Significant input to communicate urgent educational issues that are common to all of the European education area has also been contributed by the European Commission. One of the EU supported initiatives – Lifelong Learning programme Comenius 2.1 project “ICTime – ICT as a Tool of Intercultural and Media Education” (2006–2009) has provided an international platform with an aim of assisting teachers, students, teacher trainers and education policy makers by providing a methodology that enriches intercultural education by using digital media at schools. This part of the article implies the study about teachers' view and experience of intercultural and media education in the context of formal educational process at state schools in Latvia. This study was conducted in the first stage of the project by the team of researchers of the Institute of Sustainable Education that is a structural unit of Daugavpils University.

The population of the study consisted of general education teachers from state and municipality schools in Latvia. The sample of the study (n=120) that included female (n=98) and male (n=22) teachers from 70 Latvian schools was selected according to the parameters of gender, age, work experience and location of the school. Respondents represented three age groups: 20–34 years old (n=64), 35–54 years old (n=49) and 55–65 years old (n=7). Respondents represented three work experience groups: up to 5 years (n=39), from 6 to 12 years (n=42) and more than 12 years (n=39). Respondents represented two groups according to location of their school: teachers from city schools (n=80) and teachers from country schools (n=40). According to the described criteria, the sample selected for the study represented the parameters that correlated to the main common characteristics of the population, keeping the ratio of gender, age, work experience and location of the school in connection with the latest statistical data (LR Izglītības un Zinātnes ministrija, 2009) that characterise the whole population of general (pre-school, basic and secondary) education teachers.

A questionnaire with 13 question groups each composed of 9–15 questions was created and used during the data collection. Two types of closed-ended questions were applied: multiple-choice questions to identify the respondents' attitude, opinion or experience and response scale questions to clarify degree of the respondents' position (agree, neutral and disagree). According to the content, the questions were relatively divided into two groups. The first group included questions about types and elements of culture, about content of intercultural education and tasks of intercultural educator, about the school subjects that ensured intercultural education, about children' age appropriate for development of intercultural skills, about teachers' own contribution and efforts of the whole school to the development of children intercultural skills and competencies. The second group included questions about media aids and technical devices teachers use in their educational practice, about school subjects where teachers used different media aids

and technical devices, about the way and purpose teachers used different media aids and technical devices in educational practice and about the role of media in society. As an estimate to assess the internal consistency of a questionnaire Cronbach's α (alpha) was applied. The acquired alpha coefficient for each question group ranged from 0.70 to 0.82 and indicated that the generated instrument had an acceptable degree of reliability.

Regardless of the use of quantitative instrument, the collected data provided a rich descriptive insight into teachers' view and experience that expanded the scope of the comparative quantifications. Considering that qualitative data can be obtained by quantitative instruments (Myers, 2009; Tashakkori & Teddlie, 1998) the collected quantitative data about teachers' view and experience were analysed inductively according to the themes that emerged from the data. As the authors of the article prefer descriptive presentation of the results, the discussion of the discovered situation is structured according to eight overlapping themes that emerged during the data analysis: *types of culture, elements of culture; content of intercultural education; school subjects that imply intercultural education; intercultural education in the process of teaching and learning; the role of media in society; media message; cultural identity and the role of media in education*. The further part of the paper provides an interpretation of the emerged themes discussing qualitative and quantitative connections between the data both, in the context study and in wider context of other studies about education and society in Latvia (Austers, Golubeva, & Strode, 2007; LR Valsts Kontrole, 2007; Makarovs, 2006). Percentages in the following part of the paper provide information about the frequency of repeatable data in respondents' answers.

Types of culture

Identifying teachers' understanding of culture types, it was discovered that 77% of teachers agreed that nationality, ethnic identity and language are the essential hallmarks of culture. According to 40% of teachers, some factors, such as religious affiliation, moral health, social status, gender identity, economical status, place of residence, age and occupation, were considered to be insignificant. With regard to different conceptual understandings of culture, Welsh (Velšs, 2005) argues for two interpretations of culture – traditional and transcultural. For him, the traditional interpretation of culture implies a way of preserving its own identity and is grounded in ethnic affiliation and social homogenisation, and is based on detachment from the external influence. The teachers' view, according to the study, demonstrates that their understanding of culture is based on its traditional understanding.

Speaking about other types of culture, only 7% of teachers agreed that physical abilities were a significant cultural characteristic. Framing their opinion on gender identity, only 22% of teachers agreed that it was a type of culture, while 48% of teachers considered it insignificant and 30% disagreed that gender identity could be considered an important characteristic of culture. Several studies conducted in Latvia reveal a lack of tolerance in Latvian society regarding gender identity and sexuality. They indicate that "a considerable part of society is possibly ready to accept violence towards gay and lesbian persons" (Makarovs, 2006, p. 7). The study "Socio-economic development tendencies of Latvian cities" reveals that from 48% (Riga) up to 81% (Latgale region) of people would not wish to live next to homosexuals. Austers, Golubeva and Strode have discovered that "in Latvian schools, teachers do not attempt to prevent or solve conflicts where students suffer from a negative attitude of their classmates because of their differences. Students with different sexual orientations are most frequently subject to such risks" (Austers, Golubeva, & Strode,

2007, 14). Denying gender identity as a characteristic might result in neglecting the diverse learning styles of male and female pupils or avoiding various issues and conflicts related to gender role and sexual identity at school.

Elements of culture

Answering the question about elements of culture, 81% of teachers agreed that culture could be characterised by the following elements: everyday life, language, behaviour and manners, art, music and literature, traditions, values, attitudes and historical heritage. 40% of teachers considered that symbols, beliefs, norms, communication patterns, perception particularities and rituals are insignificant elements of culture. The collected data revealed controversies in teachers' views when they considered included traditions, but excluded rituals, included historical heritage but excluded cultural monuments, included behaviour and manners but excluded patterns of communication from the list of culture elements. This situation confirms teachers' traditional understanding of culture that emphasizes values of the so-called *high or elitist culture*. Although rituals are a part of traditions, understanding of *ritual* has been connected to traditions of pagan cults and is excluded from understanding of culture according to the elitist perspective. In general, *historical heritage* and *cultural monuments* share semantically similar meanings. Yet, in this study history and heritage are more considered to characterise elements of culture than cultural monuments that, according to the understanding of the high culture, indirectly indicate to non-spirituality and materialism.

The link between teachers' values and the hierarchical system of values characteristic of the epoch of modernism is revealed in their answers that behaviour and manners were considered to be rather inherent to culture than communication patterns. Although communication patterns include behaviour and manners, they are not identical. Noting behaviour and manners as significant elements of culture, teachers indirectly pointed out that formal aspect of communication was rather important to them than communication as a search for meaning. Educational process with adequate behaviour and manners as more important than meaningful communication is orientated towards a teacher-directed approach where discipline, recognition and effective reproduction of knowledge are preferred contrary to value orientation, attitude building, social skills development and identity formation.

Content of intercultural education

Sharing their view on the type of content which they considered to be related to intercultural education, 75% of teachers agreed that facts and knowledge about the traditions, history, lifestyle, geography and nature of different states, tolerance towards differences, interest in learning about differences, sharing different values, learning to cooperate and live together, an inclusive educational environment and support to every individual were significant elements of the content of an intercultural education. It confirms that teachers in general recognise the importance of intercultural issues that are included in school curricula and legislation that determine education in Latvia.

A rather detailed data analysis demonstrates that the recognition and prevention of stereotypes was considered an insignificant element of the content of intercultural education by 50% of teachers, whereas 86% of teachers considered the desire to preserve their culture as a significant aspect of intercultural education. Recognition and prevention of stereotypes is grounded in bias-free openness to others, creating a democratic environment for self-

expression for everyone. Indicating that the recognition and prevention of stereotypes is insignificant, teachers (46%) have indicated that their understanding of the content of intercultural education is insufficient and does not meet the diversity of cultural dimension in society. A considerable number of teachers (85%) emphasised that a desire to preserve the particularities of their culture is a significant aspect of intercultural education. Although this position highlights a strong attachment to one's own culture, it is rather ethnocentric in character and exclusion-oriented in opposition to the cross-cultural approach that observes how different cultures interact with each other.

School subjects that imply intercultural education

83% of teachers emphasised that school subjects of humanities, social, environmental science and arts were the most suitable for acquisition of content of intercultural education. 51% of teachers believed that intercultural education was insignificant in nature science and mathematics and 25% agree that natural sciences and mathematics were not suitable for intercultural education. A considerable number of teachers (68%) pointed out that intercultural education should not be integrated in all school subjects. Teachers' answers highlight that the content of intercultural education implies specific knowledge (languages, traditions, geographical and environmental information, art and cultural monuments) that is acquired in a traditionally oriented educational process. However, intercultural education focused on development of attitudes and communicative skills can be integrated as metacontent in any school subject. To do this, educators have to change teaching strategies, providing equal opportunities for all pupils. Such educational approach would not aim to recognition and reproduction of knowledge. It would rather encourage a purposeful acquisition of social skills, non-discriminative attitudes and sustainability-oriented values.

Intercultural education in the process of teaching and learning

The greatest part of the teachers (70%) believed that intercultural education was not merely the personal business of every individual. Teachers admitted that in general intercultural education should be purposefully organised and implemented in the educational process. The majority of teachers (90%) agreed that the teacher should create an educational environment in which every pupil feels accepted and safe, introduce pupils to the languages, traditions and customs of all cultures present in the class, ensure equal treatment, rights and study opportunities for all pupils, enhance the presence of various cultures using extracurricular activities, promote tolerant attitude towards each other, model a positive attitude towards every culture, organise parents' involvement in cultural exchanges, teach students about mutual support and cooperation, promote the pupils' understanding of their own culture among other cultures, promote recognition of similarities and differences of various cultures and facilitate the formation of students' cultural identity. These statements illustrate the heart of intercultural education. Generally they indicate a teachers' point of view intercultural education has to be included in the educational process. However, only 17% of teachers admitted that they promoted the conscious and purposeful development of intercultural skills in their pedagogical activity. Half of the teachers stated that their pedagogical activity towards promoting development of intercultural skills was mainly unconscious (55%), and some (20%) pointed out that it was rarely possible to integrate intercultural skills within the content of the school subjects they taught. As the state does not provide sufficient support to integrate intercultural skills within the content of school subjects, half of the respondents (57%) pointed out that

intercultural educational depended solely on teacher's own initiative. The incompatibility of the teachers' rich understanding of the content of intercultural education and their poor contribution to include intercultural education in educational process gives rise to the tendency to give politically "correct" answers which fact has been one of the characteristic behavioural tendencies during the times when continuous changes are the constant reality of life.

The role of media in society

Nowadays, media play a significant role in the exchange of information in all aspects of human life. The exchange of information not supported by media is rather rare at the personal level of communication. An analysis of teachers' views on media reveals that 54% of teachers emphasise the informative nature of media, noting that media provide information about the reality. However, a considerable portion of teachers (52%) think that media are not the constitutive source of information. Likewise, only 30% of teachers indicate that media make the world to be smaller and more approachable, while more than half of teachers slightly disagree (30%) and do not agree (40%) with it. The teachers' view that media are an insignificant source of information suggest that teachers have to broaden their understanding about media, their roles and the various ways they are used in contemporary society.

48% of teachers shared that the media communicate beliefs about unhealthy sexuality; while 51% of teachers emphasized that the role of media in sharing information about body culture is insignificant. Considering that teachers share a traditional understanding of culture that is based on the preservation of ethnicity and language, it becomes evident that notion that the media, as teachers believe, carry negative information about sexuality and body is not related to the understanding of body culture.

Media messages and cultural identity

Sharing their views about media message and its connection to the cultural identity of a person, 54% of teachers noted that media create stereotypes about minority cultures and advocate the ideology of the dominant culture. More than half of the teachers (69%) claimed that media politicise the world and serve commercial purposes. 60% of teachers agreed that media degrade people while 40% of teachers disagreed with that premise. Only one third of teachers indicated that they use the media in order to promote intercultural competences while the same number of teachers insisted that they do not see media as a means to be applied as a tool of intercultural education. In general, the teachers' view highlights media as a threat to person's cultural identity. It could be one of the reasons why teachers do not actively integrate media expertise with the content of school subjects they teach.

The role of media in education

Sharing their view about school subjects where media can be used, 80% of teachers agree that media can be successfully used in humanities, social, environmental, nature sciences and teacher education. 70% of teachers agree that media should be used in all the subjects. In their teaching, the most used digital media were the Internet (84%), audio teaching aids (65%) and video (54%). With regard to non-digital media, 95% of teachers use books, pictures and maps, and 74% of teachers indicate that they use photos. Teachers' experience

corresponds to contemporary tendencies that Internet has an ever-greater role in everyday life and education, merging several separate media (for instance, telephone, TV, radio, stereo) into one environment. However in general, a great portion of teachers are not aware of the fundamental use and circulation of media messages; they see media as more of a threat than as a tool of learning. Only 26% of teachers believe that media teach life skills, while most teachers slightly disagree (36%) and disagree (38%) with it.

54% of teachers use media in the process of teaching to present the new material, while 28% use media only sometimes and 18% do not use media at all. Only 32% of teachers expect students to use media when doing their homework. It means that for teachers, the media facilitate their work and are not means for promoting mutual interaction and participation. The audit report "Implementation of general education system in accordance to the proposed aims" conducted by the State Audit Office reveals that out of 54 observed lessons only 2 characterised skilful use of the new information technologies (LR Valsts Kontrole, 2007, Item 237.4). Possibly, teachers lack the necessary skills for the successful use of media in teaching because 60% of teachers note that students use media during project weeks and 46% admit that students use media during pair and group work. By encouraging the use of media during project weeks and group work, teachers allegedly create educational space for students' free and creative expression in some parts of the teaching/learning process, allowing students to work creatively and to choose their own priorities. The fact that 70% of teachers believe that the main purpose of media in society is to provide entertainment leads one to hypothesise that project weeks and group work which are rarely used in the traditional teaching/learning process are considered as an entertaining part of it. During the lessons, teachers mainly use simple dialogical forms of interaction, i.e. teachers ask questions and pupils give answers (LR Valsts Kontrole, 2007, Item 237.1); only 9 out of 54 observed lessons involved group work (LR Valsts Kontrole, 2007, Item 237.3). Thus, it becomes clear why a considerable part of teachers view application of media differently in the contexts of teaching and learning. During teaching, teachers perceive themselves as leaders and consequently media function as facilitators of teacher's work – visual and audio presentations. In the context of learning, however, teachers do not consider it essential that students use media because it could complicate power control and require new competencies to understand and evaluate students' work.

Summary

This study highlights the fact that global processes and their relevance to everyday life constitute one of the most challenging issues for teachers. The study shows that there is a gap between teachers' intentions of what should be practiced in schools in terms of intercultural and media education and their educational initiatives. In general, the teachers' view and experiences of intercultural education reveal that their understanding of culture, of content and the implementation of intercultural education is grounded in an ethnocentric interpretation. Teachers connect the content of intercultural education mainly with humanities and social science. Their answers indicate that teachers do not fully understand the connection between intercultural education and the formation of attitudes in the educational process and, namely, its link with educational metacontent issues. Another point is that the majority of teachers do not organise activities that promote the development of intercultural skills consciously. Instead, they rely on an unconscious application of these skills in their pedagogical praxis that indicate shortcomings of their professional mastery in terms of adjusting their teaching to the situation presented in a globalised society. One of the main reason for the controversies in the teachers' view on

culture and experience of teaching intercultural literacy is a lack of a coherent vision of intercultural education in *Basic Education Standard* and *Basic Education Standards* (LR Izglītības un Zinātnes ministrija, 2006), *Secondary Education Standard* and *Secondary Education Standard* (LR Izglītības un Zinātnes ministrija, 2008), *Basic Education Standard* (*Su baid eScet cso n dCaur ryr iEduul caa t i* (available at <http://isec.gov.lv/en/standards.shtml>), also in education policy and research in Latvia.

Likewise, teachers' view of media and the use of media in teaching demonstrates an insufficient understanding of media literacy and poor experience of introducing media in education. In general, teachers consider the basic function of media to be entertainment and the main side-effect is a threat. It could serve as one of the reasons why teachers are not excited about the promotion of the development of media skills and are not aware of non-critical consumption of media messages.

The gap between teachers' intentions and experience discovered by the study urges teacher educators to approach intercultural and media education in a rather conscious way. Teacher education should serve as an essential agent of change. However, intercultural and media education is not yet entirely recognised as a quality standard for teacher education as well.

Implementation intercultural and medial literacy as education metacontent issues

Processes of globalisation and inclusiveness, increased technological development and the re-evaluation of human potential challenge traditional conceptions and narratives of society and confront educators with an unfamiliar reality that goes beyond individualism, dogmatism, indoctrination and hierarchical structure of organisation and fosters the development of whole fields of education. Historically, teachers and teacher trainers have always faced social and technological innovations. Teachers are also some of the first to encounter the dynamically changing intercultural and media contexts, since it is they who should either to be ahead of the times and adapt educational content and strategies to the needs of students or lose the social contact and correspondence of education to the needs of students.

Implementation of intercultural and media literacy as metacontent issues of education should be initiated by the re-evaluation of the four main concepts: *multicultural identity*; *globalisation of culture*; *intercultural literacy and media literacy*.

(1) *Multicultural identity*. Everybody is multicultural as multiculturalism is natural human experience. A person's cultural identity is shaped by his or her nationality or ethnical belonging, religion (belief, faith, position, system of spiritual values), language, gender or sexual belonging, age or generation, physical and mental exceptionalities (both learning difficulties and advanced performance), profession (occupation, business, engagement), residence (rural and urban), class (economical status, income level), education level, etc. These characteristics are the types of culture. People can identify themselves with several cultural types simultaneously. According to Heyward (2002), an interculturally literate person is one who acknowledges his or her own transcultural identity and is able to "shift between multiple cultural identities" (p. 17).

Cultural types can be both mutually compatible and exclusive. Cultural conditions of different countries result in different views of national identity. Thus, society is not a patchwork of fixed identities but a web of crosscutting identifications or as Welsh (Velšs,

2005) puts it, “modern societies are multicultural and encompass a variety of life forms” (p. 243).

An argument that person’s cultural identity can simultaneously be shaped by several types of culture has to be considered in terms of the variety of these types. Besides, some types of culture are more visible in the educational process than others. Therefore, educators’ pedagogical mastery includes skills of ensuring equal possibilities and attitude, high expectations, purposeful support and a caring environment for pupils of all types in the educational process. Teachers have to learn how to recognise, honour and shape their teaching strategies to diverse cultural characteristics of pupils (Gay, 2000). Also, the voice of students should be considered as a source for learning.

(2) *Globalisation of culture*. Even if we speak about culture every day, it is rather challenging to grasp this notion. Conceptual understanding of culture represents it as a dynamic and complex process of meaning construction. Also, culture can be considered as a product of human creative activity.

In the present time any society, both global and national identity is multicultural. Cultural processes influenced by multiculturalism expand their traditional form, are enriched by different content and challenge their habitual meaning. The process of globalisation emphasises that no culture is authentic and self-sufficient (Stigers, 2008). That is confirmed by a large scale of expansion of cultures, their mutual influence and the construction of new symbolic cultural expressions. Similarly, these changes initiate the development of critical theories on culture with an aim to interpret the ongoing processes.

According to Welsh (Velšs, 2005), we are living in a time when the traditional isolation-based structure of a culture is changing into transcultural structure. Thus, understanding of culture should overlook the dichotomised division into civilisation vs. nature, wide culture vs. subculture, high culture (literature, art, music, fashion) vs. low culture (mass, popular), open culture vs. closed culture, public culture vs. private culture. These understandings are homogeneous as they imply isolation, separation, inequality and polarity.

These two understandings are crucial for teachers as they have strong relevance for education. Educators have to consider that the traditional understanding of culture as ethnical affiliation is rather flat and politically tactless. If teaching to perceive, to understand and to interact with others is built on the traditional understanding of culture, such teaching facilitates a feeling of disconnectedness, insecurity or disrespect towards the unknown and the strange. Traditional understanding of culture does not encourage equal interaction in the environment where different communication styles, needs, norms and traditions are represented. The current expression of culture can be characterised by the processes of confluence, an interconnection that is beyond contrasts between one’s own and other’s. It provides a means for teachers to reconsider their understanding of culture (Austers, Golubeva, & Strode, 2007).

The understanding of the concept “culture” should be based on a systemic approach that considers the complexity of society with all groups of a culture sharing their multiple perspectives and interacting together towards a common goal. Systemic thinking gives a rather detailed picture of reality. It emphasises the relationships between a system’s parts, rather than the parts themselves fostering the best in human nature. Based on a systemic approach, the understanding of cultural constructions can be rather complex. According to Welsh (Velšs, 2005), cultural constructions can be differentiated both horizontally “regionally, socially and functionally different cultures, higher and lower, leading and alternative or scientific, technical, artistic, religious etc. cultures” and vertically “gender differences, for instance, interlace ethnic, class or professional cultures – differences between female and male culture, homosexual, lesbian and gay trends” (p. 243).

The systemic approach has become the widely accepted framework in education. This approach has a power and a potential to observe the connectedness of events, to see common patterns and their influence on pupils' actions and behaviours and to identify the needed supports and barriers to successful learning. It contributes to viewing an educational institution as a complex interconnected set of relationships that create a unique identity and culture. Thus, the vision provided by a whole-system approach initiate not just practical changes but a shift in attitudes.

Each type of culture has its own cultural elements that can be transferred from generation to generation. They can be both invisible/implicit and visible/explicit. Visible elements are closely connected with the behaviour. They are rituals (ceremonies, festivals that implement values and norms) and different ways we interact with each other. Institutions (social structures that implement values and norms), heroes (real or fictitious characters who are models of culture), artefacts (things or material objects that are visual, observable products of a human activity) also belong to the group of visual elements. However, the essence of culture is not in the artefacts and other tangible elements (Banks & McGee Banks, 2001). The essential elements of culture are invisible and intangible. Culture essentially consists of symbolic or ideological elements that imply values, norms and attitudes. Both of the elements, as well as the tangible cultural elements and the way people perceive, interpret and use them are mutually interrelated.

For educators, this subtle area is rather challenging. Teaching and exploring all cultural elements requires a genuine awareness of cultural aspect in general. Some elements constitute more significant belonging to the particular culture than others. Some of the elements are easier to be taught. Teaching of cultural elements differs in each educational situation. The metaphor of an iceberg or an onion is widely used by educators as a visual interpretation of interrelatedness of invisible/implicit and visible/explicit cultural elements. Thus, culture can be represented by the elements seen "above the water" that are supported with more subtle elements lying "under the water".

(3) *Intercultural literacy*. Foundations of intercultural literacy are framed by three interrelated components – (1) knowledge and understanding; (2) skills and competencies; (3) attitudes and values.

1. The first component of intercultural literacy is *knowledge and understanding* about own culture, about other cultures especially those that we encounter in our daily life, about interaction of culture and other dimensions of human activity – education, politics and about legislature connected with culture – human rights and duties, etc. This component sends the message that we all perceive things, think and act in a different way. Reflection on these issues from the perspective of diversity also encourages critical self-evaluation.
2. The second component of intercultural literacy is *skills and competencies* to apply knowledge and understanding in practice: the recognition of a multicultural situation (awareness that diverse opinions about one and the same thing can be present, diverse behaviours, recognition of one's own culture among other cultures, recognition of one's own and other's uniqueness,...), intercultural communication skills (ability to communicate in the environment where different communication styles, needs, norms, traditions are represented; an ability to listen,...), intercultural interaction skills (equal/non-hierarchical, non-prejudiced interaction and cooperation, mutual benefit,...), flexible behaviour (taking risk, overcoming insecurity, adjustment to unknown conditions,...) and critical analysis of multicultural situation.

3. The third component of intercultural literacy is *values and attitudes*: awareness of own multilateral cultural belonging and identity, approval of multicultural situation, respect towards the unknown and the strange, openness to diversity, empathy, tolerance, inclusion, sensitivity, joy of exploration and creativity. Being self-critical, a pupil is able to recognise his/her patterns of thinking, attitude and behaviour are mainly socially and culturally learned. Global ideas about the truth are also socially and culturally constructed.

Intercultural literacy that is both the content of intercultural education and metacontent of education should be taught to a child firstly by her/his parents and other family members, but not mainly, as it is considered by teachers (Austers, Golubeva, & Strode, 2007). Briška and other education researchers (Rubene, Briška, Klišāne, & Maslo, 2006) highlight that intercultural literacy (sociocultural competency) represent the strategic aim of education and should be introduced in education standards and programmes. Their model of learning-based educational standards clearly implies an intercultural dimension of metacontent in a pre-school, school, professional and higher education setting as it is equally the responsibility of both family and formal education at schools and universities.

The teacher's individual attempt to implement intercultural education requires her/his strong position, motivation and courage. Implementing all three components in education, teachers should move from an essentialist understanding of the curriculum to a more constructive one where pupils' critical thinking is encouraged (Valbis, 2005). However, success initiated by the whole-school approach will be rather more effective than changes that take place in a single classroom by an isolated teacher. Values should become words and actions that have to be reinforced until they are integrated in school's culture.

(4) *Media literacy*. Foundations of media literacy are formed by skills to gain access, analyse, experience and create media messages and/or products in different media environments, forms and contexts. Media literacy is the ability combined of (1) skills of producing media messages and (2) skills of critical viewing media.

1. *Production of media messages* implies skills of media message creation either individually or participating in networks. It is applicable to all media. Media message creation can also be a means of self-expression. Thus, joy of creation, exploration and discovery are significant motivators in creating media messages. Skills in producing media messages can be acquired either separately or together with skills in viewing media messages critically.
2. *Critical viewing of media* implies skills that encourage questioning about what is seen and heard in media, about the composition of media messages, about the intended content of media message and its difference from the delivered content, about interactivity of media messages and their role in a particular cultural context, about the benefits acquired from the creation of the particular media message and the owners of the benefits, about the mechanisms of public and commercial relations and propaganda hidden in media messages. Critical viewing of media also includes the skill to manage one's own use of media.

Media are a part of the everyday life of young people, so the use of digital media as a learning tool provides extra motivation for pupils and is based on their interests and everyday realities (Stakle & Belousa, 2007; Stakle, 2008). Pupils are enthusiastic consumers of information provided by media, and the classroom can be an excellent place to discuss and deconstruct biases, stereotypes and destructive images of cultural groups. Digital technologies can stimulate innovative solutions to traditional problems and support

learning. Thus, digital media in education determine the focus on values, attitudes, critical thinking and consciousness rising of students rather than simply on knowledge acquisition. It is clear that pupils are often more competent than their teachers in the technical use of media and are more often involved in multicultural situations. Teachers ought not to compete with media environment or avoid using it but rather promote the inclusion of media and intercultural literacy in educational process, thus promoting the correspondence of teaching and learning to contemporary social, cultural and technological reality.

If teachers do not introduce critical reading of media messages in their teaching and accept the situation where pupils' attitudes regarding media messages are formed by media environment and/or non-formal education, media messages could become an essential drive shaping pupils' attitude building and value orientation. The personality whose attitudes and values have developed under the influence of media is open for non-critical consumption of media message environment. Thus, formal education should provide an opportunity to acquire media literacy that promotes formation of attitudes and values in a meaningful learning, encourages perceiving interconnection between everyday life, entertainment and education and accepting responsibility for pupils' daily choices made in media environment.

Media literacy is one of the abilities among print, numeral and technological literacy that nowadays characterises a literate person. Media literacy development is an ongoing process that constantly evolves. Media literacy acquisition should be approached from a constructivist framework that is the core of a pupil-centred approach and implies an engagement of pupils in active construction and transformation of their own learning process and outcomes rather than in instrumental, passive and value-neutral transmission of information. Thus, constructivism is considered as an epistemology that encourages pupils to be actively involved in construction and reconstruction of their knowledge, attitude and actions in a culturally sensitive educational environment. Implementation of this epistemology is based on *learning from* rather than *learning about*, highlights collaboration and supports cultural sensitivity of both teachers and pupils.

Although these concepts – *multicultural identity, globalisation of culture, intercultural literacy and media literacy* – are described mainly in terms of metacontent of education, to provide for their sustainable implementation they should also be addressed in a vision, mission and policy statements, staff development and education methodology, education materials and monitoring/evaluation of education.

Implementation of the described concepts in teacher education can be started with identifying issues of metacontent that characterise or are related to the particular study course or study program. Afterward, the content of the study course has to be restructured by highlighting metacontent issues and integrating them with content issues into meaningful units. Intercultural and media issues in teacher education are approached from a constructivist and transformative framework that form the core of a pupil-centred approach and imply an engagement of students in active construction and transformation of their own learning process and outcomes rather than in instrumental, passive and value-neutral transmission of information. Thus, constructivism and transformation serve as epistemologies that encourage pupils to be actively involved in challenging, construction and reconstruction of their knowledge, attitude and action in a culturally sensitive educational environment. Implementation of these epistemologies is based on *learning from* rather than *learning about*, highlights collaboration and supports cultural and media sensitivity of both teacher educators and pupils.

Conclusion

Both intercultural literacy and media literacy are inseparably related and interactively evolving on a common path to raise global awareness and knowledge on worldwide issues. Intercultural and media literacy as education metacontent issues share common scope with several current educational perspectives, such as, Education for Sustainable Development, Human Rights Education, Education for Peace and Justice, Citizenship Education, Intercultural and Interfaith Education, Development Education and Global Education.

Considering intercultural and media literacy as metacontent issues of formal education even if it is recognised throughout preschool and including higher education, is merely an incomplete contribution to ensure sustainable functioning of society in the era of globalisation. To create inclusive and open environment in society, all three types of education, formal, non-formal and informal have to consider the issues of intercultural and media literacy as a priority of educational content and policy. Moreover, both governmental and non-governmental sectors have to assume equal responsibility and involvement in its implementation. Multi-disciplinary vision and action to increase understanding about urgent intercultural issues, such as tolerance, equality, inclusion, and to encourage interculturality and media literate co-existence and cooperation of individuals and organisations should be particularly promoted.

Latvian national development plan 2007–2013 (LR Reģionālās Attīstības un Pašvaldību Lietu Ministrija, 2006) recognizes education as the most important factor to increase the quality of life that is the goal of the country's growth. An educated and creative personality is considered to be the main driving force and beneficiary of this development because human knowledge, intellect and its practical application are the country's key development resource. The national growth model "People First" is based on human-centred approach where the main strategic principles are inclusion, networking, balancing of development and reduction of isolation. It is rather significant that this plan underlines several turning points; one of them is a turning point in attitude that can be reached by education that recognises metacontent issues.

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