FRAMING PERCEIVED VALUES OF EDUCATION

When perspectives of learning and ICTs are related

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Framing Perceived Values of Education
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To all learners
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ABSTRACT

This thesis offers dialogue about the relations between learning and Information and Communication Technologies (ICTs). The dialogue is guided by the question of how to design education to increase perceived values of learning. It pays attention to how learners’ approach learning availabilities in various learning settings based on learners’ perceived values of learning. The aim is to understand the perceived values of learning in order to reflect its relation to ICTs. The field of learning is understood from the perspectives of formal, non-formal and informal learning. The field of ICTs is understood from the perspectives of information, communication and technology. The perspectives of learning and ICTs are chosen as a way to understand them by ‘going back to basics’ to find an origin or a point of departure for reinterpreting and understanding them. This approach has influenced the presentation of the thesis and how it is structured so that dialogic and interpretive research opens up dialogic spaces for reflections regarding the relations between learning and ICTs.

Two studies in two different education systems, formal and non-formal, are included in the thesis work. The data are collected via qualitative methods such as photo interviews and individual and group interviews in which learners’ expressions of learning are in focus. The approach of the included articles that present the two studies was to first understand learning and then relate it to the understanding, potential and use of ICTs. The results and contributions from the articles are summarised via the three perspectives of the perceived values of learning, the relations between learning and ICTs and the influences of perceived values of learning. The theoretical tools, pedagogical attitude and positioning of ICTs guide the discussions and analysis of these perspectives towards the conclusions of the thesis work.

The reader of the thesis can expect a journey along a winding road, which both addresses and involves policies’ and researchers’ implications and conceptions of learning and education. A framework for the perceived values of education when perspectives of learning and ICTs are related is considered to represent the understanding of the coherent whole of the thesis work. Three main contributions of the thesis work are put forth. The first contribution is the framework for perceived values of education, or the perceived value framework (PVF). The second contribution is the understanding of perceived values of learning. The third contribution is the specific photo interviews about learning situations that is considered to be a contribution to already existing methods such as photo-eliciting (Cappello, 2005) and stimulated recall (Haglund, 2003).
ACKNOWLEDGEMENT

I am very grateful for the opportunity to become a PhD student that was given to me in 2012. When I saw the available position in Creative Learning Cultures, I just knew that I had to apply for it. I got the position thanks to Isa Jahnke, but I had no clue whatsoever about what being a PhD student meant.

My gratitude is firstly addressed to my supervisors. Thank you, Isa Jahnke, for supporting and believing in how I approached my thesis work. You made it all possible when you gave me the opportunity to work with you. It was a true research expedition. Thank you, Eva Leffler, for standing by me. You really helped me to wrap it all up, which made me finish the thesis work in a way that makes me feel proud of my thesis and myself.

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I owe many thanks to all the children, teachers, volunteers, school leaders, decision-takers and trainers who were interviewed or made my research possible in other ways. Without you, I would have no data to analyse and no thesis to present.

The Department of Applied Educational Sciences holds so many different faces and competencies. Thanks to all of you for these years of sharing the small and the big things of life within and outside of education. I truly enjoy all the lunches where we meet, eat and just allow ourselves to live out the moments of being silly or serious, whatever that means.

During these years, I have also had the opportunity to work with the best of the best within floorball. Being involved in IBK Dalen has meant a lot. The club hosts many role models that have reminded me that if I do my work one
step at a time, I will get closer and closer to what I aim for, and suddenly, the work will pay off.

To family and friends: Please understand that many of the achievements and good things that come out of my thesis work are also because of you.

DAD – My thesis, your hole in one!

Kristina and Albert – I am longing for a summer holiday together with you! Just being together and doing the stuff we choose to do is awesome!

Umeå, May, 2016
LIST OF ARTICLES SELECTED FOR THE THESIS

Article 1

Article 2

Article 3

Article 4

In the text, they will be referred to as Article 1 (A1), Article 2 (A2), Article 3 (A3) and Article 4 (A4).
A Selection of Other Publications within the Thesis Work


Conference contributions


Does the educational apparatus, as now conceived, really satisfy the needs and aspirations of man and societies in our time? (Faure, 1972, p. 23)

Learning takes place in various systems and in various forms of education and there are initiatives that strives for learning to be available wherever the learners are, using any support or any device (EC, 2013; Peña-López, 2015; Harring et al. 2016). The fields of formal, non-formal and informal learning offer learning in different forms, thus confirming the principle of lifelong learning (European Commission [EC], 2014). Information and communication technologies (ICTs) have transformed views of learning; i.e. in what forms it is available, where it is available and how it is interpreted (cf. Säljö, 2010; Floridi, 2014b; Jahnke, 2016). This has resulted in understandings of learning as always being available and even considered omnipresent, expressed in policy or via conceptions of learning such as ubiquitous or seamless learning (Kuh, 1996; Cope & Kalantzis 2009; Looi, 2010; Wong & Looi, 2011; Milrad et al., 2013). This thesis is guided by the question of how to design education to increase perceived values of learning and is paying attention to how learners’ approach learning availabilities in various learning settings. The learners’ perceived values of learning are presented in the articles included in the thesis, and this has been the starting point for the formation of the thesis. The approach of the included articles was to first understand learning and then relate it to the understandings and potentials of ICTs or the use of ICTs. The same approach is taken in this thesis and the aim is to understand the perceived values of learning in order to reflect on the relation between learning and ICTs.

Strategies and policies are formed to support learners in moving between different forms of learning and learning settings in order to enhance the learning of the youth (Communiqué, 2012). This is reflected in the number of students who have received financial support via mobility strategies for moving between countries to learn. It has increased in the last fifteen years and is expected to increase even more (Peña-López, 2015). However, the development of ICTs in education and the vast expansion of learning availabilities have meant that, for example, issues like mobility and learning have faced new considerations. Enhancing learning is no longer just about physically moving between countries, settings and situations. It has become an issue of “mobility of learners across formal, non-formal and informal learning spaces” (p. 63), thus implying that mobility and learning can be seen as a virtual experience; virtual mobility (EC, 2014). Hence, ICTs have
transformed views of learning, e.g., in what forms it is available, where it is available and how it is interpreted (cf. Säljö, 2010; Floridi, 2014b; Jahnke, 2016).

Education systems around the world have been influenced by the issue of investing in ICTs with a variety of goals (cf. Johnson et al., 2014; Dutta et al., 2015; Article 3). The current trend is mobile, portable technologies such as tablets and smartphones. However, new technologies are always on the move; the sale of wearable technologies like smart watches and smart glasses is steadily increasing, and interest in them has been demonstrated by researchers and other stakeholders (cf. Sig WELL1; Märell-Olsson et al., 2015). The potential of ICTs and increased access to information and communication, realised through the last two decades of technological investments in educational settings, can be seen as an expansion of availabilities for learning (cf. Floridi, 2014a, Jahnke, 2016). Increased and faster access to information and more possibilities for communication is challenging strategies and decisions about learning that have already been made. One can say that education is under pressure to find strategies for valuing these new learning availabilities. Thus, the relation between learning and ICTs is relevant for education in the sense that for different reasons, international and national policy emphasise that the fields of education and learning are key to economic growth and that a changing world means a need for the transformation of education (EC, 2014; Peña-López, 2015). The potentials of ICTs are considered to be important key players in this transformation2 (EC, 2013).

This thesis offers dialogue about the relations between learning and ICTs through a dialogic and interpretive research approach (Wegerif, 2006; Cohen et al., 2007). Two studies in two different education systems, formal and non-formal, form the basis of the findings. The children, pupils and students who are enrolled in these education systems are considered learners. The perceived values of learning can be observed from the position of a learner, a teacher, a trainer, a school leader or a decision-taker at the national and international level. Situations in which one perceives or does not perceive a value of learning are not only available at certain institutions for learning and education. Perceived values of learning and how we can understand relations between learning and ICTs is based on the notion that due to different reasons and circumstances, attitudes towards learning and the perceived values of learning influence the relation between learning and

1 http://ea-tel.eu/special-interest-groups/well/ - Retrieved 2016-03-16
ICTs (cf. Aspelin & Persson, 2011; Floridi, 2014a; Article 1, 2 and 3). The decision-making processes of how to learn vary and can take different forms because definitions of learning or how we understand learning have developed differently within different fields and traditions (cf. Alexander et al., 2009; Säljö, 2009, Articles 1 and 4). Hence, it is not so simple that we can merely consider that we can learn from any possible learning availability in a certain way. Rather, it is more complex than that. Thus, the complexity can be interpreted as embedded in the adaptation to the learning availabilities, especially from a key understanding of this thesis, which is that when one adapts to new learning availabilities, one acts or makes decisions according to certain attitudes and understandings of how to learn (cf. Aspelin & Persson, 2011). The decision-making processes of how to learn can be made at the level of the individual, groups or communities that forms cultures (Stahl, 2013), including decisions made by, e.g., learners, teachers, trainers, school leaders and decision-takers. The decisions can be made individually and/or in collaboration with others.

The guiding question for my thesis work is formulated as how to design education to increase perceived values of learning. The question, or varieties of the question, grew in my mind when I was a teacher in a primary school (formal education) and at the same time working as a contracted trainer within the Youth in Action Programme\(^3\) (non-formal education). The combination of occupations as a learning facilitator in formal and non-formal education gave birth to the guiding question. It grew as an attempt to understand how learning and education were described and discussed in different fields with interests in learning and education. One could say that I was trying to make sense of the all encompassing, lifelong learning to understand the coherent whole of the educational dimension – the learning life worlds – when learners are subscribed to various learning and educational contexts (cf. Article 1).

When looking back today, I would say that my interest grew because the collaborative discourses on how learning is understood and what the perceived values of learning are differed between formal and non-formal education. The role of formal and non-formal education was promoted differently when, for example, the recognition of learning and knowledge differ between the fields. Formal education relies on grades, and the assessment of learning and knowledge are connected to subjects. Non-formal education argues for the recognition and validation of learning via methods

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like Youthpass⁴ or Experience Learning Description (ELD)⁵. From a global perspective, many examples show that the recognition of learning in non-formal education is made through recognition of knowledge, skills and competences (English, 2015).

**Perspectives of learning and ICTs**

To understand learning and the relation between learning and ICTs, two research fields form the foundation of the thesis:

- Learning
- Information and Communication Technologies (ICTs)

Each research field is understood from three perspectives. Learning is understood from the *formal, non-formal* and *informal* perspectives. ICTs are understood from the *information, communication* and *technology* perspectives. The division of the fields into perspectives in this thesis is essential for understanding the perceived values of learning in order to reflect on the relation between learning and ICTs. It is an approach that includes ‘going back to basics’ to find an origin or point of departure to make reinterpretations and understandings of learning and ICTs available (cf. Derrida, 1972). This approach influences the presentation of the thesis and how it is structured. I seek a dialogic approach to open up dialogic spaces for reflection regarding relations between learning and ICTs (Wegerif, 2006).

**Learning**

Learning is understood from three perspectives: formal, non-formal and informal (Fig. 1). A variety of definitions of the three perspectives of learning have flourished since the beginning of the 1970’s (Coombs, 1973; Rogers, 2004), but in general, the perspectives can be summarised as follows. Formal learning (FL) is intended learning under the formal education system. Non-formal learning (NFL) is intended learning under the non-formal education system. Informal learning (IFL) does not adhere to an education system of its own but is an intentional or unintentional learning process set apart from the intended formal or non-formal learning that are connected to their respective education systems (Rogers, 2004; Vavoula, 2005; Harring et al., 2016; Articles 1 and 4). Two contexts are studied in this thesis: a formal education context and a non-formal education context.

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Both contexts are educational settings in which learning is taking place. A historical background and definitions regarding the three perspectives of learning will follow in chapter 2 to contextualise the research. The three perspectives of learning are in this thesis also regarded as three different learning availabilities.

**Information and communication technologies**
The concept of ICTs is understood from the three perspectives of information, communication and technology (Fig. 2). It is divided into three perspectives in this thesis in order to reach a deeper understanding of ICTs and their relation to learning.

To forestall any expectations that the thesis will concern detailed knowledge of how the technology works, I want to clarify that it will not. The concept of technology is more treated and put forth from an evolutionary perspective. It has always been part of human learning and development to “enhance our capacities for performing certain activities” (Säljö, 2010, p.57). In the case of ICTs as technology, the capacity that is enhanced can be seen as the capacity to retrieve information or take part in communication. However, a background to and a positioning of the three perspectives of information, communication and technology will follow in chapter 2 when the research is contextualised.
How to value availabilities of learning
The research problem is based on the notion that learning and ICTs can be understood from different perspectives. Depending on what perspective or attitude is dominant when learning and ICTs are related to each other, it may influence decision-making processes in learning cultures in various ways. The perspectives of learning and ICTs can be interpreted as integrated or isolated in terms of their perspectives. Integration means striving towards a coherent whole in which the perspectives of learning are integrated and related to the integrated perspectives of ICTs. Isolation means striving towards the isolation of perspectives in which the attitude is to isolate perspectives and bring forward only one perspective of learning or ICTs (Fig. 3).

The theoretical concept of pedagogical attitude (cf. Aspelin & Persson, 2011) and a theoretical positioning of ICTs in education will be used to guide interpretations and possible understandings of attitudes and perspectives that are considered to strive for isolation – isolated attitudes – or integration – integrated attitudes. If viewed as a research problem, the problem is at the minimum about the challenges we face when relating learning and ICTs. At most, the research problem is about how to value and argue various perspectives of and attitudes towards learning and ICTs, including ontological and epistemological positions. The negotiations can end up in isolation, integration or ‘something in between’.

Possible scenarios in which the research problem comes to light include, for example, ICTs projects for developing teaching and learning cultures - for instance, so called 1:1 ICTs projects in school (one device per learner) – or trainings with the purpose of enhancing learning or supporting the recognition of learning in formal or non-formal education, such as national or international initiatives to trainings funded by, e.g., the Youth in Action programme or national agencies for education. In summary and from a broader perspective, the research problem appears when learners, teachers, trainers, school leaders, decision-takers or other actors in education meet the challenge of how to value availabilities of learning in situations in which learning is related to ICTs. It can happen seldom or on a daily basis regardless of whether it is within formal or non-formal education or happens outside of those systems.
Fig. 3. The research problem.
Facing the challenge of the research problem
From the very beginning, the research plan of my PhD has included the interest in understanding learning in formal and non-formal education. Two educational contexts are supposed to offer a wider perspective of learning than learning that is significant for just one educational setting. The decision to research the formal and non-formal education contexts was not random. It was a choice based on my experience of working in both fields, and from a research perspective, it was expected that there would be variations in understandings of learning that could be met from researching two different education contexts (cf. Larsson, 2009).

The intention of the thesis is not to form a new learning theory for contemporary learning (cf. Illeris, 2009) or to find one definition of learning, like “any process that in living organisms leads to permanent capacity change and which is not solely due to biological maturation or ageing” (Illeris, 2007, p. 3). The intention is instead to understand how learners express learning, comparable with e.g. Säljö (1979); to understand learning from the learners’ perspectives; or to be able to discuss, for example, issues within education in relation to learners’ views on learning. This intention is summarised below along with the aim of the thesis.

Four articles are included in the thesis. These are in line with the structure of the thesis, which was formed to understand learning in both formal and non-formal education. Learning, as expressed by the learners, is the focus of all articles. This is why I have chosen to study the learners’ perceived values of learning. I made this choice for the following reasons. (a) Learning is regarded as a common denominator and important concept in any field of education. (b) The research about learning from the learners’ perspective made way for understanding perceived values of learning that can be connected to and interpreted as influencing attitudes towards learning, like in Article 1. (c) Perceived values of learning can be related to the use of technology or methods for recognising learning, like in Article 2, 3 and 4. (d) As I am a researcher within the field of applied educational sciences, within the program of Educational work in the area of ICTs Media and Learning (ICTML), a clear focus on the practice of learning and its role in educational contexts is central.

Research questions
The thesis work has been guided by the question of how to design education to increase perceived values of learning. This is understood as an objective or purpose of the thesis work. The research problem is formulated as how to value availabilities of learning when learning is related to ICTs. Based on the articles that are included in the thesis work, the aim is to understand the
perceived values of learning in order to reflect on the relation between learning and ICTs. The study object is the learners’ perceived values of learning. In order to address the guiding question, the research problem and the aim of the thesis, the research questions are:

1. How can perceived values of learning in formal and non-formal education be understood?
2. How can perceived values of learning be understood in relation to ICTs?
3. What are possible influences on perceived values of learning?

Lastly, in order to understand the coherent whole of my thesis work, a fourth research question is:

4. How can the coherent whole of my thesis work be understood considering the aspects that are included in RQs 1-3?

**Structure of the thesis**

Chapter 1, *Introduction*, situates the research by introducing the reader to the research problem and how it is related to practices and issues within education. The chapter is summarised through the purposes, aims and research questions to give the reader an opportunity to understand the structure of the thesis.

Chapter 2, *Contextualisation of the research*, will further develop and give more background to perspectives and conceptions of learning, ICTs and relations between learning and ICTs. It is mostly grounded in prior research, but it also includes policy to give the reader an opportunity to understand what has influenced the thesis work and why it is framed this way. In short, the chapter presents the perspectives that I have chosen to include in dialogic spaces of reflection that concern the matter of learning in relation to ICTs.

Chapter 3, *Theoretical foundation*, emphasises that the research adheres to a socio-cultural perspective of learning and that the research approach is regarded as interpretive. It presents a summary of theories that have been used in the articles included before ending with the two main theoretical tools that are used to understand and interpret findings and contributions from the articles.

Chapter 4, *Methodology and some considerations*, presents the plan and the design of the research. The two studies that are including both formal and non-formal education can be understood as two separate case studies, but at
the same time, they can also be considered as one case involved in the same research problem. The reasons the contexts are considered learning cultures are based on a certain view of how group levels can be understood, which is noted in this chapter.

Chapter 5, *Methods*, concerns the methods that are chosen for data collection and analysis. The chapter presents how methods are motivated with regards to the aims and purposes of the research that was conducted in the studies that are included in the thesis. In relation to these matters, transparency, validity, transferability, my role as a researcher and ethical considerations are discussed.

Chapter 6, *Results and contributions from included texts*, presents a summary for each of the included articles. The results and contributions of the articles are summarised and brought forward through three perspectives. These perspectives have guided the formulations of the research questions of the thesis and open up dialogic spaces for reflections regarding the three perspectives.

Chapter 7, *Analysis and discussion*, has its starting point in the three perspectives that were brought forward by the included articles. As the perspectives are chosen to open up dialogic spaces for reflection, this chapter offers a deepening of the dialogic spaces concerning the perspectives and thereby addresses research questions 1-3.

Chapter 8, *Conclusions and remarks*, summarises this thesis in order to conclude the chapter of the analysis and discussions, thus framing the deepened dialogic spaces for reflection that are offered. The fourth research question is addressed in this chapter, which presents an understanding of the coherent whole of the thesis.

Chapter 9, *Contributions*, first addresses the field of education and educational work in particular, which is my research field. In addition, contributions may also be of interest for educational and learning sciences as a whole when the interest is to understand the relations between perspectives of learning and ICTs. The chapter also discusses some possible limitations of my research before some future research is proposed. The future research includes possible ways to broaden the dialogic spaces of reflection regarding the aims and research questions of this thesis. In addition and based on the contributions of the thesis, suggestions for possible future research that involve and relate to fields other than education conclude the thesis.
In viewing learning and teaching for the year 2000 and beyond, it is easier to predict what will not be than what will be. A prescribed age for beginning formal education would be meaningless. The computer console with an array of stimuli and feedback devices will be as natural for the two-year-old in the year 2000-plus as a television set is for today’s two-year-old. Teaching and learning will not be marked by a standard day of from nine to three, nor a standard year from September to June, nor a year for a grade of carefully packaged material. Age will be meaningless as a criterion for what one is to learn. Will learning be any less because there are no periods, no Carnegie units—thank God—no ringing of bells, no jostling of pupils from class to class? And what will the school principal and his administrative associates do when it is no longer necessary to schedule teachers so as to produce a balanced diet of subjects? Perhaps we will start doing some really important things. (Goodlad, 1968, p. 21)

Formal, non-formal and informal education

The system of formal education that we have today has been relatively unchallenged and remains so. The formal education system is still dominant, and going to school is generally the most common way to participate in education worldwide. For example, there were about 109 million children, pupils and students enrolled in the formal education system in Europe, from pre-primary education through postgraduate studies in 20126. However, the formal education system has been challenged, and the situation in the 1960’s was chosen to exemplify this. The 1960’s is considered the historical starting point for this thesis from both the learning and ICTs perspectives.

In the 1960’s, the formal education system was under pressure. It was seen as a system that adapted too slowly to socio-economic changes in society according to needs stated by the wider society and other institutions (Coombs, 1968; Fordham, 1993). To show that learning was more than acquired learning in the formal education system and that some solutions to

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the world educational crisis were to be found in learning outside of the formal education system (Coombs, 1968), the World Bank started to distinguish between formal, non-formal and informal education in the late 1960’s (Fordham, 1993).

In the beginning of the 1970’s, the United Nations Educational, Scientific and Cultural Organisation (UNESCO) presented characteristics of education from a global perspective. Three specific phenomenon were highlighted: the development of education on a worldwide scale tended to precede economic development, the role of education was to prepare members of the society “for a type of society which does not yet exist” for the first time, and societies rejected school leavers. The products of institutionalised education were not appropriate according to societal demands (Faure, 1972, pp. 12–14).

To meet the challenges of education in an era of educational crisis, recommendations, new concepts and definitions of education were cultivated and developed. UNESCO proposed “lifelong education as the master concept for educational policies in the years to come for both developed and developing countries” (Faure, 1972, p. 182), and the concepts of formal, non-formal and informal education saw the first, and commonly used, definitions:

**Formal education**: the hierarchically structured, chronologically graded ‘educational system’, running from primary school through the university and including, in addition to general academic studies, a variety of specialized programmes and institutions for full-time technical and professional training.

**Informal education**: the truly lifelong process whereby every individual acquires attitudes, values, skills and knowledge from daily experience and the educative influences and resources in his or her environment – from family and neighbours, from work and play, from the market place, the library and the mass media.

**Non-formal education**: any organized educational activity outside the established formal system – whether operating separately or as an important feature of some broader activity – that is intended to serve identifiable learning clienteles and learning objectives. (Coombs et al., 1973, pp. 10–11)
Economic crisis calls for education to open up

The 1970’s can be seen as a decade in which non-formal education flourished because of political changes and discussions about how useful the formal education system really was. In the 1980’s, formal education was more in focus again because of inequalities within and between countries, which led to different politics than in the 1970’s, and non-formal education was more neglected (Rubenson, 1982; Fordham, 1993). In the mid-1990’s, defining formal, non-formal and informal education together with the concept of lifelong education saw a revival (The Organisation for Economic Co-operation and Development [OECD], 1996; EC, 1998). The concepts evolved and were developed over two decades but were still basically the same as the first definition by Coombs et al. (1973), with the difference being that it was not clear whether the concepts were about formal, non-formal and informal learning or if they were called formal, non-formal and informal education (Rogers, 2004).

Since about 2008, an economic crisis of considerable proportions has affected the global economy. The collapse of two Bear Sterns hedge funds in the summer of 2007 led to banks and individuals going broke as well as drawbacks in employments. The European economy was not spared, and we could soon see policy documents that put pressure on education systems to be more efficient and solve the economic crisis by turning to learning outside of the formal education system. The EU initiative Opening up Education, launched in 2013, almost seemed to reinvent formulations about the educational crisis of the 1960’s and 1970’s. Policy now says that Europe “faces an increased demand for education” in which “EU education is failing to keep pace with the digital society and economy” (EC, 2013, p. 2). The initiative foresees a future in which we learn wherever we are using any support or device. The initiative is connected to Horizon 2020 (EC, 2011) and the Erasmus+ programme. Erasmus+ is one example of policy highlighting the principle of lifelong learning by “linking support to formal, non-formal and informal learning throughout the education, training and youth fields” (EC, 2014, p. 9). What is different from the original definitions is that the concepts refer to lifelong, formal, non-formal and informal as learning instead of education. The concepts, according to policy, have now moved from distinguishing between different forms of education to distinguishing between different forms of learning.

Whatever the definition, one conclusion can be that the policy of today highlights that learning and education are conceived of as more than the formal education system, and whether these forms of education or learning are isolated from each other or partly or fully integrated is unclear. Hence, the conception of learning is interpreted differing between, for example,
individuals or groups working within the field of learning (Fig. 4), as is a result in Article 4. Furthermore, different learning cultures build their conception of learning through subjective reception and cultural agreements (cf. Article 2, 3 and 4). However, what is clear is that the relationships or the ‘importance’ of the fields seem to change when education is under pressure to meet new circumstances.

*Fig. 4. Is this one possible way to understand learning?*

**With a variety of attitudes and understandings towards learning**

Various stakeholders like research fields, non-governmental organisations (NGOs) and national and international agencies for education can be understood as having various perspectives of and attitudes towards learning and fields of learning (cf. Bergstein et al., 2010; Fennes et al., 2012; Harring et al., 2016; cf. Article 4). Thus, depending on the stakeholder’s perspective or attitude, the perceived values of learning can be understood or argued differently when they are related to each other depending on how learning is conceptualised or conceived (Fig. 5).

*Fig. 5. Some possible ways to value learning when relating the perspectives of formal learning (FL), non-formal learning (NFL) and informal learning (IFL).*
One viewpoint of the thesis is that learning can be understood as formal, non-formal or informal. When relating learning to the concept of education, learning and education are not the same since education demands systematic organisation and intentions while learning can happen any time, intentional or not (Vavoula, 2005; Smith, 2008). As a conclusion, and in line with the study object of the thesis, learning is central and is the main interest and common denominator of both education contexts that are studied: formal and non-formal education.

**Information, communication and technology in education**

From a historical perspective, the implementation of ICTs in societies and education can be traced back to Mesopotamia in the third millennium BC and the use of clay tablets for documenting and saving information (Säljö, 2010; Floridi, 2014a). Since then, we have seen the inventions of the book and chalkboards. The 20th century brought us public radio and television before the computers came, and computers in the latter part of the century could access the Internet. In relation to the historical aspect of ICTs, the interest in the relation between education and ICTs is anything but new. However, in accordance with the historical starting point for understanding learning as formal, non-formal and informal, some viewpoints on ICTs in education will be put forth and related back to the 1960’s.

With a starting point in the late 1950’s coinciding with the launch of Sputnik, the 1960’s was a decade in which technologies in education were heavily debated (and considerably funded, at least in the United States) (Molnar, 1971; Coombs et al., 1985; Säljö, 2010). At that time, the role of radio, motion pictures, (instructional) television and computers were in focus, and the fact that the interest in ICTs in education was considered a global issue was expressed through the UNESCO report *Learning to Be* in the 1970’s (Faure, 1972). There was criticism that the view on educational technology was driven by “one-eyed promoters...[that] often viewed their favorite technology as a cure for whatever ailed the schools. With their favorite technology in hand they went scouting for an educational problem to solve, which usually meant superimposing the new technology on the malfunctioning existing teaching/learning process like an added geologic layer” (Coombs et al., 1985, pp. 125–126). Furthermore, research that related education to technology was thought to be in need of addressing more complex problems in a systemic way (Molnar, 1971) “to recast fundamentally the whole of education’s technology, combining the best of the old and the modern in ways that will form an essentially new, integrated ‘system’ of teaching and learning, capable of yielding better results for any given level of effort” (Coombs, 1968, p. 112). The same view on the relation between education and technology is put forth today (cf. Selwyn, 2011; 2012).
Today, contemporary ICTs offer the possibility of being constantly connected to the Internet, as exemplified by computers, smartphones, tablets and wearable, smart technologies. With this development, societies are dependent on ICTs for individual and social well-being as stated through the concept of Hyperhistory (Floridi, 2014b). Even though it may seem like the interest in ICTs in relation to learning is not new and that it is interpreted as an ever present problem to be researched, the amount of research concerning it still seems to attract a lot of interest and gather researchers in international research associations like the European Association of Technology Enhanced Learning (EATEL) and the International Society of the Learning Sciences (ISLS).

**Positioning ICTs in education**

One of the outcomes of writing Article 3 was the process of understanding ICTs from the perspectives of information, communication and technology. The division into three perspectives was my way of approaching the understanding of ICTs, and here, I present some theoretical perspectives that can influence the current view on information, communication and technology. To position ICTs could be a way to present how one ‘understands’ the world, i.e., the nature of being or the nature of reality (ontological positioning), or how one ‘understands’ knowledge or the theory of knowledge (epistemological positioning). It is also possible that ICTs themselves can change how we understand ourselves with regard to our ontological positioning. The ICTs are re-ontologising our conception of the world with regard to, e.g., “(a) the transition from analogue to digital data and then (b) the ever-increasing growth of our digital space” (Floridi, 2007, p. 60).

Depending on which perspective among information, communication or technology is understood to be the most important to stress in relation to education, the value of perspectives can vary and be argued differently (Fig. 6).

![Fig. 6. Is this one possible way to understand ICTs?](image)
Information
Based on the concept of a biosphere, Floridi started to use, develop and define the concept of the Infosphere in the late 1990’s (Floridi, 1999, 2007). The concept of the Infosphere is presented as all information all around us coming together in one ‘information sphere’. In the same way that the biosphere includes all ecosystems in the world, the Infosphere includes all information systems in the world. The Infosphere makes online and offline merge into Onlife. Minimally, an Infosphere includes all digital online and analogue offline spaces of information. Maximally, the Infosphere is “synonymous with reality” if we view reality from an informational perspective (Floridi, 2014a, p. 41). The Infosphere ‘surrounds’ the learners, and the number of possible connections within the Infosphere and all its information systems is increasing because of the (internet enabled) ICTs. Onlife refers “to the new experience of a hyperconnected reality within which it is no longer sensible to ask whether one may be online or offline (Floridi, 2014b, p. 1)

Communication
While Infosphere is the concept of one overall sphere of information, CrossActionSpaces is the connection across and between myriads of spaces of human communication (Jahnke, 2016). In education, when learners use (internet-enabled) ICTs, social practice takes place in spaces and ‘rooms’ regardless of whether they are online or offline. This affects learning in the learning setting since communication from ‘outside’ is made available, thus enabling an influence on learning from outside the traditional educational context.

Technology
The role of technology in education can be understood through the view of technological development presented by Vygotsky, which is that technological tools “give rise to new social structures; new tools of thinking give rise to new mental structures” (1978, p. 132). The use of the tool helps humans “to relate more effectively to their external environment” (1978, pp. 132–133). The ICTs as technology can, with regard to the roles of information and communication, be seen as expansions of the learning culture. Discussions of whether the ICTs should be seen as tools or mediators was already present at the beginning of the 1970’s (Molnar, 1971, p. 10) when the role of the computer in education was being discussed. Following the viewpoints of Jahnke and Floridi, ICTs are more than mere tools. They are seen as “interactive and transformative” (Jahnke, 2016, p. 161) or like “environmental forces” (Floridi, 2014b, p. 2) in social practices. Säljö argued that “knowledge is expressed in our abilities to merge and collaborate with
external tools and to integrate them into the flow of our doings, whether these are intellectual, physical or mixed” (Säljö, 2010, p. 62).

**With a variety of attitudes and understandings towards ICTs**
Various stakeholders, like research fields, non-governmental organisations (NGOs), and national and international agencies for education can be understood to have various perspectives of and attitudes towards ICTs (cf. Kling, 2000; Sein & Harindranath, 2004; Säljö, 2010; Harring et. al., 2016). Thus, depending on the stakeholder’s perspective or attitude, ICTs can be understood or argued differently when perspectives of information, communication and technology are related to each other depending on how they are conceptualised or conceived (Fig. 7).

![Fig. 7. Some possible ways to value ICTs in education when relating perspectives of information (I), communication (C) and technology (T).]

**Division into various perspectives or a coherent whole**
The integration of perspectives of learning is a reality of the European Union. Formal, non-formal and informal learning are all gathered under the Directorate General for Education and Culture (DG EAC), which is the executive branch of the European Union responsible for policy on education, culture, youth, languages and sport. The DG EAC supports all fields through programmes like Erasmus+ (EC, 2014). However, even though the perspectives are gathered under the same organisation at the EU level, it doesn’t necessary mean that the attitude towards learning is understood as integrated or intertwined when formal, non-formal and informal learning are equally considered (Fig. 8.). Instead, when it comes to learning, the attitude can be either isolated or integrated, as shown in Articles 1 and 4 of the thesis.

When it comes to the integration of the perspectives of ICTs, they are integrated in the technology that adheres to the concept of ICTs. However,
even if the ICTs are taken for granted in the contexts that have been studied, it does not necessarily mean that the attitudes towards and the perceived values of ICTs are considered to have an integrated or intertwined relation between the perspectives of information, communication and technology (Fig. 8.).

![Fig. 8. Perspectives of learning and perspectives of ICTs integrated into concepts of learning and ICTs, including possible ways to value or understand the perspectives.](image)

**Conceptions when learning and ICTs are related**

When presenting existing research about learning when learning and ICTs are considered to be related, many concepts seem to exist, like virtual learning, mobile learning and e-learning.

Concepts are the way that we make sense of the social world. They are essentially labels that we give to aspects of the social world that seem to have common features that strike us as significant (Bryman, 2012, p. 8).

To cover a whole range of interpretations within the field of learning in relation to ICTs is not the goal, nor is it possible. I am neither embracing all concepts nor taking a stand for or against certain definitions. I accept the existence of those concepts that have developed for different reasons and purposes. They are examples in which learning and ICTs are considered related and maybe even integrated. From an educational science perspective, different actors in education work in settings where mobile learning is a reality, as in the context of formal education that is studied in this thesis.

However, since technological advances in relation to learning and education are not a new phenomenon, they must also be put into the historical context of how humans transformed their practices in a co-evolutionary process with the development of contemporary technology and artefacts (cf. Selwyn, 2012). In other words, both the social and the technical can be studied as
separate parts or as an interconnected, integrated coherent whole (cf. Lievrouw & Livingstone, 2002).

**Conceptions with regard to learning**

A number of concepts have appeared in research that give name to the phenomenon of ICTs in education. Sometimes, the technology integration refers to education and at other times learning, and not seldom with regard to characteristics or features of the technology: “Computer-assisted instruction, educational technology, educational computing . . . e-learning, distributed learning, asynchronous learning, and networked learning” are some examples (Chan et al., 2006, p. 7). Whether the concepts are synonyms or not can be discussed.

Research communities like Computer Supported Collaborative Learning (CSCL), Technology Enhanced Learning (TEL) and Human Computer Interaction (HCI) host a variety of learning concepts in their publications: mobile learning (Pachler et al., 2010; Traxler, 2007), ubiquitous learning (Cope & Kalantzis, 2009) or seamless learning (Kuh, 1996; Looi et al., 2010) are some examples, and the list can be quite long when you look for characteristics of learning.

There seems to be an ambition among some researchers to collect all learning, no matter where or when it happens, for any institution that wants to recognise and assess it, as in the research field of learning analytics (cf. Siemens & Long, 2011). From the learners’ perspective, learning availabilities are to be found anytime, anywhere, with any support and with any device, as expressed by the Opening up Education initiative (EC, 2013) or realised in concepts such as seamless learning (Kuh, 1996; Looi et al., 2010) and ubiquitous learning (Cope & Kalantzis, 2009). Theories and concepts that are developed seem to interrelate with the intentions from the 1970's of dividing education into formal, non-formal and informal learning. Solutions for development of the formal education system seem to be found in education and learning outside of traditional formal education or by breaking the boundaries of the traditional view of the classroom (Lawson & Comber, 2000).

Furthermore, when concepts of learning have been developed in which ICTs are related, grand theories of learning like constructivism (Piaget & Cook, 1952; Vygotsky, 1978) and constructionism (Papert & Harel, 1991) are put into new contexts and challenged by new theories of learning, like connectivism (Siemens, 2004). Other examples of theories that are used with regard to ICTs and learning are situated learning (Lave & Wenger, 1991) and communities of practice (Wenger, 2000).
Conceptions with regard to teaching
The situation with ICTs in school shows that learning can be interpreted differently when ICTs are related to learning than when they are not, as suggested in Article 3. Interpretations of what learning is and how we learn have come to change (Säljö, 2010). Hence, when learning is conceptualised in a variety of ways with regard to technology, it also has an impact on teaching. Several researchers have presented their understandings of teaching when technology is integrated with the learning environment. This means that teachers have to adapt their learning designs (Mor & Craft, 2012) and didactical designs, which are exemplified through new methods and theoretical frameworks like Digital Didactical Design (DDD; Jahnke et al., 2014) and Technological Pedagogical Content Knowledge (TPCK, also known as TPACK; Mishra & Koehler, 2006). However, considerations about whether teachers have support from organisations to develop their use of ICTs in relation to learning are reported (Wastiau et al., 2013; Grönlund, 2014).

Learning is the subject of this thesis, and teaching is not put first. However, consider this: teaching and learning can be seen as separate perspectives that, through dialogue, connect to one construct, an intertwined process of learning. Lund and Hauge (2011) bring forward the Russian/Vygotskyan term obuchenie, where learning and teaching are not separated into two different aspects of the learning process. This can be understood as operationalised, as in the concept of learning expeditions (Jahnke & Norberg, 2013) in which both learners and teachers intend to “master X or to explore and understand the implications of Y” (Jahnke et al., 2014, p. 175).

Conceptions of perceived values of learning
Understanding the perceived values of learning was the result of studies that were based on learners’ expressions of learning. Understandings of perceived values of learning in learning situations can be related to prior research on the concept of perceived values. The studies consider perceived values of learning in specific situations in Articles 2 and 3. In Article 4, the perceived usefulness of learning and education is discussed and analysed.

Perceived value research and conceptions of perceived value are foremost related to marketing and management (cf. Sánchez-Fernández & Iniesta-Bonillo, 2007). In education, it has been used in relation to stakeholders that offer ICTs/books for the purpose of education, for example. In this case, the values of the educators are seen as: the “means by which to evaluate and tailor educational offerings that both optimize the learning experience” (Ledden et al., 2007, p. 966, based on Hannaford et al., 2005 & Unni, 2005). It has also been used in the interest of understanding and evaluating
students’ perceived values of higher education in order to improve efficiency (cf. Lai et al., 2012; Alves, 2011).

Perceived value definitions are based on the understandings of customers’ overall assessments of the utility of products based on the perception of what is received (quality) and what is given (price) (Zeithaml, 1988), or in other words, as a ratio of perceived benefits relative to perceived sacrifice (Monroe, 1991). This can be related to the learner who assesses or recognises learning in order to value what is the ‘best way to learn’ or how to learn. In a sense, the learner can be considered a customer, and the role of the education system or setting is to keep the customer (the learner) satisfied when building a long-term relationship, thus considering the customer-perceived value (cf. Ravald & Grönroos, 1996), or when the learning setting is considered to have the role of offering learning availabilities for the learner to assess. In addition, the perceived value according to Zeithaml (1988) is individual, subjective and can vary between different occasions in the way that the same product can be evaluated differently in different situations. Thus, the perceived values are dynamic by nature (Sánchez-Fernández & Iniesta-Bonillo, 2007). Based on this, Ravald and Grönroos (1996) suggest, “that the customer-perceived value of an offering, seen through the eyes of the customer and related to his own value chain, must also be highly situation specific” (p. 22). Following this, the increase of perceived value is presented differently from different authors. However, to keep the solution on how to increase perceived values simple, Ravald and Grönroos (1996) suggest that the focus should be on how to increase customer-perceived value by a reduction of sacrifice.

The background of perceived value research is presented in this chapter because the aim and research questions highlight the interest in understanding perceived values of learning. However, perceived value research is not a theoretical tool that will guide analysis and discussion in the thesis. The design of the thesis is not appropriate for this, since methodologies and purposes of included studies didn’t focus on measuring benefits and sacrifice in relation to quality of learning. Instead, it is seen as one possible way to contextualise perceived value research. In my case, the perceived value research is related to learning and the thesis is about perspectives of learning and ICTs. The theoretical concepts of pedagogical attitude and the positioning of ICTs in education, instead of perceived values research, are chosen as the main theoretical tools. Theory and theoretical tools will be addressed in the next chapter.
CHAPTER 3. THEORETICAL UNDERPINNINGS

No single theory ever agrees with all the facts in its domain (Feyerabend, 1975, p. 33).

Theoretical perspectives in regard to the thesis work were chosen in order to explain and make sense of observed and perceived regularities at various levels of the research process (cf. Bryman, 2012). Some were at a methodological level, some were to position my view of ICTs, some were to guide the analysis and some were to understand perceived values and interpretations of learning and their relation to ICTs. The research approach of the thesis is interpretive, showing facets of learning and education with the chosen aim and purpose, beginning with expressions used by individuals to interpret the world around them (Cohen et al., 2007).

Understanding learning in learning cultures

On the whole, the present thesis adheres to a socio-cultural perspective on learning and knowledge. This is foremost explained via constructionist and constructivist perspectives of learning. The constructionist perspective, inspired by Papert and Harel (1991), explains a view where the participants of the research are consciously engaged in constructing the entity of learning, and it “allows the full range of intellectual styles and preferences to each find a point of equilibrium” (p. 3) when the learning in the learning cultures is described. Furthermore, on a meta-level, the researcher and the information from and communication with the learning cultures are construing what learning is and how learners learn in the learning cultures. The outcomes are in Articles 2, 3 and 4 presented in the form of either themes of what formal learning is or as collaborative discourses on what non-formal learning is. A constructivist perspective is taken because meaning or knowledge are seen as constructed in the human mind by individuals (cf. Piaget & Cook, 1952) or socially framed (cf. Vygotsky, 1978).

As a complement to the constructionist view of a “point of equilibrium” (Papert & Harel, 1991, p. 3) in understandings, a dialogic perspective is also considered and put forth. Learning and ICTs are understood from three perspectives per concept, with each perspective presented as a research field of its own that is discussed in the contextualisation of the thesis. This technique of dividing learning into being formal, non-formal and informal and ICTs into being about information, communication and technology was chosen with the approach that “understanding is an event within a dialogue between perspectives and is not reducible to a constructed representation” (Wegerif, 2006, p. 155). This means that the approach within the writings of
the thesis and its outcomes are seen from a dialogic perspective in which “dialogic perspective argues that the emergence of creative new insights presupposes a capacity for suspending assumptions and dissolving previous constructions in order to be able to enter more deeply into the space of dialogue” (Wegerif, 2006, p. 156). The dialogic approach and the technique to dissolve constructs and question metaphors is operationalised through going ‘back to basics’ to find an origin or a point of departure to show the potentials for meaning-making and interpretations of the concepts of learning and ICTs. This is argued by Wegerif (2006), and it is inspired by the concept of deconstruction created by Derrida (1972). The attitude of a dialogic perspective underlines that there are no definite or final interpretations with regard to what is uttered. This view is grounded in reasoning from Bakhtin (1986) and is in line with an interpretive perspective of conducting research (cf. Cohen et al., 2007).

In summary, there is more than one answer or constructed representation of how to interpret or reinterpret learning, ICTs or the relation between learning and ICTs. The outcome of the thesis may move towards a point of equilibrium as stressed by constructionist perspectives (Papert & Harel, 1991). Foremost, the approach to how to present the thesis and how it is structured; is a dialogic approach to open up the deepening of dialogic spaces for reflections on the guiding question, the aim and the research questions of the thesis.

**Theories used when studying learning**

When it comes to the view on how theory or theories shall be used in research, an interpretive perspective is chosen instead of a normative perspective (Cohen et al., 2007). This has been operationalised through a number of theories that are included in the articles that this thesis is based on. However, the theories are not randomly chosen. They are chosen with a purpose to guide understandings of different levels or stages of the research process (Table 1). It is also important to stress that all theories are thought to adhere to a socio-cultural view of learning and education.

The operationalisation of the theories that are presented in the table has altogether moved understandings of two studies in the direction of the formation of new research questions, aims and purposes in order to present, analyse and interpret the PhD work that my thesis now offers. The theories that I have used in the included articles are given a new role in the thesis: to explain methodological considerations or support discussions that follow conclusions, except for two theoretical perspectives that have grown to become the main theoretical tools used for understanding my thesis. The concepts of pedagogical attitude and the positioning of ICTs have been
further developed and are considered to be the ‘main theoretical tools’ that guide understandings and interpretations in order to deepen the dialogic spaces for reflections.

Table 1. Summary of theoretical perspectives used in articles included in the thesis.

<table>
<thead>
<tr>
<th>Theories</th>
<th>How they were used</th>
<th>Appears in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theories based on the work of Gerry Stahl:</td>
<td>‘Making sense’ of the data and methodology with regard to understanding various levels of groups and learning processes towards the outcome of knowledge.</td>
<td>Articles 1, 3 &amp; 4</td>
</tr>
<tr>
<td>→ Collaborative Cognition (2013)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Learning House - A theoretical framework used in the researched municipality that consists of attitudes, theories and methods for teaching and learning.</td>
<td>To understand design and decision-making processes to support learning and how it influences what learning is from the learner’s perspective.</td>
<td>Articles 2 &amp; 3</td>
</tr>
<tr>
<td>Positioning ICTs I → Infosphere, Onlife (Floridi, 2007, 2014b)</td>
<td>To understand and interpret learning and how ICTs can influence interpretations of learning.</td>
<td>Article 3, and to some extent, article 1</td>
</tr>
<tr>
<td>C → CrossActionSpaces (Jahnke, 2016)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perspective on usefulness (‘Youthfulness’)</td>
<td>To understand the ‘usefulness of education’, some perspectives are proposed and considered to influence the attitude towards learning and education.</td>
<td>Article 4</td>
</tr>
<tr>
<td>→ Inspired by perceived values of learning, autonomy and motivation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(cf. Hennesey &amp; Amabile, 1998; Reeve, 2012)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pedagogical attitude (based on Aspelin &amp; Persson, 2011)</td>
<td>To understand influences like isolated and integrated attitudes in order to understand learning in formal and non-formal education.</td>
<td>Article 1</td>
</tr>
</tbody>
</table>
Pedagogical attitude
Based on the notion that this thesis has a pedagogical approach to understanding and bringing more knowledge to education and learning, a pedagogical perspective of understanding attitudes towards learning and ICTs is taken. The definition and development of the pedagogical attitude began in Article 1.

The concept of pedagogical attitude as understood in this thesis emanates from Aspelin and Persson (2011). In their view, from a pedagogical perspective, an attitude includes three aspects: cognitive, emotional and intentional. For example, this means that when referring to an individual’s attitude towards learning or ICTs, it is about an individual who thinks, feels and intends to act in a certain way towards or in relation to someone or something. In addition to Aspelin and Persson’s view, the pedagogical attitude is also guided by individuals’ underlying or embedded assumptions when defining what knowledge is from their point of view. This positioning of what knowledge is is called the approach to knowledge, and it includes both an epistemological and ontological perspective. From the perspectives of decision-takers, school leaders, teachers, trainers, learners and researchers, the pedagogical attitude refers to the basics of decision-making, aiming to influence the learning. In other words, the interpretations and perceived values of what learning is are what influence the decisions one makes about how to learn.

In research, the pedagogical attitude and approach to knowledge can be related to teacher beliefs or educational beliefs (e.g., Pajares, 1992; Northcote, 2009). However, the choice of pedagogical attitude is made because the pedagogical perspective of defining attitude (Aspelin & Persson, 2011) is supplemented by the approach to knowledge, underlining both an epistemological and ontological perspective. When the pedagogical attitude has been used before, the focus has been on relations in the form of the teacher’s ways of relating to students or the teacher’s role in supporting student relations (cf. Jons, 2008; Aspelin & Persson, 2011; Aspel, 2014). My understanding of pedagogical attitude underlines the act, in certain ways, towards or in relation to someone or something realised through the decisions we make when we decide how to learn based on interpretations of what learning is and the perceived values of learning.

Positioning ICTs in education
The positioning of ICTs in education was already presented in the chapter in which I contextualised the research. That is because I consider this perspective to be both an existing condition for the contexts that are studied, and that it that can be used to guide understandings and interpretations of
the thesis when learning and ICTs are related. As previously stated, various perspectives of and attitudes towards ICTs can and do exist (cf. Kling, 2000; Sein & Harindranath, 2004; Säljö, 2010). Thus, depending on the perspective or attitude, ICTs can be understood or argued differently when perspectives of information, communication and technology are related to each other depending on how ICTs are conceptualised or conceived.

To understand how the main theoretical tools are operationalised in this thesis, the results and contributions from the included articles opens up analyses and discussions with regard to perceived values of learning, the relation between learning and ICTs and the influences of perceived values of education. The pedagogical attitude and the positioning of ICTs in education will be used when analysing and discussing the thesis. The analysis and discussion is viewed as a way to deepen the dialogic spaces for reflections, which include the analysis, interpretations, combinations and discussions of certain results and contributions in order to meet the research questions and aim of the thesis (cf. Wegerif, 2006). Simply put, the pedagogical attitude and the positioning of ICTs in education are the main theoretical tools that help me understand research questions 1-3 in order to understand the coherent whole of the thesis work, research question 4.
CHAPTER 4. METHODOLOGY AND SOME CONSIDERATIONS

When talking about the methodology in the particular fields mentioned - about which I am supposed to have a little more than second hand knowledge - I have always found it utterly inadequate to focus attention only on these special fields without seeing them in a much broader perspective (Frisch, 1970, p. 1).

Two fields of education
The original plan for my PhD thesis was to research the two fields of formal and non-formal education, especially the learning and perceived values of learning and education. Regarding the final product of my years as a PhD student, I did stick to the plan.

The field of non-formal education was the first field that was studied. This first study concerned two target groups: the learners and the decision-takers and trainers within the European Voluntary Service (EVS). The EVS is a non-formal education programme for youth aged 18-30. It was part of the Youth in Action programme from 2007-2013. Since 2014, the EVS has been part of the youth programme within Erasmus+ (EC, 2014). During 2013, when volunteers were interviewed for my research, the Youth in Action Programme had nearly 275,000 participants divided between approximately 12,100 projects. The EVS hosted almost 10,000 volunteers who participated in a non-formal learning experience that lasted 2-to-12 months.

The approach in the study of non-formal education was to focus on the learners’ view of learning in non-formal education to then get additional reflections from decision-takers and trainers to reflect on findings and quotes from the learner’s perspective.

The second study in the present thesis was in the field of formal education. Also, in this case, the learner’s view of learning was in focus. The learners in formal education represent a Danish municipality with around 22,000 inhabitants. In the municipality schools, from the preschool class (6-years-old) to grade 9 (16-years-old), there are about 2,000 learners and 200 teachers. There are 7 schools from preschool class to grade 9. The researched

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municipality and the research team at Umea University agreed on a research contract in 2012 in which the researchers would follow and research the full-scale investment of tablets in education where all learners and teachers got one tablet each. I was one of the researchers in the team that visited the municipality on a regular basis from April, 2012 until the last visit in March, 2016. The municipality that was studied is situated in a rural area of Denmark. The average income of the inhabitants in the municipality was year 2010, close to the average of the country. The number of working citizens with long-term further education as the highest completed level of education was year 2011, slightly lower than the average of the country.

The approach of the second study was to focus foremost on the learning from the perspectives of the learners as well as the relation between learning, the use of the tablets and the municipality frameworks for developing the teaching and learning culture.

**Two separate learning cultures**

The contexts of formal and non-formal education are defined as learning cultures, following Stahl in his definitions of the units of learning science: the individual, the group and the culture (Stahl, 2013). The group is the classroom or group of volunteers, and they can both also be understood as communities (Dillenbourg et al., 1999). In the formal education context, the groups and the communities of learners and the leadership of the municipality form a culture. In the non-formal context, the groups and the community of volunteers and the leadership of decision-takers and trainers form a culture. Since the aims and the study objects are formed with regard to learning in both formal and non-formal education, both contexts are considered learning cultures.

**Same case?**

The research strategy was chosen with regard to the research problem of how to value the availabilities of learning when learning is related to ICTs. As the research problem and the background express, the figure that shows the research problem can be seen at one level as one integrated, coherent whole or as separated, isolated fields and perspectives.

The same view is adapted to the perspective of the research strategy. When this research is a case study (Cohen et al., 2007), what is the case? As I have researched two different fields of education, each study can be regarded as a case. This is grounded in the view that a case study can illustrate a more general principle based on specific instances in schools, communities or cultures with the purpose of understanding how ideas and abstract principles can fit together (cf. Nisbet & Watt, 1984). In a case study, it is
beneficial if the researcher is integrally involved in the case, focuses on individual actors or groups of actors and aims for a deeper understanding of their perceptions of events (Hitchcock & Hughes, 1995). A case study can cater to sociological domains (cf. Merriam, 1988), and both contexts enable boundaries to be drawn around them as a demarcation that defines the cases of learning in formal and non-formal education (Hitchcock & Hughes, 1995). The research problem shows that it is possible to draw boundaries around cases on several levels. This thesis does draw a boundary around a level in which the perspectives and attitudes of learning and the perspectives and attitudes of ICTs are integrated in the concepts of learning and ICTs, respectively, thus forming two different cases. On a third level, boundaries are drawn in such a way that they integrate perspectives and attitudes towards learning and ICTs.

However, the background and contextualisation of this research show that both integrated and isolated views of learning co-exist with regard to views on learning, education and ICTs (cf. DG EAC; Harring et al., 2016; Articles 1 and 4). Thus, the case of this thesis can also be regarded as the whole image of the research problem formulated as how to value the availability of learning when learning is related to ICTs (Fig. 9).

Fig. 9. Is the research problem the case?
Learners’ expressions of learning made visible
Throughout the research, the learners’ expressions of learning have been in focus. At first, because individuals brought forth their views, I thought that this research would be the result of their interpretations and perceived values of learning. This ended up developing in another way. Interviews with more than one individual soon showed that the reasoning and expressions of learning situations resulted in a scenario in which the interview data showed that the individuals were ‘coloured by’ the expressions and understandings of others. This is a benefit of focus group interviews with several individuals, but describing the data as individual expressions was not fitting. This experience led me to consider using theories by Gerry Stahl (2006, 2010, 2013, 2015) to support the methodology of the research and explain the data that were collected and presented.

The starting point was the theory of group cognition (Stahl, 2006, 2010), which expresses that group cognition is not the same as individual cognition: “It relies upon individual cognition to make essential contributions; however, one cannot say that all of the cognition is reducible to the individual unit, because the work of assembling the high-level argumentative structure typically occurs at the group unit of analysis” (Stahl, 2015, p. 13). The theory of group cognition is regarded in this thesis as a socio-cultural perspective, but it can also be understood as having roots in cognitivist research traditions or as an example of a theory in the ‘boundary area’ between cognitive and socio-cultural perspectives (Akkerman et al., 2007). However, because of the greater focus on a social perspective in which understandings and expressions of learning are not reducible to individuals, the theory of group cognition is useful in my research, which mainly adheres to a socio-cultural perspective on learning and knowledge.

The same understanding is applied to the concepts of collaborative knowledge and collaborative discourse in this thesis in that they are not reducible to individual units, even though they are essentially based on individual contributions. Whether it is group cognitions, collaborative knowledge or collaborative discourse depends on what part of the ‘learning-towards-knowledge-process’ you highlight or make visible. The research decides this. Put simply, and from the viewpoint of this thesis, the process of getting to know (cognition) is the initial phase that occurs via the forming of or adapting to a discourse before gaining the knowledge (cf. Stahl, 2006). According to some epistemologies and situation, the process can be seen as an individual process, or to some, it can be seen as made together with others (cf. Piaget & Cook, 1952; Vygotsky, 1978).
In the study of formal education, the interview data are foremost seen as collaborative knowledge about what learning is. This collaborative knowledge representation has been preceded by the process of forming a collaborative discourse of what learning is. The act or process of forming group cognitions was present when the learners in the classroom solved the issue of how to present learning situations and to some extent during focus group interviews (Cohen et al., 2007) in which the individuals’ expressions about learning were ‘coloured by’ other group members’ expressions. The theory argues for utterances as the unit of analysis in research. Utterances make group cognitions and collaborative knowledge visible, as shown by findings (Stahl, 2013; 2015).

In non-formal education, the interview data with the individuals together with the interview data from focus group interviews with volunteers, decision-takers and trainers (Cohen et al., 2007) are seen as the collaborative discourse of what learning is in the field of non-formal education. The process of forming group cognitions was present in the focus group interviews.

Data in both studies are described and understood as group cognitions, collaborative discourse or collaborative knowledge. They are considered to be influenced by subjective receptions and cultural agreements as to what learning is or how to learn (cf. Glăveanu, 2011). Final outcomes that represent the learners’ expressions of learning via themes are considered to be the learners’ perceived values of learning, which are based on the notion that when learners’ perceive a value of learning, they then express it as an interpretation of what learning is (cf. Articles 2 and 3).

Regarding the studies included in this thesis, the concepts of group cognitions, collaborative discourse and collaborative knowledge are used to make visible subjective receptions and cultural agreements of understandings of learning summarised as perceived values of learning in the fields of formal and non-formal education.
CHAPTER 5. METHODS

To be a teacher in the right sense is to be a learner. Instruction begins when you, the teacher, learn from the learner, put yourself in his place so that you may understand what he understands and the way he understands it (Kierkegaard, 1848).

The data were collected via qualitative methods such as photo eliciting interviews (Cappello, 2005), and individual and focus group interviews (Cohen et al., 2007) in which learners’ expressions of learning was the focus. The sampling was based on considerations on how to cover a variation of learners’ expression of learning. Thus two educational contexts, one in formal and one in non-formal education, were chosen to study. This means that the choice to research the formal and non-formal educational contexts that are included was not a random choice. It was a choice based on the expectancy of variations that could be met in two different educational contexts, considered a sampling of contexts (Bryman, 2012). The sampling of participants within each context was based on voluntary participation, therefore qualifying as convenience sampling (Cohen et al., 2007).

Collecting data

Study 1
The European Voluntary Service is a non-formal education programme, and the participants are named volunteers. The volunteers were one out of two target groups in the data collection phase. The second target group consisted of decision takers and trainers. The volunteers, also considered learners in non-formal education, were interviewed either as individuals or via focus group interviews (Cohen et al., 2007). Ten interviews were conducted with individuals via Skype, and three focus group interviews were conducted with three individuals per interview. The focus group interviews were administered at a mid-term evaluation\(^8\). In total 19 volunteers (12 female, 7 male) took part in interviews during spring 2013.

The volunteers came to Sweden from Albania, Belgium, Holland, England, France, Germany, Portugal, Romania, and Ukraine. Eight came from university and seven had master’s degrees (two of whom also had worked for 3-4 years). Six came from upper secondary school, two came from work, and

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\(^8\) On-arrival trainings and mid-term evaluations were mandatory for the volunteers who participated in European Voluntary Service (EVS) within the programme Youth in Action.
three had an unclear status. They were between 18 and 26 years in age and had participated in EVS for 8 to 12 months.

The second target group consisted of four experts who were trainers and decision takers connected to the fields of youth and civil society, the field of non-formal education and the field of non-formal learning (gender is not stated with the purpose of anonymity, but both genders were represented). Each of the experts had more than 15 years of experiences working within the fields in the roles of educating through trainings, taking decisions about projects within non-formal education and formulating the basis for governmental decisions at a national level in Sweden. They took part in a focus group interview with two researchers during spring 2015.

The language of the interviews with the volunteers was English. The individual interviews lasted about 30-60 minutes. The focus group interviews (Cohen et al., 2007) lasted about 90 minutes. All of the interviews were semi-structured (Kvale & Brinkmann, 2009) and were recorded and transcribed. The interviews with the decision takers and trainers were held in Swedish, which meant that when data were supposed to be presented in English, quotes were translated from Swedish to English. Quotes and abstracts from the interview data were considered as utterances. These were the units that were analysed (Stahl, 2015).

Study 1 is presented to some extent in Article 1 but foremost in Article 4.

**Study 2**

The second study in the thesis is based on research in the Danish municipality. The methods are in line with a two-step research design of first understanding how learners express learning and secondly relating it to the use of tablets without asking explicitly about the technology. The understanding of learning is primarily examined through the study object of *learning situations*. The learning situation study was a research project in collaboration with teachers and school leaders in the municipality. The project idea was presented in meetings with teachers and school leaders. The teachers who wanted to participate were informed about proceedings and important information such as ethical issues during the project (Appendix 1; Appendix 2). Eleven teachers made the learner's participation in the research project possible, representing 11 classes/classrooms that were visited for data collection via interviews. Two researchers administered the learning situation research project.

The plan for the project was that the learners took their own photos of what they considered to be learning situations. Those pictures were supposed to
be labelled with a keyword or a short sentence to show the motive for taking
the picture. The pictures were collected with the primary purpose of being
used as a starting point in the interviews, inspired by the methods of photo-
eliciting interviews (Cappello, 2005) and stimulated recall (Haglund, 2003).
The pictures were not analysed in this study beyond the fact that the
researchers had seen them and organised them in advance of the interviews
that followed the collection and organisation of the photos.

The interviews were considered focus group interviews (Cohen et al., 2007),
called photo-interviews. The interviews became the main form of data
collection that provided the study with data in forms of utterances about
learning from the learners. In the interviews the learners took turns telling
about the pictures they had taken to describe what the image showed and
why they had chosen the picture as a representation of a learning situation.
The researchers listened to the learners’ descriptions of what the picture
showed and wrote down their explanatory statements as to why the pictures
were chosen as learning situations. The learners’ statements were written
down and translated to English in the form of full sentences, short
statements or sometimes just a summarising word – all forms considered to
be utterances expressing learning from the learners’ perspective, which
became the units of analysis. One learner could have more than one
utterance for each picture.

The study of the learning in formal education involved 11 classrooms from
grade 1 to grade 7, studied during autumn 2013. There were 207 learners
(100 girls and 107 boys) and 11 teachers (9 female and 2 male) involved. The
classrooms represented 6 out of 7 schools in the municipality. All learners
had one tablet each (1-1). The tablets were iPads of the 2nd generation with
16-gigabyte storage.

The learners produced 278 photographs and five drawings. A total of 293
utterances were generated. The interview data were collected via 12 photo-
interviews in classrooms (that lasted 30-60 minutes) and 7 photo-interviews
in groups of three from one classroom (lasting about 20 minutes each), for a
total of 19 interviews.

The study is presented in Article 2 and Article 3.

**Comments in regards to the data**
The summary of the methods, participants and data from the two studies
shows that the study in formal education is of larger scale than the study in
non-formal education (Table 2). This could give the impression that it is an
unbalanced research. But the intention was not to have two studies of the
same extent. The intention was rather to have two studies from two different fields of education where the learners were subscribed to the same or a similar educational setting. In addition, formal education and non-formal education are not organised in the same way, as having the same amount of participants in the same educational setting is possible in schools but not in smaller voluntary-based organisations or networks. This is also an explanation of why the number of participants in formal education can easily outnumber the number of participants in non-formal education, at least if the participants are supposed to adhere to the same or similar educational settings.

The form of the research project of learning situations was developed after the learners in Study 1 already had been interviewed. This is the reason why the data collection method of taking pictures of learning situations was not used in both studies. However, one of the benefits and purposes of the pictures was to ease the interview situation with the young learners – to be able to have a starting point that would open a dialogue with the young learners in order to understand their perspectives and how they value learning. The volunteers did not have that kind of door opener to ease the interviewing, but this was not problematic since the volunteers had met the researcher during trainings before and had the opportunity to get to know each other in advance.

Table 2. Summary of methods, participants and data in the two studies.

<table>
<thead>
<tr>
<th>Study 1. Learning in non-formal education</th>
<th>Study 2. Learning in formal education</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Method</strong></td>
<td><strong>Autumn 2013</strong></td>
</tr>
<tr>
<td>Spring 2013 3 focus group interviews with volunteers (learners)</td>
<td>12 photo-based focus group interviews in classroom (with learners)</td>
</tr>
<tr>
<td>10 individual interviews with volunteers (learners)</td>
<td>7 photo-based focus group with three participants (learners) at time</td>
</tr>
<tr>
<td>Spring 2015 1 focus group interview with decision takers and trainers</td>
<td></td>
</tr>
<tr>
<td><strong>Participants</strong></td>
<td></td>
</tr>
<tr>
<td>19 learners</td>
<td>207 learners (supported by 11 teachers)</td>
</tr>
<tr>
<td>4 decision takers and trainers</td>
<td></td>
</tr>
<tr>
<td><strong>Data</strong></td>
<td></td>
</tr>
<tr>
<td>In total, about 14 hours of interviews were recorded and transcribed.</td>
<td>About 11 hours of interviews were recorded; 278 photographs and five drawings were collected to use as starting points in interviews.</td>
</tr>
</tbody>
</table>
**Analysis of the two studies**
The data that were analysed were from interviews with regards to learners’ expressions of learning. The unit of analysis was utterances (Stahl, 2010; 2015) in the form of quotes, sentences, short expressions or just summarising words. Data analysis was applied through a qualitative approach in which themes were coded and generated in both studies. The themes follow a definition from Boyatzis, where they are considered as “a pattern found in the information that at a minimum describes and organizes the possible observations and at maximum interprets aspects of the phenomenon” (1998, p. 4). The phenomenon is expressed a bit differently in each article, with some slight differences in formulations to better fit the writing of the articles. However, the study object of this thesis – the learners’ perceived values of learning – can be seen as a phenomenon in this thesis that summarises the two studies coherently.

**Study 1**
The study of learning in non-formal education is foremost presented in Article 4, and the procedures that are described here originate from that article. Some parts of the data were presented in Article 1, but more in the form that quotes were used as descriptive examples in connection to the isolated and integrated attitudes that were presented and discussed.

The analytical process of Article 4 was presented in two steps. The first step was to show quotes and summaries of data structured according to five themes (Table 3). Themes 1-4 were organised according to the research questions of Article 4, and theme 5 was chosen because a comparative aspect between formal and non-formal learning often came up in interviews. The first step of presenting the data had a descriptive character as the main idea. Since theme 5 was considered important for describing the characteristics of the data, the theme was also interpreted as a finding itself.

The second step was of an analytical character, as analysis and discussions were conducted through a triangulation technique of combining two or more objects, not only to construct validity but foremost to get an “holistic understanding of the specific situation and general background knowledge about this class of social phenomena” (Mathison 1988, p. 17). Themes were triangulated to get a deeper understanding of the learning, recognition of learning and its relation to the existing tool for recognition of learning – the Youthpass. Analysis also showed how participants in non-formal education expressed how they could benefit from it.
Table 3: Themes presented in the findings of study 1 (table origins from Article 4).

<table>
<thead>
<tr>
<th>Themes</th>
<th>Motive</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Why EVS?</td>
<td>To understand why youth chose to participate in a non-formal learning programme</td>
</tr>
<tr>
<td>2. How learning is expressed</td>
<td>To understand how learning is expressed in EVS— Learning in non-formal education</td>
</tr>
<tr>
<td>3. Youthpass</td>
<td>To understand the strategy of Youthpass as a way to document learning as well as the strategy to recognise non-formal learning</td>
</tr>
<tr>
<td>4. Documentation</td>
<td>To understand how they document or make their learning visible</td>
</tr>
<tr>
<td>5. Formal vs. non-formal learning</td>
<td>A comparative aspect often came up in interviews and turned out to be useful when trying to understand the collaborative discourse of what learning is and what education is. This aspect involved formal and non-formal learning according to a “non-formal learning perspective”</td>
</tr>
</tbody>
</table>

**Study 2**
The analysis in Articles 2 and 3, which is presented in study 2, is similar, using a three-step analysis procedure. The analysis is based on utterances expressing learning from the learners’ perspective. One learner could have more than one utterance for each picture. The utterances that were written down were the unit of analysis (Stahl, 2010; 2015).

The first step was the coding and generation of themes. This was made via an iterative process, an interplay between data and theory. The approach was inductive in the sense that the collected data were the starting point in order to form the understandings of the study (cf. Bryman, 2012) – but also abductive in the sense that theories guided the development of the themes, an interplay between data and theory to form new theory based on understandings and interpretations (cf. Alvesson & Sköldberg, 1994; Kovács & Spens, 2005). The findings were organised according to explored themes that were coded from the units of analysis. They informed how utterances were distributed into themes that are considered to show the learners’ perceived values of learning.

The second step was to relate the utterances that expressed learning to the use of the tablets. The relation between learning and tablets was analysed according to this definition from Article 3:

> Expressions of learning could be related to the tablet and the features that mobile technology in general provides by being present in the learning setting (Traxler, 2005; Crompton, 2013). This means, for example; if the
learners express that learning is to search the Internet for something specific they want to learn, it is assumed that it is done via the tablet. Therefore it is a connection to what the learners express as learning and the use of the tablet (italics in Article 3).

The third step was a procedure of connecting themes to the municipality’s framework for developing the teaching and learning, ‘The Learning House’ (Articles 2 and 3). The framework consists of attitudes, theories and methods for teaching and learning, which are considered the building blocks for teaching and learning in the municipality. The framework brings forward perspectives that adhere to a socio-cultural perspective of how to understand teaching and learning and how to approach learners in learning processes. This analytical step can be seen as a kind of evaluation of the framework but foremost as a way to analyse its coherence with municipality intentions to develop teaching and learning in comparison to what the learners in the municipality schools express as learning.

Even though Article 2 and Article 3 are based on the same study, the results from the Poster Classroom (Article 3) do not show the same results as the whole municipality (Article 2). In Article 3, the analysis and the development of the themes are more stringent, which means that the coding of the themes as well as the relation to the theoretical underpinnings has been further developed. This means that the main differences from Article 2, in which the municipality was presented, are that (a) one classroom is analysed, instead of eleven classrooms, and (b) analysis and coding are made differently.

**Transparency, validity and transferability**

The ambition in the research process and especially when presenting the research was to make it as transparent as possible. The aim was to make clear the whole research process from initial contacts with informants, to theoretical and methodological considerations, issues regarding data collection methods and procedures in the analysis, and findings and final conclusions. With transparency other people are given the opportunity to discuss, criticize or learn from the research; in other words, to enable assessment of internal validity (Merriam, 1994). This is because a researcher is dependent on other people’s views. It has been beneficial to work in a research team where we have been able to discuss data and findings before presenting them to others. For example, my research was reviewed and presented at conferences where the presentations were based on articles, workshop papers or abstracts. Similarly, drafts of articles or presentations of research plans were discussed on a regular basis in a group of PhD students at the department, who were mentored by senior researchers.
Different forms of triangulation have been used during my thesis work to get a holistic view and background knowledge of what was studied (cf. Mathison, 1988; Merriam, 1994). When studying non-formal education, volunteers were interviewed so they could give their views on learning. In addition, decision takers and trainers were interviewed to give their perspectives on learning. Together this made a collaborative discourse of learning in non-formal education visible. This approach can be seen as a triangulation between learners, decision takers and trainers to strengthen validity in the cases that were studied (cf. Merriam, 1994). A similar approach is seen when studying formal education. Triangulation took place when the learners’ expressions of what learning is were related to the municipality’s intentions of developing the teaching and learning culture. Getting an understanding of learning from learners, school leaders and decision takers was made with the intention to strengthen the validity of the understanding of the learning culture.

On the level of this thesis, understandings of learning in two learning cultures, representing formal and non-formal education, can be seen as a triangulation of educational settings or even learning cultures towards the understanding of learning within and across educational contexts. Triangulation itself was not seen as a solution that would bring a single valid proposition. It did rather show the complexity and richness of learning. Hence, the value of triangulation was to provide “more and better evidence from which researchers can construct meaningful propositions about the social world. The value of triangulation lies in providing evidence such that the researcher can construct explanations of the social phenomena from which they arise” (Mathison, 1988, p.15. Italics by author).

In the wording of trustworthiness or transferability of research lies the assumption of equal situations or similar contexts, which are more appropriate in research with a more quantitative approach (Cohen et al., 2007; Lincoln & Guba, 1999). From my point of view, I do not decide the trustworthiness and transferability i.e. external validity (cf. Merriam, 1994). However, I can see examples of other contexts in which the experience could be the same as or similar to what this research presents. However, those who want to use the research must decide the value of it (Lincoln & Guba, 1999). It is in the subjective reception of the recipient of the thesis or articles to make their own interpretations on possible outcomes of the research and how they can transfer research outcomes to their reality in order to realise it in their situations. From a constructionist perspective (cf. Papert & Harel, 1991), how does the construct of this thesis relate to the constructs in existing learning cultures, and what is the point of equilibrium when they ‘have met’? Or, from a dialogic perspective (cf. Wegerif, 2006), how does this
thesis contribute to deepening of the dialogic spaces for reflections regarding learning and relations to ICTs in contexts where decisions of how to learn is made or taken? What speaks for a transferability of this research is that interest in ICTs and their relation to learning seems to be ongoing, as shown in the chapter that contextualises my research. This means that the case – the research problem of how to value availabilities of learning when learning is related to ICTs – is a current issue in educational settings around Europe and beyond, which means that there is a possibility that the experiences and learning outcomes of my research can be applied in other educational settings besides the cases that have been studied and included in this thesis.

**Reflexivity - My role as researcher**

In the introduction I explained my background as a teacher in formal education and trainer in non-formal education. The research in the non-formal education was made in the same context where I was contracted as a trainer. I realised the idea of researching the context with the awareness that I clearly had to separate my roles of being a researcher and a trainer. The research methodology and interview guide were discussed with my supervisors. I, myself, interviewed the volunteers, and the interviews with decision takers and trainers were conducted with one supervisor and me. It was important to involve the supervisors to firstly reduce the risk that study 1 would be considered biased, and secondly to guide me in a process of making the familiar unfamiliar and again interesting in the case study (cf. Erickson, 1986). A part of being reflexive is also to discuss the limitations of the studies. This is done in the end of the thesis to bring together the limitations of the whole thesis work, not just with regard to each one of the included studies.

**Ethical considerations**

Ethical considerations are based on four rules of the Swedish Research Council concerning demands on information (about purpose of research), agreements (of participation), confidentiality (to protect informants) and use (of research data) (Swedish Research Council, 2002). The research data will only be used for the purpose of research and are treated in a way that protects the confidentiality of the individuals following the Personal Data Act (1998:204).

In study 1 each volunteer was informed about the research at the training and via letter (Appendix 4; Appendix 5). Decision takers and trainers were invited to take part in an interview via e-mail. Informants gave consent to being recorded in the beginning of the interviews.
In study 2, the school leaders and teachers approved the project in the municipality. The parents of all participating learners (the children under the age of 18) were informed via letter (Appendix 3). The project was in most cases conducted in the ordinary school activities, as a teaching/learning assignment. This meant that participation in the project from the learners’ point of view was seen as more or less compulsory. In some classrooms it was completely voluntarily to participate. The parents of the participating children were asked for permission for their children to be recorded via audio so that recordings of the interviews could be used. The children could choose to not participate in the research, and those who said no were not included in the pictures or audio recordings made for this research. The local ethical vetting board of the researchers university reviewed the research (dnr. 2013-393-31Ö).
CHAPTER 6. RESULTS AND CONTRIBUTIONS FROM INCLUDED TEXTS

Article 1

This article was published in the form of a book chapter. It presents a background of the concepts of formal, non-formal and informal learning and education – historically but also how they are relevant to education today. The aim is to understand the concepts by using the term attitude, and consider the concepts as integrated rather than separate parts. The purpose is to bring forward pluralistic views of learning and education, as the pedagogical attitude is considered helpful when a range of isolated and integrated understandings of learning and education is brought forward. The isolated and integrated attitudes towards learning and education can influence teaching and learning in both formal and non-formal education. ICTs are put forth through a view of co-located communication spaces in a time when web-enabled ICTs in education and learning can be taken for granted.

The article builds upon data from three different studies (in formal and non-formal education), presenting empirical data that are related to the concept pedagogical attitude and the perspectives of policy, research and national curricula in education. It includes global perspectives towards educational activities where learning is supposed to take place. To understand the three studies in the article, the authors explored and looked for expressions where teachers, trainers or learners were integrating or isolating formal, non-formal and informal learning.

Results
The results show forms of isolated and integrated attitudes presented through descriptive examples from three datasets. Integrated attitude is put forth when opening up formal education with the help of ICTs, whereas isolated attitude is shown when not using the potential of ICTs to open up formal education. In non-formal education two forms of isolated attitudes are shown when (a) learners bring forward the view that the learning that is recognised is the formal learning, and (b) stakeholders from non-formal education claim that there is a difference between formal and non-formal
learning methods and that one form of educational setting needs to learn from the other.

The main message of Article 1 can be seen as twofold. First, the ambition is to show that depending on the attitude a person has towards formal, non-formal and informal learning (pedagogical, economical, technological, etc.), it is possible to learn from the attitudes and move the discussions of learning and education towards understanding it as a pedagogical attitude. Second, the article emphasizes a hope for a pluralistic approach towards pedagogical attitudes and views of learning in a digital media world “that results in a collaborative knowledge-building approach across formal, non-formal and informal – especially in a time where web-enabled ICT is taken for granted” (p. 231).

**Comments and Contributions**

In the article the idea of positioning the view of ICTs emerged. Here the concept of co-located communication spaces is used. This is more or less an early form in the evolution towards the concept of CrossActionSpaces by Isa Jahnke (2016). In this thesis the positioning of ICTs is developed from the perspectives of information, communication and technology, and CrossActionSpaces is put forth as central to the perspective on communication in education.

Apart from the results presented above; the main contributions from this article are:

- The background of the concepts of formal, non-formal and informal education – historically as well as how they are relevant to education today.
- The emergent work to defining the pedagogical attitude that is used in this thesis, based on Aspelin & Persson (2011).
- Problematizing the researched contexts of the thesis, with regard to discussions about an attitude towards formal, non-formal and informal learning and its relation to ICTs.

**Article 2**


The overall purpose of the article is to present the learners’ use of tablets in a 1:1 tablet project; towards this end, the focus primarily is on learning, not on
technology itself, to see whether the learners relate the learning to the tablets and if so, how they are related.

The research questions are:
- How do children express what they value as learning? (What makes a situation to a ‘good’ learning situation from their perspective?) (RQ1)
- To what extent is the media tablet part of what the children value as learning, and if yes, how? (RQ2).

This article is the first article of two in the thesis for which the data were collected via the learners’ own pictures of learning situations (Study 2). The outcomes of the interviews were learners’ expressions of what learning is, considered as perceived values of learning.

**Results**

The results show seven themes that were coded and generated in the analysis. It shows learners’ expressions of what learning is with regard to what they define as learning situations (using the same numeric table as in Article 2):

1. Various locations;
2. Reading and practising language skills;
3. Learning from someone (traditionally face to face);
4. Learning from/through something (mediated artefacts);
5. The learners know what works for them – ‘I did it my way’;
6. Engaged interactions;
7. Making mistakes is OK.

In addition, the relation between the themes and the use of the tablets was analysed. This resulted in the finding that in total, almost 33% of all utterances were related to the use of tablets even though the interviewers never explicitly asked about the technology.

**Comments and Contributions**

In a certain period of research the research team that I am part of decided to use the term ‘media tablet’ (Kaganer et al., 2013). This was based on the argument that the concept of tablets could be mixed up with the concept of tablet computers. Now, the winds have changed again, and I have decided to go back to using the name ‘tablets’. What is important is that it is the same kind of technology that is referred to in the included articles that are based on study 2. To be more precise, the tablets in our case are iPads. However, when the research team put forth our research as research about iPads, we experienced a kind of mistrust from research communities and reviewers
that we had some kind of deal with the company that produces them. To be clear, this is *not* the case for the research team.

Apart from the results presented above; the main contributions of this article are:

- It introduces the procedure of firstly understanding learning and secondly relating learning to the use of ICTs in education.
- There is a possibility of using the findings and relating them to the existing framework for developing teaching and learning in the municipality.
- The different ways of expressing learning were a result of the learners’ perceiving a value of learning in specific situations.
- The learners’ expressions of what learning is in relation to the use of ICTs in education could work as an evaluation of the teaching and learning culture. They could show what the learners in the municipality schools value as learning and also be related to plans and frameworks for developing the teaching and learning culture, like the one existing in the researched municipality.

**Article 3**


This article can be seen as a developed version of Article 2 and at the same time influenced by ideas and experiences from writing Article 1. Article 3 is based on the same study as Article 2 (study 2) but with the difference that it presents findings from one specific classroom. The classroom was chosen because of the richness of the data and the fact that the learners in the classroom had made one poster each with several pictures that presented learning situations. The positioning of ICTs with regard to information, communication and technology was a result of experiences from writing Article 1, and it was developed here in Article 3 towards the form it has taken here in the thesis.

The aim of the article is a deeper understanding of learning and the learning-tablet relation in a 1:1 tablet learning culture based on these research questions:

- How is learning expressed in an advanced tablet project, and how can the learning itself be related to the use of tablets? (RQ1)
- How do the learners’ expressions of what learning is and municipality intentions of changing teaching and learning interrelate when understanding learning in a 1:1 tablet project? (RQ2)
- What are possible key learning outcomes, from a pedagogical and organisational perspective, of a three-year 1:1 tablet project, to inform stakeholders of a variety of levels in the educational system? (RQ3)

**Results**
The themes were coded and generated in a similar but further developed way as described in the method chapter. In this article the themes of learning are considered to be (same numeric table as in Article 3):

1. ‘Explanations in applications’
2. ‘To read and to learn new words’
3. ‘To be guided by someone’
4. ‘Finding out something new and making mistakes’
5. ‘Engaged interactions’

In this classroom the learning was related to the use of the tablets in a total of 55% of all utterances about what learning is in learning situations when the learners learn.

The themes are in the article connected to theory; a theoretical underpinning supported the process of generating the themes. A theoretical interpretation of each theme allowed a connection to be made to the municipality framework for developing teaching and learning (Fig. 10).

Fig. 10. The five themes of what learning is, related to the municipality framework for developing teaching and learning; The Learning House (figure origins from Article 3).
The relation between the learners’ expressions and the municipality framework can be understood as an alignment or coherence between the practice of the learners and the intentions and aims from the municipality leadership.

**Comments and Contributions**

Much from this article is a result of experiences from presenting the data in Article 1 and Article 2. Contributions from this article are of the same nature but in developed form – i.e. in some cases the themes in this article have the same names and in others they do not. The definitions of the themes have been developed, and theoretical perspectives have clarified the definitions. For example, it was possible to conceptualise a category of learners as CrossActionSpace learners based on the theory of CrossActionSpaces (Jahnke, 2016).

Apart from the results presented above; the main contributions from this article are:

- The positioning of ICTs from the perspective of information, communication and technology was mainly developed in this article.
- The theoretical connection between themes and the municipality intentions for developing a teaching and learning culture through a specific theoretical framework – ‘The Learning House’ – exemplifies a systemic work of developing education of which technology is one part.
- Learning Centred Technology Alignment is when technology-integrated learning designs are aligned or coherent with the learners’ perceived values of learning in a co-evolutionary process.

**Article 4**


The focus of Article 4 is on learning in non-formal education. The learner’s expressions of learning are the main source to meet the aim of putting forth understandings of non-formal learning in non-formal education. The learner’s perspectives are supplemented with additional reflections from decision takers and trainers.

The learners were volunteers within the European Voluntary Service (EVS), which at the time was part of Youth in Action, an EU programme for youth from 2007 and 2013. Since 2014, EVS has been part of the youth programme
within Erasmus+ (EC, 2014). The article addresses interests in the field from the perspectives of learning, the recognition of learning and a perspective of usefulness (Youthfulness). The recognition of learning is connected to the strategy of Youthpass, a recognition tool for non-formal and informal learning.⁹

The research questions are:
- In what ways is learning described in non-formal education programs? (RQ1)
- How is learning recognised in non-formal education, and in what way is it related to the Youthpass? (RQ2)
- How can non-formal education be understood from the perspective of usefulness, and for who is it useful? (RQ3)

The presentation of the data has a descriptive character with regard to what the volunteers, decision takers and trainers expressed and in relation to the research questions. The expressions were organised in themes that were analysed before the possible theoretical perspectives were used to understand whether non-formal learning is ‘youthful’ or ‘youthless’.

**Results**

The findings in the article are presented through considerations that became a result of the triangulation between themes. When it comes to why the volunteers chose to participate in EVS and how they expressed learning, three considerations were put forth:
- Non-formal education and non-formal learning in EVS are organised and designed in a way that instils the learners with the values of non-formal education.
- Learning in non-formal education is summarized as adhering to a socio-cultural perspective significantly in the direction towards experience-based learning. This finding is also supported in research, policy and training guidelines (cf. Bergstein et al., 2010; Fennes et al., 2012).
- The integration of formal learning into non-formal learning benefits the learner.

When expressions regarding Youthpass and documentation of learning were subject to triangulation, two considerations were put forth:
- Youthpass is foremost about the recognition of youth work and organisations rather than supporting individuals.

- Documentation of doing can be interpreted the same as documentation of learning.

A comparative aspect between formal and non-formal learning often came up in interviews, and the analysis brought forth two considerations:
- There is a mix-up regarding what is learning and what is education. There seem to be political motives behind this, which are not connected to education or learning as concepts. Rather, they point towards political ambitions to support youth as groups with various objectives, such as personal development and employability.
- What formal learning and non-formal learning are is based on individual interpretation.

**Comments and Contributions**
The considerations above are the main contributions of the article. In line with the interest of this thesis, it is worth noting that the participants expressed (non-formal) learning as:
- Learning-by-doing in 8 out of 13 interviews.
- Language-learning in 10 out of 13 interviews.

The perspective of usefulness was discussed and understandings were guided by theories that concerned autonomy and motivation. The research resulted in a framework that shows the complexity of whether non-formal learning is ‘Youthful’ or ‘Youthless’. The outcome of discussing the proposed framework is for example that participating in non-formal education can be interpreted as both ‘youthful’ and ‘youthless’, which can depend on perspectives such as who benefits from recognising the learning and how the learner perceives autonomy and motivation.

The article concludes that the division between formal and non-formal (and possibly even informal learning) should be questioned. It is considered to build a gap and work against interconnected education with ubiquitous learning (Cope & Kalantzis, 2009) and mobility within and across formal and non-formal education. This is not in the interest of the learners.

**Opening up dialogic spaces for reflection**
Altogether, the results and contributions of the four articles open up dialogic spaces for reflection, organised by three perspectives. These perspectives guided the formulations of research questions 1-3. The following chapter of analysis and discussions offers a deepening of dialogic spaces for reflection. Then the chapters with conclusions and contributions frame the dialogic spaces for reflection before the chapter about future research offers some reflection on how the dialogic spaces for reflection regarding the thesis can
be broadened. The last chapters of the thesis are organised to open, deepen and broaden dialogic spaces for reflection (cf. Wegerif, 2006).

The first perspective concerns understandings of learning. This perspective is chosen because the research on learners’ perspectives of learning is the purposefully chosen common denominator when studying formal and non-formal education. The framing of perceived values of learning is considered as an outcome of the included articles, presented via themes and considerations in Articles 2, 3 and 4. The combination of results and contributions from both settings, formal and non-formal education, opens up for the analysis and the discussion of the first perspective: perceived values of learning.

The second perspective concerns the interest in understanding ICTs and its relation to learning, which was the focus of or discussed in all articles that are included. ICTs are presented through interpretations of how they can be positioned (Articles 1 and 3) and how learning is related to the use of the tablets (Articles 2 and 3). The combination of results and contributions from the articles opens up for the analysis and the discussion of the second perspective: the relation between ICTs and learning.

The third perspective concerns organisation of and intentions for developing and forming learning cultures. This is exemplified through a municipality framework and a certain organisation in Articles 2 and 3. In Article 4 it is exemplified through policy, methods and training guidelines. In addition, perceived values of learning and conceptions of ICTs are discussed in all articles in relation to the formation of the learning culture. The combination of results and contributions from all articles opens up for the analysis and the discussion of the third perspective: influences of perceived values of learning.
CHAPTER 7. ANALYSIS AND DISCUSSION

Technologies do not merely support learning; they transform how we learn and how we come to interpret learning. (Säljö, 2010, p. 53).

The pedagogical attitude and the positioning of ICTs in education are the main theoretical tools in analysis and discussions. The purpose of this chapter is to deepen the dialogic spaces for reflection, which includes the analysis, interpretations, combinations and discussions of certain results and contributions in order to answer the research questions and meet the aim of the thesis (cf. Wegerif, 2006). In this chapter I have considered that Article 1 was written and presented with the pedagogical attitude as its theoretical lens. This means that the findings and results from this article are already discussed from the perspective of pedagogical attitude and with regard to a certain view on ICTs. This was a useful experience, but it also means that the results from Article 1 can be seen as already analysed from perspectives that are considered as the main analysing tools of this thesis. Thus, the analysis is made mostly with regard to Articles 2, 3 and 4. The outcomes of Article 1 are used as add-ons or as results to relate to. The chapter is organised from the three perspectives that were based on the results and contributions from the included articles. These perspectives are the perceived values of learning, the relation between learning and ICTs and the influences of perceived values of learning. The analysis and discussion starts with the understandings of perceived values of learning.

Perceived values of learning

One part of the aim of this thesis is to understand the perceived values of learning. This section of the chapter addresses this and also addresses the first and second research questions.

The starting point of this discussion is that when learners perceive a value of learning, then they express it as an interpretation of what learning is. In formal education the expressions of learning hold a variety of understandings. In Articles 2 and 3 they were analysed, coded and presented in themes, and regarded to represent a collaborative knowledge of what learning is in a learning culture. Thus, the formal educational context that was studied was considered primarily to adhere to a socio-cultural perspective on learning (cf. Papert & Harel, 1991; Vygotsky, 1978). In non-formal education, learners expressed learning with regards to when they learn or how learning is recognised. The understandings of learning presented in Article 4 were mainly interpreted as having two significant
outcomes: Learning was expressed as learning-by-doing (cf. Dewey, 2004) and language-learning. This led to the interpretation that the learning was adhering mainly to a socio-cultural perspective of learning. However, when looking for a more detailed interpretation of characteristics of perceived values of learning, I chose to highlight some perspectives guided by the concept of pedagogical attitude and the positioning of ICTs.

When interpreting the learners’ expressions of learning in both studies it can be posited that the learning process has expanded beyond the traditional classroom to involve other spaces or spheres (cf. Jahnke, 2016; Floridi, 2007; Lawson & Comber, 2000). From the perspective that learning is divided between education systems such as formal and non-formal education (cf. EC, 2014; Harring et al, 2016), the learners perceive a value of learning when integrating not just various spaces and spheres; they are integrating learning that adheres to various education systems (Article 4). One interpretation can be that the learners assume that learning has no borders or limits between learning settings or education systems; it all depends on how they can learn in the best way possible, from their perspective. This is done by involving and accessing learning availabilities that the learners value, in regard to how they think, feel or intend to act in the learning process (cf. Aspelin & Persson, 2011, on attitudes).

The perceived values of the learning are presented in various ways in various contexts. The characteristics of learning reveal the epistemologies of the learning cultures. Depending on the cultural tradition, learning is understood in accordance with the epistemology that the learning culture brings forward as central (cf. Säljö, 2009). To deepen this understanding, I suggest expanding this notion to also consider the ontological position of the learning cultures. I would like to introduce the interpretation that learners understand the world (ontological position) from an information perspective (cf. Floridi, 2007), thus underlining that the availability of information is crucial when learners perceieve a value of learning. Following this, and in the same spirit, I would also like to suggest the interpretation that the learning cultures also have an ontological position that considers communication crucial in the sense that what we can communicate about does exist. Thus, communication is considered vital when the learners perceive a value of learning (cf. Jahnke, 2016).

With this reasoning, one interpretation is that to understand the perceived values of learning in the studies of this thesis, the relation to perspectives that the ICTs offer is crucial, especially with regard to information and communication. It is already known that technologies transform our conceptions and interpretations of how we understand what learning is and
even how we come to understand the world (cf. Vygotsky, 1978; Säljö, 2010; Selwyn, 2011; Floridi, 2014a). Thus, when technologies enhance the availability of information and communication, then this availability is reflected in how learners express what learning is.

Following these interpretations of learning as availability of information and communication, access to information and communication is considered vital for the learning process. The learning is valued as a quality of having access to available information and communication when needed. This can be seen as an understanding of what a learning availability is, but foremost it underlines a relation between learning and information and communication. Learning can be seen as a search for available information and communication, and the question of whether this information and communication is accessible becomes important from a learning perspective. Thus, the perceived values of learning have become a dialogue about the accessibility and availability of information and communication. With this interpretation many existing conceptions and perceived values of learning (including several findings in Articles 2 and 3) are regarded as expressions of how to ensure availability of learning through various ways to access or enhance access to information and communication (Table 4.). When considering other existing conceptions of learning, these are possible to include in a dialogue of learning, which is interpreted as a matter of accessibility and availability of information and communication. The conceptions of learning are expressed in other examples as mobile learning, ubiquitous learning or seamless learning – concepts that can be understood to express learning as a matter of accessibility and availability of information and communication (cf. Pachler et al., 2010; Traxler 2007; Cope & Kalantzis 2009; Kuh, 1996; Looi, 2010; Wong & Looi, 2011; Milrad et al., 2013).

When learning is interpreted to be a matter of accessibility and availability of information and communication, it is related to perceived values of learning or vice versa. But there are some considerations regarding the concept of perceived values of learning: firstly, what is considered to be learners’ perceived values of learning may not be the same as learners’ conceptions of learning, as in e.g. Säljö (1979). Secondly, the perceived values of learning may be explained by theories of learning as in Articles 2 and 3, or possibly by contemporary learning theorists as presented in Illeris (2009). It could even be interpreted that perceived values of learning can be understood as a learning process itself that can be defined as leading to “permanent capacity change” (Illeris, 2007, p. 3), or whatever learning definition that exists and is chosen as appropriate.
Table 4. The perceived values of learning can be understood as a dialogue about the accessibility and availability of information and communication.

<table>
<thead>
<tr>
<th>Examples from the results that are presented in Article 3:</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Explanations in applications’</td>
</tr>
<tr>
<td>The applications ensure the information and communication that the learner values, therefore explanations in applications are considered a perceived value of learning. The applications enhance the capacity to access learning availabilities.</td>
</tr>
<tr>
<td>‘To read and to learn new words’</td>
</tr>
<tr>
<td>This theme is interpreted to underline the importance of information and communication. When one develops their language they ensure that they can access information and communication, to enhance the capacity to access learning availabilities.</td>
</tr>
<tr>
<td>‘To be guided by someone’</td>
</tr>
<tr>
<td>This is seen as a way to ensure information and communication from someone; a perceived value of learning – a learning availability. ICTs can enhance the capacity to access this ‘someone’ that the learner value, which can provide the ‘right’ information and communication.</td>
</tr>
<tr>
<td>‘Finding out something new and making mistakes’</td>
</tr>
<tr>
<td>This theme is a bit different in the way that a more exploratory or experiential view on learning is expressed. It can be interpreted in the sense that the learners themselves are responsible to find and ensure the information and communication that the learning situations require. ICTs can enhance the capacity to find out the information and communication that the learner values.</td>
</tr>
<tr>
<td>‘Engaged interactions’</td>
</tr>
<tr>
<td>To ensure information and communication by being part of engaged interactions, also a perceived value of learning – a learning availability. ICTs can enhance the capacity to access the interactions that the learner value, which can provide the needed information and communication.</td>
</tr>
</tbody>
</table>

When it comes to the considerations regarding the relation between perceived values of learning and the concept of learning, I present the explanation of my consideration in a simplified version via a metaphor: If one is talking about perceived values of a pen, the subject is not conceptions
of the pen, but rather possible ways to value it (which means that no definitions of what a pen ‘really is’ are needed). However, the perceived values of the pen may reveal what the pen ‘really is’. Thus, I suggest that understanding perceived values of learning is not the same as understanding the concept of learning itself. Another possible explanation of my concern may also be found in discussions of whether access to available information or communication per se means that one is learning, but this discussion is not answered in this thesis. Instead, an understanding of the relation between perceived values of learning and learning itself may be illustrated in Fig. 11. It shows that the two concepts may overlap. This overlap can also be interpreted in the sense that sometimes perceived values of learning are the same as learning and sometimes they are not. Or, if I draw on discussions about group cognition as adhering to a cognitive or a socio-cultural learning paradigm, is the overlap a ‘boundary area’ between cognitive and socio-cultural perspectives of learning (cf. Akkerman et al., 2007)? The relation between learning and perceived values can be discussed here, but from my point of view it needs further investigation before conclusions can be drawn. This means that discussions about the relation between learning and perceived values of learning are an area for future research.

Fig. 11. Learning is not the same as perceived values of learning; or is there an overlap?

**Valuing availabilities and perspectives**

When learners express perceived values of learning, the use of technology is present in all themes in Articles 2 and 3, even though the extent varies. Overall, Article 2 presents that the technology is related to 33% of all learning situations; in Article 3 it is related to 55% of all learning situations. It is concluded that integration of ICTs in a learning culture does not mean that learners use them all the time. Instead, the learners choose when to use ICTs and when not to. It can be interpreted that they choose (value) when ICTs are likely to offer availability of the information and communication
that the learning situation requires, with regard to how the learners understand learning. If learning is described as ‘to be guided by someone’, then they choose to use technology because it gives the learners access to this ‘someone’ that they seek to be guided by. It becomes a decision-making process of how to learn that is related to perceived values of learning and the interpretation of what learning is.

When studying non-formal education, one conclusion in Article 4 was that the division between formal and non-formal learning is considered to build a gap and work against interconnected education with ubiquitous learning and mobility within and across formal and non-formal education. This is considered to not be in the best interest of learners, especially in a time when learners have access to technology with features that can bridge gaps or overcome borders between learning settings and spaces of information and communication. This means that when the learners are given the opportunity to integrate learning from both formal and non-formal education through the example of language-learning, they consider that they benefit from integrating formal and non-formal education. In this case they see a learning availability through access to information and communication besides that which is ensured in non-formal education. In this case they are ensured access to the information and communication from another education system. But the division between education systems does not enable this access in all cases since they are expressed to provide different forms of learning and learning availabilities (cf. Taru and Kloosterman; Harring et al.). This means that if the learners were allowed to decide, then the decision-making process of how to learn, in terms of perceived values of learning and interpretations of what learning is, would involve the decision to learn through various education systems depending on where the learner considered the ‘right’ information and communication to be regarding what the learner decides the learning situation to require. From a perspective of integration, you could say that borders between learning settings or education systems should not limit access to information and communication; thus the same should apply to the process of learning.

The decision-making processes in learning situations can be understood as a valuing of perspectives based on perceived values of learning (Fig. 12). The isolation or integration of perspectives can, from a both learning and ICTs perspective for example, be seen as an indicator of whether learning availabilities are ensured via access to one (isolated) or several (integrated) learning settings, systems or spaces in order to ensure information and communication with regard to the learners’ decisions about how to learn (cf. Article 4). In the two learning cultures that was studied, results and contributions shows examples of perceived values of learning where
perspectives where isolated or integrated. Hence, with a pedagogical attitude that strives for ensuring learning availabilities for learners, we cannot seek just one solution when valuing perspectives. Instead, we have to understand the complexity of valuing perspectives and that various actors in education intend to influence the valuing of perspectives in certain directions depending on their attitudes and how they value learning in particular situations.

Fig. 12. Valuing perspectives – Are perspectives integrated or isolated?

**Influences of perceived values of learning...**

In the two studies of the thesis, the perceived values that were expressed by the learners were influenced by intentions and strategies from decision takers and policy (cf. Articles 2, 3 and 4). These influences opened up for the analysis and the discussion of research question 3, which is about possible influences on perceived values of learning. The question grew from experiences during the analysis of interviews; based on an insight that it wasn’t really clear whose perceived values of learning the learners really expressed. I found that the group, the community and even the learning culture influenced the individuals’ expressions. Based on the included articles, it is interpreted that when it is not really possible to distinguish between whose perceived values of learning are expressed, then theories regarding collaborative knowledge, collaborative discourse and group cognitions (Stahl, 2006; 2013) guide interpretations of that; results of
perceived values of learning are regarded as representing the collaborative discourse or the collaborative knowledge of learning cultures.

In the formal educational context that was studied there was a history of different strategies to develop teaching and learning. ‘The Learning House’ is one example of certain theoretical perspectives of learning being put forth to influence perceived values of learning. In the non-formal educational context, both policy documents and training guidelines put forth certain theoretical approaches to learning (cf. Bergstein et al., 2010; Fennes et al., 2012), foremost in the direction of experience-based learning (cf. Kolb, 1984; Dewey, 2004). In various forms of education, perceived values of learning are expected to be found in curriculums, intended learning outcomes or national and international strategies for education. This allows for an interpretation that various stakeholders in education are planning to influence the perceived values of learning in order to optimize learning experiences (cf. Ledden et al., 2007). Maybe stakeholders are planning a certain value of learning in order to be valued in a certain way from the very beginning of introducing certain perspectives of learning. Could this imply a plan to be valued according to how one wants to be valued? In other words, can learners and learning organisations nowadays afford learning just for the sake of learning (as in the German concept of ‘bildung’), or has the valuing of learning become more in focus than the learning itself? On the one hand, this view could open up a new perspective in the dialogue concerning pedagogy or power – who decides the valuing of perspectives of learning, and who decides the valuing of perspectives of learning when learning and ICTs are related (Fig. 12)? In the decision-making process surrounding how to learn, this can be interpreted as; the actor/actors who are involved in the learning situation makes the decisions on how to learn. However, decisions are also taken at other levels of the education system, thus influencing the decision-making processes on how to learn. On the other hand, to have aims and to be able to assess what you aim for is considered key in the teaching and learning processes, especially with regard to organisation of and design for learning and education (cf. DDD - Jahnke et al., 2014; TPACK – Mishra & Koehler, 2006).

...include attitudes towards ICTs and the positioning of ICTs

Understandings of ICTs, including perspectives of information, communication and technology, have become perspectives of importance to such an extent that they affect our ontological and epistemological positions, so that the ICTs themselves are regarded to influence perceived values of learning. Several themes that present learner’s perceived values of learning in Articles 2 and 3 are examples of this, especially when learning is expressed as ‘explanations in applications’ in the form of CrossActionSpace learning.
(cf. Jahnke, 2016; Article 3). Learning conceptions like mobile learning (Traxler, 2007; Pachler et al., 2010), ubiquitous learning (Cope & Kalantzis 2009) and seamless learning (Kuh, 1996; Looi, 2010; Wong & Looi, 2011; Milrad et. al., 2013) are other examples of concepts in which views on ICTs influence our understandings of learning. In addition, they are also followed by examples such as “...e-learning, distributed learning, asynchronous learning, and networked learning” as put forth by Chan et al. (2006, p. 7).

In line with already discussed interpretations of perceived values of learning in which learning is interpreted to be a matter of accessibility vs. availability of information and communication, the conceptions of learning in terms of ICTs and learning are considered a way to influence conceptions of learning or perceived values of learning in a certain direction. I would like to put forward the view that many concepts of learning that are formed with regard to characteristics or features of the technology risk being criticized or debated similarly to how they were analysed in the 1950s and 1960s. At that time, views on educational technology were criticized for being driven by “one-eyed promoters ... [that] often viewed their favorite technology as a cure for whatever ailed the schools. With their favorite technology in hand they went scouting for an educational problem to solve, which usually meant superimposing the new technology on the malfunctioning existing teaching/learning process like an added geologic layer” (Coombs et al., 1985, pp. 125-126).

On the other hand, from a technological/evolutionary perspective, technology has always been part of human learning and development because it can “enhance our capacities for performing certain activities” (Säljö, 2010, p.57). In this thesis the perceived values of learning can be understood as a matter of accessibility and availability of information and communication. One can say that the ICTs and the learning is part of a co-evolutionary process where perspectives and attitudes towards learning and ICTs are related. This can be understood in the sense that technologies influences and have always influenced perceived values of learning, and the understanding of technologies or potentials of technologies is likely to guide understanding of how learning will be understood in the learning cultures that adopt the technology. This could thus lead to a situation in which attitudes towards ICTs and positioning of ICTs, which forms understandings of ICTs, are likely to influence how learning is perceived and valued.

The interest in increasing perceived values of learning
My interest in increasing perceived values of education is motivated by my role in contributing to the field of applied educational sciences. More specifically, within the PhD program of Educational work within the area of
ICTs media and learning (ICTML), there is a clear focus on the practice of learning and its role in educational contexts. Expressed in another way, the interest in increasing perceived values is a way to understand how to apply understandings of perceived values to the practice with the intention to support learning.

A focus on understanding perceived values of learning was chosen in order to push towards answering the guiding question of how to design education to increase perceived values of learning. This focus follows an interpretation that if one understands perceived values of learning, then one is likely to be able to increase perceived values of learning. More simply, if a learner’s perceived value of learning is ‘engaged interactions’, then a decision to design learning with more group work or forum discussions is likely to increase the learner’s perceived values of learning in those situations when the learner perceives the value of ‘engaged interactions’ as learning. Thus, I want to stress that a learner who expresses ‘engaged interactions’, for example, as a perceived value of learning in a situation does not have to perceive the same value of learning in all learning situations. This follows the reasoning in perceived value research that perceived values can be seen as individual and subjective, and they can vary between different occasions in the sense that the same product can be evaluated differently on different occasions (Zeithaml, 1988).

Regarding the categorization of the perspective of learning as formal, non-formal and informal, an increase of perceived values of learning can be understood from the results and contributions from Article 4. The learners express that they benefit from integrating formal education into non-formal education via an example of formal language learning that is integrated in the non-formal learning experience (the non-formal educational setting of EVS). In this example, the integration and isolation of learning perspectives can be understood to influence perceived values of learning, thus meaning that to design education that integrates formal and non-formal education can be understood as an increase in perceived values for learners.

An increase in perceived values of learning can be interpreted as a deliberate act of putting forth or arguing for certain valuing of perspectives, as shown through a variety of influences above. The influencing of the valuing can be considered as guided by e.g. an individual who thinks, feels and intends to act in a certain way towards or in relation to someone or something (cf. Aspelin & Persson, 2011; Article 1), and guided by an underlying ‘approach to knowledge’ as put forth in Article 1. When relating this to the positioning of ICTs, the concept of Learning Centred Technology Alignment from Article 3 can be interpreted as one attempt to explain a ‘match’ in the relation...
between learning and ICTs. When there is a ‘match’ instead of a ‘mismatch’ in the interplay between perspectives on ICTs and learning, the ‘match’ can be interpreted as increasing perceived values of learning. At least it is considered to influence how one values the learning.

However, when reflecting on the ‘match’ between ICTs and learning, it is not interpreted as some kind of stable position or point of equilibrium (cf. Papert & Harel, 1991). In my opinion, perspectives and attitudes towards learning, ICTs, and the relation between perspectives of learning and ICTs are based on a dialogic perspective (cf. Wegerif, 2006) and, in the contextualisation of my research, they are things that can change over time. They can also be understood as a kind of cyclic pattern depending on e.g. the worldwide economic situation and a search for solutions to the educational crisis. This can be seen in the examples that are put forth from the 1970s and the 2010s that call for non-formal learning and education as a solution to the economic and educational crises (cf. Coombs, 1968; Rubenson, 1982; Fordham, 1993; EC, 2011; 2013; 2014). Thus, from this perspective, how to design education for the increase perceived values of learning seems to be an ever-existing guiding question for the field of education. Because perspectives, pedagogical attitudes, positioning of ICTs in education and perceived values of learning can be interpreted and valued in a variety of ways, it is complex to finding one simple solution to increase perceived values of either learning or education.

The analysis and discussion chapter concerns RQs 1-3: understandings of perceived values of learning in formal and non-formal education; how perceived values of learning can be understood in relation to ICTs; and what possible influences on perceived values of learning could be. The chapters for conclusions and contributions will frame the analysis and discussion and address the fourth and last research question: How can the coherent whole be understood considering the aspects that are included in RQs 1-3?
CHAPTER 8. CONCLUSIONS AND REMARKS

The first function of a conceptual model is relating the research to the existing body of literature. With the help of a conceptual model a researcher can indicate in what way he is looking at the phenomenon of his research. (Jonker & Pennink, 2010, p. 48).

The aim of this thesis is to understand the perceived values of learning in order to reflect on the relation between learning and ICTs. It is guided by the question of how to design education to increase perceived values of learning. Learning and ICTs are considered to be the research fields of interest, and each research field is understood from three perspectives. Learning is understood from the perspectives of formal, non-formal and informal. ICTs are understood from the perspectives of information, communication and technology. The research problem is formulated as how to value availabilities of learning when learning is related to ICTs, and it is approached from an interpretive (Cohen et al. 2007) and dialogic research perspective (Wegerif, 2006).

Two case studies made the methodology of the thesis possible, which are regarded as two separate learning cultures in formal and non-formal education. The results and contributions firstly focussed on the perceived values of learning, from the learners’ perspectives, that are considered to represent the collaborative knowledge and collaborative discourse of what learning is (cf. Stahl, 2006; 2010; 2013).

The method of learning situations, which used the learners’ own pictures of learning as a starting point in focus group interviews, provided the research with data from formal education (cf. Haglund, 2003; Cappello, 2005; Cohen, 2007). In non-formal education, the learners were interviewed, and in order to receive help and guidance with reflections about the learners’ view on learning in non-formal education, decision takers and trainers at the national level were interviewed to provide their perspectives to the research.

The outcomes of the two studies were presented and published in four articles that were chosen to be included in the thesis. Results and contributions from the articles were considered to opening up for dialogic spaces for reflections (cf. Wegerif, 2006) regarding the three perspectives of: Perceived values of learning, the relation between learning and ICTs and influences of perceived values of learning. Those perspectives guided the formulation of the first three research questions, which also guided this
research towards understanding the coherent whole of my thesis work (RQ 4).

The main theoretical tools that were used in this thesis and in the chapter of analysis and discussion were the pedagogical attitude (cf. Aspelin & Persson, 2011, Article 1) and the positioning of ICTs, which were developed from understandings of the perspectives of information (cf. Floridi, 2007; 2014a), communication (cf. Jahnke, 2016) and technology (cf. Vygotsky, 1978; Säljö, 2010; Floridi, 2014a; Jahnke, 2016).

To frame the chapter of analysis and discussion, some conclusions and remarks are put forth, and together with the contributions of the thesis, they are considered to frame the deepened dialogic spaces for reflections of RQs 1-3 in order to meet the last research question, RQ 4.

**The relation between learning and ICTs**

Learning availabilities can be defined as a quality of having access to available information and communication when needed. When technologies enhance a certain capacity, like in this thesis, the interpreted capacity to access learning availabilities. These capacities are reflected in how learners interpret and perceive learning, much like the themes of learning in Articles 2 and 3 (see table 4, p. 58). The fact that technologies give rise to “new mental structures” (Vygotsky, 1978, p. 132) and transform how we interpret learning (Säljö, 2010) is already known and the thesis adheres to this view.

The perceived values of learning have become a dialogue about the accessibility and availability of information and communication. Many existing conceptions and perceived values of learning (including the findings in Article 2, 3 and 4) can be understood to express learning as a matter of accessibility and availability of information and communication. Mobile learning (Pachler et al., 2010; Traxler, 2007), ubiquitous learning (Cope & Kalantzis, 2009) and seamless learning (Kuh, 1996; Looi, 2010; Wong & Looi, 2011; Milrad et al., 2013) are some examples of this, and they are also followed by examples like “…e-learning, distributed learning, asynchronous learning, and networked learning”, as put forth by Chan et al. (2006, p. 7). In relation to perceived value research, it is interesting to propose that perceived values are considered as individual and subjective and can vary and be estimated differently depending on the occasion (Zeithaml, 1988). Moreover, the perceived values depend on an estimation of perceived benefits vs. perceived sacrifices (Monroe, 1991). Thus, this can be related to perceived values of learning and learning processes and not just to products or services outside of education. In fact, the learning process and learning availabilities that the learning setting, learning system or learning space offer
can be seen as a product, service or process that is under constant assessment and is being valued by various stakeholders in education.

In learning situations, decisions are made on how to learn. Depending on the perceived values of learning, the decisions can be made differently, and there can be influences such as frameworks, policies or ICTs that influence the perceived values of learning, which is stressed in Articles 1-4. The decision-making process can be understood from the perspective of an actor’s attitudes towards learning: The decision on how to learn is guided by an individual who thinks, feels and intends to act in a certain way towards or in relation to someone or something (cf. Aspelin & Persson, 2011; Article 1) and guided by an underlying ‘approach to knowledge’, as proposed in Article 1. If related to the research problem that is framed in Fig. 9 (p. 31), the decision-making processes in learning situations can be understood as a valuing of perspectives based on perceived values of learning (cf. Articles 2 and 3). The isolation or integration of perspectives can, from a both learning and ICTs perspective for example, be seen as an indicator of whether learning availabilities are ensured via access to one (isolated) or several (integrated) learning settings, systems or spaces in order to ensure information and communication with regard to the learners’ decisions about how to learn (cf. Article 4)

When considering the chapter that contextualises the research, perspectives of learning and ICTs change over time. Depending on technological development or economic crises that put pressure on education to act in a certain way, the perspectives of how to understand the relation between learning and technologies are interpreted as being an ever-existing topic (cf. Coombs, 1968; 1985; Faure, 1972; Selwyn, 2011; EC, 2013; Peña-López, 2015). Also, I would like to stress that historical conceptions of learning and the relation between learning and ICTs can be understood as re-invented and of a cyclical nature, where the research problem of this thesis seems to be valid and possible to use over time because, when understanding learning and the role of education, it seems that education and actors in education always face the problem of how to value availabilities of learning when learning is related to ICTs.

**The coherent whole**

The recurring figure, presented below as Figure 13, has been vital for the understanding and framing of the thesis work. It has been used throughout the thesis to: present perspectives; visualise relations between learning and ICTs; visualise that attitudes and perspectives of learning and ICTs can be understood differently; discuss what the integration and isolation of perspectives can be understood as; discuss and frame the research problem;
and support analysis and discussions. The insight that the framework has been vital for presenting the thesis led to the conclusion that the coherent whole of the thesis work is the framework. The perspectives of learning and ICTs are included, thus considering the framework as an outline that can help and guide the understandings and reflections of perceived values of education when perspectives of learning and ICTs are related (Fig. 13).

![Diagram](image)

Fig. 13. Framing Perceived Values of Education – when perspectives of Learning and ICTs are related.

**Various levels of framings**

The framework presents the two fields of learning and ICTs. They are presented from three perspectives each. The fields and perspectives are framed differently and at various levels within the framework. From the perspective of the pedagogical attitude, the variety in how learning and ICTs are framed and understood depends on individuals’ attitudes. The pedagogical attitudes include three aspects: cognitive, emotional and intentional; in addition, the individuals’ epistemological and ontological position is included (Aspelin & Persson, 2011; Article 1). This means that the understandings of learning, ICTs and the relation between learning and ICTs can be explained by how individuals think, feel and intend to act when deciding how to learn.
The decisions on how to learn can be made at the level of the individual, group or community that forms cultures (Stahl, 2013), including decisions made by learners, teachers, trainers, school leaders and decision takers. In the thesis, the perceived values of learning are the starting points that have guided the understandings of learning and the relation to ICTs. However, when decisions about how to learn are made at various levels of the school system it is considered to have an impact on the perceived values of the education that the learning setting is subscribed to. In my studies, this is seen through a municipality framework that argues for their view on learning, thus arguing for their view on how to design education as presented in Articles 2 and 3. In Article 4, from the perspective of non-formal learning, non-formal education is argued to be a specific form of learning thus also arguing for a specific view on how to design education. This is the reason why the framework (Fig. 13) is framing perceived values of education when learning and ICTs are related.

The framework (Fig. 13) can be used to bring forward various perspectives of learning and ICTs to understand various educational settings or learning cultures. When doing this, the understandings of learning can take various forms that also present certain perceived values of learning. In Articles 2 and 3, various themes of learning can be understood as producing both the importance of information and communication (cf. ‘explanations in applications’ or ‘engaged interactions’). This can show that, depending on the perceived value of the learning, various perspectives of ICTs can be understood as more important and argued.

In Article 4, the understanding of non-formal learning is considered to be based on individual interpretations. What is understood as non-formal learning for some individuals is interpreted as formal learning by others. This result leads to a conclusion that the understandings of how to learn can be the same no matter the educational setting, but it can be argued differently in order to influence perceived values of education.

**Overlaps and integration**
Within the framework, there are images where fields and perspectives overlap. With a dialogic approach, the overlaps can be understood as dialogic spaces of reflection where two or more fields or perspectives are included in the dialogue (cf. Wegerif, 2006). For instance, the dialogue that overlaps formal, informal and non-formal can take place in formal, informal or non-formal learning settings. When it comes to the perspectives of ICTs, the same can be concluded; the overlaps represent dialogic spaces of reflection where two or more fields or perspectives are included. The understanding of ICTs
and learning has become “an event within a dialogue between perspectives and is not reducible to a constructed representation” (Wegerif, 2006, p. 155).

The dialogues can occur on a daily basis in learning situations between learners or between teachers and learners. They can also occur on the level of policy making and decision making about how to formulate national or local curricula. The dialogues on how to understand learning and how to learn at various levels can show what perspectives the various stakeholders included and what perspectives were excluded. This can be used when assessing the learning culture to see what perspectives can be added or problematized in the dialogue about the relations between learning and ICTs and how this may influence the perceived values of education. This can be useful when the ambition is to influence the relations between the fields, perspectives and frames within the framework with the purpose to develop or change the teaching and learning culture in a certain direction (Fig. 13).

Individuals within education can have integrated or isolated attitudes towards various perspectives and fields based on how they think, feel and intend to act when deciding how to learn, as put forth in Articles 1 and 4. The isolation or integration can be at various levels with regard to learning or ICTs or the relation between learning and ICTs. Sometimes the learning aspect is excluded in the dialogue about ICTs, and sometimes the ICT aspects are excluded in the dialogue about learning. However, theories of information, communication and technology guided the interpretations of what perceived values of learning are in the direction towards an understanding that the learning is valued as; a quality of having access to available information and communication when needed. This can be interpreted as such: even if the perspectives of ICTs can be understood as excluded in the dialogue about learning, the importance of information and communication is still present. Hence, one can ask why not enhance the availabilities to learn by involving ICTs, when it is the access to information and communication that is considered as one cornerstone in the perceived values of learning? Thus, including learning, ICTs and the relation between perspectives of learning and ICTs in the dialogues that regards the perceived values of education.

The framework for the perceived values of education (Fig. 13) can be seen as a pluralistic view on learning or a kind of learning inclusivity where perspectives of learning and ICTs are related and included in education. From a historical aspect, this can be related to the discussions of lifelong learning that include formal, non-formal and informal learning, which, with the help of ICTs, opens up education (cf. Faure, 1972; Rogers, 2004; EC, 2013; EC 2014; Article 1). However, all learning is in a sense lifelong, and
even the concept of lifelong learning can be seen as an act of ensuring access to information and communication, regardless of the learning setting or learning situation, which is in line with the understandings of seamless or ubiquitous learning (cf. Kuh, 1996; Looi et al., 2010; Cope/Kalantzis, 2009).

According to the learning that was described in the two studied learning cultures, none of the cultures stayed within just one of the frames. The learning moved between being formal, non-formal and even informal. In a way, this can be related to the fact that learners move between formal, non-formal and informal learning spaces (Peña-López, 2015). However, the perceived values of learning in the included learning cultures shows that learning as a concept cannot be divided into static conceptualisations of what is formal, non-formal and informal. Learners learn and understand the world in relation to the information and communication that are available (cf. Floridi, 2007; 2014b; Jahnke, 2016). Borders between learning settings or education systems do not limit information and communication, and the process of learning shares the same concerns; also, learners have a variety of perceived values of learning. In addition, perceived values of learning are dynamic by nature and will vary from situation to situation (cf. Sánchez-Fernández & Iniesta-Bonillo, 2007; Zeithaml, 1988). This means that the fields of formal, non-formal and informal learning are also dynamic by nature, speaking against the fact that the fields can have a certain definition or label that comes with the learning. It is the dialogue about what is formal, non-formal or informal that frames what the concepts really mean, and the conceptualisations of learning will change over time due to technological, economic or political development that forms and influences pedagogical attitudes; the pedagogical attitudes influence individuals to value learning in a certain way and make certain decisions on how to learn. This means that the guiding question of how to design education to increase perceived values of learning remains a guiding question that does not hold one simple answer in this thesis. It will remain a guiding question and can possibly act as an introduction for future dialogues about learning, education and perspectives that are related to this.

However, and as a final remark, since understandings and perceived values of learning are subjective and depend on pedagogical attitudes that have developed due to different reasons, any stakeholder that seeks to influence perceived values of education may benefit from having a dialogic approach towards learning cultures (cf. Wegerif, 2006). This benefit might add to understanding the perspective of learning or perspectives of ICTs, as in this thesis, or any perspective that is regarded as influencing perceived values of education. A framework that frames perceived values of education can be one starting point in the dialogue.
CHAPTER 9. CONTRIBUTIONS

...as we know, there are known knowns; there are things we know we know. We also know, there are known unknowns; that is to say, we know there are some things we do not know. But there are also unknown unknowns—the ones we don’t know we don’t know. (Rumsfeld, 2002)

The contributions of the thesis work firstly address the field of education, and educational work in particular, which is my research field. In addition, contributions may also be interesting for educational and learning sciences as a whole, when the interest is to understand relations between perspectives of learning and ICTs. Whether the contributions are possible to transfer into other fields rather than those related to education, I cannot say. Those who want to use the research must decide the value of it (cf. Lincoln & Guba, 1999), and maybe those who want to use the research also see contributions other than the ones that I want to bring forward.

The first contribution that I present is the framework that is considered a key outcome of my thesis work. It is a theoretical framework that is based on empirical findings and contributions from studies in formal and non-formal education and is regarded as framing perceived values of education when perspectives of learning and ICTs are related. The framework itself presents a way to scrutinise and understand the fields of learning and ICTs through the approach of dividing the fields into three perspectives, as inspired by Wegerif (2006) and based on Bakhtin (1986) and Derrida (1972). This approach is part of the research work when framing perceived values of education and a possible contribution to perceived value research when attempting to understand the perceived values of products, processes or services, regardless if they have a relation to education or not. If the framework is considered to be a product of the thesis, then it will be called a Perceived Value Framework (PVF).

My second contribution is the understanding of perceived values of learning. The perceived value research with regard to learning contributes with the view that, when learners perceive a value of learning, they then express it as an interpretation of what learning is. If there is no perceived value of

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learning in a situation, it cannot be interpreted as learning. This interpretation of perceived values was based on Articles 2 and 3. But consider this: as a result of the analysis of learning in both formal and non-formal education, and in relation to conceptions of learning presented in the contextualisation of the thesis, many existing conceptions and perceived values of learning are regarded as expressions of how to ensure availability of learning through various ways to access or enhance access to information and communication. Whether this is a contribution to learning theories (contemporary or not, cf. Illeris, 2009), I leave it for other researchers or practitioners to judge. However, to me it is a contribution in the sense that it helps to explain the conceptions of learning when foremost learning and ICTs are considered to be integrated. I also find it possible to use the understandings of perceived values of learning to explain other learning conceptions as well. These conceptions were not developed with technology first in mind, e.g., the concepts of formal, non-formal and informal learning. From a learning perspective, the formal, non-formal and informal learning can be interpreted as a learning availability that ensures the access to the information and communication that the learner request for the learning situation.

The third contribution is the research method called learning situations. The method is a result of a collaborative work with my fellow researcher Andreas Olsson, who is equally responsible for the development of the method as I am. The method can be seen as a data collection method that was initially developed in order to administer and conduct interviews with young learners to get a deeper understanding of learning situations from their perspective. The method was inspired by photo-eliciting (Cappello, 2005) and stimulated recall (Haglund, 2003). It can be seen as a development and contribution with regard to Cappello and Haglunds’s initial work on interviewing informants with the help of videos or photos as a starting point in the interviews. Our method focuses on learning and is especially useful and beneficial when learners have access to a camera in connection to learning situations. Thus, when researching contexts that have implemented ICTs such as tablets to every learner, the method is quite appropriate from my point of view.

**Limitations**

The research is conducted in two various educational contexts of formal and non-formal education. This was done with a purpose and based on my experiences on working in both fields of education. However, it was not possible to compare the researched contexts per se. Instead, I studied the contexts one by one from a learning perspective in order to learn from the
contexts when interpreting the coherent whole of the thesis work. Some limitations are related to the coherent whole of the educational contexts.

First of all, the method of learning situations was used in formal education and not in non-formal education, which means that the data collection methods were different. Second, the age of the participants in the interviews differed within the contexts: from 7-13 years old in formal education and from 18-26 years old in non-formal education. If I combined the two contexts, the ages of the learners’ that reflected on the learning ranged between 7-26 years. This can be interpreted as a limitation in the sense that, depending on age, the ability to reflect on and express what learning is may differ. However, it was never my intention to judge or compare reflections or expressions of learning; the varied and multifaceted views were rather seen as strengthening the research. Third, non-formal education seems to, at least when I analysed the discourse, have the mentality that it is ‘doomed to be compared’ to formal education and to be organised in opposite ways, at least if I consider the discourses. This meant that I faced a challenge to present a research that was trustworthy when I still seemed to have a lot of differences between the fields to overcome. I understand when those differences can be understood as limitations from a comparative aspect when, for example, interpreting data or when analysing and combining the learning cultures. But, on the other hand, it might have been those differences that guided the outcome of the thesis into the direction of a pluralistic view on perceived values of education. A comparative aspect between the studied contexts was never the purpose of this research. But if I conduct a comparative research between formal and non-formal education in the future, I will seek to do it under the condition that the studied contexts hold more similarities when it comes to the age of the informants and the use of methods.

In relation to the limitations above, I would also like to mention that I have not taken into account the perspectives of intersectionality such as gender, race, class, ability, sexual orientation or religion.

When the learners took photos of learning situations, they did so with the iPad. Thus, a limitation could be that the iPad should have been included in the learning situation if possible. This could be interpreted as influencing the results if the iPad was related to or connected to the learners’ perspectives on learning. However, the research team asked the learners and teachers about this issue and said that when that was the case, they seemed to have solved this problem by arranging the photo to make sure to include the iPad and take pictures with another device, with the help of friends or adults.
The concept of perception with regard to perceived values of learning was never discussed and defined. I understand that some critiques can be put forth regarding my choice to call it perceived values of learning, since there is an understanding that perceived values can be different from expressed values. To make it simple, can anyone really know if the learners can express what they perceive? However, the existence of perceived value research as a field made me choose to call it perceived values of learning instead of expressed values of learning. The concept of perceptions or perceived values, to me, underlines the subjectivity in the understandings; also, to propose subjectivity is also a part of the understandings of my thesis work.

If I conducted the same research again by following the same methodology, I would offer two reflections. When doing interviews in relation to the learning situation project, I would do the interviews in a stage where the learners get to solve the task of how to take pictures of learning situations in order to understand, for example, how the teachers and learners talk about learning in advance of documenting it. In this way, I would be able to capture the process of group cognitions in addition to collaborative discourse or collaborative knowledge (Stahl, 2006; 2010; 2013; 2015). For example, this could better help the understanding of the influences of perceived values of learning. Secondly, in the data collection in non-formal education, I would have also considered holding interviews with organisations that host the volunteers. Their voice was not heard in the research, and they can also be considered an important actor that might influence or mirror perceived values of learning in non-formal education.

**Future research**

The section about possible future research offers reflections on how the dialogic spaces for reflections regarding the thesis can be broadened. The posed future research is discussed with contributions of the thesis as a starting point. The reflections are organised in a way that it first proposes the possible research in relation to education before other possibilities are considered.

**In education**

Inspired by the thesis work, I would find it interesting to scale up and develop the research to be able to understand the perceived values of learning in a variety of learning cultures: globally, nationally and locally. It can be a way to learn from a variety of learning cultures, or it can be a way to understand what is possible or what should be developed in particular learning cultures, thus inviting municipalities and organisations to use the PVF as a tool in developing teaching and learning.
Over time and in the same context, a learning situation research project would also be interesting. This could be a way to follow the fluctuations or developments of learning and education and what the influences of learning and education are from the learners’ perspectives. In a ‘dreamworld’, from my perspective, perceived values of learning and education, based on learning situation projects over time and in a variety of contexts, are part of the next UNESCO landmark publication on education and learning.

As implied in the section about limitations, I can see benefits from the development of the methods and methodology. For example, I would consider how I plan to conduct interviews or in what phase or phases of the research project I would record conversations and solutions to the task of understanding what learning is. Another reflection is that I would consider what actors to interview or collect data from in order to understand who is included in and influencing a learning culture. Maybe it is time to consider parents or relatives as actors of interest who might influence the perceived values of learning and education from the learners’ perspectives. In this way, the future research becomes an interest in developing the already existing methodology and methods.

In the chapter of analysis and discussions, I introduced a dialogue about what learning is and if it is different from perceived values of learning. Maybe it can be understood, seeing that I have already in a way answered this, but curiosity still remains and a starting point is suggested via a dialogue about the understandings that learners express as learning in Article 2, 3 and 4 vs. learners’ perspectives of learning in Säljö (1979) or contemporary learning theories (Illeris, 2009). This could be interesting when trying to understand the relation between perceived values of learning, conceptions of learning and what learning ‘really’ is as well as how these perspectives influence each other (Fig. 14).

![Fig. 14. A possible future research to understand relations between perceived values of learning and the concept of learning is proposed.](image-url)
The relation between learning and ICTs is at the centre of the thesis and can also be at the centre of future research. It would be interesting to see if it is plausible to test the causalities between the positions of ICTs and attitudes or perspectives of learning. What positions influence what attitudes and perspectives and vice versa? Maybe this can help us develop new technologies for education once we consider the perceived values of learning. Or, by asking about perceived values of learning, perhaps new learning technologies can be highlighted or developed. Otherwise, from a learning perspective, it can aid in the understanding of what kinds of technological features are lacking in education.

The thesis frames perceived values of education through a dialogue between perspectives of learning and ICTs, to understand relations between learning and ICTs. However, I am also open to relating other perspectives to each other and trying to include them as fields of interest in a framework for perceived values of education. What about perceived values of education when relating the perspectives of assessment and ICTs or perceived values of education with the relation between perspectives of creativity and ICTs, or even more challenging, from the perspectives of creativity and learning? Thus, future research that includes PVF does not have to include ICTs; other artefacts or perspectives are possible.

Other possibilities
Perceived value research can be found in a number of fields covering subjects such as “Perceived Value and Perceived Usefulness of Halal Labeling: The Role of Religion and Culture” (Jamal & Sharifuddin, 2015) or “Influence of Perceived Value on Purchasing Decisions of Green Products in Brazil” (de Medeiros et al., 2016). With this in mind, I find it interesting to propose that the PVF (Fig. 15) might be possible to transfer and use in other fields than that of education.

When I think of how to apply PVF in other fields, one possible suggestion can be guided by the question of: How does one design health care to increase perceived values of wellbeing? The concept of wellbeing can be divided into perspectives of training, eating and sleeping, and the perspective of ICTs will be about positioning ICTs in health care. The outcome of this research will be considered as: Framing the perceived values of health care – when perspectives of wellbeing and ICTs are related.
Fig. 15. Perceived Value Framework (PVF) – Other perspectives are possible to apply.

However, I welcome any future research that includes some relation to my thesis. In line with my thesis, I welcome and am curious about other perspectives than my own, and I leave the valuing of my thesis to those who want to or must value my viewpoint in relation to their research perspectives and perceived values.
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Appendix 1: Information to Teachers

Learning Situations – from the student/pupil perspectives

As we presented in XXXX during our last visit, we believe that the student perspectives is needed to broaden the picture of the Ipad-project in XXXX. Therefore we invite you to collaborate with us in a project about LEARNING SITUATIONS. Some of you have already given us contact details but for those who haven’t please send an e-mail to andreas.olsson@umu.se and lars.norqvist@umu.se.

If you want to participate, please confirm to us before 11th of October.

About the project

- The students/pupils in your class takes a photo of a learning situation. This could be situated in school or in any other context.

- The student/pupil labels the picture with one word.

In the classroom:

You as a teacher choose the extension of the project in your class. We hope that you look upon this as a win-win situation where you as a teacher have the opportunity to discuss what learning could be and how a “good” learning situation could be portrayed.

The product:

In the end you have a poster where all the pictures are collected and clustered in themes/rubrics that you decide together with the students/pupils. From a research point of view this project is inspired by the method Stimulated Recall where picture is seen as a start-up for a conversation regarding a specific topic – in this case learning. The picture “triggers” the remembrance of what the student reflections where at a specific situation.
**Deadline for the poster:**

During autumn 2013 you can choose when it suits you to do this project. However since we come back in December we would be grateful if *the posters* can be sent to us no later than 15th of November so we have a chance to analyse and prepare questions before coming to XXXX.

**Next visit:**

December 9-13 we will come back to XXXX and visit classes that have made this posters. We will then visit classes in this project and discuss the pictures to hear the student stories regarding learning. This will be made through group discussions and small interviews (approximately 4-5 students) where the teacher also is present.

Today it is hard to predict how many classes that will be part of the project and it is our wish to visit each and every one of you. However, we are only in XXXX for one week and maybe the time is not enough to visit all participants. But in any case, no matter if we visit you, we hope you see a benefit of this project in your class and for you as a teacher.

**Ethical issues:**

We will make sure that we follow ethical guidelines when collecting data in this project where the student perspectives are asked for and documented via pictures. For further information about ethical issues in research, please visit: [http://codex.vr.se/en/index.shtml](http://codex.vr.se/en/index.shtml)
Appendix 2: E-mail Conversation With Teachers

Before Visit

Greetings from Sweden

Here are important letters to parents (see attached file) and a plan for the visit.

Thank you very much for your work in the project Learning Situations. We understand that you have put a lot of effort in the process where the children have taken pictures of situations where they learn.

Next week is the week when we will come to visit the schools in the municipality and we are really looking forward to it. At the moment we are planning the schedule for the week with help from XXXX XXXXX. We aim to visit about 12 different classes in total and each visit will last about 1-2 hours. As soon as the schedule is set you will get it from XXXX or from us.

The plan for the visit is that we first present ourselves to the class and tell a bit about our work and why we are in XXXX. Then we hope to hear the children in the class telling about the pictures of the learning situations and finally, if possible, we can have a group discussion/interview with a group of children and where the teacher also can attend. If this is possible maybe it can be done in a separate room and then it will also be recorded (audio).

Plan for classroom visit in bulletpoints:

1. We as researchers present ourselves in an informal way.
2. A short background of why we are in XXXX and about the project Learning situations.
3. Students/pupils tell about the pictures about learning situations.
4. If possible, group discussion/interview with 3-5 students/pupils where also teacher can attend

We will try to talk “Scandinavian” but if that’s not enough some English will be used and hopefully we can get help from you as a teacher to translate if necessary.

To make sure that we as researchers don’t involve children that doesn’t want to be involved or if the parents don’t want the children to be involved we have a letter of information that we would like the parents to have.

Please send the attached letter to the parents and help us to make sure that the letters are answered and back in school before our visit in your class next week. Letters that we don’t get signed
before the visit will unfortunately be viewed as if the parents don’t want their children to participate.

Best regards and thank you for your work
Andreas and Lars
Kære forældre eller værge

Vi skriver til jer for at anmode om tilladelse til, at jeres/dit barn deltager i en undersøgelse lavet af Umeå Universitet - et projekt kaldet 'Læringssituationer fra et elevperspektiv'. Dette projekt vil blive udført på skolerne i XXXX kommune og er en del af et større forskningsprojekt i forhold til XXXX kommunes 1til1 iPad projekt. Vi er interesserede i og vil undersøge elevperspektivet på: hvad er en god læringssituation? Hvordan kan dette forstås? Og; hvordan kan vi lære fra børnene, hvordan vi støtter denne form for læringssituationer?

I samarbejde med dit barns lærere er der i løbet af dette efterår blevet indsamlet billeder taget af børnene, der viser gode læringssituationer. Vi forskere vil nu gerne besøge klasserne for, at for mere at vide om de dokumenterede læringssituationer.

Projektet som jeres barn deltager i, forventes at blive en ‘win-win’ oplevelse for såvel elever, lærere og de forskere, der er involverede. De gode diskussioner, der kan komme ud af dette projekt kan for eksempel handle om, hvornår man lærer bedst og hvordan man kan blive bedre til at komme videre eller søge hjælp i en læringssituation. Det er dog vigtigt at påpege, at beslutningen om hvorvidt jeres barn skal deltage i forskernes dataindsamlingen til dette projekt er jeres.

For at hjælpe jer i jeres beslutning, er der hér en kort beskrivelse af, hvorledes dataindsamlingen forgår. I december vil to af vores forskere, Lars Norqvist og Andreas Olsson, besøge de klasser, der allerede har deltaget i indsamlingen af gode læringssituationer. Ved dette besøg, vil der være diskussioner i klassen, samtaler i grupper, interview i mindre grupper og eventuelt nogle individuelle interviews, hvis dette er muligt. Der vil blive taget nogle billeder og nogle interviews og samtaler vil måske blive optaget, for at vi bedre kan fastholde indholdet til undersøgelsens videre arbejde.
Alle børnenes billeder, dokumentation og eventuelle optagelser er selvfølgelig fortrolige og vil blive kodet. Videre kan elever eller forældre til enhver tid tilbagetrække deres deltagelse i projektet ved at informere forskerne om dette gennem klassens lærere.

Vi vil gerne forsikre Dem om, at dette forskningsprojekt er vurderet af Regionala etikprövningsnämnden i Umeå. Endvidere har projektet støtte fra ledelsen og lærerne på dit barns skole og er ligeledes blevet godkendt af skoleudviklingskoordinator i XXXX kommune, XXXX XXXXXX.

Beslutningen om, hvorvidt jeres barn skal deltage i dette projekt er som nævnt jeres. Skulle I have nogle bekymringer eller spørgsmål vedrørende jeres barns deltagelse i projektet må I endelig kontakte Lars Norqvist lars.norqvist@edusci.umu.se eller Andreas Olsson andreas.olsson@educliumtse. Dette kan gøres på dansk.

Udfyld venligst den vedhæftede blanket, hvor I tilkendegiver om jeres barn må deltage i projektet og returner den til skolen senest den 5. december 2013.

Som sagt skal I endelig spørge, hvis I har brug for yderligere informationer.

Venlig hilsen

Isa Jahnke, Leder for den digitale Didaktik forskergruppe
Lars Norqvist, PhD studerende
Andreas Olsson, PhD studerende
Umeå Universitet, Afdelingen for anvendt undervisningsforskning

Godkendelse til deltagelse

Barnets navn:

___________________________________________

Skolens navn:

___________________________________________

Klasse:

___________________________________________
Jeg giver tilladelse til, at mit barn bliver dokumenteret med kamera/billeder, hvis han eller hun indvilger i dette. □ □

I giver tilladelse til, at mit barn bliver optaget/lyd, hvis han eller hun indvilger i dette. □ □

Jeg giver tilladelse til, at mit barn kan deltage i gruppesamtaler eller gruppeinterview, hvis han eller hun indvilger i dette. □ □

Jeg giver tilladelse til, at mit barn kan deltage i individuelt interview, hvis han eller hun indvilger i dette. □ □

Jeg giver tilladelse til, at de billeder mit barn har taget bliver brugt i forskningen, hvis han eller hun også indvilger i dette. □ □

Vær venligst opmærksom på, at alle former for dokumentation (optagelser, billeder mm.) vil blive behandlet fortroligt og i overensstemmelse med de retningslinjer CODEX giver til forskning.


Date: ________________
Forældres/værges underskrift: ________________________________

Forældres/værges underskrift: ________________________________
Appendix 4: Letter to Volunteers

Dear XXXX XXXXXXX,

In a very formal way I have a few questions to you as volunteer in Sweden during 2012/2013. It is about the fact that I conduct research at Umeå University about mobile learning, collaboration and creativity. At the same time, as you know, I am a trainer within the programme Youth in Action where EVS (European Voluntary Service) is one part of the programme.

I would like to follow your journey as a volunteer from the first application to EVS until the end of the year where the final version of the Youthpass and the Final report are produced. One of the aims of my research is to understand the training process in detail to improve it if necessary and to better understand the process when documenting learning outcomes for the Youthpass.

It would be great if you would be part of this research.

The research includes

- Collect data from On-arrival training and Mid-term training at XXXX such as Timelines, presentations etc.
- Collect application, the EVS-agreement, the final version of the Youthpass and the Final report
- Collect other documents like for example blogs and other kinds of documentation of experiences and learning outcomes that are of importance when trying to understand mobile learning, collaboration and creativity.

Why this research?

In school as well as in learning activities outside of the formal school system (Non-formal learning) there is an on-going challenge in how to teach to prepare and foster learners for the future. In this research, this challenge will be met from the perspective of mobile learning, collaboration and creativity. The European Voluntary Service offers perspectives on those issues that are important to highlight in the search for elements that can increase the perceived value of learning outcomes.

Further information about our research activities is online: [https://iml.edusci.umu.se/ICTml/](https://iml.edusci.umu.se/ICTml/)

I hope that you agree to be a part of this important research and if so you will receive more information at the mid-term training the 12th-14th of February 2013.

Please reply to [lars.norqvist@edusci.umu.se](mailto:lars.norqvist@edusci.umu.se) until Monday the 11th of February to let me know your answer.
Thank you very much.

Best Regards

Lars Norqvist

PhD student at Umeå University
Institution for Applied Educational Sciences
Website Lars Norqvist: https://iml.edusci.umu.se/ICTml/research-projects/creative-learning/
Appendix 5: Second Letter to Volunteers

Hi
In February I sent you a letter where I asked about your participation in my research that is about the year as a volunteer in the European Voluntary Service. The research aims to see the whole process from when you applied to EVS until the writing of the Youthpass and the Final report. My main interest is about the learning and the experiences that you gain during a year as a volunteer.

I have mentioned this before but now it is coming closer to the fact that I actually will start to do it so that’s why I write you a letter.

I do already have some material about your EVS and hope to complete it before having an interview with you via Skype to understand your EVS better so:

About material
I would be very happy if you could send me a copy of your application with project description and agreement included. The document is the formal EVS-application form. Please send the application to lars.norqvist@edusci.umu.se before it is time for the interview.

About the interview?
I have created a Doodle where you can choose a time that suits you. The first possible time for an interview will be the 7th of June and then the options will continue to be there for a few weeks onwards. This Doodle will be sent to you separately.

The interview will take about 45-60 minutes and in the end of the interview there will be a part where you have the possibility to discuss any on-going or future concerns about your EVS.

The participation of the interview is of course voluntary and all the material that is collected will be anonymous.

I really hope that you still have the possibility to be a part in this research that will dig deeper in the understanding of the learning and experiences during a year as a volunteer in the Non-formal education.

Further information about the research activities in our research at Umeå University is online: https://iml.edusci.umu.se/ICTml/
Thank you very much.
Best Regards
Lars

Lars Norqvist
PhD student at Umeå University
Institution for Applied Educational Sciences
Website Lars Norqvist:
https://iml.edusci.umu.se/ICTml/research-projects/creative-learning/
How can education be designed to increase perceived values of learning? This question has guided the thesis work that is based on learners’ expressions of what learning is and how they learn. The data are collected via methods such as photo interviews and individual and group interviews in which learners’ expressions of learning are in focus.

The two research fields of Learning, and Information and Communication Technologies (ICTs) form the foundation of the thesis that aims to understand the perceived values of learning in order to reflect its relation to ICTs. Depending on pedagogical attitudes and positions of ICTs, various perspectives of learning and ICTs influences the decisions on how to learn or how to use ICTs.

To have a dialogue about these understandings brings forward perceived values of education.