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Abstract

Teaching is by its core a very future-oriented profession. Teaching aims to prepare the next generation to succeed in life and to create their future. However, how well do the professional teachers consider alternative futures and understand what causes them to anticipate the future in a certain way? This study explored the futures orientation and images of the future of Estonian basic school teachers. Futures Studies methods were used to develop the participating teachers' futures literacy and to uncover their hidden assumptions regarding the future of the Estonian school by 2040.

The primary research material (both individual and collaborative results) was collected from the participants of the participatory future-oriented workshop held in April 2019 in Tallinn, Estonia. The questionnaire questions were based on the Six Basic Futures Questions (Inayatullah 2008) and analyzed through the prism of will, fear, hidden assumptions, preferred futures, alternatives, next steps to elaborate on the teachers' futures thinking. The images of the future created by the two participating groups explored the probable, possible, preferable, and unpreferable futures of the Estonian school in 2040. These images of the future represent the topics teachers have encountered in their daily teaching practices or the surrounding environment. For example, the role of technology in the images of the future is sometimes controversial. In some images, it acts as an enabler. In others, as an evil dictator. The rapid technological changes cause the uncertainty of its impacts on learning and the human psyche, which are mirrored in the images of Estonian education in 2040.

Both groups also created a vision for their group based on their preferred image of the future. The first group envisioned a sustainable and participatory school. The second group envisioned a future where students' entrepreneurial skills are enhanced, and lifelong learning helps students succeed in life. These visions represent the local level of visioning. They were compared to the national level vision (Smart and Active Estonia 2035) and global level vision (OECD's Vision of Education 2030) for similarities and differences.

This study aimed to depict multiple images of the future of Estonian education with special attention given to developing the teachers' futures thinking and futures literacy during the participatory future-oriented workshop.

Keywords	Teachers, futures studies, futures literacy, Estonia, images of the future, visions, 21 st -century skills
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x | Kandidaatintutkielma
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Oppiaine	Tulevaisuudentutkimus	Päivämäärä	9.5.2021
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Tiivistelmä

Kuinka hyvin opettamisen ammattilaiset kuitenkin harkitsevat vaihtoehtoisia tulevaisuuksia ja ymmärtävät, mikä saa heidät ennakoimaan tulevaisuutta tietyllä tavalla? Tässä tutkimuksessa tutkittiin virolaisten peruskoulun opettajien tulevaisuuden suuntautumista ja tulevaisuudenkuvia. Tulevaisuudentutkimuksen oppimismenetelmiä käytettiin osallistuvien opettajien tulevaisuuden lukutaiton kehittämiseksi ja virolaisen koulun tulevaisuuskuvien työstämiseksi.

Tutkimusmateriaali (sekä yksilölliset kyselytulokset että ryhmätyötulokset) kerättiin huhtikuussa 2019 Tallinnassa, Virossa pidetyn osallistavan tulevaisuudentyöpajan osallistujilta. Kyselykysymykset perustuivat kuuteen tulevaisuuskysymykseen (Inayatullah 2008) ja vastauksia analysoitiin läpi tahdon, pelon, piilotettujen olettamusten, toivottujen tulevaisuuksien, vaihtoehtoisten tulevaisuuksien ja seuraavien vaiheiden prisman opettajien tulevaisuusajattelun tarkentamiseksi. Kahden osallistuvan ryhmän luomat tulevaisuuskuvat tutkivat Viron koulun todennäköisiä, mahdollisia, toivottuja ja epätoivottuja tulevaisuuksia vuonna 2040. Nämä tulevaisuuskuvat peilasivat teemoja mitä opettajat ovat kohdanneet osana jokapäiväistä opetustyötä tai yleisesti ympäristöstä. Esimerkiksi teknologian rooli tulevaisuuskuvissa on kiistanalainen. Osissa tulevaisuuskuvissa teknologia esiintyy mahdollistajana, toisissa ilkeänä diktaattorina. Nopeisiin teknologisiin muutoksiin liittyy epävarmuus niiden vaikutuksesta.

Molemmat ryhmät loivat myös vision ryhmälleen haluamansa tulevaisuuskuvan perusteella. Nämä visiot edustavat paikallista visioinnin tasoa, ja niitä verrattiin sekä kansallisen tason (Älykäs ja Aktiivinen Viro 2035-visio) että globaalin tason (OECD: n visio koulutuksen tulevaisuudesta vuoteen 2030) visioihin yhtäläisyyksistä ja eroista. Työpajan tulosten analyysi paljasti joitain piilotettuja oletuksia, joita näillä opettajilla oli Viron koulun tulevaisuuteen liittyen. Tulevaisuuskuvat puolestaan paljastivat myös, että ne muodostuvat usein jokaisen yksilön omien ominaisuuksien sekä heidän ympäristöstään saatujen tietojen ja sosiaalisten kokemusten perusteella, jolloin tuloksena on tulevaisuuskuvat, jotka koostuvat mediasta, tutkimuspapereista ja muista tiedoista peräisin olevista tietoista ja omista kokemuksista. Tulevaisuuskuvat heijastavat myös Viron nykyaikaisen koulujärjestelmän huolestuttavia puolia (opettajien väestön harmaantuminen, resurssien ja tuen puute). Tämän tutkimuksen tarkoituksena oli korostaa opettajaväestön tulevaisuuslukutaidon merkitystä tietoisena keinona pohtia ja valmistautua vaihtoehtoisiin tulevaisuuksiin.

Avainsanat	Tulevaisuudentutkimus, koulu, opettajat, Viro, tulevaisuuskuvat, visiot
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**UNIVERSITY
OF TURKU**

Turku School of
Economics

IMAGES OF THE FUTURE OF ESTONIAN EDUCATION

Master's Thesis
in Futures Studies

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LIST OF ABBREVIATIONS

OECD – Organization for Economic Co-operation and Development

PISA – OECD’s Programme for International Student Assessment

1 INTRODUCTION

1.1 National and global challenges in the Estonian teacher population

“A call to re-think education: children who begin their life and learning today will be working at least until 2070” – Jukka Kangaslahti (2018)

In Estonia, a tiny country of 1.3 million inhabitants, many challenges are facing the country's education system and the education of the future generations – e.g., greying teacher population, low status of teaching profession and unwillingness of young educated people to continue the work of teachers in the long-run (Ministry of Education and Research 2011).

These national challenges are enhanced by changes in the global arena – such as climate change, globalization, the crisis in democracy, and the increasing importance of technology in future work life and education (Harari 2018).

In the 2018 publication of OECD (Organisation of Economy and Co-operation for Development) “The Future of Education and Skills – Education 2030”, three further challenges (environmental, economic, and social) have been identified. The environmental challenge is connected to the state of planet Earth and climate change that is already affecting the lives of many. The depletion of natural resources poses a problem that future generations will need to solve.

The economic challenge is framed through innovative business opportunities found from biotechnology and artificial intelligence. Scientific knowledge is the basis for innovation and better business models. As the OECD emphasizes, there is a need to combine different objectives and values (economic, social, and institutional) into effective new ways of operating for a better livelihood for all.

The social challenge presents itself in the following difficulties: based on the two challenges already mentioned and a growing number of people on the planet. One can foresee the troubles that migration, continuous urbanization can pose to social wellbeing. The emergence of populist politics, eroding trust in governing institutions, and the possibility of terrorist incidents worldwide have added an unsafe dimension to the living environments across the globe. Both local and global solutions will be needed to resolve these

matters that affect every country on the planet to some extent. The OECD vision - Education 2030 aims to build upon and provide additional support to achieving the UN Global Goals for Sustainable Development (SDGs). (OECD 2018b, 3.)

Uncertainty is blossoming due to the global challenges and the rapid pace of change, especially in a small country like Estonia, which has generally demonstrated mistrust in long-term visioning and futures studies (Márton 2018). For the teachers to come to terms with these uncertainties and to be able to educate the students for the future, teachers need a particular quality or focus towards the future. On the policy level, there are indicators that Estonian educators are becoming more future-oriented.

For example, the Estonian Strategy for Lifelong Learning 2020 (Ministry of Education and Research 2014) states the necessity of orientating in the changing world by reflecting the changing needs. Bateman (2012) argues that schools do not necessarily educate students for the future even though schools often promote themselves by promising to teach students skills they need long-term. That creates an interesting conflict of paradigms since “[the rhetoric of schools] suggests that the curriculum is developed with a foresight capacity, yet there is no evidence of what specific future we are educating our children for, nor how we will specifically achieve this aim” (Bateman 2012, 15).

Moreover, Bateman suggests that schools operate in a “business-as-usual” mindset implying that what has happened in the past is often transferred into the future without much analysis (Bateman 2012, 15). A similar meaning is conveyed by the OECD while emphasizing the importance of futures thinking in education: “much educational decision-making focuses on short-term, looking to solve immediate problems or make established practice more efficient. Education’s institutional cultures are much more geared up for looking backward at the past than forwards into the future.” (OECD n.d., 10.) The gap between the reality of school life and the statements of incorporating futures studies in education opens the discussion of how teachers and education regarding the future currently are and should be seen in our societies. Should teachers be more future-oriented? Are the education systems lagging behind the accelerating changes we are already facing in the present moment? Should educators explore the vast array of changes in our lives' social and technological spheres?

Furthermore, to “use the future” in the present moment and help their students understand the complexity of life and become more resilient future citizens? Educators are being urged to help the youth in making better-informed decisions when it comes to socio-technical change and in a way that allows them to consider a plurality of futures (Beyond

Current Horizons 2009). A similar thought was portrayed by a British NGO preparing futures studies' teaching materials for schools: "Education is about the future. Educators aim to prepare young people for the future and to support them to fully participate in all aspects of civic, cultural, social, intellectual, and economic life. It is therefore important for young people to be given opportunities to think carefully about that future and their role in it." (Futures Thinking Teachers Pack 2009, 1.)

Foreseeing the possible, probable, and preferable futures of education is relevant to everyone on the planet as by becoming aware of different possibilities, one can make informed choices. This thesis will explore some of the potential directions the future of education in Estonian could develop from the teachers' perspective and the skills they might need to educate the next generation of decision-makers. It also includes a general overview of 21st-century skills that future generations have been predicted to need to succeed in life.

1.2 Hypothesis and research questions

The main objective of the thesis is to explore how Estonian basic school teachers view the future of Estonian education and how aware are they of the influences from the surrounding society that model their perspective of how this future could look like.

The theoretical framework will examine anticipatory assumptions, futures literacy, and what kind of competencies researchers suggest both the teachers and their students will need in the future.

The working hypothesis of this thesis is that Estonian teachers tend to have heavy workloads that do not necessarily allow creative lesson planning and future orientation in the classroom. The workloads are heavy due to fully packed national curricula and strong emphasis (formally or informally) on students' academic results as successful teaching and learning indicators. Furthermore, future orientation is not something that comes naturally to the teachers as the focus is often on the short-term goals and keeping pace with the curricula.

Three research questions have been raised:

1. How do the images of the future and visions created by the teachers compare to the OECD Future of Education and Skills 2030 and Smart and Active Estonia 2035 visions for the education system?

2. How well do the teachers recognize the sources for their anticipatory assumptions?
3. What kind of skills and approaches do Estonian teachers identify as necessary for future society?

In the Discussion-chapter, the researcher aims to answer these questions based on the results of the study.

1.3 Relevance of the research

Maria Tilk, one of the respected cultural pedagogics' specialists and teacher educator in Tallinn University, Estonia, once wrote in one of her seminal books: "The teacher has been the one in all cultures, the one who has been walking in the front, who has been leading and directing, showing and pulling"¹ (Tilk 2004, 84-85). As the role of a teacher is significant as a role model and a leader to embrace the uncertainty and share their findings with their students, futures studies are and will remain of great importance to the people within this profession.

This thesis utilizes qualitative research methods to analyze the primary and secondary data sets. The primary data set consists of the participatory workshop results (collaborative futures images and visions) and individual feedback from the questionnaire. In contrast, the secondary data set comprises two visions – one representing the global level from the OECD and the other the national level by the Estonian Ministry of Education and Research. By comparing the visions created by the teachers during the participatory workshop to the ones in the secondary data set, it is possible to reveal some connecting thematics and differences that might be of importance to educational policymakers.

1.4 Outline of the thesis

The thesis has been divided into seven chapters. The first chapter introduces the topic as well as an overview of the research questions. The second chapter provides an overview of how humans think about the future and how the discipline of futures studies can prepare the teachers to become more aware of how to encourage their students to prepare for the future. The third chapter explores skills needed for future work life, how teaching

¹ "Õpetaja on olnud kõikides kultuurides see, kes on käinud ees, kes on juhtinud ja suunanud, näidanud ja vedanud." Maria Tilk (2004, 84-85)

at its core is future-oriented, and the answer as to why teachers should acknowledge futures literacy as part of one of their essential skills.

The fourth chapter focuses on the research methodology used in the study, briefly on responsible research, and, more specifically, on how participatory workshop and accompanying questionnaire have been used for studying visions and images of the future. Also, the method used for comparing the visions resulting from the participatory workshop with the OECD's Vision for Education 2030 and the vision of Smart and Active Estonia 2035 was explored in the fourth chapter. The fifth chapter presents the analysis done based on the results of the participatory future-oriented workshop and the questionnaire. It presents the OECD's and the Estonian Ministry of Education and Research's vision and the resulting comparative analysis where the visions were examined through the lenses of a local, national and global context. The sixth chapter summarizes the key findings of the thesis with an attempt to answer the research question and proposes suggestions for further research. The seventh chapter concludes the thesis with the final remarks.

2 FUTURES STUDIES

We as humans think about the future, the present, and the past. What do we want to watch on the television in the afternoon or prepare for dinner tomorrow evening? We have appointments, and we measure growth and development based on how much time has passed. Thinking about the future comes naturally to humans, and thinking about short-term futures is something everyone does daily. However, thinking about the societal futures and envision for the long-term is not everyone's daily practice. Different future scenarios and visions are used to picture alternative futures to help decision-makers make informed decisions in the societal context. Futures studies are essential for navigating the turbulent societal and technological changes the world is experiencing. Future orientation is woven into the discipline of education at its core. It can be utilized by educational professionals to guide the youth in their development to best answer the changing demands of their surrounding environment and become resilient to change.

Bell (2009, 5) emphasizes that “time, like space, is an inevitable aspect of individual experience and social interaction,” meaning that how we understand the time and the scale of time perspective (our capability to think into the past and the future) are tied to the societal environment. It might differ from society to society, even though it is woven into human consciousness at the most basic level.

Also, great thinkers have addressed what time is and how it has touched their lives – according to Polak (1973, 1), Marx and Hegel, among others, have tried to understand the meaning of time and its flows. Often though, the interconnectedness of the future with the past and present has been ignored. That is why studying the futures is essential – it expands the horizon and sharpens the lens we use to exploring the world during rapid and turbulent change.

As Masini (1993, 2-3) explains, futures studies incorporate a new way of thinking to respond to the need emerging from the constantly changing world. The two underlying principles of futures studies add to her insight that the future is both “unknow-able” and open, as well as always plural. There will always be a multitude of alternative futures. Futures studies as a field tackle the aspect of unknowing and use the future in creating better decisions and strategies in the present. There is a vast collection of theories and practices related to how humans use the future. (Miller 2018b; Poli 2017.) Since change is always interrelated to other factors, change cannot manifest itself in a vacuum.

According to Poli (2017, 61), the fast pace of change needs more anticipation to face altering situations and environments. After all, anticipation is the manifestation of the future in the present as something that does not yet exist. There are already different processes and anticipatory systems in place. (Miller 2018a, 19). Poli (2017, 61) also adds that contrary to popular belief, studying futures aims to prepare human beings to face the change and adapt instead of forecasting the future. There is no other way to be prepared for what there is to come than imagining different alternative possibilities. Nevertheless, do we have this capability as humans coded into us, or is future-oriented thinking something we learn as we get more experiences in life?

2.1 It is a human capacity after all – or is it?

In his book “The Image of the Future” (1973), Fred Polak states that humans have the privilege to think in a way that allows them to divide their experiences and feelings on time-continuum. This “mental capacity” to “categorize and reorder reality within the self (present reality) and in relation to perceptions of the not-self (the other)” allows a person to be a part of the “two worlds: the present and the imagined.” (Polak 1973, 1.)

Based on the statements made by Polak, it could be seen that humans as species have this built-in capacity to imagine a pathway to future events and experiences. Bell (2009) adds that “the ability to anticipate the future begins early in life, as soon as a newborn child learns that his crying results in reactions from other people” (Bell 2009, 4). He further explains how the understanding of time both into the past and into the future expands as children grow – going as far back as myths and written histories of previous generations. The same perspective is also shared by Masini (1993, 2), who adds the notion that “future thinking is a need, a choice, a way of thinking of human beings.”

However, on what scientific basis is the perception of time and the future based? The human brain's specific structure and neurological processes explain how temporal issues are handled – the past, the present, and the future interact with each other, making it possible for humans to live their daily lives and prepare for unexpected situations and events (see Sheth et al. 2012; Abdelkader 2016; Breska & Ivry 2018).

According to Thomas Suddendorf and Michael C. Corballis (2007), mental time travel, coined as a term in 1997, means a capacity of humans to “mentally project themselves backward in time to re-live, or forwards to pre-live, events” (Suddendorf & Corballis 2007, 299). The role of memory, more specifically, of declarative (also known as explicit memory) and episodic memory, rises from their research. Both types of memory

possibly play a role in perceiving reality and connecting past and present into futures (prospective) thinking.

As Abdelkader (2016, 1) puts it, we are all born with a brain that can gather a “cumulative capacity” for thinking about the future and thus, can transform the experiences into anticipatory action to fulfill the needs of the future. The temporal “way-finding” system builds upon these experiences and responds to stimuli from the surrounding environment and culture in addition to helping to construct the images of the future by forecasting the probable consequences of their behavior. Besides the more visible stimuli, it also incorporates the behavior of factors and forces beyond our control that are “there” but cannot be seized now. This process is subject to continuous reflection as the experiences keep molding the anticipatory system further. (Abdelkader 2016, 1; Bell 2009, 99; Poli 2017, 60.)

This capacity of the human brain to utilize futures thinking is also absorbing in the way that it can be developed further via targeted and mindful exercises and activities. For example, in a study conducted in 2016 exploring the expansion of the temporal window in individuals with alcohol dependence (closely intertwined with the studies on motivation), the ability to think ahead has been defined as episodic futures thinking (EFT) – the ability of an individual “to vividly pre-experience a realistic future event” (Snider, LaConte & Bickel 2016, 1558).

Episodic futures thinking is framed by the boundaries of prospective memory (the skill of remembering to do something in the future) and connected to how decisions are made and how goals are attained. A requirement, though, is for the individual to imagine the future event vividly, to experience the event before it happens. Another requirement is to attach personal value to the activity – a personal connection will help activate the brain areas connected to non-immediate rewards.

Providing necessary stimuli for encouraging episodic futures thinking that stretches the capacity of an individual’s prospective memory can open up a temporal window that allows him to value the rewards further in the future more than the immediate rewards. (Ibid., 1558-1559.)

The method could also be beneficial for the school setting. It would allow using specific exercises shaping children's futures thinking. Of course, with relevant modifications to suit the school environment, e.g., presenting students with future-oriented tasks that revolve around themselves and aspects vital to them, help generate futures images that also can become true.

2.1.1 Anticipation, anticipatory systems, and assumptions

Equipped with a general comprehension of how the human brain connects the different temporal windows and uses memory for imagining future options, a deeper understanding of anticipation is needed.

Anticipation can broadly be defined as “the act of seeing that something might happen in the future and perhaps doing something about it now” (Oxford Learner’s Dictionaries 2020). In the academic sphere, anticipation can better be defined as “processes that use predictive knowledge to coordinate behavior and, more importantly, act in a goal-directed fashion and proactively to realize achievable and desirable future states while avoiding unsuitable ones” (Pezzulo et al. 2009, 3). In futures studies, anticipation is often considered a sub-field to research (Miller, Poli & Rossel 2013, 4). Interestingly, Poli discusses the obvious mistake that we as humans make – we think that anticipation is a feature that only humans possess.

Nevertheless, all living creatures can anticipate to some extent. Poli (2010, 773) discusses that anticipation is the attribute that differentiates living systems from non-living systems. All living systems can be proactive and anticipatory, whereas systems that do not have living organisms tend to be reactive to changes. According to the definition most well-known, an anticipatory system is a system “containing a predictive model of itself and its environment, which allows it to change state at an instant in accord with the model’s predictions pertaining to a later instant” (Rosen 1985, cited in Poli 2010a, 769; see also van der Bos 2017).

Poli defines the anticipatory system as a “system that includes past, present and future states” (2010a, 770). Pezzulo and others (2009) further add that anticipatory systems can exceed the limits of extensively reactive systems. Anticipation has been described as necessary to many cognitive functions and all goal-directed behavior. Moreover, these systems also utilize their predictive capacity to “optimize behavior and learning to the best of their knowledge.” The system then is depending on predicted future states as well as on past states. (Pezzulo et al. 2009, 1-3.)

Pezzulo, with his colleagues, further shares an important theoretical insight to understanding anticipation and how it works based on the stimuli and expectations based on the stimuli. It is how reflection and learning work to make better decisions in the future. The way the system handles stimuli, expectation, experience, and action distinguishes proactive and anticipatory systems from reactive ones. Where reactive systems, on the

one hand, tend to behave based on stimuli to action ($S \rightarrow A$), anticipatory ones, on the other hand, tend to have an expectation to action ($E \rightarrow A$) behavioral pattern, allowed to arise from the spheres of predicting a stimulus or an effect that an action might have. That allows patterns of action to be chosen based on their probable and potential expected outcomes and not just based on the existing stimuli. (Ibid., 3.) Expectations can also be understood vaguely as representing the anticipatory assumptions.

Anticipatory assumptions, as a term, are the foundational element of foresight. One cannot amplify one's imagination about the future without anticipatory assumptions. The anticipatory assumptions themselves can fall into conscious (visible) assumptions and unconscious (hidden) assumptions. The conscious anticipatory assumptions provide the tools for creating a particular image of the future by formulating the basis for the choices and methods that one has consciously chosen. (Miller 2017, 4.)

Miller's definition explains why non-conscious anticipation occurs – the assumptions are there, yet, in an invisible form. The invisibility will only be broken when the right questions are asked about the future – e.g., the reasoning behind people assuming the future to be this or that. One of the most basic anticipatory assumptions that humans have is being alive tomorrow. Others include assumptions like “work hard, success will follow” that could be based on someone's experience but might not be correct to apply to all human beings or the next generation the same way. Anyhow, the source of the anticipatory assumption is somewhere in the realm of what we have experienced, read, or heard, or have some emotional connection. Understanding where the anticipatory assumptions come from is an important stepping stone to becoming futures literate.

In educational systems, the system includes both living and non-living actors, making it complex to understand and change. Meadows (2008) also highlights the difficulty of foreseeing possible impacts and consequences of made decisions in a human system. There might be unexpected impacts that no one saw coming with a severe level of impact that could disturb a system's functionality for a long time.

The signs of what the future of teaching, learning, and education overall will look like in 2040 are visible, but no one actor in the system can do the change alone. The anticipatory assumptions of educational leadership should be examined more carefully, which means digging deeper into the “nature” and characteristic behaviors of the education system. One cannot understand and anticipate the changes in the education system without a complete reflection on why a system behaves as it does.

2.1.2 Futures consciousness

Coming back to the importance of reflection mentioned at the end of the previous section: to teach others, we need to know ourselves. Reflection is one of the critical skills for teachers that helps them to do the inner exploration. Connected to reflection is the concept of futures consciousness, which tackles the understanding of self from the futures' perspective. As teachers need to get acquainted with their own futures consciousness and anticipatory assumptions towards the future, this reflective process would help the teachers understand both who they are and how they view the future, specifically their relationship with the future.

According to Ahvenharju, Minkkinen, and Lalot (2018, 7), futures consciousness includes five dimensions:

- Time perspective,
- Agency beliefs,
- Openness to alternatives,
- Systems perception, and
- Concern for others.

The time perspective dimension "allows" the understanding of the past, the present, and the future, as well as the value of long-term thinking.

Agency beliefs depict one's trust in their ability to influence future events. In this dimension, the person can view themselves either as an active creator of the future or a passive bystander to whom the future "just happens."

Openness to alternatives dimension enables critical questioning of the established truths and seeing the possibilities that changes may bring about. Interestingly, the role of not being simply an optimist or a pessimist towards the futures influences how open to different alternative futures people are.

Systems Perception – this dimension helps to see the interconnectedness between human and natural systems and the complex consequences of decisions. Understanding the causal nature of life and phenomena is achieved by taking many different perspectives into account.

Concern for others - this dimension is the one that makes one strive for a better world for everyone. It is the dimension that incorporates values, morals, ethics, and concern for

the generations that have not yet been born. (Ahvenharju, Minkkinen & Lalot 2018, 9-10.)

According to the dimensions of futures consciousness presented above, one can assume that a person who understands time, believes that he can change the future outcomes, is open-minded to different alternative futures, understands the systemic worldview, and cares for others scores high in futures consciousness. As a reflective process for teachers, these dimensions also help map the areas in which a deeper need for reflection exists and map the areas in which one excels. The dimensions of futures consciousness are relevant for everyone, not just teachers, to understand one's relationship with the future.

In conclusion, to answer the question posed in the title of this sub-chapter, one can agree that all living organisms can anticipate to a certain degree. However, only humans can expand their futures thinking and re-model their anticipatory assumptions by will.

2.2 Images of the future

The image of the future as a term was coined by Fred Polak (1973). Bell (2009, 82) explains that the images of the future can be seen as among some of the roots of behavior. Depending on the nature of the image of the future, they can either make people adapt to the present or motivate them to act towards creating a better image of the future. The powerful influence of the image of the future on decision-making is why futurists are interested in the images of the future and their influence on human decision-making and behavior.

It is essential also to note that the image of the future differs from *the vision of the future* as it is not only oriented towards the preferred future state that we would strive for, but it can depict the future in any light (e.g., positive, negative, neutral) as long as the depiction does not involve an evolving story. The dynamic stories that depict the possible future are called scenarios (Ralston & Wilson 2006, 15).

Thus, the *image of the future* can be defined as a depiction or mental image of an imagined future state (Beers et al. 2010, 723). This depiction of the future is composed of perceptions, beliefs, knowledge, and observations from both past and present through the lens of imagination. These images of the future we as humans hold often guide the decision-making processes, personal choices, behavior, and action in the present moment. When further explored, the images of the future can reveal the tacit knowledge, which is based on the past experiences of what kind of opportunities and choices are available and

perceived threats and hopes. The tacit knowledge surrounding the images of the future comprises general information that has been gathered from the surrounding physical and social environment (e.g., pragmatic and constructive know-how, an understanding of logic, usage of data processing tools). Tacit knowledge also incorporates social information originating from social interaction and the related normative and cultural pressures (e.g., traditions, shared values, an understanding of how things should be done in a specific context). The environmental and social data used for constructing a potential mental image of the future will then be filtered through personality (e.g., self-understanding, role, gender, imagination, creativity) for some extra flavor.

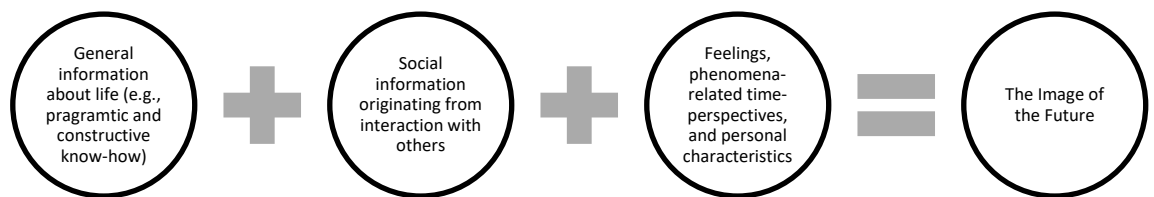


Figure 1 – Elements of the image of the future (based on Rubin & Linturi 2004)

Furthermore, the feelings experienced and the sensed phenomena-related time perspectives affect the characteristics of future expectations. Even though the mechanism for constructing the images of the future is the same for every human being in its core, it is essential to avoid making generalized assumptions on the impacts of the future on both individual and societal levels. The impact of the unconscious motives and tacit knowledge on decision-making is always a guess at best, as the same motive represents itself differently in different individuals. (Rubin & Linturi 2004.)

Futurists consider the images of the future an exciting area for studying as they emerge from the present and often have a strong influence on how the future will become

a reality (Rubin & Linturi 2004; Bell 2009). Furthermore, the possibility to have multiple images of the future based on different evaluation criteria allows us to hold contradictory images of the future – playing out depending on the conditions provided by the surrounding environment. Thus, we as humans can imagine different futures based on the roles we are currently having or what expectations we have based on our past experiences without these differences cancelling our capability to imagine alternative futures. These different images of the future then surface depending on different circumstances. Bell also states (2009, 82) that the futurists who wish to study the images of the future will have to analyze the content with care and explore the relationship and the balance between the present and the future in terms of gratification.

Even though both the images of the future and visions were created in this study, the images incorporating hopes, fears, and threats seem more interesting than the visions of the preferred future. Also, other exciting aspects of futures studies enlighten the possible and probable ways of how the future will become the present in the school context. As such, futures studies as a field of science and study continue to be valuable – providing both the tools and ethical frameworks for the “good” common future that both teachers and students help to co-create.

3 TEACHING AS A FUTURE-ORIENTED PROFESSION

Teaching, at its very core, is a future-oriented profession. The previous chapter highlighted how humans are future-oriented by nature and can anticipate future events and “use-the-future” in the present to make a preferred image of the future a reality. This chapter will move from the human to the specifics of a profession by exploring the necessary skills and competencies the teachers should develop to successfully prepare the next generations for the next decades.

3.1 They are educating children for the coming decades – what competencies are relevant?

This sub-chapter focuses on what are the skills and competencies that:

- a) the teachers need to be prepared to teach the next generations, and
- b) the workforce most likely needs – mirroring the expectations from the educational field. Both are relevant in the educational sphere as they act as goal setters for the future.

3.1.1 Skills and competencies needed by the youth stepping into the workforce in 2030 – the 21st-century skills

What kind of education would the children of the future need? What functional life skills do the youth need to master before stepping into an independent life to succeed? In his book “21 Lessons for the 21st century,” Yuval Noah Harari discusses the future of education. According to Harari (2018, 259), “change is the only constant.” He also states that many skills and the know-how of what children learn in schools today will likely be irrelevant in thirty years (Harari 2018, 260). The emphasis should be from the very beginning of the educational journey on lifelong learning.

In a world where there is an overflow of information, the teacher’s task would instead be helping the children develop the ability to make sense of information, decide whether the information is essential or not, and combine the pieces of information a broad picture of the world. (Harari 2018, 262).

It is uncertain what are concrete skills and competencies that future professionals would need. Oksanen and Dufva (2018, 9) highlighted that it is impossible to predict what kind of jobs the children who have started in the first grade in 2018 will be doing when they have completed their educational and professional training paths. However, these five aspects of life can be expected to change during the course: content and habits, employer-employee relationships and how work is done, livelihood, know-how, and the value of work in the surrounding society.

Based on these anticipated changes, many experts have made contributions to what the essential skills could look like for the 21st century (Kivunja 2014; Harari 2018; Vista 2019), organizations like OECD (2009) and UNESCO (United Nations Educational, Scientific and Cultural Organization) (2015). The Council of European Union (2018) has highlighted their future skillsets or domains.

3.1.2 What do the terms skill, competence, and capacity mean?

The Council of European Union (2018) has addressed the definitions of skills and competencies as follows:

- competence is a “grouping of knowledge, skills, and attitudes,”
- the term “skill” refers to the ability to utilize already existing knowledge in a goal-oriented way to achieve results (ibid. 2018)
- capacity can be defined as “the ability to understand or do something.” (Oxford Learners’ Dictionaries 2020)

In the context of 21st-century skills, both terms have been used to identify the key areas that need to be further addressed through educational efforts.

The 21st-century skills have been discussed by many different organizations, researchers, and thinkers, and at their core, they seem to highlight the role of understanding information, communication as well as ethics and social impact (OECD, 2009 & 2018; Kivunja, 2014; UNESCO, 2015; European Commission, 2018; Harari, 2018; Vista, 2019). *The Framework of 21st Century Learning* has concluded that 21st-century skills comprise of four domains:

- traditional core subjects (reading, writing, and mathematics) and skills,
- learning and innovations skills,

- career and life skills domain, and
- digital literacy skills (Trilling & Fadel 2009; Kivunja 2014).

The New Learning Paradigm is formulated based on these four skill domains. Kivunja (2014) explored the Career and life skills domain that includes the following skills: flexibility and adaptability, initiative and self-direction, social and cross-cultural skills, productivity and accountability, leadership, and responsibility.

Table 1 - The New Learning Paradigm by Charles Kivunja (2014, 40)

<p>JR21CS = f(TCS+LIS++CLS+DLS)</p> <p>JR21CS = job readiness with 21st century skills</p> <p>f = is a function of</p> <p>TCS = Traditional Core Skills, e.g., reading, writing, arithmetic, or basic literacy and numeracy</p> <p>LIS= Learning and Innovation Skills (e.g., critical thinking, problem-solving, and creativity)</p> <p>CLS = Career and Life Skills (e.g., flexibility, adaptability, initiative, teamwork, and leadership)</p> <p>DLS = Digital Literacy Skills (e.g., technological proficiency, digital fluency, computing, media, and information literacy)</p>

These are the sets of skills that would be the basis for success in higher education facilities and workplaces. Thus, the young professionals stepping into the workforce need to be equipped to work comfortably in the changing environment, be flexible, proactive and have a curious mind with a problem-solver attitude. However, not many of these crucial skillsets have become a part of the curriculums in the educational facilities.

Kivunja (2014) states that there will be a pedagogical shift from teaching the so-called traditional skills of reading, writing, and numeracy to involve a deeper understanding of the 21st-century skills or the 4C's – critical thinking and problem solving, (effective) communication, collaboration, creativity, and innovation. Teaching the 4C's would ensure that students will be ready to respond to the skills demand in future workplaces.

Besides the 4C's, the importance of digital literacy skills is evident. Students need to understand digital technologies and computing and be media and information literate to solve the everyday challenges in the future work-life upon graduation. In the overflow of information in the media nowadays, the ability to logically determine whether the infor-

mation provided by the media outlets is by any means correct or valuable is vital. Especially when facing enormous uncertainty, much like a global pandemic, where not much is known about the impacts.

Oksanen & Dufva (2018, 10-15) highlighted the same emphasis on know-how, education, and learning new things as the most critical solution to surviving the groundbreaking changes in the working life. For the individuals, changes in the working environment demand continuous updating of their knowledge and skills base.

The future demands are connected primarily to the so-called non-cognitive skills or meta-skills, e.g., skill to learn new things, time management, recognize essential things, and critical thinking. Value is created in social situations when a person does not seem to be evaluated and monitored but as a skillful and adaptable agent in the organization and the society.

Therefore, the future competencies will consist of both a person's thinking and learning skills and skills needed for interaction within the surrounding environments. Empathy, often described as a soft skill, helps smooth the differences between the individuals, making the teaching of emotional intelligence in the educational setting even more important. (Oksanen & Dufva, 2018, 10-15.)

3.1.3 Critical competencies of future teachers

The recent publication from OECD (2019, 3) poses an interesting question of "how will education reinvent itself to respond to the megatrends that are shaping the future of our societies and educate learners for their future, rather than their past?" in the foreword regarding innovation in education. One of the answers to this question could be that future teachers should be educated according to the New Learning Paradigm and the OECD Learning Framework 2030 to encourage new practices and ways of thinking to be utilized.

Harari states that the teachers who are currently teaching at schools lack the resilience needed for the 21st century due to them being the "product" of old education systems (Harari 2018, 265). Tang & Lim (2018, xvi) noted the same issue of outdated practices and know-how as one of the challenges of 21st-century teachers. This points toward the need to update the skills, futures thinking, and resilience of the next generations of teachers stepping into the workforce during the 2020s. Nessiphayeva (2012) has, in her research, pointed out five critical competencies of future teachers. According to her, the teachers should:

- demonstrate leadership
- establish a respectful environment for a diverse population of students
- know the content they teach
- facilitate learning for their students
- reflect on their practice (Nessipbayeva 2012, 151-153).

The final competency of reflecting on their practice is where futures literacy and anticipatory assumptions can be further examined and elaborated. Additional competencies will be added and elaborated upon during the literature review process.

Also, after considering the current teacher competencies included in educational discourse, *anticipatory competence* would be added as one of the critical competencies that teachers working in the 21st century need to help their students become more resilient to changes they may face.

Anticipatory competence has been mentioned especially in the literature regarding sustainability, and it can be described as the ability to "collectively analyze, evaluate, and craft rich "pictures" of the future" (Wiek, Withycombe & Redman 2011, 208). Another definition of anticipatory competence is "understood as the ability of a person to anticipate the course of events with a high probability, to predict the development of the situations and their reactions to them, to act with the temporal-spatial anticipation" (Akhmetzyanova 2016, 1925).

Kennedy, Lathan, and Jacinto also highlight the need for 21st-century teachers to network, form global knowledge-exchange platforms to support one another in the change, and share the latest research data. Furthermore, they also stress the importance of upkeeping the knowledge of the subject that teachers are teaching – teachers should become more source-critical to the information overload. They should remain as learners themselves to inspire students to discover and learn. Moral and ethical debates should also be encouraged. (Kennedy, Latham & Jacinto 2016, 100-105.)

Göksün and Kurt (2017) add to the list additional skills for the 21st-century teacher: administrative skills, techno pedagogical skills, affirmative skills, flexible teaching as well as generative skills.

All of the skills needed for the teacher to succeed in the 21st-century classroom environment indicate the changing role of the teacher as the authority more towards the

teacher as a guiding mentor/companion who encourages and inspires the students to discover, innovate, collaborate and succeed in the changing world. As students are expected to have obtained relevant skills to meet the demand of the workforce – to become job-ready – the teacher’s role in helping the youth to gather the experiences and know-how from new ways of doing things is significant. 21st-century skills are demanding – they demand both the students and the teachers, educational staff, school leaders, and political decision-makers to embrace the new paradigms, a new kind of flexibility, and curiosity to do things. Similarly, employers' and trainers' role as educators needs to be emphasized. They will also need to carry the responsibility of upkeeping their employees' continuous learning by offering training courses or paid study leaves, for example.

To conclude, the essence of what it means to be a teacher is changing via introducing 21st-century skills. The following subchapter will address why and how teachers should embrace the uncertainty and become comfortable amid continuous change.

3.2 The ability to face the change is an integral component of being a teacher

The works of Olli Luukkainen (2000; 2004) combine futures thinking with teacher education and teacher’s professional identity and explore the tasks teachers have as educators of the next generations. The beforementioned publications also enlighten what kind of competencies would the future teachers need to succeed in their work of preparing the next generation of “citizens to meet tomorrow’s challenges and to create a better future and society” (Luukkainen 2000, 53). Even though Luukkainen studied what the teacher could be like in the year 2010, one could assume that the competencies and the need for the skills have not yet been elevated to the level that we would need for today, tomorrow, and the next decades to come.

According to Luukkainen (2000, 43), the primary goal of teacher’s pedagogical studies is to develop extensive learning and teaching skills that would be *in line with the expectations of the present and future society*. Another aim of educational studies is to educate specialists who can face the changing society and the living environment. They need to face the change since the primary task of the future teachers, and educational specialists is to support the knowledge-skill, social-ethical and psychical growth and development of children, youth, and adults alike.

One of the challenges seen by Helakorpi (1996) for the teachers has been the increasing importance of the so-called *network expertise*, which consists of know-how on cultural competence, systems thinking, futures thinking, value management, and communication skills. Thus, a teacher should understand which direction the world is developing towards and the drivers for this change. Yuval Harari highlights this need of a teacher to be in tune with the future developments and own futures consciousness and states that the essential capability for a teacher is “the ability to deal with change, to learn new things, and to preserve mental balance in unfamiliar situations” (Harari 2018, 262).

The importance of continuous or lifelong learning is also emphasized by Luukkainen (2000), as he states that, to face the challenges the turbulent change in the society brings, the teacher should become a keen learner again - management of the futures is based on constant willingness and ability to learn. In addition, the skill or ability to face the changes and related uncertainties are increasingly important for teachers as one cannot search for the emotional safety from the “unchangeable” state of the world as before but instead from the readiness to face the change processes and from the understanding that we live in a continually changing world. (Luukkainen 2000, 108-114; Luukkainen 2004, 99.)

Touching a similar subject, Salminen (2018) emphasizes the role of educational policymakers in helping the schools become more sustainable and resilient - while also explaining why educational system changes are challenging to put into action based on David Labaree’s (2010) description of systemic levels that create a hierarchy: 1) the rhetoric, 2) the institution, 3) the teacher and 4) the student. Each of these levels poses different challenges for the resilience of the education systems. The changes will not necessarily happen if each level has not accepted them. After exploring different systemic levels and their capacity for change, Salminen concludes that “on the basis of research into the history of education, the opportunities for educational institutions to keep up with accelerating change are, in many respects, limited or non-existent. Due to their contradictory structures, schools are condemned to play catch-up.” (Salminen 2018, 113-114.)

Kyllönen (2018, 311) states that “schools are not isolated institutions; their future growth and prospect are strongly connected to societal development trends and to education policy. At the same time, the school itself can bring about change and influence future development trends. Our actions for tomorrow are never objective and are affecting how the future society will be.” According to these two opposing opinions regarding the impact schools themselves can have on the future of education, one can see the problem

of “institutionalization” on the systemic resilience of education as such. The bureaucratic structures could be too challenging to change voluntarily without outside pressures since they are based on the historical and cultural heritage and, in that sense, on the “used futures.”

Everyone has a choice whether to accept the change or not, and at least in the Estonian education system, the teachers have been given quite a lot of freedom in how to do his or her work. The key to the change and a transformation towards more sustainable, resilient schools that prepare the young for coming challenges in life might be the teachers' exact freedom to choose their teaching methods. Harari (2018, 265) claims that current teachers are not suited for today's educational needs because they were educated in different ways and methods than those used and needed in today's context.

Nevertheless, teachers can (and should) gain the flexible mindset and emotional resilience needed to face the uncertainties and changes the future brings if they are willing to do so. They could explore the methods of futures studies and more consciously think about what would be a “good future” and how to achieve that specific image of the future. In the pursuit of understanding the futures, a new skill – futures literacy – could be the key capability that could help teachers to become more futures-oriented and learn to use-the-future in the present moment. Futures literacy is currently missing from the new learning paradigm, but it should be incorporated into the coming frameworks.

3.3 A new skill for the 21st-century teachers: futures literacy

Futures literacy has gained popularity during recent years, and this is mainly thanks to the scholars working with the topic at UNESCO. On December 8-12, 2020, UNESCO's High-Level Summit was held on this theme showing the importance of the concept. Futures literacy has been described as a skill or capability to use one's imagination to create the future in the present (Miller 2018a, 15). According to UNESCO, it is also a skill that “addresses the urgent need to transform human governance by empowering everyone to use the future more effectively and efficiently.” (UNESCO 2020).

Pouru and Wilenius (2018) emphasize the importance of futures literacy as a capacity that can help to unlock untapped potential for everyone in society.

As futures literacy is a skill, it is possible to develop futures literacy through practice from novice to expert by developing the imagination skills we all have been born with and understanding our anticipatory assumptions and roots.

Anticipatory assumptions then explain how an anticipatory system has been built – allowing to anticipate in a certain way. For example, there are many methods for exploring one’s anticipatory assumptions, ranging from historical analysis to textual analysis. Understanding the cause of why we imagine a future in a certain way is crucial – this is the key to unlocking one’s potential of seeing the alternative thinking and behavior possibilities for the future. The journey often starts with the simple question of “What is the future?” as a learning process often starts when something we do not know or do not understand. Miller highlights that when a person is futures illiterate, she or he does not consciously think about the future as the anticipatory assumptions, anticipatory system, and processes remain invisible, as tacit information in the brain. (Miller 2017, 6.)

Pouru and Wilenius (2020) have developed *a holistic framework of futures literacy* for education to integrate future literacy into an already existing curriculum easily. In the framework, they have divided futures literacy into three clusters of capacities:

1. *Cognitive capacity* entails consciously thinking about the future, different alternative future paths, understanding the time perspectives and drivers of change that affect our future.
2. *Motivational capacity* explains our ways of creating meaning. Self-knowledge, reflection, and understanding of our hopes and fears all belong under this capacity.
3. *Active skills* -are the skills that equip us with the right kind of tools for being proactive in the world. The active skills are made up of four sets of sub-skills:
 - a. planetary living skills (= sustainability and the environment),
 - b. complexity skills (= uncertainty, flexibility, systems thinking),
 - c. creativity skills (= creative and critical thinking, use of intuition), and
 - d. empathy skills (= nurturing human connection and ability to relate to others).

Firstly, planetary living skills aim to cultivate a real-life connection with nature and understand how human actions impact the natural environment. Understanding the natural environment is increasingly important as the majority of humans live in the urban environment. Secondly, complexity skills help strengthen one’s sensemaking of the complexity of today’s societies. Complexity skills also help with navigating the information overflow. Thirdly, creativity skills help to foster the use of creativity and critical thinking while using intuition. Fourthly, empathy skills focus on strengthening how one can relate

to other human beings and utilize the internal passion/purpose of making a change to make the world a better place for all. (Pouru & Wilenius 2020, 207-209.)

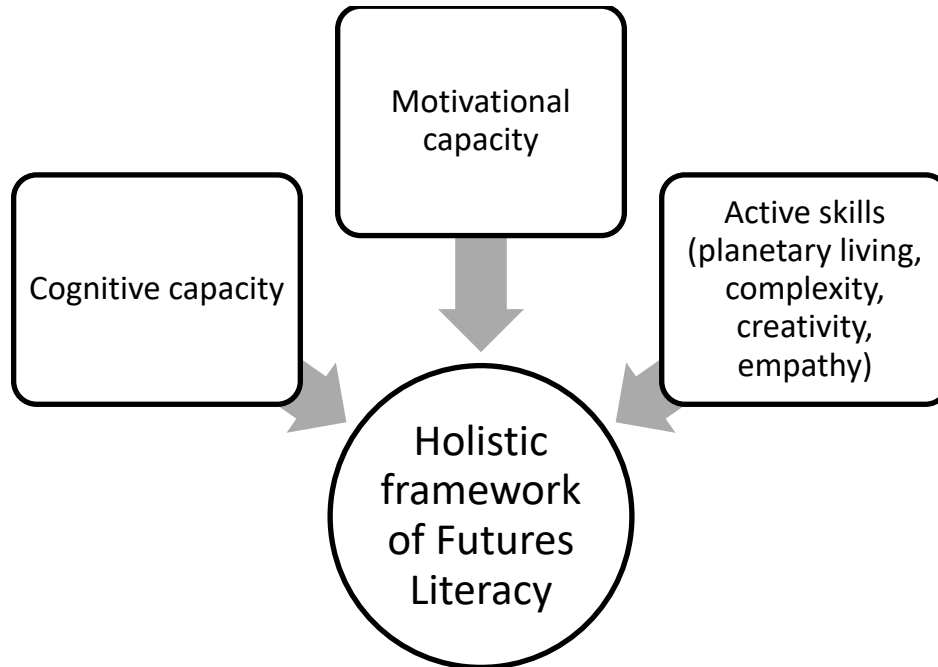


Figure 2 - The Holistic Framework of Futures Literacy by Pouru & Wilenius (2020)

These three clusters of capabilities help develop both a proactive mindset and personal resilience to change, whereas the sets sub-skills of the active skills help create more resilient societies. Suppose the societies comprise individuals equipped with the skills of planetary living, complexity, creativity, and empathy. In that case, some, if not many, of the wicked problems the world is facing today could be solved. Pouru & Wilenius also encourage integrating futures literacy into the secondary school curriculum, whether as into subjects or as a multidisciplinary course within the concept of futures literacy and sustainable future.

This chapter aimed to highlight that teaching is, in its deepest core, very future-oriented. Also, this chapter explained the changing nature of the teaching profession and skillset besides the changing work demands of the future according to the literature. Even though no one knows what the future will hold or the exact competencies/skillsets, every employee needs to succeed. We know that certain aspects of human nature need to be nurtured despite the technological developments making work-life easier.

These human aspects that will surely need to be addressed by the teachers in the school environment continue to be curiosity, empathy, creativity, need to connect with other humans, and, most importantly, how to learn and put learned skills into practice. Despite the turbulence of change, we can anticipate that we will stay human. The need to cultivate these humane skills and nourish human nature continues into the futures that are currently unknown.

4 RESEARCH METHODOLOGY

The research material can be divided into primary and secondary data. The primary data sources were the participatory workshop and the accompanying questionnaire. The secondary source of data is the visions by the OECD and the Estonian Ministry of Education and Research. The combination of both primary and secondary sources aids in comparing different perspectives on visioning the future of Estonian education. It is also important to note that the participatory workshop was held in Estonian, as were the questionnaire questions and responses. For this thesis, all the Estonian material has been translated into English by the researcher. The initial responses in the Estonian language can be found in the footnotes for each of the responses used in the analysis phase.

4.1 Qualitative research methods

Researching the future is complex and often aided by the individual thoughts and images about the futures of the research subjects. Due to this nature of Futures Studies, the interpretivist approach is used in this research. The interpretivist approach offers the researcher the freedom to explore what the teachers think about the future and grasp the "how" and "why" of the research topic.

The knowledge generated in this study would fall into the category of transdisciplinary knowledge since it does not fall only into one scientific field but is mixing the two scientific fields of education and futures studies. Fisher (2010, 44) explained that transdisciplinary knowledge is "the process of learning by the individuals and by mixing the theoretical thinking and practical experiences as well as how these sources can challenge their habits of thought and action, by questioning themselves they can develop new values and understandings." As futures studies tend to explore personal or subjective views of the future, the qualitative methods suit the objective of this study.

4.2 Participatory Future-oriented Workshop with the educators

Participatory future-oriented workshops are often used to "produce future-related knowledge, strengthen the futures thinking of the participants, network and co-operate, enhance the mutual understanding and social learning, communicate research results, or resolve a conflict" (Nygrén 2019, 29). These are the critical methods to create a shared understanding of which direction is to be pursued.

The method is also valued for its capability to “tackle uncertainties, identify disruptions and generating innovations” (Heinonen & Ruotsalainen 2013, 1).

As a qualitative research method, the workshop allows the researcher to focus on how individuals address their experiences, motivations, emotions, and other subjective features related to the lives of individuals and groups (Berg 2004, 11).

Researchers use many participatory future-oriented workshop styles for uncovering futures-related knowledge depending on the specific purpose of their study. For example, the “traditional” futures workshop seeks to utilize the local context by finding solutions to local problems. On the other hand, scenario workshops aim to include different actors in collaboratively creating scenarios for the future. Participatory workshops act as a bridge between the citizens and the policymakers. (Nygrén 2019, 32.)

Other examples of participatory future-oriented workshops include scenario planning workshops, stakeholder workshops, Futures Clinique, ACTVOD futures workshop, foresight workshop, backcasting workshop, collaborative learning CL, Participative Prospective Analysis PPA, and Futures Literacy Hybrid Strategic Scenario as stated by Nygrén (2019, 32) in her comprehensive study about different styles of scenario workshops. All these different styles and types of workshops have common elements and features. Thus, choosing the “right approach” for the research purposes might be difficult without a thorough and consideration of the resources available (time, participants, location, facilitators, materials). Acknowledging the constraints of organizing/facilitating a future-oriented workshop helps design the study accordingly to ensure the success of the research in question.

In this study, a particular type of a participatory future-oriented workshop method was used to help the participating teachers to explore their relationship with the future in practice by co-creation and cooperation with others. Due to the constraints of time and other vital resources, a specific type of a futures workshop – a four-step explorative journey into the futures (Jalonen et al. 2017) - was chosen because the method had been tested in practice in 2018 by an array of educational professionals and students in the school setting.

The main aim of the “journey”-approach was to guide the children and youth into thinking about alternative futures and their role as “creators of the future.” It seemed appropriate to use this method for this particular workshop with the teachers. It also served as a testing ground for the educational professionals – the methodology was distributed

with the goal of the participants using the materials in their work with children in their classrooms and kindergarten premises afterward.

In addition, the method served as a means of finding information about what teachers think about the future of the Estonian school and further introduced the discipline of futures studies and its methods to the workshop participants.

Preparation and facilitation of the futures workshop to the educators in Tallinn, Estonia

The overarching theme for the workshop was the topic of “Estonian school in 2040”.

Phase 1: preparation (October 2018 – April 2019)

The first phase of organizing a participatory futures workshop began in October 2018 when correspondence was established with Tallinn University’s Centre of Innovation in Education. The correspondence aimed to inquire about the possibility of arranging a workshop as part of the study to gain primary data for researching the futures orientation of the Estonian basic schoolteachers.

The agreement came in the format of arranging a professional training course for the educators as part of the Tallinn University’s Teachers’ Academy (in Estonian: *Õpetajate Akadeemia*) with the possibility of the participants to gain a certificate of participation from the workshop. As it had to be arranged as a professional development course/workshop, the structure included a presentation with an introduction to futures studies besides the facilitated workshop. The agenda also included a coffee break with refreshments for the participants. The workshop was planned to take 3.5 hours to enable the education professionals to return to their duties during the day.

Tallinn University was responsible for organizing the workshop and providing the necessary space and materials for workshop activities (A3 papers, post-it notes, markers, and pens). The responsibility of the researcher/facilitator was to prepare training materials (e.g., presentation slides and additional resources) and the worksheets (e.g., the Futures Wheel and the Futures Table).

<p><i>The agenda of the workshop:</i></p> <p>10.00-11.30 Introduction to Futures Studies and it's methods</p> <p>11.30-11.45 Coffee break</p> <p>11.45-13.15 Facilitated workshop</p>

Figure 3 - The Agenda of the workshop on 25 April 2019 that was held in Tallinn, Estonia

A promotional leaflet was created by the staff at Tallinn University and distributed mainly in their communication channels (contact lists, websites, newsletter, and social networking sites) to promote the workshop. The registration to the workshop was later extended also to kindergarten teachers as there were not many registrants from the basic schools. As a result, eight (8) participants signed up for the (with one person cancelling their registration a day before the event).

Phase 2: facilitation of the workshop (25 April 2019)

The workshop began on 25 April 2019 with an introductory presentation to seven participants. Four out of the seven participants work as teachers in a basic school (grades 1-9), two participants as a teacher in a kindergarten, and one as a principal in a secondary school. Before starting the workshop, the participants received a questionnaire of seven questions (see **Error! Reference source not found.**). Participants were instructed to answer the first two questions before the introductory presentation to map their anticipatory ideas regarding the Estonian school in 2040 before the learning session into futures studies, its methods, and its synergy with educational sciences.

The introductory presentation included the following topics/elements:

- An overview of the definition and background of futures studies,
- Futures literacy and futures thinking,
- Roy Amara's three principles of futures studies,
- The aims of futures studies,
- The methods used in futures studies,

- Change factors: weak signals, trends, megatrends, and black swans,
- Outcomes of futures studies: futures images, visions, and scenarios, and
- Futures studies in educational sciences.

The outline of the hands-on part of the Participatory Workshop was based on the “four-step explorative journey into the futures” approach for schools in Finland developed by Laura Pouru and Otto Tähkäpää for the Futures Day 2018. The Teacher’s Guidebook, including instructions for organizing/facilitating the “journey,” was translated from Finnish into Estonian by the researcher to spread the practical guidance among Estonian teachers/educators for upcoming purposes.

For the practical part of the workshop, the participants were divided into two groups, with each participant announcing either “number one” or “number two” based on their sitting arrangements in the room. The method allowed random seating arrangements to divide participants into two random groups of participants. As there were seven participants, one group was made of three persons, and the other group had four participants.

The “four-step explorative journey into the futures”- methodology divided the process of exploring futures into four parts:

1) Introducing futures (15 minutes)

The first part aimed to choose the focal theme/phenomenon of the workshop, the level of the analysis, and the time horizon. The researcher already prepared this part: The focal theme was chosen to be the Estonian school. The future analysis was chosen to reflect the immediate community and environment, and the time horizon was set to the year 2040. Framing ensured that the focus would remain on the research topic to save time during the workshop. The facilitator/researcher then explained the specific characteristics for the group work and the initial phase of getting to know fellow group members and understand their assumptions made about the futures. The discussions started with the following questions:

1. What is the future?
2. Is the future predictable?
3. What kind of emotions does the future evoke in you?
4. How aware are you of your assumptions about the future?

5. Should the school be more concerned and talk about the future? What could be the role of the teacher in the future? What about the role of the student?

As a result, the participants got the opportunity to work independently before the ideation process in teams.

2) *Exploring the futures (40 minutes)*

The second part of the workshop focused on exploring the futures. The horizon scanning was conducted in this phase, with the task given to the teachers to scan and write down change factors that could affect the future of the Estonian school in 2040. As a result of the horizon scanning activity, the change factors were then collected onto a separate paper as instructed on the Futures Wheel template that the facilitator provided.

3) *Interpreting the futures (40 minutes)*

The third part focused on interpreting the already identified change factors in the perspective of the year 2040 and how they could affect reality then. Furthermore, through discussions, the groups' shared values were established that helped the participants outline what could make up *the desirable, undesirable, and probable futures*. Also, the task was to choose the most influential change factors and analyze them according to the five perspectives stated in the Futures Table template: the society, the economy, the people, the technology, and the environment. As a result, the two groups had outlined their shared values and started to build upon the change factors they had found in the earlier phase of the workshop.

4) *Making the futures (20 minutes)*

The fourth part of the workshop focused on making the vision for the Estonian school in 2040 based on the findings they had previously made and primarily on what kind of factors were written into the “desirable future” column of their Futures Table worksheet. The participants were encouraged to discuss the aspects that make their “best future” and for whom the vision of the Estonian school in 2040 would be targeted.

Lastly, as a result, both groups presented the vision that they had created based on the previous steps in the workshop process (5 minutes).

Phase 3: results, feedback, and materials to the participants (April 2019)

The workshop resulted in six images of the future and two visions created by the participants and individually filled in questionnaires adapted from the six basic futures questions by S. Inayatullah (2008). During creating the workshop results, the change factors were respectively mapped by the two groups.

The materials were later sent by e-mail to all workshop participants, including the presentation slides, the Teacher's Guidebook, visions, and images of the future. Overall feedback from the participants was positive. Many admitted that futures studies as a discipline were new to them and that they have not been consciously using futures thinking methods for creating their own or collective futures. There could have been more time allocated for group working since the discussions were interesting, and thus, making the conclusions and wrapping up was done in a hurry in both groups.

4.3 Questionnaire

As Saunders and Lewis (2012, 141) stated, the questionnaire approach is a convenient method to be used when the same questions need to be asked from the respondents, especially when the order of answering the questions is of importance. The sampling approach could be described as self-selection sampling as the respondents to the questionnaire had signed up for the workshop voluntarily and based on the advertisement. Furthermore, they had the choice to refuse to fill in the questionnaire and only participate in the workshop if they wished.

The questionnaire was designed to find out what is on the respondent's mind, and thus, all the questions were open-ended. Six out of seven questions were adapted from Inayatullah's Six Pillar Framework (2008) (i.e., the six basic futures questions). The Six Basic Questions by S. Inayatullah were chosen as they encourage futures thinking through self-reflection and ignite the process of uncovering own anticipatory (hidden) assumptions that can impact how we imagine the future.

Two of the questions were answered before the start of the lecture part of the workshop. The rest was responded to after the practical part of the workshop. The questionnaire was given out to the participants before the introductory/educational part of the workshop to collect the initial ideas and imagined futures regarding the Estonian school of 2040 without exploring the discipline of futures studies or its methods. It is an approach

that researchers in social sciences often used to scale the change in perceptions or attitudes.

However, it is also an approach that has not, with enough evidence, created an actual change in changing attitudes/perceptions of the participants for the long run. More profound reflections and changes of the cognitive schemas are needed to get lasting results. More repetition of the new information and practice is needed to change the underlying behavioral and thinking patterns. (Nygrén 2019, 29). Nevertheless, the approach seemed helpful for gathering the rawest and most intuitive images of the future that arise from past experiences and personal perceptions about the future

These six basic futures questions were modified by the researcher to be more specific to the school setting and to mirror the topic and approach of the workshop:

Table 2 - The Questionnaire questions distributed to the workshop participants

The Questionnaire questions adapted from the Six Pillar Framework by S. Inayatullah (2008)

What do you think the future of Estonian school will be like in the year 2040? What factors would impact that future (technology, society, humans, environment, economics)?

Will

What kind of a future are you afraid of (regarding Estonian school in 2040)?

Fear

What are the hidden assumptions of your predicted future?

Hidden assumptions/anticipatory assumptions

What are some of the alternatives to your predicted future?

Alternative futures

What is your preferred future?

Preferred futures

What three steps would you have to take to get there?

Next steps

Do you plan to use the futures studies methods in a classroom context?

Readiness to explore the futures

Moreover, the seventh question was added for additional insight, measuring the interest of the teachers in futures studies methods and their willingness to taking the key learnings and experiences from the workshop to their kindergartens and schools.

As a result, the questionnaires produced insights into how the educators understand futures studies and how they foresee the changes to the Estonian school by the year 2040.

4.4 Content Analysis of the research material

Content analysis is a suitable and flexible method for the researchers to analyze qualitative data. Due to its flexible nature, there are many approaches to how content analysis can be conducted. Hsieh & Shannon (2005) explain that the specific research will determine how a researcher utilizes content analysis at hand. For example, in this research project, the determining factors are the categories formed on S. Inayatullah's Six Basic Futures Questions (2008) and the general aim of researching the underlying futures thinking processes of the teachers. As a method for analyzing the data at hand, content analysis helps identify emerging thematic patterns with the help of coding in a continuous manner.

Content analysis often entails an analytical process of the following seven steps:

1. Formulation of the research question
2. Selection of the sample to be analyzed
3. Defining the categories to be applied
4. Outlining the coding process and coder training
5. Implementation of the coding process
6. Determination of trustworthiness
7. Analyzation of the results of the coding process.

To analyze the results of the participative workshop for the educators, the conventional content analysis has been deemed to be the most appropriate analytical approach to study the underlying futures images and futures orientation. As a result, a content analysis of

the questionnaire responses was conducted in the spring of 2020. Due to the small number of workshop participants, all responses have been represented and treated as valuable insights. When categorized, the responses provide an insight into the different aspects of anticipatory assumptions and the images of the future. It has been acknowledged that openly asking someone about their “hidden assumptions” rarely exposes the “unconscious” assumptions but helps the respondents identify some of the sources they believe are causing their future-related assumptions. Thus, helping the respondents become more conscious about the future and practice self-reflection in connection to futures thinking.

The analysis process for the questionnaire went as follows (loosely based on the seven steps of the analytical process highlighted by Hsieh & Shannon (2005)):

1. Careful examination of the questionnaire responses
2. Code categories were established based on the main aims of the Six Basic Futures Questions: will, fear, hidden assumptions, alternative futures, preferred futures, and next steps. These were matched with the six questions provided to the workshop participants on the questionnaire (e.g., Q1 matched the will category, Q2 matched the fear category, and so forth).
3. The responses were analyzed in NVivo12, and similar thematic topics were highlighted and grouped where possible. Under some questions, each respondent highlighted a different factor, making it impossible to group answers.
4. The code categories were utilized for highlighting the main thematic areas that the Estonian teachers perceived necessary and discussion-worthy, revealing the skills and approaches needed for the school of the future.
5. A list of the code categories was created under where areas chosen by more than one respondent (at least by two) have been marked in bold. The categories have also been highlighted in the tables below in the Results-section.

4.4.1 Comparative content analysis of the visions

Besides analyzing the content from the questionnaire, the two visions created during the workshop were compared against the vision from the OECD and the Estonian Ministry of Education and Research. In this research, the OECD Future of Education and Skills 2030 vision has been categorized as the “global level” as it illustrates the shared vision for the 37 member countries across the globe (OECD 2021). The Smart and Active Estonia 2035 vision has been categorized as the “national level,” vision and the two visions

created in the participatory workshop were categorized as the “local level” visions. This approach makes it possible to explore similarities or differences in the different visioning levels regarding what has been envisioned as “the good” future for education in Estonia. Even though the time horizons differ in different visions (2030, 2035, and 2040), they are sufficiently far ahead in time for comparison. The division can also be made based on the status of the involved actors in the visioning process. In the OECD’s vision, different stakeholder groups (policymakers, researchers, school leaders, teachers, students, and social partners) from the member countries have been working collaboratively in creating a shared vision for education in global forums. (OECD 2019e.)

In the Smart and Active Estonia 2035 strategy and vision, the visioning process was guided by three expert group leaders, and three expert groups created the strategy with the accompanying vision. These expert groups comprised of “independent people with a broad knowledge base (scientific, researchers) who wished to develop life in Estonia, and who have in the recent years been publicly expressing their views from the ministry’s areas of responsibility” (Estonian Ministry of Education and Research 2020). The local visions were created by the grassroots practitioners of teaching activities and represent the visions of education in Estonia from the teachers’ perspective.

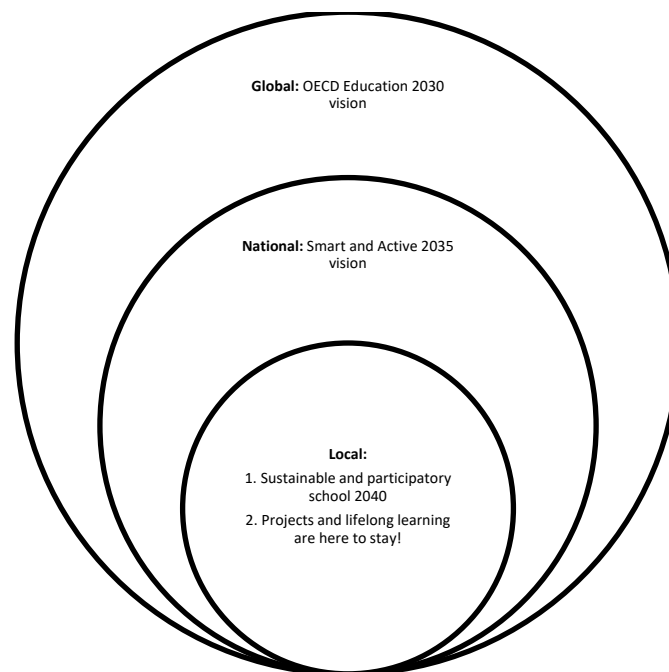


Figure 4 - Different levels of visions

The OECD has been included in this research as it holds an important status as an organization responsible for the PISA (Programme for International Student Assessment) testing. According to the PISA 2018 results, Estonian students were ranked first among the European countries in all assessment domains. Furthermore, Estonian students also hold first place among all OECD countries in reading and science and third place in mathematics (Ministry of Education and Research 2019); exploring the vision for 2030 by this organization seemed appropriate. As Estonian culture values working hard and achieving success (Hofstede 2021), the success in the PISA could also indicate the familiarity with OECD as an organization. The OECD has been mentioned repetitively in the Estonian strategy summary document “Smart and Active Estonia 2035”, indicating the status and role of the international organization in national policymaking.

This comparison helped build a basis for familiar sources of the teachers' hidden assumptions and aid in creating a general understanding of the similarities and differences on the global, national, and local/grassroots future perspectives. In order to compare the four visions, firstly, common concepts were identified based on the buzzwords.

List of the common elements:

- Individualization
- Planetary concerns and sustainability (e.g., including the term “way of life in line with the natural environment)
- Common well-being
- Problem-solving skills
- Entrepreneurship
- Complex and uncertain future

By checking whether the elements were present in the visions provided, the analysis was done based on comparing the different levels of the visions. The OECD vision acted as the overarching global level, the Estonian one as the national level, and the two visions created during the group work, represented the local level. Even though these visions have different target audiences and different uses, it has been interesting to compare them and find common or distinctive elements. The comparison of the visions also highlights a shared vision of the future of education.

4.5 Research ethics and integrity

Studying the images of the future of the grassroots educational practitioners reveals how the teachers themselves envision the future and provide an insight into their worldview for the researchers. This study adds to the responsible and ethical research inclusively. It gives the voice to the teachers who sometimes maybe not have been directly involved in the visioning and scenario processes (whether on a local or national level) before. Adding the teacher's perspective to imagining the future of schools and education systems ensures more holistic visions and inclusive processes should be encouraged more.

As the workshop participants were teachers and voluntarily signed to the workshop organized by Tallinn University's Teacher Academy, the workshop participants did not differ much from their daily life as they attend professional training sessions at other times as well. Therefore the ethical pre-review was not considered necessary. The anonymity and neutrality of the material gathered from the participants were granted by requesting the paper questionnaires to be answered anonymously (with clear instructions on the questionnaire page not to insert their name nor any other personal information).

The workshop participants were informed of the purpose of the research both on the questionnaire form and by the researcher verbally.

The workshop participants received information on how and where the information collected will be used (by the researcher in her Master's Thesis project); also, participants were informed not to fill in the form nor return it to the researcher if they did not wish to participate. By filling in the form and returning it to the researcher, participants gave their consent that the workshop's data during the workshop can be used for the beforementioned purpose.

The research material included written notes made by the researcher on the group discussions, the questionnaire forms, and the posters from the workshop as the group work results. The group work results were later scanned and emailed to the workshop participants, but no outsider has not seen the researcher's notes and the questionnaire forms. These forms will be destroyed after the thesis has been published. The research material has been handled with care and respects the opinions expressed by the workshop participants during the workshop. The information gathered via the questionnaire forms and the researcher's notes have been handled neutrally without additions or reflections from the researcher. The questionnaire papers were numbered from one to seven in no specific order, making it possible to connect the respondents' answers neutrally.

5 RESULTS

The Results-chapter presents the analysis of the participatory workshop results, the responses to the questionnaire, and the comparative analysis of the visions. The analysis of the participatory workshop results (both the individual questionnaire (n=7) and group work (n=8)) has been conducted in this section according to the themes identified from the questionnaire responses by utilizing content analysis. Analysis of the questionnaire was based on the summaries of Inayatullah's Six Basic Futures Questions.

5.1 Analysis of the questionnaire based on the summaries of Inayatullah's six basic futures questions

In his framework, Inayatullah (2008) states that the first question of the six basic questions summarizes as "will." The main aim of the six basic futures questions is to help the respondent to formulate their version of the probable future. In the workshop, the first and second questions were answered without listening to the introductory presentation into futures studies – the reason behind this approach was to collect the "raw" mental images of the future through the lens of technology, society, humans, environment, and economy.

These images of the probable future helped investigate the current trends and issues on the mind (concerning the five lenses) that subconsciously have surfaced as beliefs and attitudes towards the future among the participants as individuals as the collective working produced images of a probable future too. If a category was reflected in more than one person's responses, the category has been bolded to indicate the perceived relevance of the impact of this category, e.g., the role of technology has been highlighted in the "will" category.

5.1.1 Will

Table 3 - The code categories under "Will"

Will

Classroom-based teaching and learning is disappearing

Project-based teaching and learning

Creativity development

Digital tools used in teaching and learning

Diverse school landscape with competition
 Economy's increasing role in the funding of the schools
 Flexibility and openness
 Impact of the society on the school environment
 Individual teaching and learning approaches
 Niche schools with the focus on nature-based learning
 People as actors in creating the future
 Students with diverse educational capabilities
 Tailored school environments

Technology

The results of the seven respondents mirror the current discourse on the future of education in Estonia and, according to the OECD Framework 2030, also the global discourse on the subject.

Most participants highlighted the role of *technology*. Thus, educational professionals foresee technology playing an increasingly important role in how the school looks by 2040. *The use of digital tools* in teaching and learning has become an ordinary practice for everyone – as a result. The school environment is more often *tailored to the needs of society and individual teaching and learning approaches*. Also, traditional classroom-based learning and teaching have disappeared.

*“I believe that by 2040 we will not have a traditional classroom setting anymore (desks behind each other), and the subjects are integrated – no specific subject teaching. Technology has a bigger role in learning processes than it has today.”*²

– Respondent 5

Also, the students display more *diverse educational capabilities* (e.g., increase in learning disabilities), and as such, the teaching activities need to be individualized. The individualization of the teaching and learning activities could act as a double-ended sword as, on the one hand, it will create more work and stress for the teachers. On the other hand, it will give the students the right tools for their individual educational development.

² ”Ma arvan, et aastaks 2040 ei ole meil enam klassikalisi klasse (lauad üksteise taga) ja õppeained on pigem kõik seotud ja eraldi neid enam ei ole. Kindlasti on tehnoloogia osakaal õppeprotsessis suurem kui praegu.” - Respondent 5 on 25.4.2019

Project-based learning as the “new normal” - subject-based approaches are abandoned to ensure the students' creative mindset. One respondent also stated that people would have more freedom to be active actors in creating their futures by 2040, indicating that they will continue to have future agency.

*“People will be anyhow affecting what will happen, no matter what time we live in. People who use technology create the environment (and destroy the environment) and are a part of the economy (produce, use, save), and are active or passive members of society. The school in the year 2040 should be addressing all these fields.”*³

– Respondent 3

Both project-based learning and individual teaching and learning approaches correlate with *flexibility and openness* of the school environment. Both aspects are crucial for letting the students create their futures. More schools with a particular teaching focus or a niche have been established, especially with the focus on nature-based learning—the emphasis on nature-based learning highlights the continuum of the concern over the environmental challenges in the future.

However, emphasized individualism continues to create a diverse competitive school landscape – schools will compete for governmental/private funding and students and teaching staff. The role of the national economy and funding allocated to the schools/educational sector has become increasingly important since smaller schools (often located in smaller municipalities, with fewer students to teach) would not be able to justify their existence.

These aspects of the “will” reveal that the probable future of the Estonian school in the year 2040 is seen in a rather negative light regarding the ongoing competition for the existing financial and human resources. As this was the first of the two questions that were answered before the workshop activities, it shows that these arisen themes of technology, digital tools, tailored teaching and learning, diverse educational needs, and learning disabilities all highlight the critical societal discussion points from the Estonian educational discourse from the recent years.

³”Igas ajas toimuvat mõjutavad ikkagi inimesed. Inimesed, kes kasutavad tehnoloogiat, rajavad keskkonda (ka hävitavad), on osa majandusest (toodavad, tarbivad, säästavad) ning on aktiivsed või passiivsed ühiskonna liikmed. Kooli roll aastal 2040 peaks olema kõigi nende valdkondade käsitlemine.” – Respondent 3 on 25.4.2019

5.1.2 Fear

The second question handled the fear – what kind of future teachers fear for the Estonian school in 2040. The question was answered without the specific knowledge about futures studies or the drivers of change covered during the presentation in a later phase in the workshop.

Table 4 -The code categories under “Fear”

Fear

Authority problems

Connection to the “real world.”

Decrease in interaction

The decreasing number of teaching professionals

Estonian language

Functional reading skills

Increase in students with special needs

Increase in mental issues

Lack of physical movement

Lack of support specialists in schools

Narrow vs. more significant picture skills

No structure or rules

Older teachers

Overloaded with work

STEM subjects have become more difficult

Technology (addiction to intelligent devices, interaction only in the virtual realm)

The dystopic image of the Estonian school in 2040 includes an *increase in authority problems for the teachers* – the teachers’ authority as an educational expert is questioned by the parents and students alike. The beforementioned imbalance between the rights and responsibilities of the students and teachers can cause escalating misunderstandings. Which in turn, makes it more difficult for the teachers to teach and allocate their time for their real job, which is teaching the children. Some issues emerging in the classroom (with students and their parents) might be rooted in the lack of societal appreciation and authority of the teaching profession.

“In smaller schools, where there are many students with special educational needs, teachers are overloaded with work (with mapping the individual needs of the students as well getting support services for the students/sending them for medical examinations, finding materials, organizing the lessons, etc.). Students and their parents have many rights; teachers must justify their existence often, analyze, explain, report a lot. Lack of support specialists in schools.”⁴

- Respondent 6

The *decline in the students' functional reading and writing skills* has been due to communication and interaction via mobile devices and online.

Extensive use of smart devices and computers has caused the children to become *addicted to the technology* and thus, less actively interacting and communicating person-to-person in real life; instead, communication and interaction would take place on virtual realms and by virtual means. The effects of constant texting, sending short messages, and lack of correct spelling of words and sentences have degraded how children and adults alike understand the world. Differentiating between the real world and the virtual world has become difficult for many. The perspective has narrowed, and not many understand the causal relationships of how the world works and cannot grasp the “bigger picture” but focus only on narrow skill sets in specific fields.

When technology has become more and more important in people’s everyday life, this has brought about the *growing difficulty of the STEM (e.g., mathematics, biology, physics, chemistry, IT, geography) subjects*.

Building upon the previously mentioned aspects, *the number of students with special educational needs* has increased massively. Lack of functional reading and writing skills has generated the downfall of how the world is viewed (what is perceived as standard), and thus, the traditional methods of teaching and learning do not apply. An increase in students with special education needs will add *the need for additional resources* both from the teacher’s side and a need for special education professionals/support specialists to ensure students' well-being and education in the changing world.

⁴ “Väiksemates koolides, kus on palju HEV õpilasi, on õpetajatel väga palju tööd (nii õpilaste individuaalsuste-vajaduste kaardistamisel kui tugiteenuste saamisele-uuringutele saatmisel, kui ka materjalide otsimisel, tundide organiseerimisel jne). Õpilastel-lapsevanematel on palju õigusi, õpetaja peab oma olemasolu pidevalt õigustama, palju analüüsima, põhjendama, aru andma. Puudus tugispetsialistidest.”
– Respondent on 25.4.2019

Teachers are being overloaded with work – they need to balance bureaucracy with personal learning. Teaching methods and practices have become too much of a mental burden resulting in a *lack of teaching professionals* working in schools as teachers tend to leave. The profession is undervalued, non-appreciated and young specialists decline to work in schools due to reduced salary levels, non-existent support staff, and overly significant workload. The teachers who have stayed are mainly from *the older generation*, nearing the retirement age, or are already retired but continue to teach. The older teachers do not necessarily follow up with the newest developments in the educational sector, continue to use more traditional teaching and learning methods, and thus struggle more with the students needing more support to manage their school tasks.

“Especially the Estonian language skills and functional reading skills have decreased. Also, the difficulty of the STEM subject has increased for many — also, the lack of active movement and increase in mental issues among increasingly younger students. Teachers are getting older, and the lack of teachers is an increasing problem. Increase in special needs students. Increase in technology and robotics in schools.”⁵

- Respondent 3

Lack of physical movement has had negative impacts on the overall health of the students. More and more children suffer from different mental and physical disorders, already from an early age.

Teachers also worry about whether there will be *a clear structure and rules* for everyday life in 2040, indicating chaos in the school environment and society. The status of *the Estonian language* is also fearsome – how many will continue to use their native language in everyday interactions? Will the English language take over the educational sector and all communication by 2040?

5.1.3 Hidden assumptions

The third question inquired about the hidden assumptions – giving the educational professionals an opportunity to self-reflect and think what kind of aspects could have affected

⁵ ”Eelkõige eesti keele ja funktsionaalse lugemise halvenemine. Ka reaalinete keerukus paljude õpilaste jaoks. Samuti vähene liikumine ja vaimsete hälvete ilmumine üha nooremas eas. Õpetajaskonna vananemine ja vähesus on probleemiks. HEV õpilaste arvu kasv. Tehnoloogia ja robotika sagenemine koolis.” – Respondent 3 on 25.4.2019

the outcomes of the first two questions. It has been acknowledged that openly asking someone about their “hidden assumptions” does not expose the “unconscious” anticipatory assumptions but rather helps the respondents identify some of the sources for their futures-related assumptions.

Each respondent had to write down three concrete examples of their hidden assumptions that impacted how the respondents answered the first question of the questionnaire about the most probable image of the future.

Table 5 - The code categories under "Hidden assumptions"

Hidden assumptions

Authority problems

Decrease in interaction

Educational politics/policymaking

Increased use of the English language in everyday life

Environmental/societal factors and mental health

Justification of schools to be funded and operative

Nature

New teaching methods

Feeling powerless in impacting future outcomes

Practical experience in the school environment

Research and other information read/heard of

Smart devices

Social media

Special needs vs. availability of support specialists

Technology

The “hidden assumptions” that the educational professionals most often have a basis for their initial mental images of the future spring from the following sources are identified.

The most common sources for the hidden assumptions arise from 1) the practical experiences gained from the school environment, 2) exposure to new teaching methods, 3) current educational research and other information consumed as part of their professional activities and leisure time, and 4) advances in technology.

“HITSA digital learning programs, practical work with the children where you can see that their knowledge does not match the real-life; nature and diverse opportunities will help to upkeep healthy thinking.”⁶

- Respondent 7

Otherwise, the hidden assumptions seem to be *rooted in the everyday communications and interaction with the media* - the issues covered in newspapers and social media and other actual conversational topics among the teachers. For example, the acute problems with *lack of support specialists* in schools for the students with special educational needs. Integration of the students with special educational needs to ordinary classrooms has caused stress and insufficiency in coping with these challenges. However, the number of support specialists like special education teachers, school curators, and psychologists available in the schools has not increased at a similar pace.

“All schools need to justify their existence; otherwise they can be closed, special needs are included, but support specialists are not, need to deal with parents who cannot see the real issues.”⁷

- Respondent 6

Lack of *authority in the classroom* (and in the society) has also been one of the hidden assumptions guiding the thought process of the educational professionals – the fear of not having sufficient control over certain situations at school can be scary and cause subconscious barriers to how teachers behave with the children. There have been many cases where troublesome children have provoked their teachers to cross the thin line of professional behavior. In some situations, the students have lied and accused their teachers of bullying them, resulting in the teaching staff getting fired. The results of these situations, including police involvement, dismissal from the teaching profession, and shaming by the parents of the students, can often reduce the perceived authority of the profession in society in general.

⁶ ”1) HITSA digiõppeprogrammid; 2) Praktiline töö lastega, kus on näha, et nende teadmised ei vasta päriselule; 3) Loodus ja mitmekesised võimalused aitavad hoida elutervet mõtlemist.“ – Respondent 7 on 25.4.2019

⁷ ”1) Kõik koolid peavad end õigustama, muidu on oht sulgemiseks; 2) Erivajadused kaasatakse, kuid tugispetsialiste ei ole; 3) Peab tegelema lapsevanematega, kes ei näe probleeme.“ – Respondent 6 on 25.4.2019

“Digitalization, emergence and development of new teaching methods, the current situation of (educational) politics in Estonia.”⁸

- Respondent 5

Furthermore, *decreasing interaction between people* has been identified as a hidden assumption – closely connected to the constant use and *abundance of smart devices* present in society and interactions in general.

“I have no power over how the future turns out.”⁹

- Respondent 1

One respondent interestingly stated that she sees herself as *not having the power to influence* how the future would turn out by 2040. In her opinion, other factors like politics, national economy, and strategies that influence the direction the future will develop toward – individuals would not have the power to affect the decisions that shape the future. Thus, this respondent expressed a low level of futures agency expressed by Ahvenharju, Minkkinen & Lalot (2018) in their study on futures consciousness.

The results highlight the approach Rubin and Linturi (2004) have explored regarding the birth mechanism of the image of the future. The way people tend to imagine the future is often a combination of the information acquired from the surrounding environment and societal relations.

5.1.4 Alternative futures

The question about alternative futures seemed to be rather tricky since two respondents chose not to list any alternatives to their initial images.

Table 6 – The code categories under “Alternative futures”

Alternative futures

Community schools preserved

Compulsory secondary education for everyone

Digital, outdoor, and nature education co-exist

⁸ ”1) Digitaliseerumine; 2) Uute õppemeetodite tulemine/välja arenemine; 3) Hetkeline (haridus)poliitika olukord Eestis.” – Respondent 5 on 25.4.2019

⁹ ”1) Minust ei olene suurt midagi.” – Respondent 1 on 25.4.2019

Hyper-technological schools

Increased learning disabilities

Individual learning and teaching despite the large schools

SKYPE-school (remote schooling)

Teacher as a role model (improved authority and appreciation of the profession)

Visionary leadership in schools

The alternative futures include elements that have been mentioned under both the probable and undesirable futures by the educational professionals. Responses were not categorized according to their “positivity” or “negativity” but were acquired as a simple listing instead.

Visionary or future-oriented leadership in schools was the only concept that was raised by two people’s responses.

“Community schools should be preserved - people who are future-oriented should be included.”¹⁰

- Respondent 6

Teachers would also be seen more as role models; they have *more authority* in the school environment and act as thought leaders, guiding them toward the “right” direction based on their aspirations and capabilities. Also, the societal status of the profession has improved.

Remote schooling has become a reality – the so-called “*SKYPE-schools*” is the new norm for teaching and learning, and students do not need to be bound to the classroom space to learn. School tasks are held via technological devices, remotely.

In another alternative, the economic distress of small schools has caused many schools to unite in large school communities to continue their work. Nevertheless, *individual learning and teaching approaches* have been maintained despite the size of the schools.

Learning disabilities have increased due to the vital role of technology in the school environment. The increase in students with learning disabilities could also be connected to the lack of perceived social support, which causes increased use of smartphones among adolescents (Sarti et al., 2019). When students are addicted to their smart devices, that

¹⁰ ”Kogukonnakoolid peaks säilima, kaasata tuleb inimesed, kes näitavad tulevikku.” – Respondent 6 on 25.4.2019

can lower their capability for self-regulated learning and level of flow while studying and resulting in anxiety, depression, or insomnia, which affects learning and cognitive processes (Lee et al. 2015; RSNA 2017).

In this alternative future, *community schools* have been preserved, despite the pressures of limited funding and the “result-oriented” atmosphere of the school environments. Schools close to the students' homes will reduce the stress of school commute and make hobby education more available for every student.

Schools have become *hyper-technological*, and traditional means of teaching and learning have become rare.

The *compulsory secondary education* by 2040 provides a solid foundation for the youth to become successful in life. In some schools, the successful merging of *digital, outdoor, and nature education* co-exist – making the best of the digital solutions for teaching and learning and keeping the connection to nature and outdoor studies.

5.1.5 Preferred futures

The preferred futures gathered many different aspects that educational professionals would like to see to realize by 2040. The central thematic highlighted the curiosity of the mind and willingness to learn something new.

Table 7 - The code categories under “Preferred futures”

Preferred futures

Critical thinking

Curiosity

Freedom to teach young people who will succeed in life

Future-oriented learning

Inclusive school environment

Lifelong learning

Nature-based small schools

Professionally content and active teachers

Student-centered schools

Sustainability in activities

Teachers and students valued in schools and society alike

These factors echo the modern aspirations for the future of education and learning – the Estonian teachers have internalized these aims.

“Every human being in the school is a participant in the process, not just a passive participant. Activities in the school are sustainable.”¹¹ - Respondent 1

Curiosity is vital for both the teachers and students in the year 2040. Curiosity will ignite the hunger for knowledge and new solutions. In a rapidly changing world, curiosity can help citizens cope with the changing life situation and find suitable solutions. *Critical thinking* is an essential factor that plays an essential role in the school environment, future workplaces, and everyday life. *Lifelong learning* takes place every day for people of every age. Schools are student-centered, and the activities in schools are based on the concept of *sustainability*.

“Continuous learning, curiosity towards changes in society, lifelong learning.”¹²

- Respondent 4

The teachers are more professionally content. Teachers have more freedom to choose suitable teaching methods and materials. In addition, the curricula have set the broader frames and not tight goals that have to be achieved by every student,

more clearly stated and understood rights and responsibilities to support the young in the best possible way. Teachers are active in their professional learning, which benefits, in turn, the learning of their students. Flexible and available professional development has helped the teachers turn the schools into more student-centered, inclusive and future-oriented, and sustainable activities.

5.1.6 Next steps

The next steps indicate what the workshop participants underlined as the most crucial things to happen to make their preferred futures for the Estonian school in 2040 a reality.

¹¹ ”Iga inimene koolis on osaline protsessis, mitte lihtsalt passiivne osaleja. Tegemised on jätkusuutlikud.” – Respondent 1 on 25.4.2019

¹² ”Pidev õppimine, uudishimu muutuste suhtes ühiskonnas, elukestev õpe.” – Respondent 4 on 25.4.2019

The workshop participants were asked to write down three steps necessary to take in their opinion.

Table 8 - The code categories under “Next steps”

Next steps

Active learning methods

Better planning

Dialogue

Economy and political support for schools

Educate the parents

Educational reforms

Enforce the image of students being responsible for their future

Entrepreneurial mindset

Inclusive processes

Individual teaching and learning

Prospective future needs considered

Removal of excess bureaucracy

Self-improvement

Sustainability of small schools

The next steps to realize the image of the preferred futures include *primarily political and economic support* for the school system in general. *The sustainability of the small schools* needs to be granted by the government – not forcing schools to unite into large institutions due to saving purposes. A diverse school landscape (not consisting only of large district schools) benefits all learners and offers the best possibilities for individual learning and teaching approaches.

Furthermore, teachers have highlighted the need for more inclusive decision-making processes in schools. *The inclusive processes* indicate both the need for teachers’ involvement in strategic planning in schools and including the children to make better-informed decisions for the future. *A dialogue* between the decision-makers, teachers, students, and their parents is something that should have more value for the basis of educational strategies.

*“1) appreciation of teacher’s profession (salary, reputation, working conditions),
2) supporting and utilizing different teaching and learning activities and situations,*

3) *removal of excess bureaucracy from schoolwork*".¹³

-Respondent 3

Parents need to be informed. Not all parents are aware of the challenges in the school environment nor have a supportive attitude toward helping their children succeed in their tasks, not to mention a lack of appreciation to teachers and their work. When parents are closely involved and informed about how their children are doing at school and are knowledgeable about the school system (society's goals), they can better support their children and their schools.

Better planning is needed for the educational approaches, methods, and other ways of achieving the concepts stated in the preferred futures section. *Considering the prospective future needs* of education should form the basis for strategic planning. *Educational reforms* can help with this.

More attention should be allocated to *developing the students' entrepreneurial mindset* in the next two decades to reach the preferred futures by 2040. Also, *individual learning and teaching* approaches are closely connected to the entrepreneurial mindset – both individual learning and *active learning methods* need to be utilized. *Removal of excess bureaucracy* is needed to give the teachers resources to support each student's educational needs for their best outcomes without paperwork and writing reports that take valuable time from lesson planning and cause extra stress. Other means for quality management in schools need to be considered without the responsibility of reporting lying only on the shoulders of the teachers.

Continuous *self-improvement* (closely connected to lifelong learning concept) is needed from the teachers to stay informed about the latest developments in society, technology, teaching methods, and the trends among the children at any point in time.

"1) *Self-improvement*, 2) *critical thinking*, 3) *go with time*."¹⁴ - Respondent 2

The futures literacy of the students should be strengthened – so that everyone understands that they have the power to create their future.

¹³ "Õpetaja ameti väärtustamine (palk, maine, töötamistingimused); 2) erinevate õppetegevuste ja õpituatsioonide kasutamine ja toetamine; 3) liigse bürokraatia kõrvaldamine koolitööst." – Respondent 3 on 25.4.2019

¹⁴ "1) Enesetäiendamine; 2) kriitiliselt mõtlemine; 3) käia nõ. ajaga kaasas." – Respondent 2 on 25.4.2019

“1) More training to parents so that they would understand the future/the needs of the future, 2) Students have to understand that they are responsible for their futures - examples, role models; 3) Economy and politics have to be supportive of education.”¹⁵

- Respondent no.6

Often, the students argue in the school setting that they do not understand why they are studying in the classroom—the image of the students being responsible for their future needs to be enforced.

5.1.7 The willingness of the respondents to use futures studies' methods in their classrooms

The last question of the questionnaire presented to the educational professionals at the end of the workshop asked whether the respondents saw it helpful to utilize the learned skills and know-how about future studies. The respondents were required to answer yes or no and add an explanation to their chosen option.

Table 9 - Why would you use futures studies' methods in the classroom?

Futures studies' methods used in the classroom – why?

Critical thinking

Futures literacy development

Methods support inclusiveness and collaboration

Interesting and developing

All seven respondents stated that they would be using futures studies' methods with their students. The reasoning behind their choices was impressive since the majority highlighted the methods helping develop *critical thinking*.

¹⁵ ” 1)Rohkem koolitusi lapsevanematele, et nad mõistaks tulevikku, tuleviku vajadusi; 2) õpilased peavad saama aru, et neist endist sõltub nende tulevik – näited, eeskujud; 3) majandus ja poliitika peab olema haridust toetav.“ – Respondent 6 on 25.4.2019

“Yes, to show the students of what their future is depending on, how they should prepare themselves for the future, what and for whom they should learn.”¹⁶ - Respondent 6

“Yes, so that children could think a little further than about just today.”¹⁷ - Respondent no.3

Other aspects highlighted that the respondents viewed the methods *as exciting and developing students' understanding of their future roles*. Furthermore, the methods were perceived *as inclusive and offering possibilities for collaboration*.

“Yes, so that students would learn to think about their futures and to understand that they have the power to influence their future.”¹⁸ - Respondent 5

“Yes, I will surely use them. Good, easy, and practical. Methods that support collaboration and inclusiveness.”¹⁹ - Respondent 4

The responses indicate teachers' interest in learning about futures studies and the willingness to implement the methods in practice in their classrooms. What could be more enriching the educational field than getting the right tools to help the young minds ponder and decide their future steps. The academic field of Futures Studies was still relatively new to the Estonian educators - leaving a gap in teacher education and professional training.

This gap could be filled by adding courses into teacher education curricula and developing professional training courses that could resemble the workshop held for this research.

¹⁶ ” Jah, et näidata õpilastele, millest sõltub nende tulevik, mismoodi nad peaksid end tulevikuks ette valmistama, mida ja kelle jaoks õppima.“ – Respondent 6 on 25.4.2019

¹⁷ ”Jah, et lapsed oskaks mõelda veidi kaugemale kui tänane päev.“ – Respondent 3 on 25.4.2019

¹⁸ ” Jah, et õpilased õpiksid samuti oma tuleviku peale mõtlema ning saaksid aru, et võim nende tuleviku osas on nende käes.“ – Respondent 5 on 25.4.2019

¹⁹ ”Jah, kindlasti kasutan. Hea ja lihtne ja praktiline. Koostööd ja kaasatust toetav meetod.“ – Respondent 4 on 25.4.2019

5.2 Results of the teamwork: the images of the future of the Estonian school and the visions for 2040

This sub-chapter focuses on the comparison of the different images of the future. The results of the teamwork are presented in the tables below. Similarities in the images of the future are dependent on megatrends and trends, as well as collective professional fears that are often recognized in the field. The author has named the visions to have a catchier distinctive element. During the workshop, the two groups identified change factors – weak signals, trends, megatrends, and Black Swans – to analyze the different driving forces that potentially can affect the future of the Estonian school.

A few examples of the two groups highlighted during the workshop: *Weak signals* – political rhetoric and promises from the national elections, discussions over bilingual schools in Eastern Estonia where a large part of the inhabitants speak Russian besides the official state language Estonian. Hobby centers offer extracurricular education to the students in their free time and act as a support network for the families (various options for students from sports to cultural activities). Discussions on making secondary education compulsory for everyone were also pinpointed as one of the weak signals. Skype classrooms and students with a refugee background were also seen as weak signals in the field.

One of the example *trends* identifiable in the Estonian school is that lessons on specific subjects are increasingly being organized in a museum of that area of interest. Other trends were the increasing use of smart devices by everyone in the society, increasing interest in entrepreneurship studies, and nature-based learning. One of the less positive trends is the growing number of students with special educational needs (HEV) in Estonian schools.

Megatrends – the teachers identified artificial intelligence as one of the key megatrends that can potentially affect how learning and teaching will look by 2040. Also, project-based teaching and learning, the aging teacher population, and students' increasing interest in robotics were highlighted as trends.

Black Swans – the most surprising change factors with immense impact were identified as teachers with refugee backgrounds in the Estonian school, teacher-volunteers, and real-time studying in the basic school.



Figure 5 - Change factors as identified by group II (scanned worksheet in Estonian from the workshop)²⁰

Some examples of the detected change factors arose from the recent changes and phenomena in the Estonian educational landscape. E.g., the election promises made by the political parties as weak signals, school shootings as a Black Swan, and the megatrend of females occupying the teaching profession in the modern schools.

According to the recent research by OECD (2019), the share of females working in primary education in Estonia has consistently been over 90% between 2010 and 2017, with the OECD average percentage being 82% of OECD countries in 2014. Furthermore, other topics that have kicked off from the discussions in the society have dealt with asylum seekers as teachers marked as one of the Black Swans by the second group.

These groupwork-based change factors helped the teachers to draft their group's preferred, unpreferred and probable images of the future. The images of the most desirable future of the education system in Estonia in 2040 depict two different views, combining the inclusiveness and IT factor with excellence in teaching and learning by utilizing different methods. The shortness of images of the future and visions was due to the workshop's lack of time.

²⁰ In English: Future Study. Trends: lessons in museum, smart devices, entrepreneurship studies, nature based-learning, students with special educational needs (HEV); Weak signals: hobby centers, secondary education for everyone, different educational paths, Skype-classrooms, refugee-students; Megatrends: artificial intelligence, project-based teaching and learning, ageing teacher population, robotics; Black Swans: refugee-teachers, teacher-volunteers, real-time studying in basic school.

5.3 The preferred images of the future for the Estonian school in 2040

The preferred images highlighted the positive change factors identified with the group and are based on the teachers' hopes, representing the future they wish to see in 2040.

5.3.1 Involvement in policy-making ensures happier teachers and happier children

Teachers are actively included in educational policymaking. An educational system that really “works” so that supporting specialists and teachers would work in schools. Services could be delegated to other stakeholders so that teaching staff would not be overburdened by administrative and bureaucratic tasks that do not involve classroom teaching. Possibilities and opportunities are seen before barriers (salaries and financial funding).

The teachers are perceived as role models – they teach by example. Students have better analytical skills than they have now. Parents are cooperating with teaching staff and supporting the educational process. The schools will have the possibility to purchase digital teaching and learning materials based on their needs. In contrast, the teachers would have the necessary skills and know-how to use digital materials purposefully. There are opportunities for organizing outdoor education and getting to know how the real world operates as part of the educational plans (including transportation and other resources needed for the study visits). Human-centered small-scale schools have been preserved and are thriving as educational communities.

5.3.2 IT helps learning and teaching

Information Technology has been utilized in every sector of human life. European Union and Estonian state funding will remain and increase in education. Education belongs to everyone, no matter how old they are. Life-long learning is highly valued, and people participate actively in learning activities. Technological advances are being incorporated in life-long learning as the digital methods make it possible to learn for everyone without leaving their home. Modern technologies are being used in schools, and everyone has their own IT device for personalized learning.

5.4 The unpreferred images of the future for the Estonian school in 2040

Undesirable images of the future depict the lack of resources and its impact on the Estonian school system in 2040. The change factors that emerged from the questionnaire results are also recognizable in these images - especially those from the Fear category, e.g., lack of support specialists in schools.

5.4.1 Lack of resources affects everything

Educational policy decision-makers do not directly connect with educational sciences (do not have an educational background). They do not have insight into how the education system works. There are not enough support specialists (e.g., special education teachers, school psychologists, speech therapists) for every school to not offer relevant help to their students with special needs.

The future is seen as based on the budget period: not enough futures thinking nor futures perspective on how education is funded. The teacher profession (including support specialists) is of “low status” and very unpopular among the communities. Students have inadequately high or low self-esteem meaning that they often overestimate and underestimate how skillful they are and what kind of behavior is allowed for students. The parents are unwilling and unable to recognize the problems their children have in the school environment. Everything connected to the digitalization of education and schools becomes more and more critical.

Human-to-human interaction disappears – we are talking with robots and holograms instead of real humans in the school setting. Reforms to unite different schools and closing others without taking into consideration the needs of the local population.

5.4.2 Smart devices as evil dictators

Students, teachers, and parents – almost everyone in society – are addicted to smart technology such as smartphones or tablets. State funding to schools and pedagogical improvements has decreased, no European Union funding for innovative educational solutions or improving school infrastructure. Lack of teachers at school is being combined with the lack of skills of the people working in schools and society in general.

Even though digitalization has brought along new methods and new tools for teaching and learning, no one has been updating the equipment and basic IT programs – this affects the quality of teaching and learning significantly. No real benefit is seen of using innovative digital technologies due to the lack of resources for keeping the technologies up to date.

5.5 The probable images of the future for the Estonian school in 2040

Probable images of the future combine the elements that appeared the most “realistic,” as expressed by the teachers during the workshop. The most probable futures of the Estonian school system by 2040 picture the negative and positive elements that teachers were foreseen for the future. The basis for the images arises from the anticipatory assumptions that might form an image of the future that can be described as “business-as-usual.”

5.5.1 Reality check needed – the current resources are not enough

Lack of support specialists in education continues in this image. Educational policies are created by narrow-minded individuals who lack a holistic perspective and do not have problem-solving skills. Planning in the educational institutes continues with the “business-as-usual” mindset – with a lack of long-term view in how the state funds schools. The role and responsibility of parents have increased. In addition, self-reflection and analytical skills among the students have improved. Digital learning and teaching methods and equipment have grown in importance. However, the traditional means of studying and teaching have not disappeared but exist in parallel, and new techniques and ways of teaching/learning have been created.

5.5.2 IT solutions influence the future more than expected

The importance of IT in education and the school environment has increased dramatically. Preventive measures are being used so that children and adults alike avoid becoming addicted to intelligent technologies. The Estonian state's funding remained as it is, yet the European Union funding has decreased. Talented and active people are continuously migrating to other countries, resulting in a “brain drain.” Lifelong learning has grown its importance, and more people are updating their skills and education. Technological equipment is updated based on the needs of the schools.

5.6 Two visions for the Estonian school in 2040

The two visions of the Estonian education system in 2040 depict the preferred future with the probable one. Sustainability and participatory approaches in educational processes are highlighted and emerge as important themes for the teachers. From the questionnaire responses, the assumptions of preferred futures and the next steps might have affected the outcome of the visioning process as the participants had already created the probable image of the future individually before the group work.

5.6.1 Sustainable and participatory school 2040

Every individual in the school environment - whether a student, teacher, principal, or parent - is being valued and is a conscious actor in the learning and teaching processes, and not just acting as passive participants told what to do by others. Action is achieved by creating and implementing sustainable and future-oriented activities in the school environment. Individual responsibility is enhanced by a common understanding of the ground rules. The schools are student-centered, and activities are based on the needs of the students.

Sustainability is endorsed in school activities - including ecological, economic, cultural, and social sustainability. Nature-based small schools flourish and get the financing that is needed. The teachers are content with their professional advancements and payroll. The possibilities to influence their work and professional training are vast—teachers as professionals are valued by society, and their opinions regarding education and educational policymaking matter. The newfound societal status and appreciation of the teachers help educate successful young individuals with clear goals in life - who are also resilient in the face of change since they have learned to utilize futures studies as part of their learnings.

5.6.2 Projects and lifelong learning are here to stay!

The Estonian school consists of people who have a lifelong learning perspective, critical thinking skills, honest, entrepreneurial, and cooperative. The students are curious to learn and implement their skills in projects that impact real-life - cooperation with local

businesses and communities is an everyday practice in the classroom. Everyone has access to learn new skills no matter their age or location - the digital classroom makes learning and education less dependent on space. Entrepreneurial studies have also changed the nature of the teachers - their role has changed from instructive authorities to mentors who are by the side during learning processes. Project-based learning enhances critical thinking skills - students learn to evaluate information and causal relationships of their decisions.

Visions and images of the future are valuable insights into how some of the educational professionals in Estonia envision the state of the education system in 2040. As mentioned before, many of the elements and change factors included emerge from the “used futures” - the narratives that people share widely in their communities. Nevertheless, some narratives also arise directly from the closed circle of similarly minded professionals working in schools, directly connecting to reality - with its positive and negative phenomenon.

5.7 Comparison of the visions (local, national, and global level)

To understand whether the visions created by the two groups have anything in common with the two visions explored below as secondary data.

5.7.1 The OECD Future of Education and Skills 2030 project

The Organisation for Economic Co-operation and Development (OECD) Learning Framework has been co-created for the OECD Future of Education and Skills 2030 project by a vast group of stakeholders, including government representatives worldwide and the experts and youth from the educational field. The project aims to develop shared goals and common ways of learning and teaching across the globe, especially by developing a shared understanding of the knowledge, skills, attitudes, and values needed by the students in the 21st century.

The project has been divided into two phases. The first phase focuses on redesigning the curriculum and developing a conceptual framework for learning 2030. The second phase focuses on the implementation of curriculum and creating a conceptual framework for teaching 2030. As the framework for teaching 2030 is under development in spring 2021, the focus will be on the Learning Framework 2030.

The Learning Framework 2030 and the accompanying vision of the Education 2030, in general, offer foundational principles and ideas for the education systems of the future. The main goal of the Learning framework is to guide countries to adjust their education systems to become more resilient in the face of change and respond to the environmental, economic, and social challenges of the 21st century. Thus, the reason for incorporating the OECD Learning Framework 2030 with its accompanying vision is to compare the main trends that educational professionals and policymakers have globally identified with what the teachers in Estonia have highlighted in their futures workshop. Whether there are or are not similarities will be further addressed in the discussion part of this thesis.

The vision for Education 2030 highlights the visionary commitment to individually develop each student for their roles in sustainably shaping the planet's future. An array of 21st-century skills are also presented in the vision. The 21st-century skills have been accompanied by a notion that children should grow up to become responsible citizens and empowered to solve the complex environmental, economic, and social issues that the OECD has foreseen.

Table 10 – OECD Learning Framework 2030’s accompanying vision

The vision - Education 2030

“We are committed to helping every learner develop as a whole person, fulfil his or her potential and help shape a shared future built on the well-being of individuals, communities and the planet.

Children entering the school in 2018 will need to abandon the notion that resources are limitless and are there to be exploited; they will need to value common prosperity, sustainability, and well-being. They will need to be responsible and empowered, placing collaboration above division, and sustainability above short-term gain.

In the face of an increasingly volatile, uncertain, complex, and ambiguous world, education can make the difference as to whether people embrace the challenges they are confronted with or whether they are defeated by them. And in an era characterized by a new explosion of scientific knowledge and a growing array of complex societal problems, it is appropriate that curricula should continue to evolve, perhaps in a radical way.” - (OECD 2018b, 3).

This framework will influence how countries view educational futures due to the importance of the OECD in the global scope. The project on which this framework has been based aims to answer two questions that seek answers to what kind of competencies, attitudes, and skills today's youngsters need in and by 2030 and possibly even beyond?

The framework provides the global perspective to what kind of competencies and skills have been projected to contribute to solving the environmental (*climate change and depletion of our natural resources*), economic (*uncertainty and exposure to economic risk*), and social (*population growth, migration, urbanization, increasing diversity*) challenges that societies are and have been facing as the world is rapidly changing (OECD 2018b, 3). Students are viewed as change agents, whereas to act, they will need disciplinary, epistemic, and procedural knowledge on how to succeed in life and to combat the challenges the rapidly changing world throws at them. As such, education cannot be viewed, as stated in the Position Paper (2018), only to prepare the youth for employment solely, but to give the students the skills they require to “become active, responsible and engaged citizens” (OECD 2018b, 4).

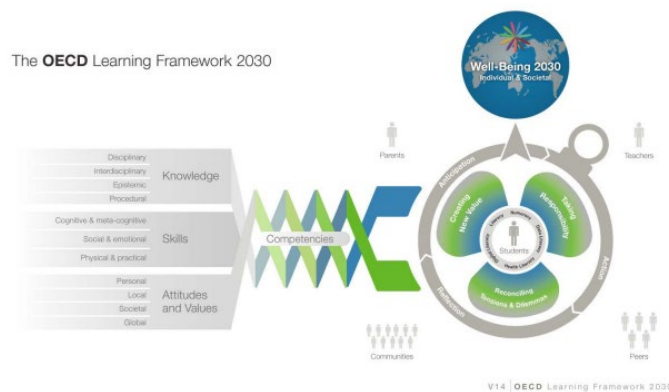


Figure 6 - OECD Learning Framework 2030 illustrated (OECD 2018b, 4)

The vision can only become a reality if the education systems adapt to the paradigm change with supportive actors such as teachers, parents, principals, and surrounding communities. Besides supporting the students, they also need to become learners themselves.

How to prepare for 2030?

The framework highlights vital aspects that need to be developed, e.g., creative thinking and innovation. The world will need new ways of doing business, creating products and services, and new social models – to adapt to the turbulent technological and scientific change. The importance of co-creating and collaboration is also on the rise, meaning that sharing one’s skills and knowledge with others can help to innovate and create something new collectively. The following set of what needs to be developed for the decade of 2020s includes attitudes and values that students will need in order to succeed, different skills as well as different types of knowledge:

- Attitude and values: *curiosity, self-efficacy, adaptability, responsibility, open mindset, growth mindset.*
- Skills: *cognitive & metacognitive, social & emotional, physical & practical): critical thinking, creative thinking, problem-solving, collaboration, empathy, self-control, manual dexterity.*
- Knowledge (disciplinary, interdisciplinary, practical): *STEM, math, history, science, art, sustainable development, global citizenship, know-how.* (OECD 2019b, 2019c & 2019d).

To conclude, the framework explains the critical demands for education systems – the skills, values, attitudes, and knowledge that need to be cultivated across the globe by 2030. It provides an insight of what is the direction toward which the education systems should develop and improve. One of the topical concept notes included in the OECD Learning Framework 2030 states: “approaches to developing attitudes and values often draw on cultural and societal traditions while addressing global challenges” (OECD 2019b, 2).

It is evident that even though the global approach gives the general guidelines and directions to develop national approaches towards to, the local cultural and societal influence to attitudes and values remains. In the next sub-chapter, the Estonian national strategic approach is examined to discover the similarities and differences between the global and national perspectives.

5.7.2 Estonian Education and Research Strategy - Smart and Active Estonia 2021-2035

The most recent update for the Education and Research Strategy for Estonia was published in April 2019. It was a summary developed by three working groups during a process lasting for eight months. The working groups were The Expert Group on Values and Responsibility, the Expert Group on Welfare and Cohesion, and the Expert Group on Competitiveness.

It should be kept in mind that “the vision documents prepared by the expert groups serve as the input used as the basis for setting final goals for the policy fields and agreeing on the course of action by the working groups that also involve different stakeholders. Policy field strategies were completed in 2020” (Valk 2019, 4).

The Smart and Active Estonia 2035 is the strategy/vision created by the Ministry of Education and Research. Thus, it acts as an official strategy for imagining the future of Estonian schools and research. The summarizing document of this strategy and vision have been integrated into this research to show the official outlook on the preferable future of Estonian on the national policy level. Another aim is to explore how it stands against the global goals and visions of the future and against what the educational professionals on the grassroots level think about the future of the Estonian school environment in the long run.

The strategy paper also explores the global trends that will affect the Estonian education system. Some examples of the global trends mentioned include quickening technological development and automatization, rapid changes in the global economy, a mobile workforce, expanding e-learning, and internationalizing the education and labor market. These trends will undoubtedly change how countries are used to doing business, educating their citizens, and collaborating with others.

The Vision of Smart and Active Estonia 2035 (see the listing of the goals and sub-goals included in the strategy document in Appendix 1) pinpoints three specific primary aspects – societal wellbeing, the importance of the national language and culture, and competitive economy.

Table 11 - The vision of Smart and Active Estonia 2035

<p><i>Smart and Active Estonia 2035</i></p> <ol style="list-style-type: none"> 1. <i>“The Welfare of the Estonian society and people is growing. The basis of growth is the self-realization of every person – the opportunity to develop and use his or her abilities and to be the master of his or her own life. In a society, commonality is created by shared values and equality of opportunities for different people and groups, and the freedom to choose and take responsibility both as a person and as a state. Welfare is not based on increasing consumption but on the way of life in line with the natural environment and the balanced and meaningful application of technology.</i> 2. <i>The Estonian language and culture are also of value in an increasingly multicultural environment. The Estonian language is sustainable, developing, and reputable, while Estonian residents learn and know foreign languages. Culture is one of the most important cornerstones, facilitators, and binders of self-realization, commonality, and freedom – for us, the Estonian culture and language with shared core values. It gives our activity a longer course and a goal as well as a base we can rely on in a rapidly changing world.</i> 3. <i>The competitiveness of the Estonian economy is increasing thanks to the economic development that is gaining momentum from R&D and innovation, widespread adoption of the latest technology in all sectors, increase in education and innovativeness, better application of skills and knowledge, smart and prudent migration policies, and sustainable use of Estonia’s special characteristics/unique natural environment.” (Valk 2019, 5.)</i>

Each of these goals has been elaborated upon in the strategy document with five accompanying goals - each of the goals describes specifics needed for future teaching and learning. For example, the strategy document is noting that the learning in the future should be flexible and individual, yet collaborative at the same time – implying that Estonian children should get their education based on their strengths, talents, and needs while practicing them in collaborative projects. Their skills would then also be appreciated in their local communities when project-based learning incorporates other learning

and teaching opportunities such as museums, other organizations, experts, and local governments next to the traditional classroom-based teaching.

The role of the Estonian language has been emphasized as the primary language used for communicating and teaching/learning with the hope of strengthening the status of the Estonian language in the communities. The so-called 21st-century skills have been included under one of the supporting goals of the Smart and Active Estonia 2035-vision. For example, social skills, entrepreneurial skills, adaptation skills, and critical thinking skills have all been mentioned. Where can all these skills be learned and practiced, one might be tempted to ask? The vision document provides an answer to this question. The vision document aims to add more collaborative learning and problem-based learning where teachers are more guiding than providing factual information.

Furthermore, the teachers will increasingly act as value educators, leading by their example. People with different expertise and know-how can teach students new skills and values, changing the traditional approach of requiring teachers to have certified pedagogical expertise. (Valk 2019.)

Research and development have also gotten a goal under this vision as keeping an edge in research and innovation as a small nation-state is vital for economic success in the global market. Thus, the vision foreseen added national funding to higher education facilities and research objectives. All the outlined aspects and goals of the vision support the education system indicated by the OECD Learning Framework 2030 – there are many overlapping elements. The focus on creating learning environments that support the learners to become more flexible, reflective, and self-directed toward the rapidly changing world is evident in both.

The national vision is, of course, more defined in the sense of what is vital to the nation in question. In the Estonian case, preserving the culture and language is vitally important for the tiny nation. Thus, all the development and renewal will occur from this perspective while combining all the other elements from the global framework.

5.7.3 Comparison of the visions

Similarities:

The comparison reveals that the overall vision in the different levels is quite similar – with the components of individual learning/teaching, sustainability, and the relevant skill-set for the 21st-century being present. In some instances, the similarities of the concepts

are rather loose with generalized groupings based on common themes, e.g., connecting problem-solving skills with resilience to change and R&D and better use of knowledge and skills. Even though these might not match at first glance, they share some common elements that led the researcher to count them as problem-solving skills.

Local vs. global

Group 1's vision and the OECD vision for education 2030 share a similar focus as both visions emphasize a future with the elements of individualization, planetary concerns/sustainability, problem-solving skills, and shared well-being. Even though the elements might have been described differently and matched loosely based on the general connection between the terms, they do share similar values. For example, the OECD's vision states that "*we are committed to helping every learner develop as a whole person, fulfil his or her potential and help shape a shared future built on the wellbeing of individuals, communities and the planet*" (OECD 2018b, 3). This one sentence conveys meaning and shared elements with the first group's vision. Group 1's vision highlights the role of the individual as a conscious actor in the learning processes and the notion that schools are student-centered. Sustainability was also a common element, with the OECD's vision stressing that students need to value sustainability, and Group 1 highlighting the need to consider all aspects of sustainability in school activities.

In Group 2's vision, the only relatively common element was problem-solving skills. The vision by Group 2 emphasized lifelong learning, curiosity, critical thinking, and projects based on real-life cases. These elements can be generalized to fit into the "problem-solving skills" category. In the OECD's vision, problem-solving skills emerge as a notion that "*education can make a difference as to whether people embrace the challenges they are confronted with or whether they are defeated by them*" (OECD 2018b, 3). The "embracing the challenges" conveys a similar meaning to problem-solving skills in different terms. The aim in those two is similar, to solve problems or challenges.

Local vs. national

Group one's vision and the Smart and Active Estonia 2035 vision share a similar focus as both visions emphasize a future with the elements of individualization, planetary concerns/sustainability, problem-solving skills, and shared well-being.

Individualization is expressed in the national level vision as equal opportunities for self-realization²¹. In contrast, in the local level vision from Group 1, individualization was approached from the perspective of worthiness²² and value by society. At the same time, the activity and responsibility of the individual and student-centered learning and teaching were also emphasized. Planetary concerns and sustainability are expressed in the national vision as a way of living that is in tune with the natural environment surrounding us. In the vision of Group 1, the sustainability aspect was expressed by including the four pillars (environmental, economic, cultural, and social) of sustainability in school activities and by utilizing nature-based learning. Nature-based learning can be viewed as a method for living in tune with the natural environment.

Common well-being has been highlighted in the national vision by noting that collaboration and commonality in the society are being created by shared values, equal opportunities, and freedom to choose and take responsibility for one's choices in life. On the other hand, the local level vision perceived the common well-being as establishing common ground rules that guard the individual responsibility. The need for structure to ensure common well-being can surface from common ground rules.

Problem-solving skills were addressed as learning based on the needs of the students and future-oriented activities in the local level vision. The youth was seen as resilient to change and solving problems that life throws at them with ease. On the national level, problem-solving skills were perceived as innovation and R&D, as well as better application of skills and knowledge. This might cause dispute, but they have been grouped due to the generalized similarity of the elements.

The only common element between the vision created by Group 2 and the Smart and Active Estonia 2035 was problem-solving skills. While the national vision emphasizes the innovation and better use of knowledge/skills, the local level vision highlights critical thinking skills and project-based learning with real-life cases. Even though the concepts were not precise matches, they do convey similar meanings as problem-solving skills do.

²¹ *"The basis of growth is the self-realization of every person – the opportunity to develop and use his or her abilities and to be the master of his or her own life"*, Smart and Active Estonia 2035 vision

²² *"every individual in the school environment is valued"*, Sustainable and participatory school 2040 vision

Differences:

Due to the nature of these visions – local vs. national and global – specific differences emerge when comparing. These differences are mostly connected to the different perspectives utilized during the visioning process.

Local vs. global

The differing perspective in the local level visions can be explained by the deeper focus on the classroom-based practical working and not focusing on the bigger picture. For example, notions of the complexity of the future have not been discussed in visions drafted by workshop participants, even though Group 1 has mentioned resilience to change as a critical strength of the students achieved via futures studies' methods. Entrepreneurship is also something that the global vision does not stress, even though the vision mentions prosperity in placing sustainability over short-term gains. The global vision focuses on the broad picture. In contrast, the local vision of Group 2 has taken a more detailed perspective into what students could be like in the future, with entrepreneurship skills being something society values.

Also, sustainability and planetary concerns have not been highlighted in Group 2. In contrast, the OECD's vision strongly includes sustainability and planetary well-being, emphasizing the shared understanding of natural resources not to be exploited. Group 2's vision also lacks in considering the following elements under discussion: common well-being and individualization in learning and overall approaches to life. In the local vision, the focus is more on the skills and approaches students need to succeed in life. However, it fails to inform whether these skills have been learned in a traditional classroom setting or if every student gets individually coached by their teacher.

Local vs. national

When comparing the local vision created by Group 1 with the Smart and Active Estonia 2035, similar differences exist discussed in the section finding differences between local and global visions. The mention that the future is complex and uncertain is missing from the local level visions as the focus is on the key actors (students, teachers, parents)

and not that much on society as a whole. The broader perspective is present in both national and global visions as it should be, considering that those visions have different target audiences and different purposes. Therefore, the mention of the future being complex and uncertain has been justified in the national level vision. Similarly, Group 2's vision lacks the broader approach and fails to consider student-centered, individualized learning, sustainability and planetary concerns, and common well-being. However, it expresses the specific vision of what the students should be like and what skills they should portray in 2040 to succeed in life.

Table 12 - Comparison of the visions (global, national, and local level)

Common elements	Group 1 Vision: Sustainable and participatory school 2040	Group 2 Vision: Projects and lifelong learning are here to stay!	OEDC vision for 2030 education	Estonian vision 2035
<i>Individualization</i>	<i>yes</i>	<i>no</i>	<i>yes</i>	<i>yes</i>
<i>Planetary concerns and sustainability</i>	<i>yes</i>	<i>no</i>	<i>yes</i>	<i>yes</i>
<i>Common well-being</i>	<i>yes</i>	<i>no</i>	<i>yes</i>	<i>yes</i>
<i>Problem-solving skills</i>	<i>yes</i>	<i>yes</i>	<i>yes</i>	<i>yes</i>
<i>Entrepreneurship</i>	<i>yes</i>	<i>yes</i>	<i>no</i>	<i>no</i>
<i>Complex and uncertain future</i>	<i>no</i>	<i>no</i>	<i>yes</i>	<i>yes</i>

The global and national level visions have much common ground. It can be assumed that these two have been interrelated regarding the base of the professionals tasked with the visioning process on national and international levels. The results indicate a need for more collaborative and inclusive visioning processes. A vision should include a roadmap for the practitioners with concrete steps. Also, an adaptation process in a changing environment needs a deeper understanding of the classroom situation from a teacher's perspective. By exploring the recent experiences, guiding the schools to adapt to new ways of doing and thinking can be more manageable. Comparing the local level visions with the OECD's vision for education in 2030 and the Estonian Strategy for 2035, one can

identify common keywords and elements from all four of them, suggesting that the Estonian teachers have consumed professional content and were knowledgeable regarding the trends and new approaches in learning and teaching.

The local level visions were focused more on a specific perspective on learning than taking a more holistic perspective regarding the future of education in Estonia. Based on the comparison, one can conclude that all levels of vision regarding the future of education envision a better world where students will be content and succeed in life. The overall objective is the same in all four of them.

6 DISCUSSION

This chapter aims to connect the findings from the research with the theoretical framework and answer the research questions stated in the introduction. As there were three research questions, each of them is covered in a separate section to make the results more feasible to find.

6.1 Summary of the key results

The main objective of this thesis was to explore the images of the Estonian teachers' future and find out whether these images correlate to the visions proposed by the OECD and the Estonian Ministry of Education.

6.1.1 Research question 1: How do the images of the future and visions created by the teachers compare to the global and national visions for the education system?

The two groups created two local visions that differ by their focal points. As indicated in the analysis, the first group's vision was closer to the national and global visions for the future of the school and education in general. The main commonalities were based on the concepts of well-being, sustainability, and individualization of learning and teaching. The second local vision did not include these at all but instead highlighted project-based learning and entrepreneurial attitude. The focal points of the two local visions differ.

The first group concentrated on the sustainability and well-being of everyone - a community-based approach. In contrast, the second group highlighted problem-solving and entrepreneurial skills as the core characteristic of the vision, a more pragmatic and success-centered approach. Though the national and global level visions are also based on the more holistic perspective, and thus, there were common elements also with the vision created by Group 1.

Nevertheless, all visions portray a somewhat similar future on their respective levels. In this future, every individual student can choose what to study based on their interests and strengths to educate them to be responsible citizens of the Earth, connect with other humans, and have a proactive mindset for problem-solving lifelong learning. All of the four visions on these three levels hope to see the future generations succeed and live a meaningful life based on the foundation they had acquired from their education. To conclude, even though the aspects from the national level vision were not always evident in

the local visions, some similar concepts arose from the questionnaire. For example, the “seamless” education system (the first of the main goals under the Vision of Smart and Active Estonia 2035) was mirrored in response by one of the teachers.

“I believe that by 2040 we will not have a traditional classroom setting anymore (desks behind each other), and the subjects are integrated – no specific subject teaching. Technology has a bigger role in learning processes than it has today.” This answer was under the “will” category and represented a “raw/unprepared” insight into this teacher’s futures thinking. Other examples of similarities exist, emphasizing how visions and plans can affect how we think about the future and what we believe is probable or possible.

6.1.2 Research question 2: How well do the teachers recognize the sources for their anticipatory assumptions?

The “hidden assumptions” that the educational professionals most often have a basis for their initial mental images of the future spring from the following sources are identified. The most common sources for the hidden assumptions arise from 1) the practical experiences gained from the school environment, 2) exposure to new teaching methods, 3) current educational research and other information consumed as part of their professional activities and leisure time, and 4) advances in technology.

Other origins for the hidden assumptions could be rooted in everyday communications and media coverage on specific topics, such as portraying issues like lack of support specialists in the schools (Vapper 2018) and lack of authority in the classroom in uncertainty (Juurak 2018). Media can create mental models and assumptions on how things can look like when specific development paths continue. The medium of these articles is essential, as the Estonian professional newspaper for teachers, “Õpetajate Leht,” has been publishing articles that highlight these societal bottlenecks. Other sources for the anticipatory assumptions can arise from the social surroundings and interactions with other people.

Also, the increasing use of smart devices in everyday communications has been highlighted as a potential source for hidden assumptions.

The primary sources for the anticipatory assumptions highlight the approach Rubin and Linturi (2004) explored regarding the birth mechanism of the image of the future. The way people tend to imagine the future is often a combination of the information ac-

quired from the surrounding environment and societal relations. The study of seven people also proves the same – through self-reflection, it has been possible to identify some of the sources of anticipation. Even though one can only admit that “we have just scratched the surface” as the unconscious layers of assumptions need more time and deeper digging than possible during the workshop.

6.1.3 Research question 3: What kind of skills and approaches do Estonian teachers identify as necessary for the future society?

The research material provided an insight into the skills and approaches that the Estonian teachers foresee to rise in the educational field. The future society would benefit from the following skills and approaches: critical thinking skills, curiosity, lifelong learning, entrepreneurial mindset, individualized learning and teaching, active learning methods, sustainability and understanding of planetary concerns, project-based learning, and nature-based learning. Some of the methods aim to teach the students the values and keep the students connected to the real world, as one of the teachers highlighted in the questionnaire. They are worried students are losing touch with reality with the increasing role of smart device use in modern society.

6.2 Limitations of the research and proposal for further exploration

The study group was small yet, reasonably sized for small group work. This research explores how some of the Estonian teachers think about the future and the sources of their anticipatory assumptions. However, the results cannot be projected to the Estonian teachers' population as a whole as the images of the future are highly subjective. The findings should not be included in the making of any solid conclusions. A limitation of the research was also based on the research material – the live discussions were not recorded. The analysis was based on the written questionnaire papers and the group work posters, and researchers' notes.

More research into how teachers in Estonia imagine their field and the school of the future should be conducted to help society understand the needs of the learners, teachers, employers, and the schools. These visions, in turn, can be utilized in future policymaking to ensure the right direction of development and the amount of change management action

needed to realize the visions on standard terms. Especially important when envisioning the local and national level visions are to include the teachers – *the practitioners* – and the students in inclusive policymaking processes to ensure everyone’s perspectives are accounted for in the future vision.

7 CONCLUSION

Responses from teacher-practitioners of a futures-related workshop organized in Tallinn, Estonia, were mirroring societal issues the teachers and the educational sector have been going through in Estonia. Will enough young people decide to become a teacher in the coming decades or will most teachers come from the greying population? These feelings of uncertainty - fears and hopes regarding the future - are human.

As explored at the beginning of this study, even though animals can also anticipate, humans can add different layers to this anticipatory system and, as such, re-construct the experiences based on the stimuli to expectation dimension that do not solely base on the “learned” experiences but on the experiences of what we anticipate to happen. As such, anticipatory expectations with a negative connotation - worries and fears - as very human.

The worries regarding smart device use, increasing usage of the English language in society, decreasing authority and conflicts regarding teacher-student rights and responsibilities in the classroom, and the quality of communication cause some participating teachers to fear the future. On the one hand, some teachers believed that they do not have any say on how the future would turn out. On the other hand, some respondents believed that people create the future, themselves included, displaying futures agency.

All seven respondents believed that technology would continue to impact their work and the school environment significantly. The traditional classroom-based teaching and learning morphing into digital, real-time teaching and learning need new kinds of competencies from both the teachers and the students. It is important to note that the respondents appreciate the community values and collaborative ways of working.

When asked about the next steps in making their preferred future a reality, a teacher responded with the three concrete steps: 1) inclusive processes, 2) considering the potential needs of the future, and 3) dialogue. The preferred future of this respondent was a society where the teachers and the students were valued, and the learning processes are future-oriented. Her concrete steps illustrate that the future cannot be made in isolation, but to make a certain future a reality, we need collaboration, inclusive processes, and a dialogue. That also means that the relevance of self-reflection, critical skills, and futures literacy will be increasing in the following decades to come.

The current challenges that education systems across the globe face due to the COVID-19 pandemic have been acting as an accelerator to implementing several of the

relatively new teaching skills to practice – for example, the digital and self-directing learning skills have been put to the test during 2020 and 2021.

The schools in Estonia (and elsewhere in the world) have been thrown into the unknown regarding homeschooling, digital tools, and Skype classrooms. The so-called Skype classrooms were among the change factors identified by the teachers in the spring of 2019 during the workshop. The fact that merely one year later, all of the Estonian schools had to jump into digital teaching and utilize the non-traditional means of teaching highlights the real need behind thinking about different images of the future. One needs to be prepared for what might happen in the future (on the conceptual level) and be open to different alternatives. To be futures literate, one must be interested in asking what the future is.

Also, one needs to be curious and consciously think about the anticipatory assumptions, systematic challenges, and causal relationships – to be interested in learning about the bigger picture and oneself, as reflection is vital for understanding the relationships behind different images of the future. The dimensions of futures consciousness (Ahvenharju, Minkkinen & Lalot 2018) include areas for the teachers to consider when self-reflecting about the future – thinking about whether they need to develop their futures agency, time perspective, or systems perception, for example.

Futures literacy as a skill can help the teachers embrace the uncertainty regarding the changing world. Pouru & Wilenius (2020) developed the futures literacy concept further by describing this new 21st-century skill with a set of capacities and skills. The active skills presented in their framework reflect on the other 21st-century skillsets, which emphasize creativity, complexity, empathy, and problem-solving proactively. During the study, the teachers managed to uncover some of their hidden assumptions, which hopefully directed them to become more interested in the future and address the future differently with their students.

Futures Studies help the teachers develop their students' critical thinking and guide them to become active future agents. One of the fundamental notions from the questionnaire was that the students would need this kind of approach to understand why they are attending school and why getting a good education is essential for their future life. Also, the teachers themselves appreciated the holistic and systematic perspective of Futures Studies – the methods support collaborative thinking and inclusive action that can support every aspect of school life.

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APPENDICES

Appendix 1. The Vision of Smart and Active Estonia 2035

This appendix highlights the key aspects and goals from the summarized vision document.

The main aspects of the vision have been outlined:

1. The Welfare of the Estonian society and people is growing

The basis of the growth is the self-realization of every person – the opportunity to develop and use his or her abilities and to be the master of his or her own life. In a society, commonality is created by shared values and equality of opportunities for different people and groups, and the freedom to choose and take responsibility both as a person and as a state. Welfare is not based on increasing consumption, but on the way of life in line with the natural environment and the balanced and meaningful application of technology.

2. The Estonian language and culture are increasingly valued in the environment that is more multicultural. This aspect supports the increased use of Estonian language (the state language) in bilingual schools and kindergartens.

3. The competitiveness of the Estonian economy is increasing thanks to the economic development that is gaining momentum from R&D and innovation, wide-spread adoption of the latest technology in all sectors, increase in education and innovativeness, better application of skills and knowledge, smart policies of migration, and sustainable use of Estonia's unique characteristics/unique natural environment (Valk 2019, 5). The above-mentioned aspects of the vision are supported by the five main goals:

1. A “seamless” education system that supports individual choices, i.e., smooth transitions:
 - Flexible individual learning and a community approach to education
 - More attention to early awareness of learning difficulties and other special needs
 - (Mandatory) secondary education that integrates vocational and general education

- Vocational/professional education is not understood as a separate education sector but as a part of learning at different levels of education and learning environments; also, vocational development centers - competence centers established.

2. Valuing the Estonian culture and language and cohesive society:

- Estonian residents mainly use Estonian as the language of communication and study, administration, information, and work
- The transition of the single Estonian school/kindergarten reduces national segregation and increases the future competitiveness of children
- In addition to the Estonian language-school, (paid) English -language and other language schools based on international curricula operate in major centers.

3. New skills and better use of existing skills:

- Learning focuses more on the acquisition of skills and on the willingness and ability to apply (independently) what has been learned
- The future education system must “produce” technologically literate people
- Adaptation and self-management capability, social skills, critical thinking skills and creativity, entrepreneurial attitude and perseverance
- Estonia manages labor resources wisely.

4. Learning as collaboration, and the teacher as the guiding force:

- By 2035, national curricula for pre-school and general education will be redesigned
- More collaborative and problem-based learning methods
- The teacher’s profession is becoming more diverse
- The teacher is also increasingly a value educator
- There are more people in teacher profession that do not have pedagogical education
- One of the most important goals of collaborative learning, while taking individual differences into consideration, is to increase the teachers’ and learners’ welfare
- In a technology-rich and individualized learning environment, the teacher’s work becomes data-based.

5. Research-based mindsets and leading universities:

- Consolidation of higher education continues,
- The inclusion of private money and the learner's contribution for the higher education studies are increased
- In the future, specialty choices will be directed by providing better information on demand for skills and labor market development and by supporting learners evaluating their skills
- Public expenditure.

Appendix 2. Agenda and invitation to the Participatory workshop

TALLINNA ÜLIKOOL
KOOLITUS

TARGA MUUTUSE PARTNER



KOOLITAJA
Kristiina Paju

ÕPETAJATE TULEVIKU-LUGEMISOSKUS JA TULEVIKU-ORIENTATSIOON IGAPÄEVASES ÕPETAJATÖÖS

SIHTGRUPP:

Põhikooli esimese ja teise astme klassi- ja aineõpetajad ning haridusasutuste juhid.

KOOLITUSE EESMÄRK:

Tutvuda tuleviku-uuringute meetoditega teoreetilisest ja praktilisest vaatenurgast; luua tulevikupilte (futures images) Eesti haridussüsteemist aastal 2040.

KOOLITUSE ÕPIVÄLJUNDID:

- Tuleviku-töötoas osaleja mõistab tuleviku-uuringute tähtsust kooliruumis;
- teab tuleviku-uuringutes kasutatavaid meetodeid;
- oskab kasutada loovat ja kriitilist mõtlemist erinevate alternatiivsete tulevikupiltide loomisel;
- teab, kuidas tuleviku-lugemisoskus aitab teha paremaid otsuseid;
- oskab teadlikult reflekteerida ja analüüsida oma vaimseid mudeleid ja eeldusi seoses tulevikuga ja teatud põhjus-tagajärg olukordades.

KOOLITAJA: Kristiina Paju, Turu Ülikooli tuleviku-uuringute magistrant.

TOIMUMISE AEG JA KOHT:

25.04.2019

kell 10:00 – 13:15

Tallinna Ülikoolis, Narva mnt 25,
Terra maja ruumis T-410

MAHT: 4 akadeemilist tundi.

MAKSUMUS: 69 EUR

(osaleja, hinnale ei lisandu km)

Hind sisaldab koolitust, jaotusmaterjale ja kohvipausi.

Registreerumine kuni 18.04.2019

**UURI LISA ja
REGISTREERI SIIN!**



KONTAKT JA TÄPSEM INFO: Elina Ojamets
tel 6 199 859; e-post eojamets@tlu.ee
www.tlu.ee/opetajateakadeemia



TALLINNA ÜLIKOOL
Haridusteaduste
instituut

Appendix 3. Questionnaire provided to the teachers prior and after the Participatory Workshop on 25 April 2019

Thank you for deciding to participate to training and participatory workshop on „Futures literacy of the teachers and future-orientation in everyday teaching) by the Teachers Academy on 25 April 2019 at Tallinn University.

Before we begin, I would kindly ask you to fill in the two first questions regarding the future of Estonian school in 2040. To guarantee anonymity of the responses, please do not write your name on the paper – your responses will be analysed in the Master’s Thesis „Understanding Futures – A Study into the relationship of the Estonian basic school teachers with the future(s)“ by workshop facilitator Kristiina Paju as part of her studies in the the Master’s Degree Programme in Futures Studies in the University of Turku, Finland.

The aim of the questionnaire is:

- to help you reflect what do you unconsciously assume about the Estonian school in 2040.

Profession (kindergarten, basic school, secondary school/vocational training facility, other educational facility):

1. What do you think the future of Estonian school will be like in the year 2040? What factors would have an impact on that future (technology, society, humans, environment, economics)?
2. What kind of future scares you (in connection to the Estonian school in 2040)? (Describe in your own words)

The following question please answer after the workshop, so that you can reflect on the experiences and new information from the participatory future-oriented workshop with futures literacy and futures thinking.

3. What were the hidden assumptions about the future that affected your response to the question no.1? (Write down three)

- 1)
- 2)
- 3)

4. What alternative futures would you envision? (Please provide two alternatives in a concise manner)

5. What is your preferred future like?

6. What are the concrete three steps to take in order to make your preferred future a reality? (highlight three things)
 - 1)
 - 2)
 - 3)

7. Do you plan to use Futures Studies methods in your classroom? (Yes, no; why?)

Appendix 4. Change factors of the participants

Change factors of Group 1 (4 persons)

Weak signals

- Jõhvi state gymnasium becoming possibly bilingual (Estonian and Russian)
- Political promises made during the 2019 parliament elections

Trends

-
- Education policy reforms
- Immigration
- The belief of small schools not providing proper education
- Parents believe that kindergarten and school are responsible for raising their children, not them
- Logopedic issues are on the rise
- Smaller class sizes
- Liikuma Kutsuv Kool (Active School initiative) and other educational programs
- Entrepreneurial school

Megatrends

- Digital learning/teaching materials
- Distancing from the “real” life
- Teachers are mostly female

Black Swans

- Mustad Kaabud (a backwards-looking populist political party winning the elections)
- A school shooting in Paalalinna school

Change factors of Group 2 (3 persons)

Weak signals

- Hobby centers for children/youth
- Secondary school education for everybody
- Educational specializations in schools
- Volunteers working as teachers
- Skype-classrooms
- Refugee-students

Trends

-
- Museum classes
- Smart technologies
- Entrepreneurship-education
- Outdoor education programs
- Robotics
- Students with special educational needs

Megatrends

- Artificial intelligence
- Project-based learning
- Greying and declining teachership

Black Swans

- Refugees as teachers
- Real-time teaching and learning in basic school