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Editorial

I would like to thank all the members of the Editorial board for their hard work, carried out behind the scenes, endlessly reviewing and commenting out the constant stream of articles that we receive week by week from all parts of the world. My thanks are also due to contributors to this issue for their forbearance and patience in the necesseraly long process of preparing articles for publication.

This issue of the JTEFS consists of seven papers that deal with issues ranging from a factor that may impact the sustainability of current teacher education modes – attitudes toward inclusion of students with disabilities in the mainstream classroom – to a theoretically-grounded pedagogical systems theory of early childhood education and care. The papers also demonstrate the range of methodologies which can be applied to studies in teacher education for sustainability and provide ideas and results from a number of different national and cultural perspectives.

The paper by Gill and her colleagues examines the unacceptable level of sustainability of the teaching profession, which is of concern to both teacher training institutions and the local education agencies. This paper looks at one factor that may impact the sustainability of current teacher preparation models: attitudes toward inclusion of students with disabilities in the mainstream classroom.

The theme of people's attitudes – the content of educational action research – is also a key feature of the paper by Salīte and her doctoral students. This paper discloses a fragment of a broader educational research which is aimed at designing the learning environment that would facilitate both pre-service and in-service teachers' research skills. At the same time, this educational action research attempts to highlight the methods by means of which it would be possible to promote the idea of teacher–researcher in higher education.

The paper by Purg and Zakrajšek focuses on new technologies for sustainable teaching and learning. This paper provides the results of a case study on diminishing students' workload and increasing motivation through the use of information and communication technologies. The authors believe if education for sustainable development must reflect environmental, societal and economic conditions and be culturally appropriate, then it needs to openly consider and gradually embrace the condition of techno culture, moving technology into the focus of education for sustainable development in a reflected and critical, but also affirmative and participatory manner – thus fostering information and communication technologies as one of the pillars to a sustainable future.

The paper by Poom-Valickis and Elvisto elaborates on students' motives and satisfaction with studies in the area of natural sciences and their willingness to continue studies in teacher education. The importance of this study substantiates the fact that teachers of natural sciences play a key role providing education for sustainable development. However, Estonian students' interest in studying natural sciences and their willingness to continue studies in teacher education have decreased.

The paper by Sakk and her colleagues dwells upon the quality of family relations in ensuring sustainable education. This family research is crucially important to teacher education and training in that it reveals important facts about students' socialization. In many respects, teachers lack insight into and experience with the complexities of family interactions within their multiple ecological settings.

The following paper by Ololube and his colleagues examines the professional and non-professional methodological competencies of secondary school teachers. The main focus of this study is to probe the impact of professional and non-professional methodological competencies as a predictor of teaching effectiveness. Theoretically, this study provides an outline of school effectiveness and quality improvement. At the practical level, this study might guide school leaders, education planners and policy makers in their school effectiveness and quality improvement endeavours.

The paper by Harkonen proposes a new pedagogical systems theory of early childhood education and care. This theory, as the author acknowledges, can help teachers to become responsible mentors for sustainable development, especially for children's education for sustainable human development and well-being.

Finally, it is worth reiterating to potential contributors that strict adherence to the Notes for Contributors, published on the back cover of every issue of the JTEFS, is essential if the assessment, acceptance, editing and publication of articles is to proceed smoothly and in timely fashion. The relevant information can also found at: http:/versita.com/science/education/jtes/.

Astrida Skrinda

THE IMPACT OF INITIAL FIELD EXPERIENCE ON PRE-SERVICE TEACHERS' ATTITUDE TOWARD INCLUSION

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Abstract

In the United States, up to 50% of new teachers leave the profession within 5 years (Smith & Ingersoll, 2004). This unacceptable level of sustainability of the profession is of concern to both teacher preparation institutions and the local education agencies. This paper looks at one factor that may impact the sustainability of current teacher preparation models: attitudes toward inclusion of students with disabilities in the mainstream classroom. Participants in the study were currently enrolled in 3 different phases of a teacher preparation programmes at a regional university in the United States. A survey was administered at the beginning and at the end of the semester. Results indicate that students become progressively more negative toward inclusion of students with disabilities in the general education classroom yet continue to support the social value of having all students in a general education setting. Results from the survey are presented and implications for practice are discussed.
Key words: inclusion; teacher preparation; attitudes; disabilities; pre-service.

Introduction

In the United States, up to 50% of new teachers leave the profession within 5 years (Smith & Ingersoll, 2004). This unacceptable level of sustainability of the profession is of concern to both teacher preparation institutions and the local education agencies. This paper looks at one factor that may impact the sustainability of current teacher preparation models: attitudes toward inclusion of students with disabilities in the mainstream classroom.

In the United States, the passage of Public Law 94-142 in 1975 and its reauthorization as the Individuals with Disabilities Education Act (IDEA) in 1997 and 2004 dramatically changed the way students with special needs are educated. This law requires that students with disabilities must receive instruction along with students without disabilities to the maximum extent appropriate. While IDEA does not mandate inclusion, it does require that the first placement considered for students with disabilities

is the general education classroom with supplementary aids and services. Coupled with this move toward inclusion is the wave of increased accountability that demands that all children participate in a standards-based education (Lindsey, Roberts, & Campbell-Jones, 2005). Research indicates that the teacher is the most important element that affects student learning in the classroom (Marzano, 2003). Even more importantly, Mcleskey and Waldron (2007) suggest that the attitudes and expectations of teachers directly affect the academic performance of children in the classroom.

The social model of disability theory and social learning theory suggest that the societal climate, including the environment, people and behaviours can have a significant impact on anyone within that context including teachers, students (with and without disabilities) and pre-service teachers. Further the social model of disability theory proposes a difference between impairment and disability. Impairment is "an attribute of the individual mind or body" and disability is "a relationship between a person with impairment and society" (Barnartt & Altman, 2001, p. 17). A person with an impairment may have to engage in activities in ways that are different from most people, but society frequently sees this as an inability to engage in "normal" activities. Thus disability comes not only from impairment but also from reaction to the barriers that restrain engagement in activities. These barriers may be both physical and attitudinal and serve to constrain the lives of those with impairments.

The problem and the purpose of the study

Pre-service teachers are forming their attitudes and opinions toward students with disabilities. Informal surveys indicate that most pre-service teachers have had little if any experience with students with disabilities. Given the importance of attitude in successfully meeting the academic needs of these children, examining their developing attitudes as they prepare to step in the classroom provides valuable information to the teacher preparation programme as to whether additional or different experiences need to be provided. Do current teacher preparation programmes adequately address the needs of pre-service teachers as reflected in their attitudes toward children with disabilities? Is the current model of teacher preparation developing a sustainable teaching force?

The purpose of this study was to investigate the attitudes of pre-service teachers toward students with disabilities at three definite points in the training programme. Specifically, it seeks to find out the answers to two questions.

1. Do pre-service teachers' attitudes change as they are exposed to classrooms in which students with and without disabilities work together?
2. Do pre-service teachers' attitudes change as they assume more teaching responsibilities in these classrooms?

Context and method

The Educator Certification Programme within the College of Education and Psychology is divided into three programme areas: grades EC-6, grades 4–8 and grades 8–12. The initial certification programme is a collaborative, field-based programme. The programme provides for the mediated induction of students into the teaching profession

through field basing of professional education course work in a number of professional development school sites. This model emphasizes the importance of sustainability as a process of life-long professional development.

The EC-6 programme is divided into four Phases. Phase I classes are completed on campus and include a *Survey of Exceptionality* class and nine hours of observation in public schools. Phase II students spend one day a week in schools and teach a minimum of four lessons during the semester. During Phase III students take a two-semester credit hour class entitled, *Educational Strategies for Individuals with Special Needs* and are in the schools 10 hours a week and teach three lessons per week. Finally, Phase IV students are student teaching in schools.

This study used a survey administered to pre-service teachers in a regional university in the southwestern United States. The population of the study comprised all pre-service teachers in Phase II, Phase III and Phase IV, Pre-Service teaching in the School of Education in the 2008 autumn semester. The survey was distributed by the researchers to all pre-service teachers (Phase II (47), Phase III (33) and Pre-Service Teachers (60)) in August during orientation meetings for the semester. The same survey was re-administered in December at the end of the semester. Survey data were analyzed using SPSS 15.0 for Windows. Data were examined to identify changes in attitudes over the semester. Data were aggregated at the group level.

Findings

Phase II students had the least changes in attitudes. However, they became more likely to believe that the needs of students with disabilities can best be served through special separate programmes or classrooms (.17) and that it is difficult to maintain order in a general education classroom that contains students with disabilities (.12). They also were more likely to believe that placing students with disabilities in a general education setting would help them be more independent.

Table 1. Phase II attitudes toward students with disabilities

	August		December	
	Agree	Disagree	Agree	Disagree
Students with disabilities need to be in special classrooms.	25%	75%	33%	67%
Students with disabilities are more difficult to teach than their non-disabled peers.	45%	55%	36%	64%
Mixing students with disabilities and students without disabilities in one class will foster understanding and acceptance of differences among them.	100%		100%	
Parents of students with disabilities are a greater problem for general education classroom teachers.	2%	98%	6%	94%

Sequel to Table 1.

Inclusion of students with disabilities will require the retraining of the general education staff.	77%	23%	76%	24%
The needs of students with disabilities can best be served through special separate programme or classrooms.	39%	61%	49%	51%
The extra attention students with disabilities require will take away from their non-disabled peers.	33%	67%	40%	60%
It is difficult to maintain order in a general education classroom that contains students with disabilities.	12%	88%	24%	76%
The challenge of being in a general education classroom will promote the growth and development of students with disabilities.	80%	20%	91%	9%
Providing instruction in a self-contained or resource classroom has a negative effect on the development of students with disabilities.	30%	70%	28%	72%
The interaction between students without disabilities and students with disabilities in the general education setting may be harmful to students without disabilities.	11%	89%	6%	94%
Placing students with disabilities in a general education setting will help them be more independent.	80%	20%	91%	9%
Students with disabilities are more of a burden to teach than their non-disabled peers.	11%	89%	19%	81%
Students with disabilities should not be in the same class as students without disabilities.	14%	86%	13%	87%
Students with disabilities interact best with other students with disabilities.	11%	89%	16%	84%
Students with disabilities cannot learn the same things (on the same level) as their non-disabled peers.	25%	75%	22%	78%
Students with disabilities will develop skills more rapidly in a special education classroom than in a general education classroom.	30%	70%	28%	72%

Phase III students' attitudinal changes were consistently less favorable toward the student with disabilities. Phase III participants were significantly more likely to believe that parents of students with disabilities are a greater problem for general education teachers (.01). They were also more likely to believe the interaction between students without disabilities and students with disabilities in the general education setting may be harmful (.11). They were slightly more likely to believe students with disabilities need to be in special classroom (.13).

Table 2. Phase III participants' attitudes toward students with disabilities

	August		December	
	Agree	**Disagree**	**Agree**	**Disagree**
Students with disabilities need to be in special classrooms.	31%	69%	39%	61%
Students with disabilities are more difficult to teach than their non-disabled peers.	35%	65%	42%	58%
Mixing students with disabilities and students without disabilities in one class will foster understanding and acceptance of differences among them.	97%	3%	90%	10%
Parents of students with disabilities are a greater problem for general education classroom teachers.	7%	93%	5%	95%
Inclusion of students with disabilities will require the retraining of the general education staff.	59%	41%	79%	21%
The needs of students with disabilities can best be served through special separate programme or classrooms.	48%	52%	48%	52%
The extra attention students with disabilities require will take away from their non-disabled peers.	35%	65%	36%	64%
It is difficult to maintain order in a general education classroom that contains students with disabilities.	10%	90%	16%	84%
The challenge of being in a general education classroom will promote the growth and development of students with disabilities.	100%		81%	19%
Providing instruction in a self-contained or resource classroom has a negative effect on the development of students with disabilities.	40%	60%	29%	71%
The interaction between students without disabilities and students with disabilities in the general education setting may be harmful to students without disabilities.	7%	93%	11%	89%
Placing students with disabilities in a general education setting will help them be more independent.	93%	7%	85%	15%
Students with disabilities are more of a burden to teach than their non-disabled peers.	14%	86%	6%	94%
Students with disabilities should not be in the same class as students without disabilities.		100%	16%	84%

Sequel to Table 2.

Students with disabilities interact best with other students with disabilities.	7%	93%	17%	83%
Students with disabilities cannot learn the same things (on the same level) as their non-disabled peers.	14%	86%	27%	73%
Students with disabilities will develop skills more rapidly in a special education classroom than in a general education classroom.	31%	69%	35%	65%

Analysis of the data indicates that pre-service teacher participants (phase IV) have the most significant changes in attitudes toward students with disabilities. After the pre-service teaching experience, participants were significantly more likely to believe students with disabilities should be in a special classroom (.07), that students with disabilities take time away from their peers (.01), that it is difficult to maintain order in a classroom that has students with disabilities (.05), that students with disabilities should not be in the general education classroom (.02), that students with disabilities cannot learn the same things as their non-disabled peers (.10), and that students with disabilities will develop skills more rapidly in a special education classroom (.01). They are significantly less likely to believe mixing students in the general population will promote growth and understanding (.05).

Table 3. Pre-service teacher participants' attitude toward students with disabilities

	August		December	
	Agree	**Disagree**	**Agree**	**Disagree**
Students with disabilities need to be in special classrooms.	26%	74%	54%	46%
Students with disabilities are more difficult to teach than their non-disabled peers.	48%	52%	48%	52%
Mixing students with disabilities and students without disabilities in one class will foster understanding and acceptance of differences among them.	93%	7%	84%	16%
Parents of students with disabilities are a greater problem for general education classroom teachers.	7%	93%	11%	89%
Inclusion of students with disabilities will require the retraining of the general education staff.	44%	56%	72%	28%
The needs of students with disabilities can best be served through special separate programme or classrooms.	41%	59%	48%	52%

Sequel to Table 3.

The extra attention students with disabilities require will take away from their non-disabled peers.	41%	59%	54%	46%
It is difficult to maintain order in a general education classroom that contains students with disabilities.	10%	90%	22%	78%
The challenge of being in a general education classroom will promote the growth and development of students with disabilities.	88%	12%	77%	23%
Providing instruction in a self-contained or resource classroom has a negative effect on the development of students with disabilities.	28%	72%	20%	80%
The interaction between students without disabilities and students with disabilities in the general education setting may be harmful to students without disabilities.	8%	72%	7%	73%
Placing students with disabilities in a general education setting will help them be more independent.	79%	21%	72%	28%
Students with disabilities are more of a burden to teach than their non-disabled peers.	17%	87%	14%	86%
Students with disabilities should not be in the same class as students without disabilities.	10%	90%	14%	86%
Students with disabilities interact best with other students with disabilities.	18%	82%	21%	77%
Students with disabilities cannot learn the same things (on the same level) as their non-disabled peers.	15%	85%	33%	67%
Students with disabilities will develop skills more rapidly in a special education classroom than in a general education classroom.	36%	64%	52%	48%

Overall, the change in attitude experienced by these future teachers seems to be a less favorable attitude toward students with disabilities. The pre-service teacher experience in the classroom is most likely to result in a negative change in attitude. There was, however, strong endorsement of the social values of students with and without disabilities interacting in the general education setting.

Table 4. Comparison of pre-service teacher attitudes toward students with disabilities:
December

	Phase II		Phase III		Student Teaching	
	Agree	Disagree	Agree	Disagree	Agree	Disagree
Students with disabilities need to be in special classrooms.	33%	67%	39%	61%	54%	46%
Students with disabilities are more difficult to teach than their non-disabled peers.	36%	64%	42%	58%	48%	52%
Mixing students with disabilities and students without disabilities in one class will foster understanding and acceptance of differences among them.	100%		90%	10%	84%	16%
Parents of students with disabilities are a greater problem for general education classroom teachers.	6%	94%	5%	95%	11%	89%
Inclusion of students with disabilities will require the retraining of the general education staff.	76%	24%	79%	21%	72%	28%
The needs of students with disabilities can best be served through special separate programme or classrooms.	49%	51%	48%	52%	48%	52%
The extra attention students with disabilities require will take away from their non-disabled peers.	40%	60%	36%	64%	54%	46%
It is difficult to maintain order in a general education classroom that contains students with disabilities.	24%	76%	16%	84%	22%	78%
The challenge of being in a general education classroom will promote the growth and development of students with disabilities.	91%	9%	81%	19%	77%	23%
Providing instruction in a self-contained or resource classroom has a negative effect on the development of students with disabilities.	28%	72%	29%	71%	20%	80%

The interaction between students without disabilities and students with disabilities in the general education setting may be harmful to students without disabilities.	6%	94%	11%	89%	7%	73%
Placing students with disabilities in a general education setting will help them be more independent.	91%	9%	85%	15%	72%	28%
Students with disabilities are more of a burden to teach than their non-disabled peers.	19%	81%	6%	94%	14%	86%
Students with disabilities should not be in the same class as students without disabilities.	13%	87%	16%	84%	14%	86%
Students with disabilities interact best with other students with disabilities.	16%	84%	17%	83%	21%	77%
Students with disabilities cannot learn the same things (on the same level) as their non-disabled peers.	22%	78%	27%	73%	33%	67%
Students with disabilities will develop skills more rapidly in a special education classroom than in a general education classroom.	28%	72%	35%	65%	52%	48%

Implications for practice

The research has implications for development of a sustainable model for preparation of pre-service teachers. Most teacher preparation programmes in the United States utilize The Interstate New Teacher Assessment and Support Consortium's *Model Standards for Beginning Teacher Licensing, Assessment and Development: A Resource for State Dialogue* (1992) referred to as the INTASC Standards as the guide to identify the knowledge, dispositions and performances that new teachers should possess as a result of their educational preparation programme.

The INTASC Standards (2001) state that "*...all teachers are responsible for providing an appropriate education to students with disabilities*" and "*all teachers, both general educators and special educators, must have knowledge and skills related to their subject matter discipline and the principles of effective teaching and learning as well as specific knowledge and skills drawn from the field of special education*" (p. 1).

The question is how to operationalize these premises in a teacher education programme so pre-service teacher's values and beliefs are consonant with these principles as a result of their teacher education preparation. Traditionally, most institutions provide course work in special education with an assumption that knowledge about the field of special education will impact the pre-service teacher's values and beliefs. In addition, it is an accepted practice that students should be immersed in public schools throughout their teacher preparation so they experience working with students throughout the various phases of their preparation as a teacher. It is assumed that formal training and applied experiences will positively impact the teacher's values and beliefs about teaching and students. Although the teachers in this study received two courses in special education and had extensive field experiences their beliefs and values concerning students with disabilities actually deteriorated during their programme.

One intervening variable that could affect pre-service teacher's beliefs and values is their interactions with the teachers in the field. If their mentor teachers possess negative feelings toward the inclusion of students with disabilities in their class this could influence the pre-service teacher's values and beliefs.

What could teacher preparation programmes do to develop a sustainable model that will increase the likelihood that a pre-service teacher will develop positive values and beliefs about working with children with disabilities?

A series of recommendations are presented as a result of this research.

1. University faculty should model a positive perception of students with disabilities in their classes.
2. All teacher education courses should address working with students with disabilities as appropriate.
3. Pre-service teachers should have the opportunity to watch teachers utilize successful practices with students with disabilities.
4. University faculty should engage pre-service teachers in a dialogue about their experiences working with students with disabilities throughout their field experiences.
5. Pre-service teachers should have the opportunity to reflect on their experiences in working with students with disabilities perhaps through journaling experiences.

This list is not exhaustive. There are other strategies that can complement the aforementioned to create a comprehensive programme that will foster positive values and beliefs about working with students with disabilities.

A second major consideration in developing a sustainable model is the field placement of the pre-service teachers. University faculty should make every effort to ensure that pre-service teachers are placed in classrooms in which teachers display a positive attitude toward students with disabilities. Each preparation programme should examine its selection process to choose mentor teachers. How is the issue of special education addressed in this process? Is there a history of success with students with special instructional needs in the mentor's classroom? Is there a collaborative culture on the campus that suggest special educators and regular educators work together to meet the needs of all students. Are there opportunities for the university supervisors to positively impact the climate of the school?

Conclusion

With the goal of developing a sustainable model of teacher preparation, programmes are challenged to develop teachers who can work successfully with students with disabilities. This is both a legal requirement and a moral imperative. However, this study suggests that many pre-service teachers develop negative attitudes towards students with disabilities during their pre-service preparation programmes. Current classroom curriculum, field placements and the selection of mentor teachers must be carefully reexamined to identify how to better prepare new teachers to handle the reality of today's classroom expectations. Teachers leaving the field frequently refer to lack of support and the challenges of classroom management as reasons for their departure. If new teachers enter the field with negative attitudes toward students identified as having learning disabilities, support will be crucial to their success. From the findings in this study, this support must begin in the field experiences through strong mentoring programmes that address successful teaching strategies while developing relationships that encourage reflective teaching approaches. With a strong foundation in teaching and a mediated induction period that emphasizes success for all students, a sustainable teaching force is possible.

This study looked at overall attitudes of pre-service teachers. Additional studies need to examine the specific variables that may be impacting these teachers in training. However, even without more knowledge about the specific variables, pre-service programmes and university faculty must be cognizant of how they can address this issue and foster positive beliefs and values about providing appropriate education for all.

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EDUCATIONAL ACTION RESEARCH FOR SUSTAINABILITY: SEEKING WISDOM OF INSIGHT IN TEACHER EDUCATION

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Abstract

The paper presents experience from educational action research in teacher education, which was obtained by conducting an investigation with first year students during the first semester of their studies. The aim of this action research is focused on the concept of phronesis, which was theoretically substantiated by Aristotle and further elaborated by several contemporary scholars. The paper emphasises the need to recognise different kinds of action research.

This study focuses on the investigation of specific characteristics of phronetic processes. The content of our educational action research is people's attitudes toward own and other species. It was considered a tool for investigating the research aim, which is to develop the ability to find wisdom of insight in phronesis. Three stages of prhonesis (A, B and C) can be distinguished in this educational action research. This article reflects the organisation of action research and evaluates the use of communicative space at the initial stage of research from the perspective of researchers and research participants. The paper also contains evaluation of research outcomes concerning the extension of communication discourse and the evaluation of experiences regarding attitudes towards own and other species in various contexts. Finally, the paper proposes a brief review of tendencies that reflect changes in the research participant opinions. Discussion and conclusions reflect the specific features of phronetically-oriented action research. The paper presents the first experience from phronetically-oriented action research and seeks conditions for promoting wisdom of insight (phronetic skills) in communication and through discourse.

Key words: educational action research; phronesis; attitudes as content; communication through discourse; phronetic skills; wisdom of insight.

General context of research

This paper discloses a fragment of a broader educational action research which is aimed at designing the learning environment that would facilitate teachers' research skills in teacher education. At the same time, this educational action research attempts to highlight the methods by means of which it would be possible to promote the idea of the teacher–researcher in higher education. Thus, the general aim of this study is to promote reorientation of teacher education toward sustainability in educational action research.

Our experience with educational action research has led us to believe that each new case of educational action research confirms the general characteristics of this research approach. At the same time, each new action research calls for consideration of specific aims, content and values and requires the identification of frames of reference that correspond to the particular research case. It is the issue of diversity within action approach, or the *nuances* of specific action research cases that should be considered in every action research.

We believe that the concept of nuance permits persons to more deeply examine the diversity that can become more or less pronounced during co-action in action research. Identifying nuances in qualitative research, therefore, allows a more nuanced description of the obtained data. The concept of nuance is used in the works of Mezirow and his followers (Mezirow, 2000). These scholars consider the uniqueness of different frames of reference as their potential nuances.

Usually, the aim of action research is to discover new *knowledge* that can contribute to solving a particular problem. The aim of this action research does not emphasise creating traditional knowledge; it is focused on seeking *wisdom*. The reason that prompted such a choice is the tendency that sustainability is frequently viewed as people's wisdom to live in harmony with the world.

Scientific articles published at the turn of the 20th–21st century reveal a tendency to refer to Aristotle's beliefs about the development of wisdom as the goal of education (Birmingham, 2004; Grint, 2007). In Aristotle's opinion, it is essential to acquire not only theoretical knowledge (*episteme*) and skills (*techne*), but also practical wisdom (*phronesis*) (Aristotelis, 1985; Birmingham, 2004; Flyvbjerg, 2004; Grint, 2007). Aristotle regarded experience supplemented by reflection as a source of *phronesis*. This term – *phronesis* – is translated in English as *practical wisdom*, *practical judgement*, *common sense* or *prudence* (Flyvbjerg, 2004). Aristotle calls it an intellectual virtue that envisages rationality and the ability to evaluate the context of the situation. It means searching for the good in order to act ethically and promote this good, if referring to past experience and seeking there solutions to the problem at hand. A person who possesses practical wisdom (phronesis) knows how to act in specific circumstances, and this knowledge cannot be reduced to general truths (Flyvbjerg, 2004). As Flyvbjerg (2004) points out, a particular tendency of contemporary science is that it disregards the specific, the practical and the ethical. The dominant presumption is that the purpose of scientific activity is discovery of universal truths or the creation of a general theory and that it is impossible to generalise from a particular case. Therefore, phronesis (ethical practical wisdom that envisages the ability to look into specific problem situations and use past experience when deciding upon the desired course of action) is relatively little studied. Curiously, even the notion of phronesis has not been preserved in any contemporary word while the other two intellectual virtues proposed by Aristotle (episteme and techne) have survived in such words as epistemology, epistemic, technology, technical.

As stated above, the notion of phronesis is generally translated as wisdom, which means "experience and knowledge together with the power of applying them" (Oxford Illustrated Dictionary, 2000, p. 957). We propose that in order to better express the essence of phronesis, the term *wisdom* should be supplemented by *insight*, thus coining the notion *wisdom of insight. Insight* means "the capacity of understanding hidden truths, etc. esp. of character or situation" (ibid., p. 418). We, therefore, view phronesis as wisdom of insight which we understand as the ability to use past experience for evaluation of specific problem situations in the present in order to make ethical decisions about the required course of action that would promote the collective good in the future for a greater number of people.

In recent years, the notion of phronesis has come to be intensively used in action research theory in that it permits persons to express the nuances of the deepest essence of action research. The analysis of Aristotle's beliefs in scientific publications proposes a conceptual and theoretical frame of reference that suggests searching for wisdom and conditions of its development in action research (Flyvbjerg, 2004). In a way, the notion of practical wisdom concisely describes the process of action research – *seeking practical wisdom through reflection.*

The notion of *phronesis* has found its place in leadership, education and action research theories. The notion of *phronesis* emphasises action (process and content), not merely reflection on experience. In leadership theory, it is related to the concept of *bricoleur* suggested by Straus (see Grint, 2007). This concept refers to an original, creative, ingenious actor who can quickly react to changing circumstances and uses all available means and resources to ensure practical success. In leadership theory, phronesis is related to the leader's improvisation skills (Grint, 2007) and use of various techniques that generate energy in the system of mutual relations (Barge & Fairhurst, 2008). Improvisation skills are no less important for researchers in action research and teachers in pedagogical process. Hence phronesis is simultaneously a process that creates wisdom and aims at educating future teachers and action researchers. *Communicative space* (Gustavsen, 2001) is another concept related to phronesis. The notion of *open communicative space* is used in action research theory (Gustavsen, 2001; Wicks & Reason, 2009). It has been established that success in action research depends on what is happening in its initial phase. If, at the beginning, the researcher manages to open communicative space (i.e. ensure that the research participants interact and openly discuss the problem, accept and promote diversity of opinions), participants' involvement that reflects upon their personal experiences (phronesis) proceeds more successfully (Wicks & Reason, 2009). There are several studies about emotional experience; its role in communicative space (Newton & Goodman, 2009) and techniques to create communicative space (Hyland, 2009).

The process and essence of communication is closely related to the concept of *discourse,* which is defined as practical use of language with a certain communicative purpose (Barge & Fairhurst, 2008). Discourse, however, reveals and contains not only the textual form of language that is used for information exchange, but also a culturally determined sets of ideas, beliefs and assumptions that are revealed in the communication process.

This article contains an analysis of experiences from a specific research case where participants were encouraged to involve and act in communication and through discourse. Communicative action was initiated by identifying specific experiences that reflect

people's attitudes toward plants, animals and other people. Responses were then evaluated from the perspective of various simplified frames of reference and complemented with extended discourse – adding or reducing the number of specific features in various types of attitudes.

Thus, the general context of research in this study focuses on the idea that phronesis requires the inclusive action of participants and attitudes that are essentially sustainable and oriented toward opening the communicative space. An exclusive approach is directed toward unsustainability and suggests a more closed communicative space.

Specific context and content of research

Specific considerations that prompted this research in teacher education were related to the necessity of introducing study courses where students could learn about the notion of sustainable education and become involved in the creation of practical wisdom as a basis for developing personally significant frames of reference for their future professional life.

This research was conducted within the study course *Environmental Pedagogy* that was created *on the grounds of educational action research*. It is included in the first academic year of teacher education programmes. One of the topics in this course is attitudes toward own and other species. This topic was introduced to encourage students to evaluate their personal experience regarding attitudes toward own and other species and to involve them in the creation of personally significant frames of reference for their future professional life.

The *lived experience* of the research participants was used in this action research. In qualitative research, this concept is understood as *researchers' or the research participants' experiences, choices and opinions and the way all these factors influence person's knowledge perception* (Boylord, 2008). In action research, lived experiences acquire additional nuances related to researchers' and the research participants' subjective characteristics that indicate self-knowledge and can help to answer greater social questions, thus creating an environment for storytelling, interpretation and sense-making. Lived experience represents a starting point for research, reflection and interpretation and becomes the content of what is experienced (Manen, 2003; Whitehead, 2009).

For evaluation of the specific contexts of attitudes toward plants, animals and people, we selected a number of suggestions that helped to build the theoretical frame of this study. For this purpose, we examined Brereton's (2009) study where he: (1) analysed Dewey's model of evolutionary experience and included it in his anthropological theory and (2) further developed Dewey's theory (Brereton, 2009). In our opinion, it is a general frame of reference that can be applied for structuring the content of lived experience in a dialogue among researchers and the research participants. In Brereton's (2009) study, the essence of Dewey's model is expressed as a belief that experience has a phenomenal character, that it is a phenomenological whole with a multiplex nature, which is a structured unit that has certain levels and elements. Dewey distinguishes the following levels of evolutionary experience: pre-human level, human-social level and personally subjective level.

In educational action research conducted previously (Salite, 2002; Salite, Vanagele, & Jurane, 2005), we have discovered that people's specific attitudes toward own and other species can vary significantly. Undoubtedly, *in their consciousness people can*

perceive their connection with other species by becoming aware of themselves as included in the ecosystem, or as excluded from the contexts of the evolution of ecosystem and human evolutionary experience. Therefore, when studying person's attitudes, the researcher should identify its direction (inclination toward interaction or avoidance from interaction). Nowadays, one can frequently observe some people being increasingly aware of their inclusion in the ecosystem and/or their connection with its evolutionary processes, while others become alienated or exclude the contexts of ecosystem and/or evolutionary experience and avoid using them in daily actions and future plans.

Inclusion and *exclusion* as categories help explain educational and social relations. They have become the grounds for *inclusive and exclusive approaches*. These notions have been studied since the beginning of the 19th century (Buber, 2002), and even more intensively so during the last years (Kluth, 2000; Dymond, 2001; Aguirre & Martinez, 2002; Leo & Barton, 2006; Silverman, 2007; Angelides & Michaelidou, 2009). These approaches are viewed in broader and narrower contexts, e.g., in the context of ecosystem, the context of social relations and education. Interpretations of inclusive and exclusive approaches reveal the specific difference between these approaches, which are grounded in different attitudes, values and epistemologies of knowledge acquisition (Hayden, 2009). Hayden (2009) distinguishes two types of knowledge acquisition epistemologies: (1) based on alienation (exclusion), when knowledge is obtained via objectification and generalisation of others and (2) based on togetherness (inclusion), when knowledge emerges through stories, discussions, answering questions, observations and interpretations of the way people act. Undoubtedly, both these epistemologies can be easily recognised in educational practice since alienation-based epistemology has been retained in traditional education which aim is knowledge acquisition; inclusion-based knowledge acquisition is proposed in action research and inclusive education models. Each epistemology has a specific outcome: in the former case, it will be precisely *defined knowledge* or *defined wisdom*. In the latter case, it will not be wisdom as knowledge, but wisdom of insight, as we have previously termed, which can be understood as a solution gained through action, which corresponds to a particular situation.

This action research is based on the above-mentioned context and provides a possibility to investigate the research participants' lived experiences, initiate communication through discourse, use techniques for extending discourse and open communicative space to advance the process of phronesis, offering the discovery of wisdom of insight seeking of more sustainable attitudes.

Research design

The participants consisted of three researchers and 38 (37 female students and one male student) from pre-school and primary school teacher education programmes (1st year students). The research was conducted in September–October, during the autumn 2009 semester in Daugavpils University.

The researchers worked out the research design with the objectives of (1) organising educational action research grounded in the process or phronesis and (2) creating an open communicative space for dialogue *among researchers and research participants in communication through discourse.* For implementation of dialogue and co-action, activities were planned at three stages of *phronesis* (A, B, C) (Figure 1).

(A) Identification of experiences regarding people's attitudes toward plants, animals and other people (most vivid cases of lived experience that illustrate people's attitudes toward plants, animals and other people), content analysis of experiences in communication and through discourse.

> **The research participants** had to discuss, reflect upon and evaluate the identified cases, thus defining their characteristic features; the research participants had to name each of the evaluated experiences by writing down one key word and one sentence. This activity was performed in pairs or groups of three.

> *The researchers* summarised and qualitatively evaluated the content of attitudes toward plants, animals and other people and examined the approaches that the research participants had used for content formulation.

> Qualitative data analysis revealed that the research participants expressed the content of their experiences in four different ways: *(1) generalisations, (2) clichés, (3) 'flowery phrases' without deeper context, (4) phrases with traces of spirituality.*

(B) Evaluation of the identified experiences in the context of various types of attitudes (discourse evaluation in the context of simplified frames of reference, extension of discourse with own opinions and their evaluation in communication through extended discourse).

> *The research participants* were asked to evaluate the identified experiences in the context of various types of attitudes: (1) caring love, uncaring love, uncaring alienation and caring alienation, (2) caring inclusion, uncaring inclusion, uncaring exclusion and caring exclusion, (3) complementation of the initially (during stage A of phronesis) obtained discourse with participant individual contributions about attitudes toward plants, animals and other people in each type of attitudes, (4) evaluation of attitudes in communication through extended discourse.

> *The researchers* prepared qualitative analysis of data obtained in reflective activity.

(C) Seeking wisdom of insight: stages A and B (identification and evaluation of experiences) proceeded sequentially. Stage C was conducted in parallel with stages A and B and comprised an evaluation of the process and outcomes of educational action research.

> This paper contains only part of the analysed data and researcher observations. The included data permits us to identify the essence of phronesis and its correspondence to educational action research where we tried to answer the question *How can higher education promote implementation of the idea of teacher–researcher?*
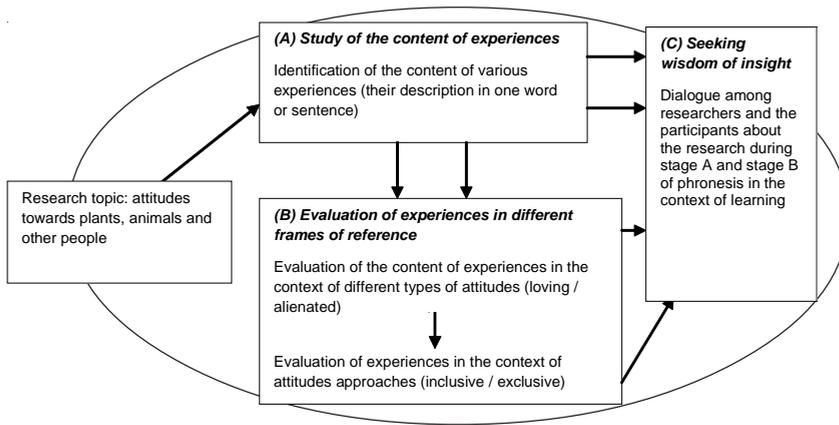
Figure 1. Stages of phronesis (A, B, C) in educational action research about person's attitudes
            toward plants, animals and other people.

Qualitative analysis of the results

(A) Study of the content of experiences

During stage A of phronesis, the researchers obtained the discourse from the participants'
lived experiences. For qualitative discourse analysis, the researchers distinguished four
approaches to describe experiences in written protocols.

● *Approaches to the description of lived experiences*

(1)   Generalisations of lived experience were most frequently used to describe attitudes
      toward animals; least frequently used to describe attitudes toward people. All in
      all, the researchers identified a wide range of frequently contradictory features for
      describing generalised attitudes (Table 1).

Table 1. Generalisations of lived experience

Types of attitudes	Features of attitudes
attitudes toward plants	*one word* – from care to carelessness; *one sentence* – person's temporary, irresponsible attention to plants without really caring about them;
attitudes toward animals	*one word* – a wide range of emotionally charged utterances (cordiality, charity, hardheartedness, friendliness, love, ruthlessness, violence, inequality, cruelty); *one sentence* – a wide range of activities based on egocentrism, anthropocentrism and various feelings (irresponsible behaviour, responsible interaction, estrangement, loving attitudes, superiority etc.);
attitudes toward people	*one word* – respect indifference, love; *one sentence* – don't care about others, think about themselves, want to be noticed, want to be respected, take care about their kin etc.

(2) For characterisation of lived experience, clichés were most frequently used to describe attitudes toward people; least frequently used to describe attitudes toward plants and animals. Use of clichés to describe attitudes also revealed a wide range of frequently contradictory features; impersonal attitudes toward plants; use of warnings, declarative statements and anthropocentric suggestions to describe attitudes toward animals; use of warnings and advice and identification of egoism when describing attitudes toward people (Table 2).

Table 2. Use of clichés for description of lived experience

Types of attitudes	Features of attitudes
attitudes toward plants	*one word* – good attitudes, fear, recognition of inner value, being against extravagances; *one sentence* – impersonal expressions (you can never have too much of a good thing, too much – too bad, you can never know what to expect from plants, beauty lies in simple things around us);
attitudes toward animals	*one word* – from fear to love, cruelty, violent attitudes manifested in action; *one sentence* – warnings against unethical behaviour, declaring friendly relationships, love toward our 'little brothers';
attitudes toward people	*one word* – love, friendship, indifference, loneliness, cruelty; *one sentence* – warnings against hurting, advice for ethical attitudes, urging to love other people, identification of egoism.

(3) Characterisation of lived experiences by using 'flowery phrases' without deeper context was most frequent in descriptions of attitudes toward plants; least frequent in description of attitudes towards people. Use of 'flowery phrases' without deeper context revealed a wide range of features concerning attitudes toward plants and people, but attitudes toward animals was described only with positively oriented features that revealed deep interconnection between people and animals (Table 3).

Table 3. Use of 'flowery phrases' without deeper context for description of lived experience

Types of attitudes	Features of attitudes
attitudes toward plants	*one word* – positive attitudes, respect, care, love, waste, anthropocentrism; *one sentence* – praising beauty, declaring the need for respect, attitudes toward plants mirror attitudes of the world in general, figurative expressions about pollution;
attitudes toward animals	*one word* – care, love, charity; *one sentence* – deep love, deep connection and people's ability to sacrifice themselves for the sake of animals, care and protection, from fear to love and cruel, violent attitudes that are manifested in action;
attitudes toward people	*one word* – love and competition; *one sentence* – praising the noblest feelings and declaring fight for one's place under the sun.

(4) Characterisation of lived experiences by using phrases with traces of spirituality was most frequent in descriptions of attitudes toward plants; very rarely in description of attitudes toward people (Table 4).

Table 4. Use of phrases with traces of spirituality for description of lived experience

Types of attitudes	Features of attitudes
attitudes toward plants	*one word* – admiration, considerateness, interest, beauty, care; *one sentence* – deeply emotional and figurative expressions, deeply felt connection between plants' and people's souls, human spiritual mission, caring attitudes and admiration of plants that enrich one's life;
attitudes toward animals	*one word* – love, irresponsibility; *one sentence* – reminder about responsibility for what/who we have tamed and about loving them;
attitudes toward people	*one word* – values; *one sentence* – conclusion that person's inner world is a value.

Phrases with traces of spirituality in descriptions of lived experience revealed only positively oriented features in attitudes toward plants, a wider range of features in attitudes toward animals and traces of inner values in attitudes toward people.

● *Summary of the content identified in the research participants' experiences*
The participants were encouraged to enter the communicative space with their experiences about people's attitudes toward plants, animals and other people. The researchers identified four different ways in which the research participants entered the communicative space and engaged in a dialogue. In this case, the content (experiences regarding people's attitudes toward own and other species) was used as a tool for communication. As previously mentioned, this research objective – organisation of educational action research on the basis of which the process of *phronesis* is being implemented.

The research participants offered their lived experience and evaluated and generalized its content that, when brought into communication, revealed the diversity of lived experience. The research participants summarised the essential features of a person's attitudes toward plants, animals and other people.

In attitudes toward plants, the participants emphasised *indifference and a lack of interest, admiration of the beauty of plants, careless, irresponsible and destructive activity, pollution of the environment, care and tending.*

In attitudes toward animals, the participants emphasised *people making use of their superiority (breeding and using for satisfaction of own needs), inability to assume responsibility for the animals that they have tamed (throwing away as an unnecessary thing), love and care for animals (treating them as family members or best friends), avoidance or violence toward animals caused by fear and alienation.*

In attitudes toward people, the participants emphasised *indifference, every man for himself, compassion in mere words, jealousy, competition, evil, cruelty, violence, love, kindness and the need for intimacy, friendship and respect.*

● *The researchers' observations and conclusions about the participants' involvement in the research process or in communication through discourse*

The researchers analysed their observations and concluded that during the first stage of phronesis, the participants *initially positioned themselves for a cautious and alienated selection and description of the content of their experiences*. During the process of experience identification and evaluation, a gradual increase in the participants' interest was observed and communication became more open.

During the stage of cautious positioning, the researchers evaluated the use of communicative space and lived experience and observed some tendencies.

- Positive, deep and, at times, deep-ecological attitudes during positioning in communicative space were identified in cases when the participants expressed their experiences regarding attitudes toward own and other species by using 'flowery phrases', without deeper context or phrases with traces of spirituality.
- Most comments during the stage of cautious positioning were suggested in the form of impersonal observations, warnings, advice and declarative statements.
- Attitudes toward plants were chiefly described in 'flowery phrases' without deeper context and phrases with traces of spirituality. Attitudes toward animals were chiefly expressed in generalisations. Attitudes toward other people were mostly suggested in clichés.

Additionally, the participants revealed their views about the research during stage A research of phronesis in the context of learning.

● *The participants' views about the research during stage A of phronesis in the context of learning*

The participants' views about the research during stage A of phronesis were submitted in written form at the end of the initial stage of action research. The research data analysis permitted us to identify five categories that reveal characteristic features of the process of phronesis at the beginning of this research (Figure 1, C).

(1) Opportunity for communication and cooperation.

> *I discovered a great way to cooperate with my newly-met course mates. I learnt how we can instigate a person's activity and encourage communication with others. Identification of experience teaches to listen to other people and their thoughts.*

(2) A chance to engage in research and draw conclusions from this process.

> *I learnt how to study interpersonal relations. I noticed how quickly we can get to know various opinions and make 'statistics', how to group people's opinions and discover the beliefs of majority and minority. I learned to evaluate my attitudes toward others, be honest and analyse not only my attitudes toward others, but also attitudes of others toward me, what it is like and why?!*

(3) Introspection and reflection.

> *I learnt to express my feelings toward plants and animals.*

I reflected upon my own and other people's views and the various ways we react to self-evident things that we face daily.

I reflected upon what I, being one of God's creatures, think about other God's creatures. Although we are all created for this world, people with their thinking suppress and try to govern everything else around them. They do it both deliberately and unaware.

(4) Identifying diversity.

Everybody may think and perceive the world differently. Relationships may be different. They can be loving, friendly and caring or unfriendly and violent. What matters most is upbringing and education – they reflect family values. After this activity, I understood how different people are and how different our opinions and our attitudes toward things can be.

(5) Observing the interconnectedness of everything in this world.

I was given a chance to look into other people's attitudes and relationships with nature, animals and people. We live in a world that we share with each other, people and animals. This division is ethically significant. Like every person, every animal also needs freedom. Animals are conscious beings, the same as people. People treat plants and other things very differently – well and badly. I believe that people should be told about it more rather than simply forced to read things. Nowadays people are very different. It happens that stronger ones survive though everybody struggles for existence. We must learn to live with ourselves and with the surrounding environment. We should all join hands to help each other. We have everything in common. We ought to be able to deal and live with it correctly, to love ourselves and others.

The participants' impressions from the first activities of educational action research permit us to conclude that the participants evidently sought broader metacontent gains and lessons learnt. Moreover, the outcomes of the research during stage A of phronesis in the context of learning reveal peculiarities of the process of phronesis: communicative action through discourse, introspection, highlighting the contexts of family and interconnectedness of all. In this action and content, the basis of wisdom of insight is seen. These cognitions are rooted in the evaluation of lived experiences. In this initial positioning, and with the cautious presentation of the content stage, the research participants viewed these research outcomes at a metacontent and purpose-oriented level.

(B) Evaluation of the identified experiences in the context of various types of attitudes

Evaluation of experiences in the context of various approaches and the extension of discourse based on individual opinions initiated a more energetic and open communication through a more broadened discourse. It was marked by a transition from evaluation of the features and manifestations of attitudes toward the participants' self-instigated insight in the contexts and causes of people's values and experiences. This

tendency can be illustrated by the nuclei of various types of attitudes that the research participants distinguished after the extension of discourse:

In caring and loving attitudes, the research participants identified:
- *love as core value and manifestation of human nature (in attitudes toward plants, animals and people);*
- *awareness of the **world as a unified system** (plants, animals, people, interconnectedness of everything, which leads to the need to care for everything alive);*
- *care and considerateness as manifestations of love;*
- *understanding and tolerant acceptance of **diversity**;*
- *intimacy as a basic human need;*
- *person's **responsibility for** conservation of the **ecosystem** (well-being of plants and animals), understanding that person's activity affects the ecosystem;*
- *respect toward life and life sustaining system.*

In caring and alienated attitudes, the research participants identified:
- *love towards the known and the close;*
- *fear of the unknown followed by estrangement and avoidance;*
- *negative past experience as a cause of reserve and fear;*
- *orientation toward the positive in the values system (e.g. tendency to love) which is not manifested in action due to **fear and idleness**;*
- *care which is based on **anthropocentrism**, egocentrism and wish to satisfy one's needs;*
- *idleness, not wanting to assume responsibility;*
- *positive feelings and their manifestation in action **perceived as weakness** (fear to appear weak).*

In uncaring and loving attitudes, the research participants identified:
- *lack of knowledge (and stereotypes) that **prevent from caring activity** (one does not know something and is afraid or does not know how to care for it properly);*
- *inadequacy between attitudes expressed in words and actual behaviour (hypocrisy);*
- *laziness and need for comfort and easy life as basic determinants of human behaviour, which cause estrangement – avoidance of negative aspects, ignoring them, indifference toward what happens around, irresponsibility (even positive flashes of behaviour – **inconsistent**);*
- *egoism as a basic human trait (**using others for the sake of one's own benefit and satisfaction of one's needs at the expense of others – nature and other people**).*

In uncaring and alienated attitudes, the research participants identified:
- *fear is caused by lack of knowledge and provokes destructive activity – turns into aggression;*
- *egoism and irresponsibility as causes of violence and person's estrangement from the life system (plants, animals and people);*
- *violence is caused by **lack of values and humaneness** – a negative values system is the **result of negative experience**;*
- *anthropocentrism (person's imagined superiority over other species), which causes violent use of other species for satisfaction of one's needs;*

- *competition as a base motive of person's existence (fight for survival, natural selection – the physically strongest survives);*
- *inability to empathise (lack of empathy);*
- *consideration springing from fear of losing what you have (fear of estrangement provokes considerateness and care).*

These pieces of practical wisdom were formulated during the research of stage A of phronesis in open communication. In this form of communication, declarative statements, admonitions and clichés are not prevalent. During this stage of communication, the features of attitudes were 'woven' into contexts. A close examination of these contexts reveals causes of attitudes and interrelations of various contexts that prevent the use of unequivocal and declarative statements. Content evaluation of the extended discourse reveals the dominance of contextual nuances that were identified by the research participants and a deeper insight into personal attitudes toward plants, animals and other people. This stage of phronesis can be metaphorically called **weaving the nuanced pattern of the contextual content of communication,** where the participants integrated their experiences with metacontent (values, target orientations and personal opinions).

(C) Characterisation of inclusive and/or exclusive approaches in open communication

The evaluation of concrete experiences in the context of various types of attitudes intensified the participants' involvement in research activity. The researchers encouraged the participants to describe *inclusive and exclusive* activities and approaches. Thus, the participants gradually came to recognise these two phenomena and describe them with nuances from their individual frames of reference.

- Inclusion and alignment were identified as an open activity and a person's need for it.

  Inclusion, I believe, is reaching toward someone, extending your hand. Most certainly, it is also a friendly and open attitude. A person is open to the world. He/she is friendly, well-disposed and wants to participate in the social and natural processes.

  Alignment is grounded in positive emotions, which bring joy and brightness into life, sympathy and personal inner needs, attitude toward the world, love, care, pleasure, interest, understanding and consideration for everything that is alive – by caring and looking after.

- Inclusive relationships among people, animals and plants.

  Inclusion is primarily grounded in love, care, responsibility. Inclusion means understanding, friendliness, love, respect and consideration. If there were no relationship among the living creatures, there wouldn't be any common life or peace. It is crucially important to be a good-natured person.

- Unfortunate experiences and a person's reserve can affect the wish for inclusion.

  Non-alignment proceeds from unfortunate past experience, from complying with the will of others or submitting to the circumstances. A person's wish

for inclusion also depends on the degree of his/her openness to other people and the world in general.

• Exclusion is not easy; it is a choice; it hurts the other. Ignorance of the world is the road to exclusion.

> *Exclusion is grounded in irresponsibility, indifference, violence, envy, hatred. It is chiefly associated with negative emotions. If we experience such attitudes, we often react in the same way. But rejection is not easy, because you first need to meet and get to know what you are rejecting and only then decide whether you should reject it or not. It is a very cruel behaviour.*

> *Exclusion is grounded in betrayal, hatred, envy; in dislike toward people, animals and plants; in a combination of duty, indifference and insensitivity; in closeness, fear and not wanting to let anyone or anything approach you; in fear, ignorance, antipathy, egoism. A person excludes what he/she does not need or find interesting. This way others get hurt; the natural ways of the world get destroyed and wasted.*

> *A feature of **exclusion** is fear from a particular creature, thing or situation.*

> *The typical feature of **exclusion** is a person's fear from the world. The world seems strange, cruel, prejudiced. Ignorance of the world – that is the road to exclusion.*

A thorough examination of these comments and of the nuances in the opinions reveals that open activity and a person's need for it are the keywords of inclusion. Exclusion is not easy in that we choose to feel the inner burden of exclusive activity. Hence, each person's needs and choices are the grounds for different attitudes. The research participants concluded that unfortunate past experiences and external circumstances can become insurmountable reasons for adopting exclusive behaviour or being excluded.

Discussion and conclusions

Educational action research, which has been discussed in this paper, has made researchers reflect on the fact that action research can be characterised by certain nuances. These nuances may encourage re-evaluation of personal experiences and beliefs about action research. Our previous action researches were conducted under the assumption that the construction of new knowledge is a reflective activity, as mentioned at the beginning of this paper. Having studied publications where action research was analysed with reference to Aristotle's theory and especially to the process of phronesis and its use in action research, we observed that this perspective brings about the need to answer several questions that lead to a re-evaluation of prior beliefs.

We concluded that, in educational action research, it is impossible to define wisdom and answer the question: what wisdom has the research participants created? This question can only be answered in traditional epistemologically-oriented action research. In phronetically-oriented educational action research, it is impossible to define wisdom as knowledge (also practical) in that phronetic wisdom is the ability to find solutions

in concrete circumstances on the grounds of past experiences and a common target-orientation that would benefit the majority. Such wisdom can only be found through insight. When constructing the theoretical framework of this study, we discovered that phronetic wisdom is essentially different – it is not the application of knowledge, it is the ability to create wisdom. This can be defined as wisdom of insight, emphasising that the roots of this wisdom are fundamentally different. It is neither knowledge, nor a skill of applying knowledge; it is the ability to find a wise solution which would be appropriate for the particular situation.

The development of phronetic skills in action research introduces a new nuance in its structure – the need to find a strategy that can permit us to extend and open communication through discourse in order to promote the development of phronetic skills. The aim and outcomes of phronetically-oriented action research will be different. The context of this study suggests an answer to our general research question: *What are the ways by means of which it would be possible to promote the idea of teacher–researcher in higher education?* In teacher education, it is possible to propose educational action research that is grounded in the process of phronesis or a strategic approach to the development of phronetic skills. These skills can help the teacher in cooperation with the diverse partners in his/her professional environment which is characterised by variety of discourse.

Phronetically-oriented educational action research requires reflection on the interconnection between research content and the process of phronesis. In this case, the chief aim of research is to create communicative space that helps develop phronetic skills. On the way toward reaching this aim, specific research content serves as a tool for finding out specific solutions and highlights the need for seeking wisdom of insight.

People's attitudes toward own and other species are closely related to their life wisdom. In teacher education, discovery of life wisdom is crucial since it encourages striving for sustainable aims

Discovery of life wisdom in co-action (phronesis) is one of the opportunities of educational action research. Phronesis as moral practical activity which is directed toward achieving the collective virtuous good and educational action research as reflective activity for formulation and implementation of shared action aims are complementary in their nature.

In the process of phronesis, it was observed that lived experience (its content as a person's attitudes toward own and other species), openness of communicative space and energy generated in co-action transformed into an evaluation of attitudes toward others and oneself in the context of the ecosystem. This research suggests that there is an opportunity to discover different frames of reference during the study of lived experience – the ecosystem or evolutionary context. The context of the evolutionary process, however, was not discovered. There are probably lived experiences that weaken the connection between the ecosystem and its evolutionary processes.

This study suggests experience of implementing phronesis in educational action research. Evaluation of its procedure was viewed in the context of openness or closeness of communicative space and generation of energy in co-action. Accordingly, we argue that two stages of phronesis have been discovered: (1) cautious positioning with a gradual opening of communication and increase of interest; (2) active evaluation of contextual nuances (search for the valuable) in co-action or weaving the nuances of contextual communication pattern in the process of phronesis.

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NEW TECHNOLOGIES FOR SUSTAINABLE TEACHING AND LEARNING: A CASE STUDY FROM SLOVENIA ON DIMINISHING STUDENTS' WORKLOAD AND INCREASING MOTIVATION THROUGH ICT

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Abstract

If education is to become culturally appropriate and improve environmental, societal and economic conditions, it needs to consider that current cultural development across the globe is increasingly connected with the use of new information and communication technologies (ICT). A close analysis of a blended higher vocational education course design and its two annual implementation cycles in different schools shows that careful introduction of ICT can have a positive impact in an educational context from the perspective of sustainability; new-media affirmative teaching and learning methods can increase both the hour-per-credit value of a course and student satisfaction. Current discussions about time management and students' workload and a symptomatic local situation concerning sustainability issues in Slovenian education show that integrating ICT into models and practices of sustainability should not only remain a profoundly disputed topic within reflections about sustainability in education, but also become an important practical method for achieving its goals.

Key words: *workload; time; information and communication technologies; blended; Slovenia; Moodle.*

Technology shifting culture

Based on a case of successful information and communication technologies (ICT) use in the educational process, this paper discusses concrete possibilities for a sustainable future in the realm of education; not only that "computer technologies align with the principles of sustainability by reducing use of resources for printed materials, reducing waste and making information and programmes available to audiences in areas distant from teacher–education facilities" (UNESCO, 2005, p. 57). The *Guidelines and Recommendations for Reorienting Teacher Education to Address Sustainability* also foresee that "ICT can help students take responsibility for finding information and evaluating it and ultimately take responsibility for aspects of their own learning" (UNESCO, 2005, p. 57). Although importantly introducing the technological aspect

into the vision, this pivotal document in the field of education for sustainable development comes short of recognizing the sustainability potential of e-learning as a method. Especially with the rise of blended learning (combining online and presence teaching phases), the use of new technologies in educational processes can importantly contribute to gradually realizing the vision of a sustainable society.

     After introducing selected cultural and educational issues connected with sustainable development and the topical implementation of ICT – firstly on prescriptive levels globally, then by way of an example in Slovenia – this paper deals with a report on local teaching practice. Leaning on an empirical study and analysis of blended learning methods shows it is possible to significantly rationalize the use of basic resources (i.e., students' workload) by implementing new technologies in education. It is beyond doubt surprising to discover that technical media and especially the Web are potent for decreasing the stress and raising not only the motivation of students but also the credit value of their education. This seeming paradox opens an illuminating view on the possibilities of future teacher education that could update the ICT-related competencies of teachers. If this can be proved correct in the case of Slovenia as a new EU member state, the blended course-design model could inspire similar resource-balancing efforts in the work of other teachers and school leaders. Thus, the article eventually arrives at one of the many answers to the question of "what kind of education would best serve humanity in the future?" (UNESCO, 2005, p. 59).

ICT as pillar of sustainable future

After the United Nations (UNECE, 2009) and the European Union (EC, 2008) accepted sustainable development as a priority paradigm in implementing the important strategies of cultural, social and economic development since 2005 and 2008, respectively, the realm of education has seen important conceptual shifts. A new definition of sustainable development influences all areas of human existence by connecting and balancing the many possibilities opened up by new technologies and the leaps of scientific and popular thought. The abovementioned initiatives align in that ICT is not only closely connected with the globalization process; it also plays an important role in renewing educational processes that, in turn, significantly correlate with social and cultural change. The raging consumerism and globalization of markets and financial systems that have presently brought the world economy into severe recession are, perhaps more than ever, both ready for (and in urgent need of) change toward a paradigm of sustainable consumerism that would enable the continuous use of resources and benefit the few evident social and environmental potentials left unspoilt. Such a process can be brought about only by educated people (critically) who are conscious of their gradual, but inevitable behavioural change, and above all, proud of possessing both the means and the competence to implement sustainable future visions. That is why not only topics, but also the methods of a development-affirmative, technology-emancipated teaching and learning practice are at stake here. Popular as well as high-tech trends in the use of new media (especially of the Web in combination with the personal computer – and of course increasingly in their mobile, multi-local and omni-accessible hybrids) lend these technologies an increasingly important role in all segments of human existence. Thus, these technologies naturally come into educational use, the Web being implemented as the most potent (if also unreliable or even dangerous) source of information and study

materials as well as a medium and platform for learning processes at large (Purg & Zakrajšek, 2009).

Among the key competencies of education for sustainable development (ESD), Tilbury (2007) defines several that support the understanding of ICT in education from the point of view of sustainability: complex systems in the context of educational settings call for a systemic approach to communication that should incorporate both human and technological factors. Such an affirmative position towards a techno-cultured human (Strehovec, 1998) enables a smooth envisioning of a future that both emancipates man from machine (Purg, 2007) and instrumentalizes the latter for a sustainable future. A critical approach toward technology (especially as used in marketing through mass media!) demands a rich experience and profound knowledge of it – such that it is carried into the educational setting by young learners (e. g. as implicit expectation), and is thus expected from teachers (e. g. as explicit goal of teacher training). Then an occasion-specific blend of traditional and progressive learning methods should prove viable – not least within partnerships for change in teacher-education processes that include teachers as participants in a sustainability-compatible pedagogical culture. In the following section, this paper discusses the Slovenian situation among teachers, learners and schools, showing a need for adopting concrete measures of ESD and incorporating a positive implementation of ICT into this process.

Slovenia between ICT and education for sustainability

Under the influence of the abovementioned UN and EC initiatives, the education systems around the globe, but especially those of western societies, have started to systematically incorporate the topics of sustainable development into education processes. Also, in Slovenia, the initial stage mostly deals with sustainability as a topic (rather than method), especially in the natural (chemistry, biology) and social sciences (sociology, economy, culture studies). Numerous projects have initiated to raise environmental awareness and stress egalitarian social principles as both came under serious threat due to the rapid transitional processes of the 1990s. The second stage of mainstreaming these principles at more complex and systemic levels, including sustaining critical discourse and assuring participation across cultures and economies and turning the topics into methods (i. e. structuring educational processes) has, however, rarely been implemented. While depending on a spontaneous acquisition of ESD by the emerging teaching staff, based mostly on their youth (somewhat systematic introduction to the basic aspects of ESD during teacher training only after 2005), the Slovenian education system largely failed to distribute these competencies across generations (teachers, school administrators, teacher trainers etc.) and across sectors (of subjects, programmes) and geographical regions. Still, the principles of ESD managed to enter the (recently quite systematically renewed) curricula at all educational levels. However, due to abovementioned reasons they have not been implemented to the extent needed to have the envisioned impacts. What is more, the implications of ICT use in the line of ESD guidelines are virtually non-existent, this not only in the case of Slovenia, but also in the broader European or even global context.

According to Arh, Rajkovič and Blažič (2005), the introduction of ICT into schools and teacher training had been quite intense in the years 1996–2002, but has faced a steep decline due to weakened financing in the sector. As late as 2006, a national

e-learning strategy was passed (Arh et al., 2008), but has been somewhat efficiently implemented in the realm of online training materials only since 2008, and has – with a revived political and structural support – gained noteworthy systemic momentum in early 2009 by providing schools with individual consultancy and on-demand training and equipping strategies and programmes. All this is in tune with the EU's recent priorities that try to catch up with the USA, Australia and Canada that have been for decades building on their successful distance education systems (owing their high priority mostly to the countries' geographical characteristics). The authors find that the first level of computer literacy (mastering basic computer use to access information and materials for teaching, using e-mail and databases) has been so far achieved by not more than a fifth of all teachers in Slovenia, whereas the next stage (ICT-based autonomous search, editing, interpretation and evaluation of information, including hypertext, hypermedia and digital interaction competence) has been achieved by less than 5%. So far, only a third of all Slovenian secondary and primary school teachers have participated in any kind of pedagogical training connected with ICT – and with a total of 5 days a year dedicated to any kind of teacher training, this is not likely to increase significantly. The current alarming situation is due mostly to a severe discrepancy between teacher training programmes and real classroom needs, on the one hand, and, on the other hand, to an over-(techno-)euphoric introduction of new technologies into schools before 2000, when teachers were not yet (and above all not systematically) sufficiently acquainted with the possibilities of the (then) new media. As a result, many teachers developed a fear or loathing of them. The authors estimate that 10% of teachers would be both ready and capable of mastering contemporary teaching styles that would include most recent developments in the area of ICT and active teaching methods in a very short time. Another 60% would take several years to achieve the necessary competencies and an alarming third of all teachers would most probably never accept or implement new teaching concepts and techniques. As this research shows, not only the topics, but the methods of ESD demand "a complete transformation in our teacher training programmes" (UNESCO, 2005, p. 59) that places urgent attention to the pedagogical use of ICT.

Significantly, blended learning methods seem to be in the foreground of the most optimistic scenarios of introducing ICT into educational processes in a sustainable way. That is why teacher training in the near future is likely to focus on this particular area (Nekrep & Slana, 2006). Only a highly motivated, community-involved, quality-aware and personally responsible teacher (also as a training participant) will be able to embrace the complexity of both ESD and ICT, especially if they are integrated in an inevitably paradoxical manner. Successful Finnish examples (FNCSD, 2006) show two factors for efficient realizations of ESD guidelines: including elements of sustainability into graduate study programmes of pedagogy and constant in-service teacher training that includes the practice of how to teach them inter-generationally and inter-culturally. The answer lies in a new-media yet socially binding blend of participative and cooperative training and didactically structured empowerment toward ethical pedagogy that maintains the highest standards of professional dedication and intercultural competence. Although structurally similar to Slovenia, Finland, for instance, presently boasts of one of the most progressive educational systems, not least owing to the efficient management of study materials, and according teacher training systems. Produced digitally – and interdisciplinary, to the highest media-production standards – they are delivered mostly

online and call for well-established networks of excellence in quality control that can assure trustworthy teaching and just-in-time/just-for-the need learning materials. Practically, some of these materials are not language-bound or culturally specific thus lending themselves for local use in other countries (ibid.).

For three years, Slovenia has increasingly produced high-quality e-learning materials and developed joint platforms for their management and systemic support of blended educational processes. Only partnership-based and collaboration-based networks and widely (cross-community and cross-culturally) accepted platforms can combine all these elements into a sustainable education system that will coherently incorporate all the heterogeneous elements and different stakeholders. Each of them can benefit from this process by decreasing the workload imposed by the conflict of traditional (paper-based and chalk-based) teaching technologies and increasing both learning outcome attainment and students' satisfaction. Students especially need to significantly decrease their workload using ICT to make the classroom a place for new, better integrated and more sensible learning activities (Praprotnik, 2003). Topical local research has also found that sustainable consumerism is an important focal point that may replace environmental protection as the primary issue of ESD. Even more significantly, it is ICT that can influence a reorientation away from unsustainable consumerist practices that affect both local and global global markets (Erčulj, Sedmak, Trnavčevič, & Kuzmanić 2008), mostly in terms of transport and infrastructural resources, but also in terms of administration, support personnel and immediate material costs. Of course, such shifts introduce new needs for resource consumption such as electricity or hardware-production and maintenance costs (along with supporting personnel), yet, in practice, these costs prove significantly lower the traditional, presence-only educational model. Teacher training programmes should be tailored to the local needs and capacities of the specific school or community and only include locally accessible technologies and know-hows that are likely to be (immediately) implemented in the educational process. "The first place (and perhaps most effective place)" to improve these aspects is beyond doubt within each teacher's "own classroom and the curriculum area" of which he/she is "directly responsible" (UNESCO, 2005, p. 40).

How new technologies decrease workload and increase motivation

The Internet and the World Wide Web have sped up human communications, economic transactions and information processing, making different parts of the world come nearer to one another. One can claim that the (perceived, but also measured) time required to transmit and process information has drastically decreased due to electronic, digital and, above all, mobile communication technologies. Also, the phenomenon of *information overload* significantly increased: the immanently multitasked and multimedia-enabled human brain still easily gets overburdened by the soaring compu-tation speeds of new technologies that force the slowly evolving brain into memory malfunction or attention deficit disorders (Klingberg, 2008). This paper presents a practical (and empirically closely observed) instance of carefully implemented ICT with a firm sustainability objective – decreasing the workload (as perceived time investment) and increasing student motivation. This research shows that if certain ICT-based course design elements are correctly implemented in a blended way, they can significantly raise

the "hours per ECTS credit point" (Purg & Zakrajšek, 2009, p. 192) value of the course without additionally burdening the students. After having been reserved predominantly for the workplace – now taking a firm hold also in the higher education sector – the workload issue has been spreading also into lower stages of the educational system, enabling both critical and future-oriented vertical comparability and transparency and horizontal equity among different programmes, countries and cultures.

Decreasing workload through ICT

When students begin to take over the responsibility not only of their own learning (UNESCO, 2005), but also for the time they need for learning, they are managing a particularly scarce resource – and one that is, beyond doubt, not distributed evenly. Purg and Zakrajšek (2009) find that while financial and material assets are being discovered as relative and inconstant, the resource of time is still widely accepted as a linearly, equally distributed good, of which every individual or group is granted an equal amount – at least at the beginning and theoretically excluding, for example, Einstein's theory of relativity (1920). But, practically, there are many divides remaining in the realm, such as life expectancy – even if it more than doubled in the last two hundred years, it remained largely different throughout countries and even social strata (Riley, 2001). And similar is also true for forms of unfree labour (ILO, 2005). The invariable flow of time is, however, challenged also by human subjective impressions or states of *boredom* (time appearing to run more slowly than usual) or its antonyms of *excitement*, *interest* or *pleasure* and even *stress* (time seemingly passing faster than usual). Even if contemporary western societies proverbially value time as money (that is also said to make the world go around) – and even if at the cost of unsustainability in terms of negative globalization (Garson, 2002) – important future-oriented solutions are emerging (for instance, the *time-based currency* concept that can let people exchange services according to an absolute unit of time, instead of relative money units; such a unit of exchange is usually called the *man-hour* and defines the amount of work performed by an average worker in one hour, thus being comparable to the ECTS concept explained below).

Purg and Zakrajšek (2009) recognize similar divides in other resources mentioned also in the realm of the knowledge resource spread unequally among countries and social strata – even if perhaps somewhat balanced with the globalizing effect of migrations and especially new technologies. As formal learning is increasingly becoming a life-long activity, the process of studying is perceived as underlying the same personal (or group-based) economy of resource management as, for instance, labour. Within the so-called Bologna process, time is directly connected with credit value through the European Credit Transfer System (ECTS), defining a quantitative unit of study (one credit point) by time spent studying (25 to 30 hours). ECTS credit points award "all learning activities (such as lectures, seminars, projects, practical work, self-study and examinations) required to achieve the expected learning outcomes" (Education and Culture DG, 2006) and may as such easily obscure the importance of spending learning time in sensible, didactically well-designed activities and subject-relevant contexts (as linked to learning outcomes). The impression of time passed is strongly subject to factors of motivation that are dependent on teaching methods, forms and contents of study materials and not

least the forms of assessment – which is why teacher training should pay particular attention to these topics. Apart from learning the right methods in terms of skills, it seems important that teacher communication and community competence is being fostered as well. Kember (2004) stresses the strong impact of personal relationships between teacher and student (group) discovering that the perceived workload also depends on students' overall satisfaction with a course, the collective learning climate and interpersonal relations in the group.

Increasing motivation through ICT

The research on workload assessment and satisfaction conducted between 2006 and 2008 (Purg, 2009) among the first-year students of the "Media Production" higher vocational education programme shows that workload in terms of learning activity and assessment-based stress could be effectively distributed along the entire duration of the course. This was especially because the blended course design prevented students from postponing their learning activity toward the end of the course – otherwise a major problem in Slovenian (and many other Central European, i.e. historically Austro-Prussian influenced) educational systems. In terms of expanding the *recommendation 8.4.* of the *Guidelines and Recommendations for Reorienting Teacher Education to Address Sustainability* that suggests matching "student preferred learning styles and modalities (e. g., especially students from oral-based cultures whose preferred learning modality is listening, not reading)" (UNESCO, 2005, p. 57), the study discovers that the freedom of choosing the best medium for an individual to construct and present knowledge or skills (e. g. preferring video-recorded presentation to live, or forum discussions to in-class debates) indeed has a relieving effect – blended learning settings can be often seen as temporally optimized and personalized teaching and learning systems. Here the scope of the concept of *culture* is to be expanded to the globally emerging techno-cultures (Strehovec, 1998) that, especially among the young, again recover the (pre-literary, oral) preference for multi-modal information processing and exchange (Giesecke, 2005).

The empirical research of Purg and Zakrajšek (2009) on individual workload-relieving influences of ICT in education (conducted within the course *Introduction to Media* of the abovementioned study programme in years 2006–2008 in three different parallel course runs, on representative samples of over 150 students in total) has proven that spontaneous after-class discussions can be just as effective as regular semi-structured moderated discussions. In blended and distance learning settings, forum discussions or even chats can help optimizing student workload as well, whereas independent students' forums and chat-rooms or other, more complex Web 2.0 applications such, as portfolios, wikis or blogs, offer significant added value for the media-cultured user. Blended and autonomous learning settings thus call for more complex models that necessarily include ICT-enhanced methods not only in immediate course delivery, but also in assessment processes. Through the use of a web-based learning management system (such as *Moodle* here) not only the teacher, but also school management can transparently follow and control the entire study process, from topical and temporal organization to course activities and grading aspects – which enables professionals to compare it horizontally to other courses and vertically to previous academic years (ibid., p. 198), assuring the necessary equity through a transparent systemic and regulatory approach.

Similarly, Hall (2008) finds that Web 2.0 can support and positively represent diversity, especially where cultural, racial, economic differences deepen the digital divide, whereas Kupiainen, Suoranta and Vadén (2007) assume that technology-enhanced learning processes may play a certain critical and revolutionary role, creating a new set of politically-relevant productive competencies gathered under the conception of digital social creativities. As if contrary to the empirical base of the present paper that founds its argumentation on quantitative assessment, the authors suggest introducing strict assessment and regulation practices that disable constructive and politically correct use of social media in education, which can – in terms of positive temporal resource management – ensure enough time and space for discussion, reflection and debate.

Education for sustainable development with ICT

On the background of comprehensive studies, the above discussed case shows a practical example of addressing the guideline that effective "ESD is based on local needs, perceptions, and conditions" (UNESCO, 2005, p. 16). So if "fulfilling local needs often has global effects and consequences" (ibid., p. 59), it needs to be recognized that exactly these students (of media production) are the ones who will, through their creative and decision-making roles in the media-production process, influence important structural and systemic change in the entire (media) society. Indeed, carefully designed new-media and web-based teaching and learning methods motivate students to reach higher course-defined competence, with less perceived effort or stress – and thus importantly structure their educational experience as integrative of ICT. If used appropriately, ICT can help people learn faster and with less perceived effort. But most importantly, new media in education fosters interactive knowledge and skill acquisition that is more sustainable in terms of being centred on the learner's actual needs, preferences and capacities, as well as sensitive to the ever changing environment (Purg & Zakrajšek, 2009), thus directly addressing "content, context, pedagogy, global issues, and local priorities" (UNESCO, 2005, p. 16). From the point of view of new technologies, one can definitely see education not as a problem but rather as a "solution in working toward a sustainable future" (ibid., p. 59). If "all education for sustainable development must reflect environmental, societal, and economic conditions" and "be culturally appropriate" (ibid., p. 16), then it needs to openly consider and gradually embrace the condition of techno culture, moving technology into the focus of ESD in a reflected and critical, but also affirmative and participatory manner – thus fostering ICT as one of the pillars to a sustainable future.

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STUDENTS' MOTIVES AND SATISFACTION WITH STUDIES IN THE AREA OF NATURAL SCIENCES AND THEIR WILLINGNESS TO CONTINUE STUDIES IN TEACHER EDUCATION

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Abstract

Teachers of natural sciences play a key role to play in creating knowledge of education for sustainable development (ESD). However, Estonian students' interest in studying natural sciences and their willingness to continue studies in teacher education have decreased. This study was designed to address the following research questions: How clear were the students' motives to study natural sciences? How does the clarity of motives relate to students' satisfaction with their studies? How is students' satisfaction with studies related to their interest to continue studies in teacher education? What are the reasons to choose or not to choose teacher education? The participants of the study were students of natural sciences at Tallinn University who responded to an adapted Learning and Studying Questionnaire by Entwistle et al. (2002) and open-ended questions designed by the authors of the study. The results of the study support that carefully planned curriculum selection and positive learning experiences increase students' willingness to choose teacher education.

Key words: *education for sustainable development; teacher education; natural science area; students' motives; students' satisfaction.*

Introduction

Education is an essential tool for achieving sustainability. People around the world recognize that current economic development trends are not sustainable and that public awareness, education and training are the key to moving society toward sustainability. But, at the same time, people argue about the meaning of sustainable development and whether or not it is attainable. They have different visions of what sustainable societies will look like and how they will function. Of course, many truly great concepts of the human world – among them democracy and justice – are hard to define and have multiple expressions in cultures around the world.

In our opinion, education for sustainable development (ESD) is the use of education as a tool to achieve sustainability. Education is critical for achieving environmental and ethical awareness, values and attitudes and behaviours consistent with sustainable develop-ment and for effective public participation in decision-making. ESD has to be seen as a

process of learning how to make decisions that consider the long-term future of the economy, ecology and equity of all communities. This vision of education emphasises a holistic, interdisciplinary approach to developing the knowledge and skills needed for a sustainable future and changes in values, behaviours and lifestyles (UNESCO, 2003).

The relationship between education and sustainable development is complex. This research shows that basic education is a key to a nation's ability to develop and achieve sustainability targets. The teacher and his/her competence have an essential effect on the quality of basic education. Thus, ESD poses new challenges for teachers and teacher education. ESD requires teachers to engage pupils in a culture of argument, complexity, uncertainty and risk analysis. If teachers are to provide ESD effectively, they need the right skills and tools. However, there are concerns that initial teacher training and continuing professional development do little to equip teachers with the skills and knowledge necessary to provide ESD in the cross-curricular manner (Learning the Sustainability Lesson, Environmental Audit Committee, 2003).

Another important issue is that, in many countries, there is a lack of young teachers. Fewer and fewer students are interested in continuing their educational career in teacher education. In recent years, Tallinn University, one of the biggest universities in Estonia providing teacher education, has had difficulty enrolling even some state funded study places of subject teacher curricula. Furthermore, among those completing the teacher education programme, many do not enter the teaching profession. At the same time, the teaching staff is becoming increasingly senior in age (Riigikontrolli aruanne, 2004).

This paper focuses on teachers of natural sciences because they play an important role in producing competent environmental decision-makers. Sterling (2001) argues that the linear idea that more environmental education would change people and, therefore, society is simplistic and limited. Instead, all education, whether or not intended as such, should be treated as environmental. Nevertheless, subjects related to natural science are important parts of the school curriculum as they promote diverse forms of inquiry in the environment and encourage debate and decision-making on environmental issues. In the face of the challenges involving a lack of natural science teachers in schools, insufficient *offspring* and the fact that 12-18% of the teachers currently practising in the area do not meet the required qualification, we analyse what influences and motivates students to enter and pursue the natural science curriculum and continue studies in teacher education.

The study

Estonian subject area teachers follow a 3+2 programme in which the first three years are devoted to studies in the subject area chosen. After these studies, students may enter a programme at the MA level where they choose either to continue subject matter studies or enter into teacher education. In contrast, class teachers study according to an integrated programme, meaning that they begin pedagogical studies right from the start of their education. It is worthwhile to mention here that based on the Rots et al. (2007) study, the non-integrated academic teacher education, such as the road Tallinn University future subject teachers follow, is a negative predictor of graduates' entrance into the teaching profession. The integrated model appears to foster stronger commitment to teaching than the 3+2 model, in which potential teacher candidates may lose interest to teach during the time of intensive subject matter study without pedagogical studies.

This study was designed to address the following four research questions: *How clear were the students' motives to study the area of natural sciences? How does the clarity of motives relate to students' satisfaction with their studies? How is students' satisfaction with studies related to the interest to continue studies in teacher education? What are the reasons to choose or not to choose teacher education?*

The participants of the study (N=92) were Bachelor level students of natural sciences at Tallinn University. Of them, 31 studied under the curriculum where the major was biology, for 55 students the major was geo-ecology and for 6 – physics. After completion of the curriculum and obtaining their Bachelor's degree, the graduates may or may not pursue teacher education at the Master's degree level.

Method and sample

The data was collected using an adapted Learning and Studying Questionnaire by Entwistle et al. (2002) where 40 questions (using a five-point scale from agree to disagree) were divided into the following blocks: *organisation and structure of curriculum*, *teaching and learning*, *students and teachers* and *assessment and individual work*. The authors of the study added a fifth block measuring the students' overall satisfaction with statements such as: *I am satisfied with my learning experiences at the university; I am satisfied with my intellectual development across studies.* Additional questions were designed by the authors of the study considering the following topics: *general satisfaction with studies*, *clarity of reasons and motives in choosing the university and the particular curriculum*, *reasons to continue studies at university* and *probability of continuing studies under the teacher education curriculum after completion of the Bachelor's degree studies*. All these were scaled questions. The last question in the questionnaire was an open-ended question to find out what the students' possible reasons of choosing or not choosing the teaching profession.

Data analysis

The quantitative data was analysed using the SPSS programme. Descriptive statistics, group statistics, independent sample t-test and correlation analyses were used. For reliability, internal consistency (Chronbach alpha) analyses were also conducted. The alpha was between 0.72 - 0.86, which shows satisfactory internal reliability.

For analysis of qualitative data, both deductive category application and inductive category development were used. The comparing coding among two coders was used for reliability. The coincidence/agreement rate of two researchers was 87% for the first and 83% for the second open question.

The results

To the first research question: *How clear were your reasons and motives for starting studies under the particular curriculum in the area of natural sciences?*, 77% of the students answered that their reasons and motives were clear. However, this implies that 23% of the students choose the curriculum at random or were influenced by external factors. To get a better understanding of why the students chose to enter the particular

university and curriculum, the students were asked to assess, on a five-point scale, the importance of various factors that had affected their decision. The division of the students' assessment is presented in Figure 1.
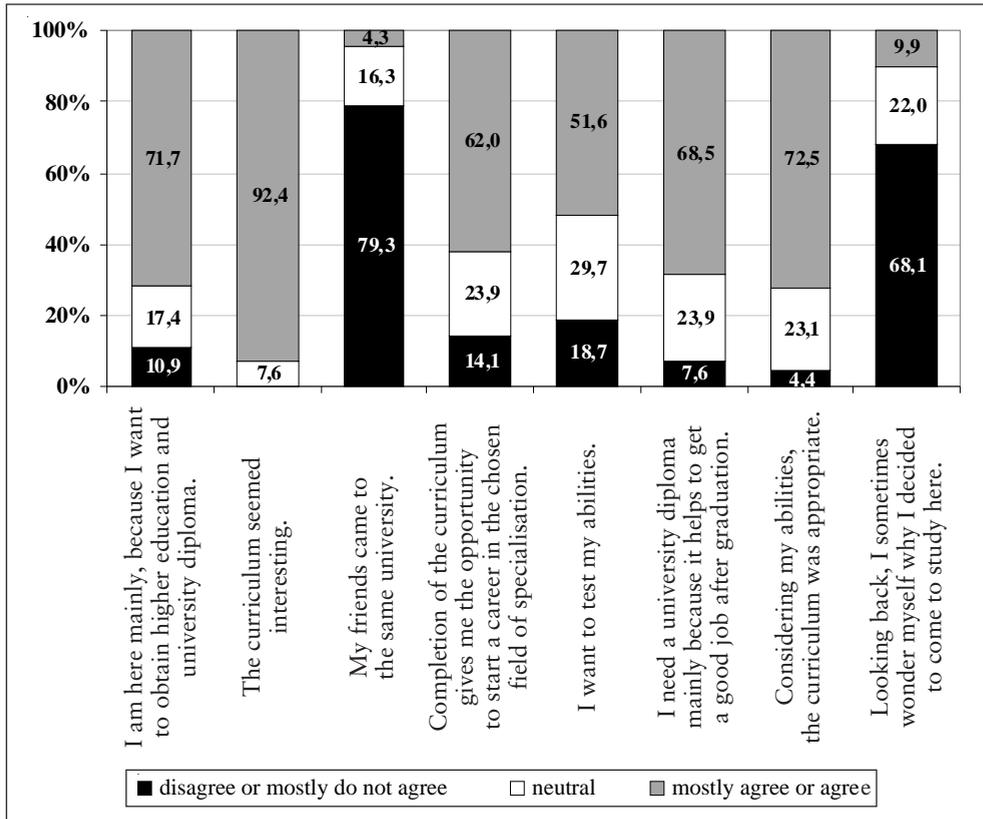

Figure 1. Students' assessment of the factors that affected their decision to choose the particular curriculum

The key factors that influenced students to continue their studies in the university were the following: (1) the curriculum seemed interesting (92%); (2) the curriculum seemed suitable to their abilities (73%); (3) the main reasons of taking up studies were to obtain higher education and a university diploma (72%).

The influence of friends in the selection process was insignificant as only 4% of the respondents agreed that their choice was affected by friends who came to study in the same university. Other researchers have also found that there are very few students who feel that they were influenced by their friends' decisions (Byrne & Flood, 2005). Yet 10% of the participants admit that looking back they sometimes wonder why they had decided to enter the specific field of studies in the first place. While to 23% of the students their motives and reasons of choosing the curriculum were not clear, 10% had continued to have doubts about their choice.

The second research question was *How does the clarity of motives relate to students' satisfaction with their studies?* To find out whether the clarity of motives relates to

students' satisfaction with their studies, the average evaluations of two groups of students – (a) students whose motives and reasons of selecting the curriculum were clear; (b) students whose motives and reasons of selecting the curriculum were vague – were compared by using the t-test. Statistically significant differences were manifest in three of the five blocks (Table 1). Namely, statistically significant differences appeared in the blocks: *organisation and structure of the curriculum* (p < .01), *teaching and learning* (p < .05) and *general satisfaction with studies* (p < .01). This indicates that the more informed and considered the choice of curriculum is, the greater the student's satisfaction with studies.

Table 1. Average evaluation of students' satisfaction with their studies based on the clarity of motives and reasons for starting studies under this particular curriculum

Study experience at the university		Clarity of reasons and motives for starting studies under this particular curriculum		p	Group total
		Vague	Clear		
Organisation and structure	Mean	3,13	3,67	,001	3,55
	Std Deviation	,69	,64		,69
	Valid N	21	71		92
Teaching and learning	Mean	3,51	3,88	,003	3,79
	Std Deviation	,40	,50		,50
	Valid N	21	71		92
Students and teachers	Mean	3,71	3,84	,335	3,81
	Std Deviation	,49	,53		,52
	Valid N	21	71		92
Assessment and individual work	Mean	3,94	4,05	,384	4,02
	Std Deviation	,48	,48		,48
	Valid N	21	71		92
General satisfaction	Mean	3,75	4,29	,014	4,16
	Std Deviation	,88	,59		,70
	Valid N	21	71		92

One of the objectives of this study was to find out what affected students' choices and willingness to continue or discontinue their studies in teacher education. Therefore, the students were asked to answer the third research question *How do you evaluate the probability of continuing studies under the teacher education curriculum after completion of the Bachelor's degree studies*? The responses were not very positive. Only 33 students (36%) said that it was *likely* or *very likely* that they would continue in teacher education, while 59 students (64%) were of the opinion that teacher education would not be their first choice after obtaining the Bachelor's degree.

On analysing whether there were any correlative relationships between the students' awareness of choosing the curriculum and interest in continuing studies in teacher education, a statistically significant difference became apparent ($p < .05$). It appeared that the more informed the choice of curriculum on the Bachelor's degree level was, the greater the probability that the student continued in teacher education was. It is possible that many of the students had thought about teacher education, such that they had the desire of becoming a teacher of the subject area already upon entering the university.

However, there were no significant differences between students' satisfaction with their studies and interest in continuing studies in teacher education. This indicates that the most important factor is an informed choice of curriculum, which affects both satisfaction with studies and the desire to continue studies in teacher education. However, a positive learning experience obtained in the university does not affect students' desire to continue studies in teacher education.

The fourth and final research question was *What are the reasons to choose or not to choose teacher education?* To ascertain the causes that affect students' choice of curriculum and the teacher's profession, two open-ended questions were included where the students were asked to substantiate why they wanted or did not want to be involved in classroom teaching as a profession. The first open question was analysed applying a deductive approach, where categories were formed on the basis of Kyriacou and Coulthard's (2000) categories. Namely, several earlier findings have shown (Kyriacou & Coulthard, 2000) that the main reasons for choosing teaching as a career fall into three main areas: (1) altruistic reasons: these reasons deal with seeing teaching as a socially worthwhile and important job, a desire to help children succeed and desire to help society improve; (2) intrinsic reasons: these reasons cover aspects of the job activity itself, such as the activity of teaching children and an interest in using their subject matter knowledge and expertise; (3) extrinsic reasons: these reasons cover aspects of the job which are not inherent in the work itself, such as long holidays, level of pay and status.

Altruistic reasons were mentioned 9 times.

> *The opportunity to make a positive difference in the educational system, to guide students, to shape their values and thus improve the world.*

Intrinsic reasons were mentioned 31 times.

> *I have always wanted to be a teacher. I love being involved with children and passing my knowledge to them. I think I am good at explaining my subject.*

Extrinsic reasons were mentioned 13 times.

> *Teachers have steady state employment and salary. There is always a need for young teachers.*

Thus, the majority number of students made their career choice due to intrinsic reasons, which confirms the researchers' presumption that a large number of students who wish to continue studies in teacher education after obtaining their Bachelor's degree have made their choice already by the time of choosing the curriculum. This is further

established by a relationship that appeared during the statistical data analysis that the more informed the choice of curriculum is, the greater the probability that the student continues studies in teacher education is.

Ascertaining the factors and reasons why students do not choose teacher education is just as important as finding out the reasons why students have made such a choice. The relevant open question was analysed by applying an inductive approach. As a result, four categories emerged:

(1) causes that are related to the respondent, i.e. absence of necessary personal qualities;

(2) causes that are related to work, i.e. profession-related deficiencies, including both material and learner-related issues;

(3) there are better opportunities for self-realization, including other interests which do not include teaching;

(4) students who have not made up their minds yet.

The responses fell into the categories as follows. Work-related deficiencies were mentioned most frequently (including both material reasons and student-related reasons) – 36 times. For example: *In my opinion, the workload and the level of commitment are not in conformity with the salary, especially in the case of young teachers. The job causes stress. You have to carry work home. Some students are undisciplined, etc.* Absence of personal qualities necessary for work as teacher ranked second, mentioned 23 times. For example: *I do not think that I have all the qualities that are necessary to become a good teacher. I am too modest. A good teacher must have the talent of passing her knowledge successfully and in a fascinating manner. I think I do not have the talent.* The opinion that there are better professions and opportunities for self-realization than teaching ranked third, mentioned 15 times. For example: *I think there are many other better jobs to realize myself.* The responses of five students were classified under the fourth category; they had not made their final choice yet. For example: *I did not come to the university to become a teacher, but the challenge whether I can cope as teacher has been on my mind, indeed.*

We can argue that the most essential reason why students choose not to take up teacher education and teaching as a career relates to the level of difficulty of the career and related problems. Students mention both economic and student-related problems. On the other hand, students' belief that teachers' salary is low is not quite true and management of pupils who have learning or behavioural problems depends largely on the teacher and the internal cooperation within the school as an organisation. An interesting fact is that students often associate absence of personal qualities necessary for work as teacher with problematic pupils, i.e. students think that they are unable to maintain self-control or have insufficient skills of explaining things. As many skills can easily be acquired, the Bachelor's level curricula could include a course of pedagogy, offering students opportunities to test their abilities in real teaching situations, thus impacting changing their beliefs about the self and the direction of career choices.

Discussion and conclusions

This study is aimed at seeking answers to the following questions: *How clear were the students' motives to study the area of natural sciences? How does the clarity of motives relate to students' satisfaction with their studies? How is students' satisfaction with studies related to the interest to continue studies in teacher education? What are the reasons to choose or not to choose teacher education?* As the number of participants was relatively small and concentrated on the Bachelor's level undergraduates in the area of natural sciences of only one university, any generalisation to the wider population must be made with caution.

The findings indicate that, almost a quater, 23% of the students were uncertain about why they had chosen to study natural sciences in the university. Of them, 10% are still not sure whether the choice of curriculum was right. This research shows that the majority of students who drop out of higher education do so in their first year (Byrne & Flood, 2005). Increasing participation in higher education has brought students of various backgrounds, levels of readiness and expectations. Unrealistic expectations and unclear goals often lead to dropping out and, therefore, this group of students are at a a risk group who may not graduate. On the other hand, the study indicates that the more informed the students' choice of curriculum is, the greater their satisfaction with studies is. Also, a significant difference appears between students' clarity of reasons and motives in choosing the particular curriculum and interest in continuing studies in teacher education. Therefore, universities preparing teachers must pay much more attention to developing their counselling systems (both curriculum and career counselling). Informed and motivated choice of studies ensures satisfaction with the studies and helps to prevent disappointment in later professional life.

It is argued that the degree of match between what a person wants from a career and the extent to which they think a particular career offers what they want has a crucial influence on their career decision-making (Kyriacou & Coulthard, 2000). The view of what is wanted from a career and what teaching is thought to offer will vary from person to person. This research shows that some students probably made their decision to take up teacher education by the time of entering the Bachelor's degree studies and, for them, the most important reasons were intrinsic reasons. Other researches have also confirmed that the intrinsic value is among the highest rated motivations for choosing a teaching career (Watt & Richardson, 2007). On the other hand, the findings indicate that the integrated curriculum is better than the 3+2-system curriculum for students who are clearly oriented toward teacher education already at the start of choosing the curriculum. As based on the study by Rots, Aelterman, Vlerick and Vermeulen (2007), the non-integrated academic teacher education is a negative predictor of graduates' entrance into the teaching profession. This may be one of the factors why only 36% of the respondents expressed the desire to continue in teacher education.

If we want to encourage more graduates to opt for teaching, we also need to explore how teaching is viewed by those who want to choose other careers. The answers provided by the participants indicated that most of the reasons why the respondents thought that the teaching career would not be among their future choices were due to work-related deficiencies, including both material and student-related reasons. Other studies indicate that improving salary and working conditions are important factors which help increase the professional status of the teaching profession (Kyriacou & Coulthard, 2000). Another

important reason why the respondents did not want to choose teacher education was the absence of personal qualities necessary for work as teacher. However, the objective of teacher education lies namely in building skills needed for the teaching career and therefore students' beliefs about a lack of relevant qualities may be premature. It is essential that some courses on pedagogy are included in the Bachelor programme to help create a more realistic understanding of teaching practice and to provide students with opportunities to test their skills and, through these experiences, become more certain about their future choices.

Kyriacou and Coulthard (2000) also note that, to improve teacher recruitment, we need to focus on those factors that undergraduates who are undecided about teaching as a career view as important in influencing their choice of career and to show that teaching will offer a pleasant working environment. To successfully construct an educational environment that engages the hearts and minds of students, educators need to develop an awareness of and sensitivity to their students' motives, preparedness and expectations. A special attention needs to be paid to the training of teachers to be able to develop the knowledge and skills needed for a sustainable future as well as changes in values, behaviours and lifestyles. In teacher training, we as academic leaders should, on the one hand, serve as role models to future teachers and, on the other hand, pay much more attention to the counselling system and toward popularising the teaching profession. It is essential that teacher education attracts learners who have the desire and who are ready to work as teachers after they graduate.

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THE QUALITY OF FAMILY RELATIONS IN ENSURING SUSTAINABLE EDUCATION

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Abstract

Family research is crucially important to teacher education and training because it delivers important insights for understanding the conditions of students' socialisation. Changes in family life, including longer working hours of parents, actual loss of adult company in children's life and less time spent on family activities, have raised the question of quality in family relationships. The paper discusses the main aspects of parental practices: care, control and family activities. The study analyses how students and parents understand family care, joint activities, vision of future and the differences of their conceptions. Two ethnic groups – Estonian and Russian families were studied. The current study was based on a questionnaire, which was administered to 4372 students in grades 4 through 12 of secondary schools, along with 2405 parents. The results were analysed using the χ^2-test. The results reveal that students worry about their future, coping at school and finishing the school significantly more than parents. There are differences between the Estonian and Russian ethnic groups: Russian families tend to have higher levels of care and control than Estonian families and relations between children and parents are closer in Russian families as well. The paper provides teachers with useful information to work with families of different ethnic groups.

Key words: students; parents; parental practice; care; vision of future.

Introduction

During the last few decades, there have been significant changes concerning the three categories of child's protective environmental factors – family, school and community (Abelev, 2009). Working life has changed, with work involving manual labour diminishing and mentally strenuous work increasing. The home is becoming a site of evening and weekend work (Stadelmann, Perren, Von Wyl, & Von Klitzing, 2007).

These changes also have implications for everyday family life. Due to changes in working life and harder competition in the labour market, people have less free time to spend with their family; traditional family values and the family itself have eroded; new family forms and competing views of parenting have evolved, leading to a situation in which the concept of the family itself has become more contested. There has been an

erosion of parenthood – that is, a loss of adult company in children's and young people's life. Many of these assumptions suggest that young people also perceive family life as less important and that families actually spend less and less time together. But, at the same time, studies show that the role of the family and parents continues to be meaningful in supporting a child's sustainable development – the development that ensures child's coping in his/her future life (Turtiainen, Karvonen, & Rahkonen, 2007).

We think that family research is important to teacher education and training in that it delivers important insights for understanding the conditions of students' socialisation. Bronfenbrenner (2005) suggests that, in many respects, teachers lack insight into and experience with the complexities of family interactions within their multiple ecological settings. Sustainable teacher education cannot be provided without considering the moral and personal background of the teachers (Mandolini, 2007). In Estonia, the most important key persons in developing children and their families are teachers. As a social support network, the system of social workers does not cover all necessary aspects of a family education. The challenge for teacher educators, therefore, is to help teachers to develop positive, yet realistic dispositions toward working with families (Baum & Swick, 2008).

The meaning of good parent–child relationships

The family serves as a major context of socialization for children. One type of influence within this context is the quality of parent–child relationships, which has been linked to children's academic, social and emotional development (Kerns, Aspelmeier, Gentzler, & Grabill, 2006; Stadelmann et al., 2007). Despite the importance of these relationships, few studies have examined what constitutes good parent–child relationships (Crockett, Brown, Russell, & Shen, 2007). An explanation from the attachment perspective might be that parental responsiveness is a primary determinant of the quality of the attachment relationship and, therefore, the behavioural tendencies of the developing child (Michiels, Grietens, Onghena, & Kuppens, 2008).

Parenting practices instead of parenting styles

Identifying parenting variables predictive of children's academic attainment has been of great interest to researches (Cordy & Wilson, 2004; Hill & Craft, 2003; Peraita & Pastor, 2000). In prior research, researchers have focused on parenting styles (such as responsiveness and demandingness), which generally tap into the emotional climate and parental control of parent–child interactions. Traditionally, there are two major dimensions of parenting styles that have been theoretically linked to pro-social and moral development (Carlo, McGinley, Hayes, Batenhorst, & Wilkinson, 2007). The first is *care and support* which refers to the degree of positive affection present in parent–child relationships. The second is *demandingness* (or *control*), which refers to the degree of strictness and behavioural standards expressed by parents for their children. Many scholars have noted that parents who express high levels of responsiveness and care tend to be more child-centred and are more accepting of their children. This parenting style receives more positive child evaluations and foster close, interpersonal relationships. The level of control is supportive to some extent and has been associated with lower

levels of violent activity and with higher levels of academic motivation (Carlo et al., 2007; Frey, Ruchkin, Martin, & Schwab-Stone, 2009).

However, there is a growing interest in identifying specific *parenting practices*, rather than assessing general interaction styles to better predict child's academic development and social behaviours. Parenting practices embrace both the basic characteristics of parenting styles and other variables, such as open communication, instrumental and emotional support, indirect expressions of caring, parental control and valued relationship qualities (Crockett et al., 2007).

Parental control, monitoring and future confidence

The personal motivation of learners, especially that of young children and adolescents, is heavily affected by their perceptions of the social and psychological environments that surround them, including home environment (Quing, Dawson-McClure, Sandier, Milisap, & Woichik, 2008). Perceived expectations, pressures and support from parents, teachers and peers can cause students to feel confident or helpless, focusing more strongly on a certain type of goal over others. Researchers have documented that achievement pressure from parents is a source of major stress and interferes with their coping (Bong, 2008). Therefore, it is important to study *future confidence and issues related to the future.*

Monitoring, which refers to parent's awareness of child's activities and whereabouts, represents one aspect of parent–child control. Monitoring can occur in a broader range of situations (e.g., checking whether a child has completed homework, controlling child's attendance in hobby groups). High levels of parental monitoring may indicate that parents are interested and involved with their children. It has been associated with lower levels of juvenile delinquency and antisocial behaviour and better academic performance in middle childhood and adolescence (Kerns, Aspelmeier, Gentzler, & Grabill, 2006). Conceptually speaking, there is a need to recognize the multi-dimensional nature of parental behavioural control (Shek, 2006) and to differentiate between parental monitoring and parental knowledge of children's activities.

Family activities

Discussions about family activities are always closely related to the term quality time. Quality time spent together with the family and common activities create a basis for child's successful coping in the future. There are remarkable differences on parents' views of *quality* time (Snyder, 2007): (1) structured-planning parents views it as planned *family* activities, (2) child-centred parents emphasizes heart-to-heart talks with their children and (3) time-intensive parents believe that all the time they spend with their *families* is *quality* time.

This paper focuses on some aspects of parenting practices studying the level of care in families, children's future expectations in the context of parental control, family activities and children's hobbies, as indicators of parental control and/or parental knowledge of children's activities. This research addresses the following research question *How do students and parents understand family care, joint family activities and future vision, and do their conceptions differ?*

During the current academic year 2008/2009, there are 147.519 students studying in Estonian general education schools, of which 75% are Estonians and 25% of other nationalities, mostly Russians (Õpilaste arv... 2008). When planning the current study in 2002/2003, there were 200.478 students studying in Estonian general education schools, which is considerably more compared to the present time, however, the percentage of Russian speaking students has remained 25%. Thus, to have an adequate overview of students' opinions, we considered it important to include also Russian speaking students and their parents in the current study.

The goal

Taking into account the aforementioned theoretical viewpoints, this research aims to find out how Estonian and Russian speaking students from the II and III levels of primary school and from gymnasium and their parents evaluate their family relations, family activities, and what expectations they have for the future. There are several problems concerning children's coping in Estonia. Therefore, much research has focused on aspects having effect on it. The research *Kool kui arengukeskkond ja õpilaste toimetulek* (School as a developmental environment and students' coping), carried out in Estonia in 2005–2007, also embraced different aspects influencing students' coping, including the role of families and their partnership with schools. The results revealed significant differences between studied ethnic groups (Russian students were more concerned about their studies and academic performance than Estonian students, and Russian parents were better informed about their child's school) (Veisson, Kallas, Leino, Ruus, & Veisson, 2008). The research supported the need for a deeper study of families and their dynamics, especially in the framework of ethnic differences. Arising from these studies, the hypotheses were put forward.

1. The importance of interpersonal relations in families is different between two main ethnic groups – Estonian and Russian (Russian families value closer interpersonal relations more than Estonian families);
2. Estonian speaking students and their parents are less worried about their future than Russian students and their parents.

Method

The current study is based on the results of the state financed project of the Department of Educational Sciences of Tallinn University *School as developmental environment and students' coping**, whose main aim was to study students' coping at school and dropping out.

The questionnaires, which were distributed to students from 4th through 12th grades and to parents, comprised 53 questions. Corresponding to the language of conduct at school, the questionnaires were designed in Estonian and in Russian.

Participants

The study included 3838 students from 7th–12th grades from Estonian general education schools and 2048 parents. The second part of the study included 534 students from 4th–6th grades and their 357 parents.

Design

The sample was created with the aim of including: 1) schools with Estonian or Russian as the languages of conduct; 2) city and country schools; 3) schools with ranging academic success according to the state exam results of the past 5 years. Altogether, 66 general education schools from different parts of Estonia participated. The study was carried out in 2004–2007.

Procedure

The current study had two phases. The first part included students from grades 7–12 and their parents and took place in 2004–2005. The second phase, in 2006–2007, included students of grades 4–6 of the same schools and their parents.

Results

Several significant differences between Estonian and Russian speaking students' and their parents' appraisals about the future, family activities, caring and extracurricular activities were found.

1. Students' and parents' evaluations about the future

Younger Estonian **students' appraisals** about their future are more positive compared to Russian students. The fear of not finishing the school is somewhat greater in the case of Estonian students. Russian students, however, have more reason to worry about behavioural problems. In general, students of the younger school level are more positive. They believe that they are able to finish the school, that they will not have many problems because of behaviour, and that this is also not a reason for dropping out of school (Table1).

Younger Russian students worry more about going to university and about unifying family and work life. Estonian students, in turn, worry more about being unemployed.

Table 1. 4–6 grade students' evaluations about their future

When thinking about the future …	Estonian %		Russian %		**
	Yes	No	Yes	No	
1. …I believe I will always do well at school (Estonian n = 168; Russian n = 180)	85.1	14.9	82.7	17.2	.000
2. …I am afraid that I won't be able to finish school (Estonian n = 170; Russian n = 177)	14.1	85.9	13.6	86.4	.000
3. …I believe I won't have problems because of my behaviour (Estonian n = 167; Russian n = 178)	73.0	27	72,2	28.7	.000

Sequel to Table 1.

4. ...I am afraid that I will drop out of school because of my behaviour (Estonian n = 169; Russian n = 177)	9.5	90.5	14.7	85.3	.000
5. ...I am afraid I will not continue my studies at the university (Estonian n = 169; Russian n = 176)	20.2	79.8	21.6	78.4	.000
6. ...I am sure I won't be unemployed (Estonian n = 166; Russian n = 170)	87.3	12.6	90.0	10.0	.007
7. ...I am afraid I won't be able to unify work with family life (Estonian n = 168; Russian n = 175)	10.7	89.3	13.1	86.8	.000

** The differences are significant at *p* < .001

It appears that older Estonian students are more confident about succeeding at school compared to older Russian students. Students of higher grades are in general more self-assured about their behaviour and believe that they won't have problems because of that. Estonian speaking students worry more about not being able to continue their studies at the university. Being unemployed worries more Russian than Estonian students (Table 2). When comparing the evaluations about the future of Estonian and Russian students on both school levels, it appeared that older Russian students feel more uncertain about their abilities to do well at school and worry much more about their chances to find work in future.

Table 2. 7–12 grade students' evaluations about their future

When thinking about the future ...	**Estonian %**		**Russian %**		**
	Yes	**No**	**Yes**	**No**	
1. ...I believe I will always do well at school (Estonian n = 2553; Russian n = 778)	84.7	15.3	72.1	27.9	.000
2. ...I am afraid that I won't be able to finish school (Estonian n = 2543; Russian n = 786)	19.7	80.4	15.4	84.6	.000
3. ...I believe I won't have problems because of my behaviour (Estonian n = 2529; Russian n = 775)	77.5	22.5	75.6	30.7	.000
4. ...I am afraid that I will drop out of school because of my behaviour (Estonian n = 2544; Russian n = 780)	6.3	93.8	12.1	87.9	.000
5. ...I am afraid I will not continue my studies at the university (Estonian n = 2534; Russian n = 775)	41.6	58.3	26.7	73.3	.000

6. ...I am sure I won't be unemployed (Estonian n = 2483; Russian n = 749)	73.7	26.3	17.8	82.1	.000
7. ...I am afraid I won't be able to unify work with family life (Estonian n = 2523; Russian n = 776)	13.1	86.8	12.2	87.7	.000

** The differences are significant at $p < .001$

When analysing **parents' appraisals** (in case of parents the questionnaire included four items; cf. Table 3) between the school levels with the χ^2-test, a statistically significant difference ($p < .001$) appeared between 7–12 grade students (n=3838) and their parents' (n=2048) responses, except for one item: *won't have problems with teachers because of behaviour* ($p < .000$; .000; .052; .000 respectively).

Parents evaluate their child's future more positively than the students themselves. Among older students, 38.1 % are not afraid that they will drop out school, whereas among parents 56.9% do not worry about desertion. Thus, students' fears concerning finishing school are significantly higher than those of their parents.

Comparing the responses of 4–6 grade students (n = 534) and their parents (n = 357), there were statistically significant differences ($p < .005$) in case of all 4 items ($p < .05$; .002; .05; .001 respectively).

Worries about finishing school are, in the case of younger students, smaller. However, here too the parents' evaluations are more positive (48.1% of students do not believe that they will have problems with finishing school compared to 61% of the parents).

Thus, the parents of both younger and older students worry less about their children not finishing school than the students themselves. There can be several reasons for this. On the one hand, the parents may be more optimistic, because they are not familiar with all the problems at school. On the other hand, the parents, in general, are hopeful and positive that their children will manage in the future (Table 3).

Table 3. Parents' evaluations about their child's future

When thinking about the future ...	Estonian %		Russian %		**
	Yes	No	Yes	No	
1. ...I believe I will always do well at school (Students n = 4315; Parents n = 2324)	82.1	17.9	82.8	17.3	.000
2. ...I am afraid that I won't be able to finish school (Students n =4307; Parents n =2252)	18.0	82.1	9.4	90.6	.000
3. ...I believe I won't have problems because of my behaviour (Students n =4271; Parents n = 2273)	74.7	25.3	77.0	23.1	.027
4. ...I am afraid that I will drop out of school because of my behaviour (Students n = 4302; Parents n = 2237)	8.2	91.7	4.4	95.7	.000

** The differences are significant at $p < .005$

2. Family activities

When analysing Estonian and Russian students' appraisals regarding the frequency of family activities (scale options: *almost never, some times per year, some times per moth, several times a week*), statistically significant differences ($p < .005$) appeared between 4–6 grade Estonian and Russian students in the following items: *we talk about books, films or TV programs; we listen to classical music,* whereas in Russian families such activities take place more often.

There were statistically significant differences ($p < .005$) between 7–12 grade Estonian and Russian students in the following items: *we discuss political themes; we talk about books, films or TV programmes; we listen to classical music; we talk about the school day; we just talk and communicate.* In the case of older students too, such common family activities are more frequent in Russian families.

The only item where the respondents reported no differences was eating together with the family. When comparing the results on different school levels, both younger and older students gave relatively similar appraisals about the fact that their family members talk and communicate with each other frequently. Families of older students are less interested in their school day or eating together compared to younger students. According to the opinions of older students (7–12 grades), their parents are not as interested in their school day as they would like them to be. According to 4–6 grade students' responses, 80.1% of Estonian and 83.3% of Russian speaking parents asked about their child's school day several times a week, whereas in the case of older students, these percentages were 65.9% and 73.1% respectively. It may be that, in the case of older students, the parents consider their children more independent and do not find it important to ask about the school day so frequently. The families of both older and younger Russian students show more interest in the school life compared to Estonian families.

3. How caring families are

There were statistically significant differences ($p = .05$) in the appraisals of 4–6 and 7–12 grade students, with younger students considering their families to be more caring (Figure 1).
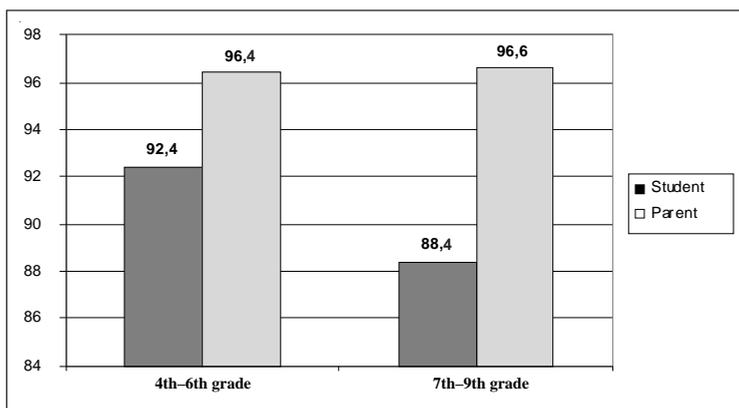

Figure 1. The comparisons of students' and their parents' appraisals about caring in families (%) on two school levels

There were no statistically significant differences between the appraisals of parents of younger and older students. According to parents themselves, they care enough about their younger or older children. The significant differences in the case of students, however, indicate that the older students do not feel their families care enough about them. Despite the fact that they are already *grown up*, the students feel they need more attention and closeness in family relations. Other explanation can be that the elder ones are going through puberty. They want to show independence and perhaps need another style of care. In general, the parents think that when the child is already in the primary school, he/she is independent enough and does not need as much closeness as younger children. However, especially in this age group, students need support and caring in order to cope with several problems they encounter.
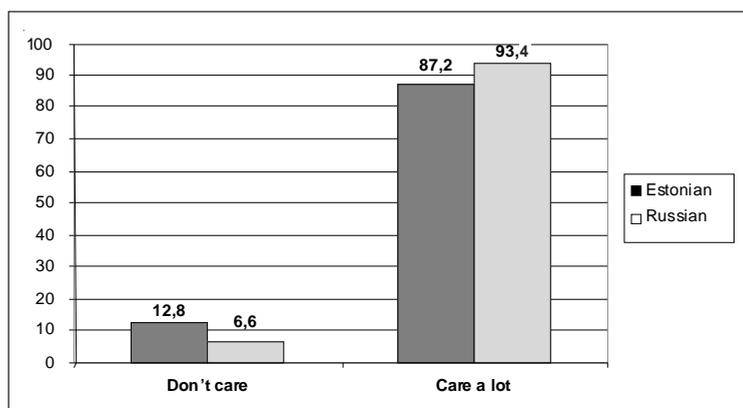
Figure 2. The appraisals of 7–12 grade Estonian and Russian language students about how caring their families are (%)

There were no statistically significant differences in the appraisals of 4–6 grade Estonian and Russian students. In grades 7–12, Russian students appeared to be significantly more positive ($p < .001$) in their appraisals (Figure 2).

Discussion

Changes in family life have raised the question of quality in family relationships. Although the role of the family and parents continues to be meaningful in the context of children's coping, the actual loss of adult company in children's and young people's life (mostly due to the stressful working life) has led young people to the point where they perceive family life as less important. Families actually spend less and less time together.

Studying the families of two larger ethnical groups in Estonia – Estonians and Russians – revealed that Russian families tend to have a higher level of control and monitoring than Estonian families. When comparing different aspects of care and control, the results indicate that higher level of control do not necessarily mean more problems in Russian families, but rather that Russian families are more interested, involved and more concerned about the future of their children.

Thus, both hypotheses of the current study were verified: Russian families value closer interpersonal relations than Estonian families; Russian students and parents are

more concerned about their future than Estonians. In Russian families, relations between children and parents are closer and more caring: parents talk, argue and discuss a variety of topics more frequently. Russian families appeared to care more and be more involved in planning their children's future rather early.

The parents' and the students' concerns about future are rather different. In general, the students are more worried than the parents, who are not always informed about all the problems the students have to deal with at school. In the case of the older students, communication with the parents is not sufficient, thus the parents might not evaluate the situation adequately enough and tend to overestimate the school. Similar results have been found in other studies elsewhere. Young people of all participating countries were similarly concerned about their future in study of Gelhaar, Seiffge-Krenke, Borge, Cicognani and Cunha (2007), which compared problem-specific coping strategies and coping styles of European adolescents from seven nations: Croatia, the Czech Republic, Germany, Italy, Norway, Portugal and Switzerland.

This study shows that Russian families spend more quality time together than Estonian families. Valuing family relations also helps to contribute to more healthy human relations in the future. The emotional support from the parents that is one of the main characteristics of family activities that may be seen as an important constitutive factor for children's sustainable development. If parents are unsupportive or insensitive to the child's signals or respond, they can evoke a sense of insecurity in their child. Consequently, the child does not learn how to effectively interact and communicate with others (Michiels et al., 2008).

The results of the current study are consistent with other family studies. According to Realo and Allik (1999), who studied the questions of collectivism and individualism in Estonian, North American and Russian populations, Estonians are more individualistic than Russians. The fact that the Russians living in Estonia were less collectivistic with regard to families and society than the Russians from Moscow corroborates the general rule that those who have migrated to other countries are usually more individualistic than those who have stayed in their resident countries. Russian family values also dominated over the values of the individualism (Varlamova, Noskova, & Sedova, 2008).

According to the study results, the profile of parenting practices in Estonia is rather different for Estonian and Russian families. Russian families tend to struggle more to ensure their child's successful future; they have higher care and control levels; they pay more attention to good parent–child relationships. Estonian parents expect their children to cope with their problems and challenges in life by themselves. However, the results of this study do not provide the entire picture of the aspects ensuring child's coping in the future as it is mainly focused on quantitative characteristics. In order to provide an in-depth analysis of the differences of parenting practices supporting child's sustainable development, additional qualitative aspects as indirect expressions of caring and parental control, the nature of emotional support and communication should be considered.

This paper discusses main issues concerning the changes in families, showing the latest trends in parenting practices. Teacher education programmes should provide their students with the knowledge based on up to date research as societal changes are very rapid making family studies an increasingly important part of teacher education. According to the concept of holistic education, the broader the network the child is living in is, the stronger its influence on child's development is. Therefore, cooperation

between school and family creates a more effective learning environment for a child. One of the most important bases is teacher training. It is essential to start from preparing the teachers who value home–school cooperation and have necessary skills for working with parents. Our lifestyle has become very stressfull. For parents, it is increasingly difficult to find the time for activities other than just earning their living which means that it is schools' (teachers') responsibility to organize the work of parental involvement in the most effective way. In teacher training programmes, more attention should be paid to introducing the principles of effective parental involvement (Lukk, 2008). The results of the study the paper is based on and a conclusion drawn from them indicates several important aspects teachers have to consider while working with parents. For instance, as Estonian parents tend to worry less about their children's future and relationships in family and they focus more on their professional career, teachers who work with Estonian families should organize their work accordingly. Russian families, in turn, because of their strong bonding, are good partners for teachers and teachers should actively involve them in the problem solving process. These are some examples of how to implement the results of family studies in the teaching process.

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TO TRAIN OR NOT TO TRAIN?

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Abstract

This paper examines the professional and non-professional methodological competencies of secondary school teachers in Nigeria. The main focus of this study is to probe the impact of professional and non-professional methodological competencies as a predictor of teaching effectiveness. Although this exploration is survey research, a questionnaire was used for data gathering, and multiple statistical procedures were employed in the analysis. This study contributes to the field both in terms of theory and practice. Theoretically, it provides an outline of school effectiveness and quality improvement that can be used as a basis for further research. The study identifies factors that create barriers to methodological competencies for the two categories of teachers used in this study. It also describes the present situation on the ground in Nigerian secondary schools. At the practical level, this outline might guide school leaders, education planners and policy makers in their school effectiveness and quality improvement endeavors.

Key words: professional; non-professional; teachers; classroom; methodological competencies.

Introduction

There are several methods of teaching that enable one to inculcate and provide students with insight during the instructional process (Harris & Muijs, 2005; Ololube, 2005b). Dictionaries variously define insight using concepts such as 'the act of grasping the inward', 'hidden nature of things', 'the ability to perceive clearly or deeply into a phenomenon'. According to one online teacher web page, if insightfulness equals intelligence then we must look more closely at how we teach and ask questions. From the contemporary act of sketching a scene to the more traditional act of recitation, do our teaching methods engage the parts of students' minds from which insight springs (The New Curriculum, 2003)? This is a question this study tends to examine, evaluating the common methods of teaching that help to provide students with insights.

There are different levels of classroom competencies that teachers should possess in order to create quality in instruction (Creemers, 1994c). For instance, teachers are expected not only to impart knowledge, but also to foster the adjustment of students;

understand student's basic cognitive and social problems; match curricular offering to levels of mental development; translate curricular specifications into relevant teaching materials; provide smooth transitions from home to school and from one level of education to another. The traditional image of teachers as people who stand in front of the classroom and teach children has, for some years, been outdated. Teaching in modern society involves assisting students as they make worthwhile and satisfying adjustments to school work, to social groups and to their occupations. If issues around these adjustments are not resolved, the individual child may not be able to fully appreciate his/her learning. As the principle duty of teachers remains to make the individual child learn, it is also their duty to remove obstacles to learning. If proper adjustments are not made, friction and frustration will set in and successful learning will not take place (Stones, 1966). The essence of harmony, a lack of friction, a smooth give-and-take and an interaction that is satisfying to cooperating parts of a social relationship, in other words, the reduction of frustration is central to making teaching and learning meaningful for the child and fostering in the child a prolonged interest in school (Amalaha, 1979). Thus, it is expected that all classroom teachers should endeavor to discover what constitutes appropriate experiences for their students through professional teacher education and studies (Austin, Dwyer, & Freebody, 2003).

Rationale for the study

Getting education right has been a priority for most countries for some years, hence the current global trend in education reform. The present course of events and priorities in the education sector in Nigeria suggests that Nigeria is on the wrong side of getting our children's education right. In the past two decades, Nigeria has undergone a number of structural reforms in its educational system. However, it is frequently overlooked that most of the reforms do not focus on practices and policies designed to create school effectiveness and quality improvement *vis-à-vis* ensuring that policies are implemented as stipulated. At this juncture, Nigeria cannot afford to be on the wrong side of educational reforms if we are to be recognized by the international community of nations.

Secondary schools in Nigeria operate under the guidelines provided by the National Policy on Education (NPE) instituted in 1981 and revised in 1989 (Federal Government of Nigeria, 1989). This policy outlines the objectives of secondary schools, the caliber and qualifications of teachers that should be teaching in them, the curriculum content and methodology to be employed. It is alarming, however, to note that, in spite of the provisions of the National Policy on Education, there remain serious problems that hinder the further development of secondary school education in Nigeria. These problems include, but are not limited to, an acute shortage of professionally qualified teachers and the recruitment of unqualified and untrained individuals into teaching.

There are essentially two categories of teachers that are employed in Nigeria, those that are academically qualified and those that are professionally qualified to carry out instruction in the classroom. By academically qualified (non-professional) teachers, we mean teachers who have academic training without professional teacher training as a result of enrolment in an institution of higher learning where they obtained qualifications enabling them to secure lucrative employment. Professionally qualified teachers are teachers who acquire professional teacher training that provides them with professional knowledge, skills, techniques and aptitude as different from general education. This

study has sought to measure these two categories of teachers in Nigerian secondary schools to determine their methodological competencies and teaching skills and their effect on student academic achievement.

The primary aim of this study is to learn from other research on teachers' methodological competencies and apply the lessons of this research to policies intended to improve and fortify the deteriorating secondary educational system in Nigeria. In other words, the aim of this research is to identify the best practices of academically and professionally qualified teachers, which can then form standards of emulation to enhance teachers' methodological competencies. Specifically, this study is designed to:

- evaluate the extent to which teachers with academic qualifications and those with professional teaching qualifications use problem-solving methods effectively;
- assess the extent to which teachers with academic qualifications and those with professional teaching qualifications effectively use individual teaching methods;
- examine the degree to which teachers with academic qualifications and those with professional teaching qualifications dramatize and demonstrate teaching situations effectively.

Research hypothesis

It was hypothesized that there are no significant differences in effectiveness between professional and non-professional teachers in their classroom methodological competencies.

Methodological competencies and the art of teaching

Methodology refers to the processes of teaching and learning which bring the learner into a relationship with the skills and knowledge that are specified and contained within the curriculum (Harris & Muijs, 2005). In the school, according to Gutek (1988), teaching methods are the means or procedures that teachers use to aid students in having an experience, mastering a skill or process and/or acquiring an area of knowledge. If efficient and effective, the methods of instruction will achieve the desired objective in that teaching implies the use of a technique or method of instruction to secure desired objectives. Gutek (1988) further observed that educators, at all levels of instruction, are involved in methodological questions. That is why in programmes of teacher education, for instance, attention is given to courses on techniques and methods of teaching (mastering learning methods, lecture methods, demonstration methods, dramatizing and discussion methods, questioning methods, problem-solving methods). It is through these methods of teaching that teachers acquire the competencies needed to carry out instructional processes effectively.

Similarly, Colman (1967) described method as an ordered system by which a teacher puts educative agents to work on humans to produce certain changes or result. He acknowledged five essential elements of instructional methodology:

- the specific objective or purpose of instruction;
- an introduction that relates the particular lesson to previous learning or experience;
- content or that which is the substance or the subject of a lesson;
- a summary to reinforce the particular learning or experience;
- an evaluation that determines if learners have achieved particular aims (Colman, 1967).

The Oxford Advanced Dictionary defines methodology as a way of proceeding or doing something, especially if systematic or regular. The same source defines competence as the condition of being capable – having sufficient skill and knowledge. Consequently, methodological competencies could be defined as the procedures of systematically doing something and having enough skill and knowledge to carry out the function at hand. Methodological competencies could be further characterized basing on their functional elements: to adapt to effective work methods; to analyse the task to be performed; to begin the process; to perform the task and to analyse one's procedures (Ololube, 2004).

The process of stimulating students' excitement and fostering a zest for education that will continue for a lifetime is an elaborate task (Ololube, 2005a). The teaching profession, therefore, must be fundamentally concerned with the attainment of maximum beneficial learning for each individual. It is the teacher's task to ensure that learning is efficient and effective to allow students to discover their full potentials. In order to carry out the teaching task effectively, teachers are guided by certain principles of teaching and learning, which themselves have great implications for teaching (Gbamanja, 1989). These principles are learned from professional educational institutions established to train potential teachers through their teacher education programs (Ololube, 2005b). Some principles of efficient and effective teaching are numerous.

- Planned teaching results in more learning.
- Students tend to achieve in ways they are tested: if students are tested only for facts, they tend only to memorize facts.
- Students learn more effectively if they know the objectives and are shown how to satisfy these objectives. The teacher should spend time discussing the purposes of doing various activities and experiment with inquiry and the processes used in solving problems.
- The teacher's function in the learning process is one of guidance: guiding individual students to reach objectives.
- Students learn from one another: working in groups while solving problems can enhance learning (Gnamanja, 1989).

One of the most important methods of teaching is mastery learning in that it accommodates the *natural* diversity of ability within any group of students. Beare, Caldwell and Millikan (1989) observed that using careful preparation and greater flexibility in instructional methods allowed individual students to be appropriately accommodated according to their respective levels of understanding in turn allowing them to progress at their own pace. That is, the role of teacher changes from that of purveyor of all wisdom and becomes that of facilitator of the learning environment. The teacher ensures the availability of resources at the time they are needed and for the duration they are needed. The actual teaching will be directed to individuals or to small groups of students dealing with essentially the same problem solving or learning mode, rather than to the entire class (Beare et al., 1989). The teacher monitors more closely the progress of individual students and ensures that concepts and processes are understood before the student moves onto the next component. Likewise, Gbamanja (1989) argued that this method of instruction has advantages that could be used to provide remedial materials for individual students, thereby encouraging individual study and freeing teachers from routine teaching. With this approach, the participation in the learning task is almost one hundred percent.

The demonstration method of teaching involves the teacher showing students a process or procedure such a science process, a cooking procedure or a computer procedure. Involving students in demonstrations makes for learning that is less passive and more active (O'Bannon, 2002). It involves showing, doing and telling the students the point of emphasis. It is mostly used as a technique within a method of teaching and sometimes as a method itself. Gbamanja (1989) describes the demonstration method of teaching as a technique within a method used to assist students in discovering the concept of metal where teachers need to demonstrate the physical and chemical properties of several different metals. Likewise, in the laboratory, teachers need to demonstrate the use of a microscope to their classes before letting their students use it to discover things themselves and when a science teacher shows the reaction of carbon dioxide on a moist blue litmus paper, he/she is presenting a demonstration. For science subjects, laboratory work is an essential ingredient of the course and some component of this learning is generally preserved, even in students who struggle with other components of the class. In addition to the experience of laboratory work, students often derive a lot of their contact with teachers in the laboratory setting (Forster, Hounsell, & Thompson, 1995).

Some people confuse the use of the words demonstration and experiment. While both concepts are related to the means of problem-solving and learning experiences in the classroom, they are different (Brown, Lewis, & Harcleroad, 1959). A laboratory experiment is used as a means of verifying a science while a science demonstration is used as an exhibition lesson or to show parts of an object or show the correct use of equipment (Gbamanja, 1989). It has been suggested that well-trained teachers tend to use the demonstration method effectively in order to aid students' understanding because their competence in teaching stems from the capacity to reach out to different categories of students by creating a rich and multi-dimensional learning environment (Reid, Hopkins, & Holly, 1987). In addition, the competent demonstrator combines the showing, doing and telling of the materials or equipment with (1) examples of ways in which they are used or operated; (2) cautions to be observed in their use; (3) reasons why certain actions are taken and certain results obtained; (4) the importance of each step involved. In this way, students are brought into close personal contact with the materials or equipment demonstrated (Brown et al., 1959).

Dramatizing and discussing are two related types of active learning with wide applicability in modern day schooling. Varied forms of both types have similar basic purposes and values in instructional situations. Indeed, there are occasions when either dramatizing or discussion methods may be chosen as a creative vehicle for achieving specific classroom goals (Brown et al., 1959). However, discussion (specifically) is when two or more people interact verbally with each other. This method could be adopted deliberately in learning situations, though, it sometimes occurs spontaneously as a teacher uses another method of teaching. It can be considered a technique of teaching within a method, and it sometimes occurs at brief intervals during an informal lecture. The discussion method is considered student-centered teaching (Gbamanja, 1989).

The discussion method is seen as naturally inspired or flowing from dramatization (Brown et al., 1959; Gbamanja, 1989). Often, too, both categories of activities are employed in close association. The rewards of these methods of instruction according to the authors are numerous.

• They assist students in developing a sense of confidence through participation and exchange of ideas.

- They encourage participation and involvement in what is going on in the learning environment. In this way students acquire knowledge.
- They develop positive interpersonal relationships in that the students interact with the teacher and with their colleagues on the basis of their desire to gain knowledge from one another.
- They develop critical and evaluative thinking and listening.
- They give students the opportunity to develop oral communication skills

Courses that can expose teachers to these methodological skills are courses that will enhance a teacher's capacity to handle instructional processes in the classroom. These courses tend to be embedded in the teacher training processes of various faculties of education, or other similar institutions charged with the responsibility of training teachers (Reid et al., 1987). Courses on the psychology of education, sociology of education, teaching methods and curriculum development and evaluation play an essential role in teacher education programmes that improve teachers' methodological competencies (Gronlund, 2000). Accordingly, Owens (2004) noted, "Psychology remains a predominant element in teacher education. Departments of educational psychology in schools of education commonly exert strong influences not only on the content of courses in teaching methods and curriculum but in such topics as test and measurements and statistics that loom so large in the undergraduate and graduate studies of teachers" (p. 19). Generally speaking, educational psychology is a method of training and teaching effectiveness. In particular, it is the study of how to help people develop intellectually, especially children who have learning difficulties. Although, research has shown that a teacher's own perception, beliefs and values guide their interactions with students, the selection of curriculum materials and organization within the classroom (gleamed from teacher training) does improve their performance (Highet, 1963; Stones, 1966).

Methodology

Research instrument

A suitable questionnaire was structured along a four-point likert-type scale (summated) of strongly agree (4), agree (3), disagree (2) and strongly disagree (1) to gather data for the study. This questionnaire was a set of attitude items, all of which are considered of approximately equal *attitude value* and to each of which subjects respond with a degree (intensity) of agreement or disagreement (Kerlinger, 1973). Section *A* of the research questionnaire describes respondents' background information, while section *B* is comprised of possible methodological competencies. The questionnaire was designed for respondent understanding in that different categories of people were chosen as respondents, thus the need to make the questionnaire as straightforward as possible (Denscombe, 2003).

Nworgu's (1991) characteristics of a good questionnaire were applied in designing the questionnaire. These characteristics are: relevance, consistency, usability, clarity, quantifiability and legibility (Nworgu, 1991). The questionnaire was also designed with the help of faculty members to elicit information from the respondents that would help gather information on teacher's methodological competencies related to student's educational achievements. It has face validity in that the feedback from faculty members

helped to determine that the measures reflect the content of the concepts in the questions (Bryman & Cramer, 1990).

Analytical framework and procedures

Simultaneously, to arrive at the intended comparative analyses, several sets of statistical analyses were conducted using SPSS version 13.0: mean point value, standard deviation, T-test of significance, ANOVA and cross tabulation (N-300). The T-test of significance was computed to test for statistically significant differences in the variables. It is a statistical significance set at *p < 0.05* to assess if the level of confidence observed in the sample also exists in the population. One-way-analysis of variance (ANOVA) was employed to test the relationship between variables and the respondents' background information. For a clear and trouble-free comprehension of data, cross tabulation was employed because it is one of the simplest and the most frequently used methods of demonstrating the presence or absence of a relationship (Bryman & Cramer, 1990; 2001; Saunders, Lewis, & Thornhill, 2000).

Population

The research population for this study was drawn from Rivers State (accessible) of Nigeria (target). It is one of the states in the south-south geo-political zone of the country. The population of the study was comprised of principals, subject heads and teachers from ten (10) randomly selected secondary schools. The supervisors of education from the Ministry of Education and Post Primary Schools Board were also included as they periodically supervised teachers in schools to ascertain their effectiveness. Of the total number of respondents, 270 (90%) were subject heads and teachers, 10 (3.3%) were principals and 20 (6.7%) – supervisors. Meanwhile, 76 (25.3%) were academically qualified, while 224 (74.7%) were professionally qualified. While 126 (42%) were female, 174 (58%) were male. 91 (30.3%) were social science teachers, 136 (45.4%) were science teachers and 73 (24.3%) were teachers of the humanities (Table 1).

Table 1. Frequency table for the respondents' background information
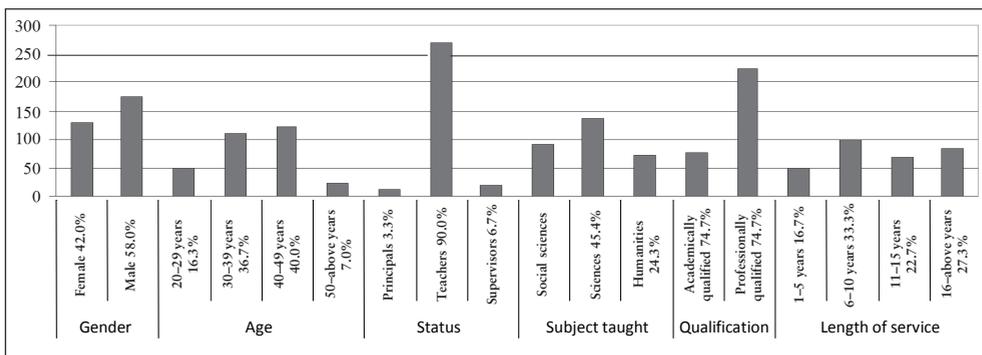
The ANOVA analysis conducted on the respondents' background information showed no significant differences in their attitude toward teacher's methodological competencies *(F = 1.71, Df = 299, p > 0.34)*. Coherence and reliability scales were tested with Cronbach's alpha coefficient. A respectable coefficient of 0.983 was obtained, thus indicating a high inter-item consistency.

Results

The first set of statistical analysis for this study began with an analysis of respondent's answers using mean and standard deviation. The goal of these measures is to reveal to what extent teachers' methodological competencies influence students' academic achievement. The respondents' answers showed that teachers with professional qualifications demonstrate and use problem-solving methods more effectively *(M = 3.65, SD = 0.54)* than academically qualified teachers *(M = 2.07, SD = 0.85)*. With respect to dramatizing and demonstrating effectively, the study showed that the respondents with professional teaching qualifications better accepted dramatization and demonstration as methods of instruction. This is evident in their mean and standard deviation respectively *(M = 3.47, SD = 0.73 / M = 1.84, SD = 0.73)*. It was equally obvious that professionally qualified teachers' mean and standard deviations *(M = 3.56, SD = 0.56)* were more than that of teachers with academic qualifications *(M = 1.75, 0.76, 0.75)*, which confirmed that the effective adoption and use individual teaching methods are an essential part of professional teaching (Table 2).

Table 2. Mean and standard deviation of differences between professionally trained and non-professionally trained teachers in the area of methodological competencies

Methodological competencies (Variable items)	Trained teachers (Professionally qualified)		Untrained teachers (Academically qualified)	
	Mean	SD	Mean	SD
Problem-solving methods	3.65	.54	2.07	.85
Dramatization and demonstation methods	3.56	.56	1.75	.75
Individual teaching methods	3.47	.73	1.84	.73
Total	3.56	0.61	1.89	0.78

The second set of statistical analysis was a t-test analysis of paired sample statistics of respondents' perception of teachers' methodological competencies. The purpose of this analysis was to further verify our analytical information; the t-test analysis was aimed at determining if there are significant differences between the respondents' means. The results showed that there are significant differences in the methodological competencies between academically qualified teachers and professionally qualified teachers across all the variables. SPSS version 11.5 displayed it as $p < 0.000$ significance levels. This does not mean that the probability is 0. It is less than $p < 0.0005$. The highest t-value was –27.08 and the lowest t-value was –35.69, *Df = 299, p < 0.000*, Therefore, the H_0 was rejected (Nworgu, 1991; Marija, 1997; Bryman & Cramer, 2001) (Table 3).

Table 3. Two-tailed test of difference between paired means

Paired variables	Paired mean	SD.	Std. error mean	T	Df	Significance (2-tailed)
Problem-solving methods	-1.58	.99	.057	-27.48	299	.000
Dramatization and demonstration methods	-1.81	.88	.051	-35.69	299	.000
Individual teaching methods	-1.62	1.038	.060	-27.08	299	.000

The third set of analysis was the use of cross tabulation to demonstrate the presence or absence of a relationship. The data were tallied along agree and disagree responses/lines. The set of pool questions that compared the two categories of teachers based on the respondents' perceptions showed large differences across all variables. The empirical results revealed that as many as *83.3%* of respondents agree that teachers with professional teaching qualifications use problem-solving methods more effectively (compared to *16.7%* who disagree). With respect to whether academically qualified teachers or professionally qualified teachers better dramatize (demonstrate) teaching situations effectively, the results revealed that *72.7%* felt that trained teachers have more propensities to effectively dramatize and demonstrate teaching situations relative to academically qualified teachers. Finally, turning to the adoption and use of individual teaching methods, the information gathered revealed that *75%* agree that trained teachers are more competent in the adoption and effective use of individual teaching methods, relative to *25%* who believe that untrained teachers are more effective in this realm. The overall cross tabulation results suggest that professionally trained teachers are more orientated to results than their academically trained counterparts (Table 4).

Table 4. Cross tabulation analysis of respondents' answers to the variables

N = 300	% Problem-solving methods	% Dramatization and demonstration methods	% Individual teaching methods
Untrained teachers (76)	16.7	27.3	25
Trained teachers (224)	83.3	72.7	75

Discussion and conclusions

Contrary to the expectations and the hypothesis of this research, the results showed that there are significant differences in the effectiveness of professional and non-professional teachers when it comes to methodological competencies. The findings suggest that trained teachers take into account the individual differences that exist among students. The children who lag behind in their schoolwork are one of the most challenging problems a teacher will face in their teaching career. These deficiencies are built on a foundation of persistent failure on the part of some children to achieve what other children are achieving and difficulty in reaching the academic standard set. Professional teachers were much more likely to devote special interest or attention to these students than non-professional teachers.

    The findings also revealed that professional teachers tend to apply more advanced teaching methods, for instance, problem-solving methods, dramatization and

demonstration methods) in the teaching and learning processes. This lends support to Janneck and Bleek's (2004) argument that currently teaching practices in the education industry are characterized by a strong emphasis on quality and special knowledge or professional competencies. These competencies cannot be easily learned individually in lectures or traditional seminars. They require teaching practice and engagement in real teaching contexts. The challenge of conveying these competencies is addressed by offering educational projects to pre-service teachers with a didactic concept that focuses on authentic teaching practices. These cooperative projects allow intended teachers to acquire the aforementioned key competencies in an integrative manner.

This study also found that there are relationships between teaching practice and methodological competence. Methodological competence generates input for instructional processes. Instructional processes offer rational input into student's academic achievements. Teaching practices and method courses designed for students at faculties of education equip pre-service teachers with relevant methodological skills that aid teaching and learning. A good example of this is the graduate teacher training registry programme in the UK which provides initial teacher training for non-trained prospective teachers (GTTR guide for application, 2005).

The analysis also reveals the importance of measurement and evaluation, psychology of education, philosophy of education, sociology of education, educational management, educational planning and other education courses that exposes pre-service teachers to the rudiments of being an effective teacher, because methodological competencies are very much associated with rigor. This gives backing to Law and Clover's (2000) study, where they contended that the rapidly changing environment in educational systems across the globe requires professional competencies in promoting educational development.

The findings show that professional teachers play multifaceted roles in effecting quality in teaching. This study reveals that there are indeed differences in the content and approaches of trained and untrained teachers and that these differences affect their instructional processes. Thus, it could be suggested that a great deal of importance should be attached to developing the skills and methods of untrained teachers in that quality teaching scored high in the evaluation of what constitutes an effective teacher. This lends support to the works of Cambell, Kyriakides, Muijs, & Robinson (2004), Creemers (1994b, 1994c), Darling-Hammond (1986, 1987), Darling-Hammond, Wise, & Klein (1995), Leino (1996) and Ololube (2005b).

An effective method of teaching reveals the ability to communicate, which is reflected in a lucid presentation and the transmission of an enthusiasm that is infectious. Communication here does not merely imply the passing back and forth of sounds, but the art of using the vehicle of sound to sensitize internal reorganizations which aid in the rolling out of new concepts and principles from the learners. This cannot happen if lucid and logical presentations backed by noticeable enthusiasm from teachers are lacking. A good teacher is therefore a person who can communicate with genuine enthusiasm (Amhala, 1979). However, the manner of teaching may be influenced by the teacher's perception, attitude, beliefs and values, which guides his/her interaction with students. Their perceptions, attitudes, beliefs and values can also determine their selection of curriculum materials and organization within the classroom in relation to the four teaching modes (didactic, heuristic, philetic and guristic) as well as their implication for various patterns of curriculum organization and instruction (Gbamanja, 1989). Teaching effectiveness is the impact that classroom factors, such as the use of classroom teaching

methods, teacher expectations, classroom organization and the use of classroom resources, have on students' performance (Campbell et al., 2004).

The broadest implications of this study are such that it has shown the influences of professional teachers on students to be multi-leveled. This research has also covered a considerable amount of literature on teaching effectiveness and various assessments thereof. A major issue of interest that appeared to be extremely important in guaranteeing school effectiveness and quality improvement has been discussed. It is hoped that this work will be a valuable addition to academic literature on teaching effectiveness, school effectiveness and educational effectiveness in Nigeria and abroad. It is essential in moving forward to have an understanding of the role that teachers' methodological competencies play. This research has helped to explain the meaning and significance of it from a Sub-Saharan African perspective.

The major limitations of this study are that the findings were based on self-reported data on the part of the teachers who served as respondents and are vulnerable to distortions as teachers and their abilities were the focus of the study. Also, researchers are not independent of normative considerations relative to a research problem, therefore, if any part of the analysis in this study bears the hallmarks of being one sided, they should be overlooked and considered as a part of our personal learning and growth. Although we have attempted to improve on the generalizability of the results by inferring from a multiple case study, it would be very difficult to arrive at conclusive findings from only ten schools, the Ministry of Education and the Post Primary Schools Board in Rivers State which may not represent the opinions of other teachers in other parts of the country. It remains inappropriate for one to assume that the opinions represented in this study are those of other teachers in Nigeria and beyond. Additional investigation on a wider scale in this direction is in order. A new perspective on teachers' metho-dological competencies, which does not only take into consideration the unique characteristics of the variables used in this study, is recommended. In addition, researchers should direct their attention to the ways in which both professional and non-professional teachers construct and apply their methodological competencies in schooling students such as grouping procedures and behaviours.

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PEDAGOGICAL SYSTEMS THEORY AND MODEL FOR SUSTAINABLE HUMAN DEVELOPMENT IN EARLY CHILDHOOD EDUCATION AND CARE

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Abstract

The contexts of this research are kindergarten teacher student education, early childhood education and the author's long term research process of constructing a new pedagogical systems theory. The two systems models, which the author created earlier, function now as a theoretical background. The models are different, however, both of them reflect on early childhood education and care (ECEC). The research question is related to the interconnections of the two different models of ECEC. Solutions will be shown by making a cross tabulation between these two qualitative models. The results will construct forward the new pedagogical systems theory of ECEC. This theory and a corresponding model can help teachers to become responsible mentors for sustainable development, especially for children's education for sustainable human development and well-being.

Key words: early childhood education and care (ECEC); pedagogical systems theory; pedagogical systems model; sustainable human development.

Introduction

The main long-term aim of the author has been to develop a new theory for early childhood education and care (ECEC). In this paper, one part of the mentioned theory will be provided. The theoretical part consists of the explanations of the main concepts and the two models on early childhood education (ECE). After that, the main problem, a methodological view, methods, results and discussion of the study are presented.

Theoretical background

About the main concepts

In European context the generally used concept is early childhood education and care (ECEC). "'Education' and 'care' are combined in the phrase to underline, that services for young children can combine care, developmental and learning opportunities" (European Commission, 2009, p. 7).

In the Finnish context, the accepted concept is *varhaiskasvatus* (literally translated – *early education*, meaning is the same as *early childhood education*). This concept implies education under the age of seven years. In Finland, the concept *preschool* is referred to only six year olds. In the Finnish context, it is not usual to add *care* (*hoito*) after *early childhood education* (*varhaiskasvatus*). As a result of the author's studies (Härkönen, 2003a, 2008, 2009), many other concepts are at the same position as care, when speaking about their relations to the concept early childhood education: *education, teaching, learning* and *development*, even *socialization, civilization* and *spiritualization*.

What does it mean when we speak about *sustainable early childhood education*? Jämsä (2006) has analyzed this thing very exactly. He (Jämsä, 2006) claims that *sustain* means supporting and maintaining something, to hold up, giving a firm groundwork for something to hold it up permanently. Jämsä (2006) continues that *educe* means bringing out, eliciting, developing or evolving, especially from a latent or potential state. *Educe* also means calling forth or bringing out (something latent, hidden, unexpressed. Jämsä (2006, p. 14) acknowledges that "sustainable education is a new research subject".

The purposes of *sustainable education* can be promoting equity, improving our quality of life and well-being, sustaining our natural resources and protecting health. Jämsä (2006, p. 28) "underlines that sustainable education … is not separable from the general principles of education and … it is an essential part of ethical education". His conviction is "that personal ethical choices, the embodiment of the individual and social good, give a transcendent ground for ethical views in all education and sustainable education… Sustainable education tries to awaken people to a deep personal awareness of the different consequences of different moral choices".

About *sustainability* Jämsä (2006, p. 28) notes that it is "usually confined to the survival of nature and the human action for or against it", and that "sustainable education stresses the human responsibility for the consequences of our misuse of natural sources". This is not enough in his views. "The risk from inside our species should be in the focus of our attention, as well". "Sustainable education necessarily needs a general view of moral education as well".

The new pedagogical systems theory is based on historical educational ideas. Cohen and Manion (1994, p. 46) writes, that *"the historical study of an educational idea or institution can do much to help us understand how our present educational system has come about; and this kind of understanding can in turn help to establish a sound basis for further progress. Historical research in education can also show how and why educational theories and practices developed. It enables educationalists to use former practices to evaluate newer, emerging ones"*.

The new pedagogical systems theory comprises *pedagogical* views. It will deal with philosophical, educational and pedagogical values, aims, goals, subjects, methods. It will show links with different sciences and knowledge areas. It will also show how different curricula and programmes can be planned and evaluated (Figure 1). These kinds of phenomena have been and are pedagogical by their nature (Gudjons, 2003; Helenius & Korhonen, 2008).

The *systems theory* means (Heylighen & Joslyn, 1992, pp. 1-2) "the transdisciplinary study of the abstract organization of phenomena, independent of their substance, type, or spatial or temporal scale of existence. It investigates both the principles common to all complex entities … and the models which can be used to describe them". "Rather

than reducing an entity … to the properties of its parts or elements … systems theory focuses on the arrangement of and relations between the parts which connect them into a whole (cf. holism)".

A *system* is a dynamic and complex whole, interacting as a structured functional unit. Energy, material and information flow between the different elements that compose the system. A holistic system is any set (group) in interdependent or temporally interacting parts. Parts are systems themselves and are composed of other parts, just as systems are generally parts or holons of other systems (Wikipedia, 2009).

Systems thinking is a powerful set of problem solving tools and techniques based on system analysis and design, that helps us avoid unintended consequences and find optimal solutions to complex problems. It is a philosophy that looks at the world in terms of just what it says – systems. The entire world can be seen as one big system which encompasses countless smaller systems. A systems thinking approach may help you break through and find more effective, more sustainable solutions (Senge, 2009).

Rapoport (1968) claims that the definition of systems should also consider the *language*, not only the physical systems. Rapoport (1968) writes, that "social scientists speak of economic and political systems; philosophers, about systems of thought" (p. 453). In accordance with Parsons (1968), the human action has its subsystems, among which one is a cultural system. It comprises the language, communication, beliefs and ideas. Chang-Gen (1990) divides real systems into categories like the natural systems, the social systems and the systems of thinking.

Thus, the concept of *early childhood education is a system,* too. It has many subsystems which have relationships with each other and with the whole entity.

The author has said that the pedagogical systems theory will be *a new theory* for early childhood education. *New* means just the characteristic features which systems thinking means. It is a quite different way of seeing than a common way of cause and effect thinking.

The concepts like *care, education, teaching, learning, development*, *socialization, civilization* and *spiritualization* can be understood as goals and aims of education. At least in Finland, one concept of them is *learning*. Originated from the developmental psychology, the *development of children* has seen as a central process in children's life course. Valsiner (2000) presents a cultural-historical theory of development. Bronfen-brenner (1989) has created the ecological systems theory of human development. In Vasta's (2002) book, there are six theories about children's development. There are also many books where developmental theories are applied to the early childhood education and care (Bredekamp, 1987; Hakkarainen, 2002; Robinson, 2008; Wood, 2008). In each theory, the meaning is to provide knowledge about a healthy human development process.

The concept *sustainable human development* has not been usually used in developmental theories. However, an application from the common concept sustainable development to sustainable human development has already been processed. Sustainable human development is a new concept. Perhaps we must begin with sustainable education.

The general systems model of early childhood education thinking

The general systems model of early childhood education and preschool thinking (GSM of ECE), which has been designed by the author, is depicted in Figure 1 (Härkönen, 2003b, 2006, 2008, 2009).

Figure 1 reflects pedagogical thinking of historical education pedagogues like Froebel, Steiner, Montessori, Neill and Dewey. In the article *the New Systems Theory of Early Childhood Education and Preschool as a Frame of Reference for Sustainable Education* (Härkönen, 2003b, pp. 5-6), the systems character of the pedagogues' educational thinking was found and described exactly. The lines between the main context areas link them together in systems way.

It is extremely important to notice that the question is about the model of *thinking.* The word *views* which lies in every context areas (white ovals) is always written in the plural form. It means that the context areas consist of a wide diversity of opinions, beliefs, interpretations and also a wide diversity of different kinds of theories.
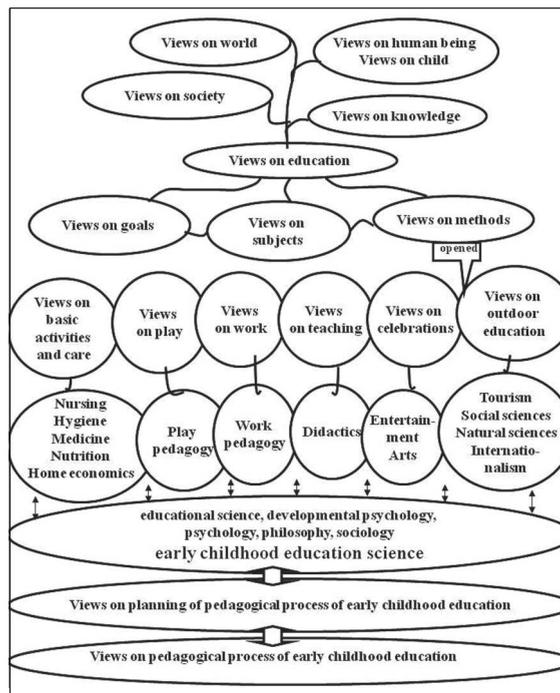

Figure 1. The general systems model of early childhood education and preschool thinking (GSM of ECE) (Härkönen Ulla 2008)

The model of the concept of early childhood education

The model entitled *The four extensions and eight intensions of the early childhood education concept as a systems model* is presented in Figure 2. A text analysis and a concept analysis method were used in studying the Finnish early childhood education textbooks (Härkönen, 2003a, 2003b, 2006, 2008, 2009).
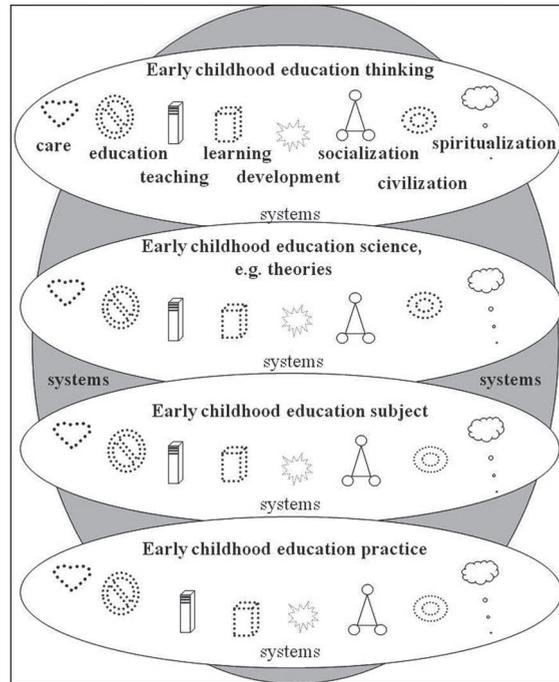
Figure 2. The four extensions and eight intensions of the early childhood education concept as a systems model

The *extension* means an application area of the concept. The *intension* means the criteria or a set of signs that would be valid for a given period of time (Karvonen, 2003).

Figure 2 shows that the concept of *early childhood education* comprises four extensions: *thinking, science, subject* and *practice* extensions. The intensions which make the mentioned extensions just as early childhood education are the following: *care, education, teaching, learning, development, socialization, civilization* and *spiritualization*. Both extensions and intension are in systems relationships with each other. As a matter of fact, extensions and intensions are in numerous relationships with each other.

Problems

Having designed the models, a new question about the interconnections of them has remained unanswered. This study addresses a challenging question: *What are the interconnections of the mentioned two models: the general systems model of early childhood education and preschool thinking (GSM of ECE)* (Figure 1) *and the four extensions and eight intensions of the early childhood education concept as a systems model* (Figure 2)?

Methodology and methods

Parsons (1968, p. 458) states that "methodologically, one must distinguish a *theoretical system* which is a complex of assumptions, concepts and propositions having both logical integration and empirical reference, from an *empirical system*, which is a set of phenomena in the observable world that can be described and analyzed by means of a theoretical system." This means that that the theoretical systems model have also connections to the observable early childhood education.

In a *content analysis* the question is how to give a greater conceptual order to the specific data (Strauss, 1987). *Relational analysis* begins with the act of identifying concepts present in a given text or a set of texts. However, relational analysis seeks to go beyond presence by exploring the relationships between the concepts identified. Relational analysis has also been termed semantic analysis (Palmquist, Carley, & Dale, 1997).

In this study, three different models are presented. "On the one hand, a *model* can be a representation of a selected part of the world (the 'target system'). Depending on the nature of the target, such models are either models of phenomena or models of data. On the other hand, a model can represent a theory in the sense that it interprets the laws and axioms of that theory" (Frigg & Hartman, 2006, p. 2.).

As a method, a *cross tabulation* was applied. Cross-tabulations are the powerful ways to combine qualitative coding with the more descriptive organization of data (Lewins & Silver, 2007). Many research problems are quite complicated, and working out graphic means for helping to understand them requires innovative imagery and careful consideration (Strauss, 1987).

Results

Figure 1 bears the validity of historically sustained features of pedagogical thinking over three hundred years in Europe and in the rest of the world. Figure 2 was designed on the basis of the definitions of the concept of early childhood education as elaborated on in different Finnish text books on early childhood education and preschool which cover a period of thirty to forty years just in one country.

In both cases, textual data was analyzed by a content analysis. Both resultant models are qualitative descriptive models. The analysis of the native literature may be more credible than the literature of different ages and in languages. However, the author has tested both models in several contexts. They both seem to be credible.

The results are seen in Figure 3 entitled *Pedagogical systems theory and its core value contexts, presented as a systems model*. The content of Figure 1 is marked with blue (or black and thick in colourless printing) rimmed oblong areas which consist of the parts and the whole of a model entitled the *General systems model of early childhood education and preschool thinking*.

It must be noticed that Figure 1 reveals only one extension; it must be early childhood science (because this area consists, for instance, of theories). The result is that Figure 1 shows new and versatile intensions for the extension of early childhood education science.
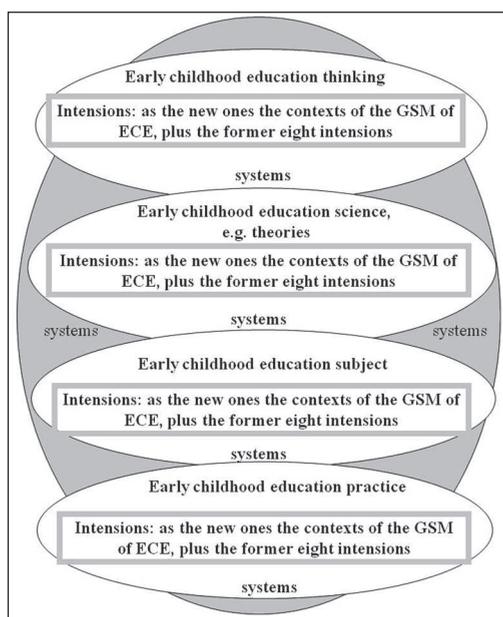
Figure 3. Pedagogical systems theory and its core value contexts, presented as a systems model

It is said (Church, 2001) that the intension of a concept consists of the qualities or properties which frames the concept. Logically, the same content must be included in every extension. The question, otherwise, cannot be about the same concept (early childhood education). That is why Figure 1 must be put inside each extension of Figure 2.

Now the four extensions and new pedagogical intensions are found for the concept of early childhood education (Figure 3). The earlier eight intensions are still valid in that they can be found in Figure 1: the concept of care has its own context area; education belongs to all contexts; teaching has its own context area; learning and development lies there in views on human being; concepts of socialization and civilization and spiritualization belong to the area on human being. These are united as a whole system.

However, it must be said that the new intensions (Figure 1) for the four extensions of the concept of early childhood education (ECE) are much more informative. They give a clear pedagogical content for the extensions of the concept of early childhood education (ECE). They have long-term sustainability. Instead of that, the former intensions, which are depicted in Figure 2, have not so solid, harmonious and continuous sustainability in history, but all of them can be found in different combinations in literature, however.

We can notice that *care* is only an intension of the concept of early childhood education, not a separate concept. In the systems context of early childhood education, *care* gets an educational character and goals. That also means sustainability in caring activities because doing caring activities suggests developmentally and educative appropriate action.

Discussion

Due to the title of the study the next question arises *How do the new pedagogical systems theory and the corresponding model function for sustainable human development?*

The most important characters of the pedagogical systems theory and the corresponding model are that they represent historical, pedagogical, systemic, holistic and comprehensive, diverse and pluralist, interpretative and semiotic, egalitarian, democratic and tolerant values. These kinds of values can construct sustainable education which takes account sustainability in children's, teachers', parents' and all human beings' development (Schreiner, 2009). All this is important in an intercultural dialogue all over the world (Council of Europe, 2008).

The author thinks that the thoughts of Jämsä (2006) could characterize sustainable education which could promote sustainable, good and healthy human development and also cultivate, civilize and spiritualize human beings from outside and inside.

Diverse ways – which are present in this theory and a model – cannot, however, offer freedom to do what an individual wants. If teachers and adults encumber children's development, they exploit the optimal possibilities for well-being. The principles of equity, restriction, limitation and control of teachers', parents' and society's activities are needed in education and in ambitions according to children's development.

The further research might concentrate on *value contexts* of the layered systems model of early childhood education, the possible influences and meanings in relation to human development.

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BOOK REVIEW

THE HANDBOOK OF SUSTAINABILITY LITERACY:
SKILLS FOR A CHANGING WORLD

Arran Stibbe (Ed.), 2009.
Green Books
223 pp.
ISBN 978 1 900322 60 7

Today the academic discourse of sustainability struggles to overcome the fragmentation, incoherence and suffers from a profound lack of common viewpoint on both theory and practice. The handbook of sustainability literacy is an attempt to join the disparate segments of sustainability thinking and acting available in a wide array of disciplines which has started to realize their responsibility for the state of the world and destiny of humanity.

Reading this handbook during the breaks of an international conference on renewable energy and climate change was a really engaging and thought-provoking activity as it showed how different could be the attitudes and perceptions of sustainability depending on personal and professional experience and context where these attitudes and perceptions are verified.

This book uses the term 'sustainability literacy' to indicate the skills, attitudes, competencies, dispositions and values that are necessary for surviving and thriving in the declining conditions of the world in ways which slow down that decline as far as possible. The authors are leading sustainability educators together with leading specialists from a wide range of areas, including engineering, art, permaculture, outdoor education, anthropology, literature, mathematics, business studies, climatology, ecology and linguistics. The book is intended to be a handbook in the sense of containing practical ideas that can be adapted and applied by a wide range of educators not as a rigid guide. The book opens up a range of previously unthought-of paths, some of which will without a doubt be rejected, but some considered worthy of future exploration.

The book could help teacher educators to find useful information that could enrich teacher education curricula, teaching methods in higher education and, what is even more important, to show both pre-service and in-service teachers the specific ways how to teach sustainability to their pupils.

The first section (28 chapters) of the book contains the explorations of particular skill, attribute or disposition. The chapters, based on a similar structure, show why the skill in question is important for life in the changing world of the twenty-first century. Simple and clear theoretical introduction and clarification of concepts, sometimes

descriptions of practical cases make each chapter as comprehensible as possible. The majority of chapters contains the examples of teaching activities for the development of the skill. They are easily adapted for the teaching purposes in schools and universities (active learning exercises). Some of them are essentially creative activities. Each chapter concludes with a list of resources for gaining a deeper insight into the skill described. However, it could happen that for teaching and learning sustainability on regular basis the resources and references available in the handbook would not be enough.

In the second section, four chapters explore the question of how educational systems and institutions will need to adapt if they are to help learners gain the sustainability literacy skills described in the first section. However, this section of the book offers less novel approaches and, also, focuses mainly on the environmental aspect of sustainability rather than on an integral approach, which foresees four aspects of sustainability (environmental, economic, social and cultural). This seems to be somewhere outdated and irrelevant for the twenty-first century.

Concerning the novelty of proposals, the authors suggest concepts and activities that have been popularized and applied by progressive educators already in the last decades of the twenties century (e.g., systems thinking, Gaia awareness, the Earth Charter, greening business, etc.) and also some radical and innovative proposals that could be approbated for their usefulness in the challenging conditions of the twenty-first century.

An attentive reader will be able to find certain overlapping of ideas within several chapters pointing toward the possible ways of interrelations between the different disciplines and approaches to sustainability, but to find out the conceptual patterns within these themes is the task of the active users of this handbook. It also would be a challenge for educational researchers to conduct a series of action research in order to confirm the validity of suggested sustainability skills.

The enjoyability of book is enhansed by the simple language used and visual materials designed to naturally complement the suggested ideas. Better read it yourself!

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