Phenomenon-Based Learning in Finland

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ABSTRACT

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The purpose of this study is to understand Finnish teachers' teacher trainers' and school leaders' perspectives on Phenomenon-Based Learning (PhBL) and its implementation as a pedagogical approach. In order to best inform future practices and borrowing within and from the Finnish education system, it is important to represent the practitioners' voice in the discourse around PhBL. This study was conducted with two secondary school teachers, a teacher trainer and a school leader from two different municipalities in Finland. The data collection process involved detailed semi-structured interviews in order to uncover perceptions, reflections and opinions regarding the implementation of PhBL in Finnish primary and secondary grade classrooms. This data was analysed through the methods of thematic analysis.

The result of this study shows that PhBL is perceived in two manners - one as removing unnatural and inorganic silos in education such as subjects and the other as learning being driven and directed by the learner. Further themes emerged which discussed the challenges and support systems that exist in implementing PhBL and addressed the changing world and its mandates for education. This research project concluded that although Finland is making headway in addressing the needs of the changing world through education, a significant amount of support and motivation is required to make further progress.

Keywords: phenomenon-based learning, pedagogical approach, subjects, learner driven, Finland.

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CONTENTS

1 INTRODUCTION

Research in education has been increasingly focused on the complexity and flux in the functioning of educational systems worldwide. This necessarily addresses the changing world and the need for its associated changes in education, both in policy and in practice. It is in our better interest to plan this change and prepare ourselves for the consequences. As Jäppinen (2017) elucidates in her discussion of educational leadership, change or reform has more and more been looked at as a process rather than an outcome in the context of education and organizations working in the field of education.

Finland, in the race to progress has indeed gone back to the strong foundation of its education system. Multidisciplinary teaching was seen as a tool to make education more relevant and practically applicable before the National Core Curriculum (NCC) for basic education of 2004 (FNBE, 2004). Over the last decade along with the plethora of changes that the 2004 curriculum change brought along with it, Finnish education had steered away from some of its erstwhile best practices such as the autonomy and flexibility given to teachers. But with the 2014 curriculum change, an attempt was made for some of these not-long forgotten practices to be revived (FNBE, 2016; FNBE, 2014) and one of the most wrongly reported ones was the concept of Phenomenon-Based Learning (PhBL) or as many renowned journals and newspapers termed it, 'abolishing of subject teaching' (Garner, 2015).

This study aims to understand the perception of teachers, teacher trainers and school leaders on the theory, policy and implementation of PhBL in Finnish education. It is of significant interest to this study that amidst the policy and systemic changes in Finland, the practitioners' perception and understanding of this change is rarely discussed and remains to be known. In order to successfully implement and engage with reform, teachers and other stakeholders need to share the vision and goals with policy makers and also be supported adequately to transform theory into action.

Since the world is looking towards Finnish best practices and this particular pedagogical approach seems to be at the centre of all the attention, it becomes necessary to first explore what exactly is the policy around phenomenon-based mandates for educators. This, as outlined in the NCC (FNBE, 2016; FNBE, 2014) becomes the core of the theory and definition of PhBL for this study. Furthermore, this study hopes to explore practitioners' perception of PhBL as a pedagogical approach. And finally, this study investigates how this policy is being implemented within school communities and within classrooms. The two main research questions are:

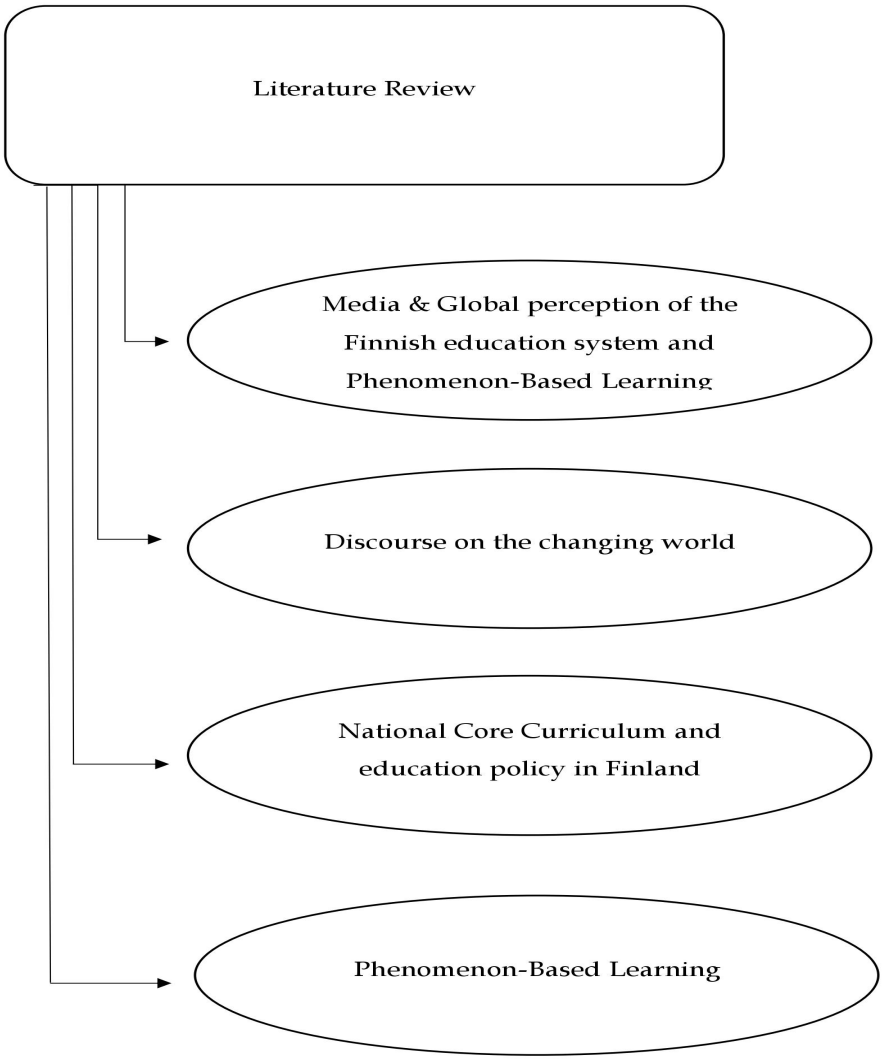
1. How do teachers, teacher trainers and school leaders view PhBL as a pedagogical approach?
2. How are teachers, teacher trainees and school leaders supported or hindered to teach through PhBL practices?

This study starts with the discussions on the media representation of PhBL, theory and literature on the changing world and its consequences, the major policy changes that the NCC 2014 and NCC 2016 have brought and also a research-based understanding of PhBL. It then progresses into establishing the theoretical frameworks at the intersection of which this study operates. Following this are the findings from the primary qualitative research that was conducted to answer the research questions. This paper ends with a discussion on how theory is being translated into practice, the challenges and support structures that come as part of the implementation and a look into the future of PhBL and its significant role in our changing world.

2 LITERATURE REVIEW

The Finnish education system and the introduction of PhBL in the Finnish NCC for basic education in 2014 have attracted a lot of attention around the world. There is little research as of yet about what teachers, teacher trainers and school leaders think of the new curriculum. In what follows, I will review the major issues involved in this particular educational reform cycle and its place in the changing world. I will introduce the reader to the topics in the order described in Figure 1.

Figure 1: Literature review outline



2.1 Media and global perception

The world has been abuzz with the idea of PhBL since 2015 (Garner, 2015). This is largely owing to the fact that countries across the world have been looking to Finland for tips and tricks on how to improve their own education systems. Finland has been amongst the largest exporters of educational (pedagogical, curricular and policy-related/based) content and services. This has been due to the high ranking that Finland obtains in international assessments of educational systems like the PISA (Program for International Student Assessment) (top 3 in 2000, 2003 and 2006 and top 5 in 2009, 2012 and 2015).

For years, Finland was regarded as one of the countries with the most successful education and school system in the world, perched at the top of international league tables for literacy and numeracy, only after Singapore and China. Politicians and educationists from around the world have been visiting Helsinki, hoping to find the magic formula of this education system (Grover, 2016).

The PISA assessment has historically been measuring 15-year olds' reading, mathematical and science abilities (About PISA, 2018). It should be noted here that PISA was set up to provide comparative data with a view to enabling countries to improve their education policies and outcomes (About PISA, 2018). Interestingly, many of the companies built around exporting Finland's educational prowess, as mentioned earlier, have sprung up in the last decade or so when Finland has been slowly falling as per PISA rankings. Considering the for-profit nature of such companies, it makes good business sense to keep the buzz around Finnish education going in order to milk the most out of this situation. Therefore, although the very tests that brought Finnish education to the forefront have been declaring the declining nature of this system, these companies have started to shift focus from suggesting major policy changes in the customer countries to smaller, practice-based, pedagogical

changes drawn from Finnish best practices (EDUFI, n.d.; OEP, 2017; Monkkonen, n.d.).

Finnish pupils' success in international student assessments and the characteristics of the Finnish educational system are the focus of interest all around in the world (Grover, 2016).

Since Finland and its education system have already been making news, the new National Core Curriculum caught media attention when it was released in 2014 to be implemented in schools starting 2016. This National Core Curriculum for basic education talks about the need for reform in the system. This document was planned, designed and created at a time when Finland was still obtaining high rankings in international education systems rankings. The obvious question posed was, of course, why? Why change when everything seems to be going well? It is in this answer that the entire purpose and design of PhBL rests and it is through this answer that we can see what sets apart Finland's approach to education from the rest of the world.

The answer is that educators in Finland think, quite correctly, that schools should teach what young people need in their lives rather than try to bring national test scores back to where they were (Strauss, 2015). In most other countries and contexts, it might have been important to understand why test scores have been declining. But somehow, Finnish educators and policy makers do not seem to be overly concerned by this. Instead, they had issued warnings of complacency setting in when Finland had achieved the highest rankings in 2005.

> What we need to underline here is that PISA tells us only a small part of what happens in education in any country. Most of what Finland does, for example, is not shown in PISA at all. It would be shortsighted to conclude only looking at PISA scores where good educational ideas and inspiration might be found. The country's early childhood education, highly regarded teaching profession, strong focus on well-being and whole child development, and alternative models of accountability still continue to be useful areas of interest for others. ("Why Finland", 2017)

Even if Finland's early childhood education or teacher-training models are studied, it needs to be noted at every step along the way that all of it is placed in a very specific context and time. Pasi Sahlberg has talked about how the idea

of competition between nations is wrong. He says that the goal of education is neither to beat another country on a test, nor to create unhealthy habits due to stress (Grover, 2016).

Through understanding PhBL in a deep and contextually rooted manner, this thesis aims to address the purpose of education. These questions are especially critical in the changing world of the 21st century (Symeonidis & Schwarz, 2016). I shall explore the Finnish idea of reform and change with respect to the 21st century in greater detail later in sections 2.3 and 2.4 of this chapter.

First, let us examine the facets of the National Core Curriculum which caught the public eye. The years of 2015 and 2016 were rife with global attention showered on Finland's decision to 'abolish subject education in schools' thanks to an article published by the British online newspaper, *The Independent* (Garner, 2015). The article was titled "Finland schools: Subjects scrapped and replaced with 'topics' as country reforms its education system". Quoting influential personalities throughout the article, including Helsinki city's Head of Education and the city's Development Manager, it makes for a persuasive read on how Finland is completely scrapping subject teaching in favour of teaching by "topics". There was little explanation given about these topics or how they were chosen or implemented as the article only highlighted how this was a revolutionary idea and persuaded the reader to believe that this must be an excellent revolutionary idea since it was coming from the holy grail of education: Finland.

This article has been quoted ever since to justify Finland's consistently high-ranking education system despite the latest PISA results not being in agreement. Even if one believes that the goal of education is not to outperform other countries, there are other reasons why this article's primary point is up for contention.

1. The NCC was implemented in 2016, so PISA results do not reflect their effect yet. It would take a few years of implementation to really see the difference a policy like this would make. Educators and school leaders need to be trained in this "revolutionary" change in education. Appropriate resources

have to be built or designed. Further, 15 year olds who take the PISA 2018 would not have studied under this NCC. So, the first effects of this new policy will start to become apparent only on the next PISA assessment in 2021.

2. It is not true that Finland's schools have not abolished subjects. And neither is true that the NCC recommends/mandates this. Nevertheless, the NCC has introduced PhBL, details of which will be discussed later. When these major errors were pointed out, certain media and publishing houses put out stories that were closer home to reality (Sahlberg, 2015; Silander, 2015; Strauss, 2015; Grover, 2016). They were able to capture nuances that the *The Independent* article (Garner, 2015) had skipped out or misunderstood.

One of these key nuances is the Finnish education system's openness to learning, which makes it remarkably different from systems in other countries. As Grover (2016) explains, "the Finnish education system takes inspiration from every country". The NCC is built by a group of very esteemed professionals from different areas in the field of education: university researchers, policy makers, teachers, principals. This allows for multiple perspectives on all issues from the most important stakeholders, but also covers the different strata in the field starting from the grassroots - teachers - all the way up to heads of municipalities and/or government representatives. This selected panel of people is also steeped in a culture of learning in the context of their own jobs. For example, the teachers that sign up to be a part of this collective are those solely interested in contributing to the making of the new curriculum as this is outside the purview of their daily jobs and are not paid extra for this. Therefore, there is new research, learnings from others' mistakes and different viewpoints coming in at every stage of this curriculum building process with the hope that it is translated into practice in classrooms.

A second key nuance that was missing from earlier reportage was in the implementation details of PhBL. There is definitely a significant difference between reporting that Finland has completely replaced subjects with cross-cutting topics and reporting key details like the fact that the NCC mandates only two extended periods of PhBL every year in Helsinki and only one extended period in the rest of the country (Strauss, 2015). Additionally, the

length of these periods can and shall be decided by individual schools in each municipality. The autonomy given to municipalities, schools and teachers make the Finnish system extremely decentralised and is an important reason for its success says Pasi Sahlberg (Grover, 2016). Moreover, the NCC also compels students to play an active role in planning these PhBL periods.

Thirdly, most stories failed to cover what I believe is the most surprising aspect of the reforms. NCC 2016 states that students must be involved in the planning of phenomenon-based study periods and that they must have voice in assessing what they have learned from it (Strauss, 2015). This aspect of not just this particular policy but of PhBL itself shall be discussed later in section 2.4 of this chapter and in the 'Analysis of Findings' chapter as it forms an integral part of the definition of PhBL itself.

Finally, an important feature of Finnish educational system as pointed out in these more accurate articles is that of addressing the need for students to learn transversal skills. According to Grover (2016), transversal skills are needed for the modern workplace. Although the general understanding is that these transversal skills, implemented through the PhBL approach, would be somehow 'replacing' subject teaching, the subtlety that Grover points out is that this integration of subjects and a holistic approach to teaching and learning are aspects not new in Finland. Since the 1980s, Finnish schools have experimented with this approach and it has been part of the culture of teaching in many Finnish schools since then. This new reform will bring more changes to Finnish middle and high school subject teachers who have traditionally worked more on their own subjects than together with their peers in school.

The fact that such pedagogical practices existed in Finnish education as early as the 1980s is of exceptional importance to this study. It not only emphasises the advanced and progressive position that the Finnish system had held but also suggests that such practices might have been in some manner responsible for the high problem solving or critical thinking abilities that students were able to exhibit in the early PISA tests. Having said this, it is of significant interest to understand why there has been a move back to these practices and approaches to learning that were discarded a decade and a half

ago. To explain this further, the changing world and the 21st century need to be addressed.

2.2 Changing world

> The meaning of each part is to be found in its implicit reflection of the whole of reality; it has no meaning exclusive of the whole. (Karsten, 1990)

There are perhaps a number of ways to approach the nature of reality and understanding the world around us. However, I have chosen to highlight the theories of Karsten (1990) and Pickup (2000) and their interpretation of the changing world – the reality of it and the knowledge about that reality.

In as early as the 1990s, Karsten had predicted that the world is changing rapidly, and we need to look at this paradigm through a new lens (Karsten, 1990). By describing how the world is changing from a Newtonian system to a Quantum one, he explains that it cannot be understood or read in the old ways but needs an overhaul in how we even begin to break it down.

In the Newtonian system of making sense of the world, there would be a single power center and everything that was decided there radiated outwards to the subsidiaries. Pickup (2000) explains it as, "the actions of, or events within, a system or organization are completely predictable". There exists a primary belief in the cause and effect relationship. This would mean that if we "know the initial conditions or original state of the system and the proper equations or theories describing the system, we can determine the outcome (effect) of any action (cause) within it" (Pickup, 2000, p. 11).

Therefore, in this paradigm of thinking it is very possible to break the whole into its constituent parts, determine what is driving those parts to become the more complex whole. (Pickup, 2000, p. 12) And in cases where a system fails to do like we predicted then then the simple assumption is that "we have not properly derived the equations to describe it and all we need to do is break it down further and add more variables. Chaos, according to Newtonian mechanics, is just a high degree of complexity" (Pickup, 2000, p. 14).

Most organizations in today's time find themselves in a certain dissonance where they seem to be trying to operate in a mechanical, Newtonian sense whereas the problems and complexities of their existence and operations do not seem to be following such simplistic patterns. Managerial fabric is based on hierarchical structures and this has, "left 21st-century organizations into the intricate cycle of bureaucracy and unwieldy structures" (Taşdelen & Polat, 2015, p. 570). Efficiency and reliability are key to running an organization like this and therefore the hierarchy and rules set out by the authorities became primary to their functioning. In such a structure, predictability and controllability of elements take the front seat. Communication is important only as long as it is top-down and in order to relay essential information for teams to be progressing towards the goal.

This kind of a paradigm has already begun to sound archaic and old-fashioned as we have a world (and so, organizations and institutions) in flux. A novel way of looking at our world has become known. This implies two things: first, the old ways of thinking were not holistic enough to solve the problems of earlier, more industrial times, so they definitely fall short in addressing the needs of today, much less those of the future. Second, we have a world that is changing so our structures and lenses definitely should change as well.

> A new way of looking at things has emerged. A combination of concepts from relativity theory, quantum mechanics and chaos theory, it is called the Quantum paradigm. In this world, cause and effect are fuzzy and largely irrelevant; things are not predictable, only probable; things cannot be separated from the system because they only exist in so far as they interact with the system; and chaos is not a high degree of complexity but a whole new level of order. (Pickup, 2000, p. 15)

In this paradigm, it is deemed futile to structure things in order to make them predictable. Even slight changes in the system that is set up can set its 'predicted' path awry. This is known as the butterfly effect (Pickup, 2000, p. 19). Nevertheless, when a certain amount of distance can be put between the observer and the observed, an order begins to appear in the chaos. Therefore, what we can hope to do with our current world is to try to understand it instead of predicting it. And so with the addition of some distance, a bigger

picture begins to emerge and through this new paradigm it has become obvious that the whole cannot and should not be broken down into parts. It is not useful to separate an event or a cause or an effect from its context (bigger picture) because it would not exist without that context.

In today's world, people and processes have become the key elements to an organization's functioning. Values such as "learning, honesty, sharing, transparency, teamwork and organizational synergy unite with the spirit of organization in our day" (Taşdelen & Polat 2015, p. 570).

The world seems to be changing with or without having everyone on board. A change in paradigm brings about deep transformation in how we function, not just as organizations, but also as a society. Therefore, "organizations of our time must directly and indirectly follow the change of paradigm in order to survive and to achieve their goals effectively. In this following process, organizations should adopt strategies which are focused on keeping pace with the speed of change in a globalizing world" (Taşdelen & Polat 2015, p. 571).

With this as the context, it becomes important to understand what skills and competencies the old paradigm valued and what amongst those have changed. The new paradigm has offered "a new perspective on ourselves and our relationships, our jobs, managerial ways, organizational theories, our global, political and economy tendencies and our educational understandings" (Taşdelen & Polat 2015, p. 571). The most important outcome of this paradigm shift for the purposes of this study is understanding education's role in this changing world. When events and facts are not being explained by simple cause and effect relationships, there exists a need for "a focus on such processes as intuition, invention, noticing, imagination, creativity, etc." (Taşdelen & Polat 2015, p. 571). Building these competencies in our human resources is building an infrastructure for this changing world.

Here is a table from Taşdelen and Polat's (2015, p. 572) study that encapsulates the key elements of this changing world:

Figure 2: Newtonian vs. Quantum elements

Newtonian	Quantum
Newtonian belief	Complexity believed
Absolute truth	Multiple possibilities
Absolute perspective	Contextualism
Uniformity	Pluralism, diversity
Certainty	Uncertainty, ambiguity
Simplicity	Complexity

In this complex, uncertain world that is entirely context driven, certain key aspects of education begin to emerge which will then form the backbone of whatever schooling strives to be. The quantum paradigm simply allows us to access this world in a comprehensive and advanced manner. It is interesting to note that many of the above-mentioned key aspects are addressed in the NCC and that is what makes it future ready. As a curriculum, it becomes a living, breathing document that sets out the ideal. The creators of this NCC 2014 have definitely considered the changing world and needs of the future while working on it.

2.3 National Core Curriculum (NCC) for basic and secondary education

> I very frequently get the question: 'What's going to change in the next 10 years?' And that is a very interesting question; it's a very common one. I almost never get the question: 'What's not going to change in the next 10 years?' And I submit to you that that second question is actually the more important of the two - because you can build a business strategy around the things that are stable in time. (Jeff Bezos, n.d.)

What are the skills needed for the 21st century? Considering the children going through schooling today are going to enter adulthood and the workforce anywhere between 10 and 16 years from now, what should they be learning for the world they are going to work and live in? What does that world even look like? I do not think we have answers to these questions. I do not think that it is even the purpose of education to answer these questions. But these questions become very important in the process of creating and defining that which fundamentally determines how children spend their time, and on what they spend their time - curriculum.

The changing world discussed in section 2.2 should be considered in curriculum design or educational reform of any kind. Preparing students for the future is a key purpose of education, even if it may not be the primary purpose. And if that life we are preparing the students of today is already a thing of the past, the learning offered by the education process is redundant. These could be aspects of values or mindset, they could be activities being conducted for the learners, the manner in which learning is taking place or they could be aspects of the content itself or even the sheer will to learn! It is of significant importance to this study, and I believe, to educational reform of any type to examine and review the changing world and its consequences on life and the living.

Both the Finnish NCC for basic education 2014 and NCC for general upper secondary schools 2016 address the need to understand this changing world and have incorporated mechanisms in themselves to reflect this understanding. Such progressive beliefs are seen in both the content as well as the process of learning. Key aspects of curricula are transversal competences and increasing sense of identity, autonomy and motivation of the learner. These shall be discussed in detail in this section.

2.3.1 Transversal competencies

The curricular aims set for transversal competences include (FNBE, 2014):

1. thinking and learning to learn

2. cultural competence, interaction and self-expression
3. taking care of oneself and managing daily life
4. multiliteracy
5. ICT competence
6. working life competence and entrepreneurship
7. participation, involvement and building a sustainable future

When looked at each one of these competences, it is clear that none of them fall within the boundaries of a traditional school subject like mathematics, history or physical education. Instead, they cut across and yet are somehow part of every subject at times and all subjects are taught alongside these competences. Therefore, they form a symbiotic relationship, each adding value to the other as and when required. There might be occasion when a certain subject area gives the content base required to master a certain competency (for example, a group project of scientific inquiry involving cultural competence, interaction and self-expression) and other times when a certain competency adds depth and a real life connection that would otherwise be absent from just mastery over the content of the subject (for example, a math assignment involving making budgets to manage daily life).

2.3.2 Increase of a sense of identity, autonomy and motivations in learning

The second striking feature of the NCCs is the building of autonomous learners. It forms a part of the transversal competences as listed above, but also features repeatedly in other parts of the body of the curricula. For example, during general upper secondary education, the students are building their identity, their understanding of humanity, worldview, and philosophy of life and finding their place in the world (FNBE, 2016, p.12).

The advantage of this addition to an educational system is that it makes the system not just learner-centered, but also learner-driven. The learner is credited with the ability to understand his or her own learning style and interests, the autonomy to make decisions based on those styles and interests,

and most importantly, the desire to partake and progress in learning, since it is driven by intrinsic motivation. The subtler advantage lies in its long-term implications. Although there are no empirical studies to date, conducted or translated to English, about the effects of PhBL on Finnish students, some studies do exist that have looked at the curricular text (For example: Nguyen, 2018) or curricular reform in general (For example: Symeonidis & Schwarz, 2016). In this regard, Nguyen (2018) concludes that the ultimate distination in the path to progressive advancement in learners' agency, identity and motivation is at students being able to adequately promote their own interests and motivation and pursue further opportunities in studies or work.

By orienting pedagogical activities towards facilitating students to self-establish and self-enhance their identity and enduring intrinsic motivations for higher education and future occupation, the curriculum regards learners as dynamic information seekers and critical language users (FNBE, 2016). It acknowledges that learners would and should be capable of making decisions, combating and/or prevent unfavourable circumstances or situations, or even intervening in an event autonomously and meaningfully. It also recognizes the prerequisite training necessary to build up such an effective agency that is interdependent on the socio-cultural context. Such learning ensures not only non-linear processes and an ability to deal with complexities from an early age, but also address the need for socio-emotional growth as they are meaningfully and purposefully interacting with the world. In other words, education is not just preparing the learner for a future, abstract, outside world, but is bringing the world into the classroom!

2.3.3 NCC being future-friendly

Upon considering the above two key features of the NCC, it is obvious that there is a lot of thought put into making it future-friendly. It is clear that, whatever the future may hold in store for humanity, it is extremely likely that people will continue to be dependent on each other. Humans will have to collaborate with each other, be creative and be committed, to survive and flourish. According to Taşdelen and Polat (2015), transversal competences and

an increasing sense of identity, autonomy and motivation as defined by the NCC become important in the quantum paradigm because the most integral and necessary skills driving this new world are:

1. Inclusion in designing systems of collaboration. Jobs do not always exist for them to be occupied by individuals. They tend to be created as each individual is able to bring a certain identity and expertise to the role and create a niche for themselves. Individuals are not going to be replaceable.
2. Active participation. Proactiveness has been highlighted in entrepreneurship or business lessons for decades now. But it has become increasingly obvious that most jobs, and even non-work situations, today require a sense of ownership and active participation. It is an attitude with a definite skill set that needs to be built over years. All structures and their underlying workings are identifiable, controllable and improvable.
3. Cross-border processes. Processes that involve collaboration between teams, or even organizations are becoming increasingly commonplace and school must prepare students to participate in them. It also increases strength between the participants or members building a collaborative network.
4. Self-management. Active participation extends beyond the work sphere to the self as well. Whether it is time, workload, attitude, emotions or wellbeing, a conscious and purposeful managing of self is essential. Therefore, most roles today involve a deep understanding of management systems.
5. Commitment. Members of organizations today look for a resonance of a vision and mission with their choice of work and organization. This works on an underlying assumption that work requires commitment. It has a more nuanced and purposeful change from discipline that was required in a Newtonian paradigm.
6. Cycles of self-transformation. It is in the very nature of a quantum paradigm to be in constant flux. Therefore, the ability to change oneself to suit the needs of the changing ecosystem is essential.

The features of transversal competence and an increasing sense of identity, autonomy and motivation drive the NCC, and educational policy, in Finland. These features constitute the aims and aspirations of PhBL. This shall be explored in the next section.

2.4 Phenomenon-Based Learning (PhBL)

This paper has discussed the current world and the direction in which it is progressing, the Finnish NCC, theoretical underpinnings of why we need what we need in education for this changing world and also what popular media has reported and then corrected about the most recent educational reform in Finland. It is at this juncture that it becomes essential to explore the depth and breadth of the concept(s) of PhBL which finds itself at the center of all the above discussions. This section aims to throw light on the details of this idea and inquire its place in this changing world. Since it has been a term that has come up in the context of Finland's education reform, most of the literature and research examined here have their roots in Finland too.

2.4.1 What is PhBL?

PhBL is a holistic, learner-driven approach to learning where "phenomena" are studied as complete entities, in the real context. These phenomena provide a starting point for the learner to learn the information and skills related to them during which there could be blurred lines between subjects, topics or any kind of inorganic silo. (Mattila & Silander, 2015, p. 16; Lonka, 2018, p. 173; Moilanen, 2015, p. 2)

> The phenomenon-based approach is anchored learning, where the questions asked and issues to be learned are naturally anchored in real-world phenomena, and the information and skills to be learned can be directly applied across borders between subjects and outside the classroom in situations where the information and skills are used (natural transfer) (Silander, 2015).

Apart from phenomena being explored in real contexts, it is important to note that the origin for such learning is dependant upon the learner's curiosity and interest.

> This new vision originated from the learners' curiosity, self-motivation, autonomy and individual observations to seek for and explain the holistic real-world phenomena around them (Silander, 2015).

The phenomena themselves are holistic topics like relationships and interpersonal dynamics, or sustainable development, even media and technology, water or energy. As starting points to learning, they differ from the traditional school culture and practices where learning is divided into subjects and are often split into relatively small, separate parts (Silander, 2015). In Lonka's words,

> "Western science often takes place in silo, providing a sliced picture of reality. Sometimes it is difficult to combine different perspectives: what one learns about human beings in biology class does not always connect to what we learn in psychology, history or statistics." (Lonka, 2018, p. 174)

Such traditional boundaries between subjects can be limiting not only to the subjects themselves but also to learning in general. Lonka refers to these limitations as "silos", a powerful metaphor to describe a system or a process that operates in isolation from others. This thesis borrows the usage of this word to mean what is stated above.

It is important to note here that PhBL is not simply a new method of learning, but an entirely new way of thinking about education. Nguyen (2018) points out that PhBL is revoluntionary in that it reorganizes teaching so that learning takes place in problem-solving contexts in the process of which they ceaselessly supported to participate actively in dealing with academic information, deliberating on issues with peers, practicing negotiation, arriving at conclusions and be reflecting on this process during and after.

In its essence, PhBL is not one pedagogical theory or a set of practices; it is an amalgamation of many different theories and best practices that together form a pedagogical structure that redesigns education and schooling

completely from what we are used to seeing around us. A few aspects of PhBL that set it apart from all other theories, practices or frameworks:

1. Amalgamation of inquiry based, problem-based and project-based learning - The phenomenon-based approach supports, in particular, learning in accordance with some of most advanced, nuanced and progressive pedagogical theories such as: inquiry-based learning, problem-based learning and project and portfolio learning. And consequently, supports or gives a framework and space for their practical implementation as well. It not only puts together the best aspects of these different theories but also adds it into a larger context that so often is quite missing from schooling.
2. Learner driven not centered – PhBL is constructed not only keeping the learning at the centre of all learning (making it applicable to their life), but also demands that the learner drive their own learning. This ensures that the entire process of learning becomes extremely meaningful for the learner and therefore he/she is motivated to continue this process.
3. Designed especially keeping in mind the shift to a quantum paradigm – The previous sections 2.2 and 2.3 discuss why we need a holistic learning framework. Considering the fact that today's world cannot be analysed or understood just by breaking it down into its constituent parts, it makes it quite redundant to envision education that does not allow the learner to engage holistically, to look at the big picture and to appreciate the complexity of the world we belong to - with the hope to learn to navigate it successfully.
4. Skills centered - PhBL is heavily focused on building skills such as problem solving in complexity, collaboration and active participation, setting and managing own goals and commitment. These skills do not necessarily come naturally and organically as one grows up. They need to be taught explicitly and given room to develop. This needs a holistic setting and will necessarily need to break artificial barriers of subjects or school hours and schedules.

5. Authentic, meaningful learning - In a learning situation, the learner's cognitive processes correspond to the cognitive processes required in the actual situation where the information or skills are used. Authenticity and meaningfulness are key requirements for the transfer and practical application of information or skills. Through PhBL, the aim is to bring genuine working life practices and processes into learning situations in a pedagogically structured way, when applicable, which allows the learner to participate in the real expert culture in the field and its practices.

   Additionally, traditionally, teachers (experts in individual subject matters) have pivoted around their own area of expertise and operated with that domain's logic. "It has not been very typical to think about the perspective of the young person whose cognitive system is not built around domains. Few school teachers think about their work from the perspective of future working life. However, the society is now changing so rapidly that creativity, thinking skills and more wide-ranging expertise are called for" (Lonka, 2018, p. 174).

2.4.2 Why PhBL?

> What Finnish youth need more than before are more integrated knowledge and skills about real world issues, many argue. An integrated approach, that is holistic and unfragmented unless needed and is real life applicable (Strauss, 2015).

The above statement holds true for youth all over the world. PhBL ensures learning within a pedagogical environment to be more concrete and meaningful to all the stakeholders. When implemented correctly, in the manner that it has been designed, not just as one-off project, it allows for learners to be engaged, motivated and prepared for what they are learning (Bobrowsky, Korhonen & Kohtamäki, 2014; Moilanen, 2015).

> Holistic and interdisciplinary thinking is important when solving the ill structured and wicked problems of our time. It is impossible, for instance, to design a school without combing the expertise of pedagogues, architects, engineers and other professionals. 'Building a

> school' is a typical real-life phenomenon that calls for networked expertise (Lonka, 2018, p. 175).

PhBL makes certain to offer positive learning environments that are filled with ample opportunities to harness and bring to the classroom learners' own personal experiences and insights and use those in connection with academic concepts, theories and principles in order to successfully and constructively reach their goals. These goals are set by them in collaboration with the whole community of learners as well as the other stakeholders (teachers, school leaders, parents, special educations, etc.). Practices to investigate real-life problems collaboaratively using different strategies and perspectives, not only familiraise them but also prepares them to encounter complex situations in the future. This kind of active restructuring of existing understanding becomes more important than going depper into a subject area (Lonka, 2018).

2.4.3 How can PhBL be implemented?

PhBL begins with "shared observations of holistic, genuine real-world phenomena in the learning community" (Silander, 2015). This observation does not occur from a singular perspective, like in most textbooks or non-inquiry based learning settings. Alternatively, the phenomena are, "instead studied holistically from different points of view, crossing the boundaries between subjects naturally and integrating different subjects and themes" (Silander, 2015). From the teaching front, observing, analysing and examining the phenomena starts from a collaborative process of asking questions and posing problems. For example, why do objects thrown up come back down?

> At its best, PhBL is problem-based learning, where the learners build answers together to questions or problems posed concerning a phenomenon that interests them. The learners have posed the problems and questions together – they are things the learners are genuinely interested in (Silander, 2015).

This process of learning, building on pre-existing knowledge and skills, the newly gathered information is in the context of applying it to the

phenomenon and/or solving the posed problem. This ensures that the theoretical information and practical skills have an immediate usage. This utility makes the entire process invaluable to the learner. Silander (2015) explains that, "information learned only at the level of reading or theory often remain superficial and separate details for the learners, without their gaining a comprehensive understanding of the information". He gives the very relevant example of memorizing a physics formula for a certain question or a test without really understanding the phenomenon behind it as being forgotten or never used again.

3 THEORETICAL BACKGROUND

PhBL definitely draws from many theories as it builds into a pedagogical approach. In this chapter, I discuss many such theories and sources such as Jones & Nimmo's (1994) Emergent Learning, Von Glasersfeld's (2013) interpretation of Constructivist theory, Gallas' (1994) and Tryphon & Vonèche's (2014) Social Constructivist theory and finally, the theory of Situated Cognition by multiple sources. Apart from the theories explored here, theories around Inquiry-Based Learning as studied by Paavola & Hakkarainen (2018) also bear direct significance to PhBL. However, I refrain from discussing theories related to Inquiry-Based learning as it is an area of pedagogy that is currently being enxtensively explored and delving into this field would derail this particular study.

3.1 Theory of Emergent Learning

This study has been greatly influenced and inspired by the theory of emergent learning. Emergent curriculum is a term coined by Elizabeth Jones and John Nimmo. They argue that a curriculum when designed months and more often than not years, ahead of time or borrowed from other contexts or even "taken off the shelves", does not meet the needs of a learner. A curriculum should be a living breathing thing instead that is flexible and can shift shape to keep the interest of and meet the needs of the learners involved. This demerits education that is prescribed or predetermined and advocates for education that is responsive. This approach harnesses student interests and pivots around the process of learning rather than meeting specific standards of content knowledge (Jones & Nimmo, 1994).

This kind of a process, of course, needs to find a balance between being teacher-driven and learner-driven. Springhouse Community School (a practitioner of Emergent Learning) (2018) describes Sullivan's (2009) work to claim that "truly emergent learning occurs when there is a balance between boundaries, nonlinearity, and collaboration, and the structure of these three

factors varies depending on the group of learners". The teacher's role in such an environment becomes that of a facilitator and mentor for learning to occur. He/she will observe student interests and needs and in response shape the curriculum and all learning experiences. Such emergence is being referred to as, the dynamic origin of development, learning, and evolution.

3.2 Constructivist theory

The base and foundation of phenomenon-based teaching is in Piaget's constructivism where learning is seen an active process of cognition. According to Ernst Von Glasersfeld (2013), Piaget through his extensive work as a biologist, sees cognition as a "generator of intelligent tools that enable organisms to construct a relative fit with the world as they experience it". He adds that,

> The basic principle of the constructivist theory is that cognitive organisms act and operate in order to create and maintain their equilibrium in the face of perturbations generated by conflicts or unexpected novelties arising either from their pursuit of goals in a constraining environment or from the incompatibility of conceptual structures with a more or less established organization of experience. The urge to know thus becomes the urge to fit; on the sensory-motor level as well as in the conceptual domain, and learning and adaptation are seen as complementary phenomena. (Von Glasersfeld, 2013, p. 25)

Upon accepting the above theory, we can no longer argue for traditional conception of knowledge as something external or independent to the learner/observer/knower. The entire idea of knowledge has to be done away with and a new definition has to be reconstructed. Glasersfeld calls this radical constructivism that he intends as a model to be used and not in any way as a description of a/the real world (Von Glasersfeld, 2013). He adds that teachers that have been using the methods of constructivism in their classrooms do not claim a sense of novelty or originality as good teachers have always had the better sense to understand that learning happens this way. Whether it was a series of trails and errors or an intuition that brought them to this conclusion

depends on the case. "Constructivism provides a model of cognition that leads directly to a method of teaching that credits the student with the power to become an active learner" (Von Glasersfeld, 2013, p. 26).

The below table lists a few directives for educators, (Von Glasersfeld, 2013, p. 26) arising from constructivism, that are extremely relevant in the context of this thesis: Figure 3: Directives for educators.

Training aims at the ability to repeat the performance of a given activity and it must be distinguished from teaching. What we want to call teaching aims at enabling students to generate activities out of the understanding why they should be performed and, ultimately, also how one can explain that they lead to the desired result.
Knowledge has to be built up by each individual learner, it cannot be packaged and transferred from one person to another.
Language is not a conveyor belt or means of transport. The meaning of words, sentences and texts is always a subjective construction based on the individual's experience. 5 Though language cannot "convey" the desired constructs to students, it has two important functions: it enables the teacher to orient the students' conceptual construction by means of appropriate constraints; and when students talk to the teacher or among themselves in groups, they are forced to reflect upon what they are thinking and doing.
Students' answers and their solutions of problems should always be taken seriously. At the moment they are produced, they mostly make sense to the student even if they are wrong from the teacher's point of view. Ask students how they arrived at their answer. This helps to separate answers given to please the teacher from those that are the result of understanding or misunderstandings.
Only a problem the student sees as his or her own problem can focus the student's attention and energy on the genuine search for a solution.
Rewards (i.e. the behaviorists' external reinforcements), be they material or social, foster repetition, not understanding.
Intellectual motivation is generated by overcoming an obstacle, by eliminating a contradiction, or by developing principles that are both abstract and applicable. Only if students have themselves built up a conceptual model that provides an explanation of a problematic situation or process, can they develop the desire to try their hand at further problems; only success in these attempts can make them aware of their power to shape the world of their experience in a meaningful way.

3.3 Social constructivist theory

There exists a further layer of a mixed complexity and clarity via the lens of social constructivism. Social constructivism focuses on an individual's learning that takes place because of his or her interactions in a group. It is studying cognitive development and learning that is emerging from a necessarily social, collaborative process which could also involve the language, history and social context (Tryphon, & Vonèche, 2013). In my opinion, in an educational context, social constructivism extends and adds on to constructivism by incorporating the role of other actors and culture in development. It provides the valuable addition of theorising learner opportunities to practice 21st century skills in communication, knowledge sharing, critical thinking and use of relevant technologies found in the workplace.

In addition, the concept of student discussion is grounded in social constructivism. Studies on student discussions have also added value and support to theories of social constructivism (Gallas, 1994). These studies how taking an active part in group makes thinking visible. According to Gallas, (1994, p.75) classroom discussion builds a strong foundation for communicating ideas orally. When ideas are communicated orally, not only is the learner having to explain what they said and develop a rationale for it, but also be open to criticism, push-back and hence increasing their ability to test their ideas, synthesize the ideas of others, and build deeper understanding of what they are learning. Apart from these necessary skills, social constructivism emphasises on interaction and discussion fulfilling the need for certain values and attitudes to be built. Self-regulation, self-determination, a desire to persevere with tasks, motivation, collaborative skills, and the ability to problem solve (Kukla, 2000, p. 62).

3.4 Theory of Situated Cognition

Sections 3.2 and 3.3 stressed upon and discuss intensively the role of learning and cognition being situation in a context. It is with this background

that I would like to delve into the theory of situated cognition. Like constructivism, Situated Cognition is founded primarily on the basic belief that learning or development is built upon the basis of something that already exists. Situated cognition goes further to explore what is it that already exists and defines that to be the context in which cognition occurs. It draws many of its principles from older fields such as Freire's critical pedagogy and Bakhtin's sociolinguistics theory. Since the theory covers many elements and aspects of understanding life, it would be efficient for the purposes of this study to focus solely on its tenets on learning. And through its principles on learning, it becomes the most relevant theory for the basis of this study.

Barab and Roth (2006) insist that knowing is rooted in action and that it cannot be removed from that context of an individual or a society or a particular period in time. Therefore, pedagogical techniques that focus on conveying facts or laws separately from their contexts are considered diminished and less effective methods to ensure transfer of knowledge and/or skills. Learning (defined to be successful and effective) must involve more than the transmission of knowledge but must instead encourage the expression of effectivities and the development of attention and intention through rich contexts that reflect real life learning processes (Young, 2013; Cognition and Technology Group at Vanderbilt, 1990; Lave & Wenger, 1991).

On writing about new literacies, Gee (2010), talks about how literacy learning in today's world is very haphazard as it is affected by the internet and other communication technologies. Today's youth are able to learn many more skills and attain expertise in various domains because of simple interest or passion in learning them. Theorists in the field have refashioned 'knowledge' as a thing or a noun to 'knowing' as an action or verb. It is not about arriving to a singular truth but a particular perspective that has transpired via an interaction between learner and context. According to Young, Kulikowich, Barab, (1997), it is therefore that knowing becomes an action that emerges out of the learner's intentions using goal-directed activities all within socio-cultural contexts.

3.5 Previous studies on PhBL

The above subsections describe the theoretical foundations for PhBL but very little has been said about the empirical studies related to PhBL. In this subsection, I intend to throw light on some of the empirical research that has been conducted in relation to PhBL and the influence that these have had on this thesis.

The first of these is a study by Symeonidis & Schwarz (2016) where PhBL practices were looked at through the lens of Phenomenology. It explores the introduction of phenomena and multidisciplinary learning modules through the new NCC. Like I have done in the previous subsections, this study also stresses on PhBL's theorectical groundings in Constructivism. This study delves deepest into how teaching and learning is being rethought, hencing breaking traditional boundaries and moving towards interdisciplinary explorations of phenomena. It compels us to appreciate the complexity in this process, as it is very hard to ever approach a phenomenon in its entirety. Through PhBL, this study argues for a responsive relationship between teachers and learners and teaching and learning. This process should be looked as a common endeavor amongst the parties involved. The authors believe that PhBL truly argues for this united front that many other approaches that pay particular attention to either teaching or learning practices alone.

The other empirical study that has relevant arguments about PhBL is Kostiainen, Ukskoski, Ruohotie-Lyhty, Kauppinen, Kainulainen, & Mäkinen's (2018) study about teacher education and meaningful can learning can look like in that process. This study finds itself embedded in the theories of Constructivism and Socioconstructivism and argues that meangingful learning is always the changes in a learner's cognitive structure. Since this usually involves personally meaningful experiences, as only they can cause such changes, the study focuses on these dimensions of the learning process – constructive, active and intentional, relational and authentic. It is through the exploration of the course design aspect of the teacher education process that the authors stress on the importance of a Phenomenon-based approach. They found that, "the interactive way of studying, where teaching and learning methods are

planned to support the overall phenomenon, was motivating". An added layer of motivation was there was an established common goal and commitment between the teachers and learners.

The final emeprical study considered in this thesis is the Master's thesis of Nguyen (2018) who was a student in the same programme as I am at the University of Jyväskylä. His thesis was a comparative analysis between PhBL in Finnish and Vietnamese curriculums with respect to learning English as a foreign language. The findings from this thesis highlight many similarities and differences on a variety of dimensions. The author concludes with a few suggestions for increasing teacher autonomy and provides insights on lesson design and direction towards building skills and competencies in learners.

The abovementioned studies provide for a good starting point for the subject-area of PhBL, but they still leave room for further explorations. My thesis is conducted with the intention to fill the gaps in existing research in this field and to bring to light Finnish teachers' school leaders' and teacher trainers' perspective of PhBL approach along with what previous research and/or theory suggests.

4 IMPLEMENTATION OF THE STUDY

4.1 Researcher's Background and Beliefs

I have had a few years of work experience in school leadership working at India School Leadership Institute (ISLI), a non-profit which ran training programs for school leaders of low-income private schools in urban India. Prior to that, I was a middle-school teacher in a low-resourced public school in Mumbai for two years. Through these years, understanding what high-quality school education is and how school leaders and teachers can create environments that enable student learning in all dimensions has driven me.

The success of Finland's education system is well publicized, and this attracted my interest. I therefore chose to pursue a Master's degree at the University of Jyväskylä to learn more about this system.

4.2 Research questions and research aim

1. How do Finnish teachers, teacher trainers and school leaders view PhBL as a pedagogical approach?

2. How are the Finnish teachers and teacher trainees and school leaders supported or hindered to teach through PhBL practices?

The necessary features of qualitative research are those of exploration and open-endedness. This research has been conducted, start to finish, with that in mind and so the research questions have been formulated understanding the nature of qualitative research. Finnish teachers, teacher trainers or school leaders' perception of PhBL have not yet been recorded and analysed since the new National Core Curriculum 2014 (FNBE, 2014) has been implemented in schools. A possible reason for the same could be due to the timing of this implementation. Many schools in the country have chosen to not yet implement

the PhBL component of this curriculum in its entirety owing to the flexibility and autonomy present in the Finnish educational system. Therefore, the research questions in this paper address the primary questions on whether or not the stakeholders' understanding of PhBL are similar and through that explore how these different stakeholders practise PhBL pedagogically in classrooms and learning situations. Eventually, the final research question aims to inquire into and discuss the future possibilities for this learning methodology/instrument (PhBL) by digging deep into the structures that currently exist and are either supportive or hindering learning through PhBL.

The need to address these research questions comes from an obvious place of definite lack of reliable and epistemological data and research that has already been done. Furthermore, since Finland has been spoken about regarding its educational system in the international media, there seems to be significant amounts of misinformation. PhBL in particular has been misinterpreted and misrepresented in popular media. Therefore, through the research questions listed above, this paper aims to contribute reliable, ethical and more importantly, ontological and epistemological evidence towards PhBL as a pedagogical tool.

4.3 Population, participants and sampling technique

I chose the educators of Finland as my population for this study as Finland is the only country, to my knowledge, which mandatorily practices this form of PhBL at a systemic level.

There were four participants involved in this study. They were two secondary school teachers from Jyvaskyla, one primary school leader from Helsinki and one university lecturer from Jyvaskyla. The participants were chosen because they responded to my initial outreach and were willing to participate in interviews and discuss their experience of PhBL. Many other

teachers and school leaders were contacted, but they declined to participate in this research study, stating a lack of time as their primary reason.

Language was another barrier which prevented me from accessing a larger or wider sample. I am not fluent in Finnish, while many teachers and school leaders are not fluent in English. I considered conducting a survey to gather data from a wider sample of participants. In comparison to interviews, a survey offers the advantage of being shorter and reduces the stress participants might have with respect to language fluency. However, since this is a qualitative study, I believed that surveys do not capture information of the quality that was required for this study.

4.4 Research design & methodology and data analysis

This study has been designed to be a qualitative one since the methods involved in qualitative research would allow me to venture deep in order to explore my research questions. Since the research questions demanded depth, quantitative methods would not do justice to the need this study hopes to satisfy. Along with being qualitative, this study is also inductive since it did not begin with a hypothesis but was open-ended and exploratory in nature. The data collected was then used to arrive at certain conclusions in order to answer the research questions. Qualitative research approaches are extremely useful in "exploring and describing complex phenomena, providing textual accounts of individuals' ''life worlds", and giving voice to vulnerable populations" (Erlingsson & Brysiewicz, 2017, p. 93). This study aims to bring the teachers', school leaders' and teacher trainers' voice into the discourse on pedagogical practices, especially that of PhBL.

The data collection involved interviews with the participants. Since they were all practitioners in the Finnish education system, I needed to dig deep to arrive at certain revelations especially regarding the support structures and challenges that this system offers. The interviews were semi-structured and

there was room for exploration built into the process. More often than not, some of the deepest insights into classroom practices and/or opinions on certain aspects of the NCC were obtained through allowing participants to deviate from the question asked. This gave me a good sample set and provide me with sufficient data to draw meaningful conclusions. Further, I spoke with people in two different cities in Finland, to understand whether responses to PHBL have been different in different geographies.

The interviews were recording on a mobile phone application in a live, audio format. Since audio data was hard to analyse and refer back to, it had to be transcribed into a written format. Since many researchers have already established that there is no one way to conduct thematic analysis (Braun & Clarke, 2006; Erlingsson & Brysiewicz, 2017; Graneheim & Lundman, 2004; Zhang & Wildemuth, 2009), it follows that there is not a single set of transcription conventions that are universally applicable. According to (Braun & Clarke, 2006, p. 88), "at a minimum it requires a rigorous and thorough 'orthographic' transcript / a 'verbatim' account of all verbal (and sometimes nonverbal / eg. coughs) utterances". This is what I have strived to achieve with my transcription and ensured that it retains all the information I need from the audio recordings in a way that is "true to its original nature". Each of the four interviews were transcribed in Times New Roman font in size 12 and 1.5 line spacing and extended between 8 and 13 pages.

Once transcribed, I analysed my data through thematic analysis where I found themes and patterns related to my research questions in the data. Since, "thematic analysis is a poorly demarcated, rarely acknowledged, yet widely used qualitative analytic method" (Braun & Clarke, 2006, p. 77), it was hard to find a common definition for it. Therefore, I shall explain the process I laid out for this thematic analysis. My first round of coding involved highlighting all areas of importance and insight in the data. After I had hundreds of these areas, I started creating broad categories of information I had received. At this point, I observed that the responses I had received pertaining to each category was

obtained at different points and in response to different questions in each of the interviews. These large categories of information had to be further coded into patterns and themes. Sometimes this involved breaking the categories further into sub-categories and at other times it involved combining certain aspects of two or more different categories to draw a certain theme. The final stage of coding involved combining all the transcribed data to answer the different interview questions as well the themes that were drawn from the responses.

4.5 Ethical considerations and quality assurance

A very important aspect of my research implementation was to ensure quality as well as conduct the study with the proper ethics to the participants, the study and myself. I acknowledged correct scientific conduct and maintained the integrity of this project in consultation with both the European code of conduct for research integrity (2017) as well as BERA ethical guidelines for educational research (2011).

I ensured proper ethics were meted out to the participants by treating them and the time they had given me with respect and the work they do, with dignity. Aspects of this included acknowledging if the interviews were running over time and ensuring that this was not eating into their working hours. All the participants gave their voluntary informed consent before the interviews began. They were also fully aware of the entire process and extent of my study. The participants were under no obligation to take part in this research study and they were aware of their right to withdraw from it at any point in time during or after their immediate involvement.

The data collected through interviews with the participants also needed to be secured. Managing data was important to me for ensuring the participants' right to privacy as well as to make sure that this data was not misused in any way or form. According to the European code of conduct, it is essential to

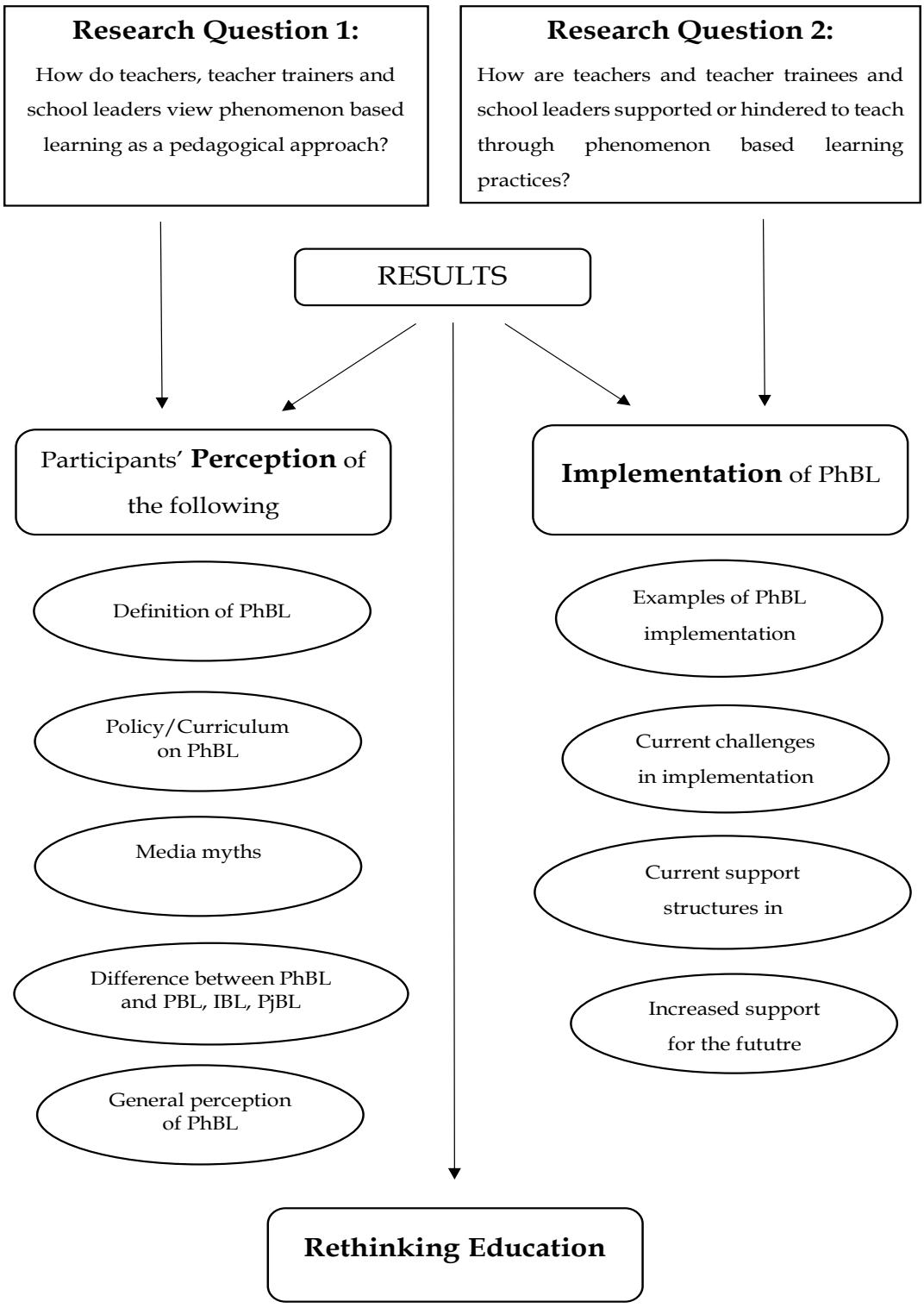
"manage data securely, and keep data as open as possible but as closed as necessary" (European code of conduct for research integrity, 2017, p. 6). To secure the data and keep it closed, no participants' names or their associated institutions' names are used anywhere in this research. This information will also be deleted from the collected data after use. In order to ensure openness and transparency, this study will be shared with all participants so that they know the outcome of their involvement with this research.

It was important to me to also ensure proper ethics for the research itself. Therefore, I have reported negative or positive responses to all questions as such and have not manipulated the data through omission or suppression.

Finally, it was important that I was ethical in my research too. I have carried out this research with integrity, accuracy and thoroughness in all process of this research: conducting, recording, presenting and evaluating the data.

5 ANALYSIS OF RESULTS

This chapter delves into the findings from the data collected. Below is the outline for the chapter. Figure 4: Analysis of results outline



The research questions as set out by this study are:

1. How do teachers, teacher trainers and school leaders view PhBL as a pedagogical approach?
2. How are teachers and teacher trainees and school leaders supported or hindered to teach through PhBL practices?

The two research questions are going to be answered in the subsequent two sections 5.1 And 5.2 titled "Perception" and "Implementation" respectively. The last section 5.3 under analysis of results talks about an added layer of nuance that came to light during the data collection process. This last section is called "Restructuring Education" and addresses the question, "Do we have to completely rethink education for PhBL to truly work?"

The above flowchart (Figure 4) pictographically depicts the relationship between the research questions and the manner in which the data has been analysed and categorised into the sections of this chapter.

5.1 Perception

This section aims to bring to light any gaps that exist between what literature says about PhBL and what practitioners believe. It points out the differences between theory and practise with respect to PhBL, if any. In doing so, this section answers the second research question, "How do teachers, teacher trainers and school leaders view PhBL as a pedagogical approach?" It is necessary to go through the main aspects of what has been discussed in the literature review for reiteration and understanding through the practitioners' lens.

The five key themes that appeared in this regard in the interviews were:

5.1.1 Definition of PhBL

In the interviews, all participants pointed out that PhBL is not a novel idea in Finland.

> In my opinion it is not something new. It is not something we have come up with recently or a couple of years ago. I went to school in 1979 and I had great primary school class teachers and, when I think about it now, they had very very phenomenon-based learning or teaching style. (PT2)

It also seemed that PhBL was something practiced by those that the interviews consisereded good teachers (example: "great primary teachers" by PT2). When probed further on what in their opinion PhBL truly was, two main categories of responses seemed to emertge from their answers:

1. PhBL is student driven learning

PhBL seemed to emerge very strongly as an approach to establish and encourage learning that is driven by the learner. From the following extracts, phrases such as "[…] kids have an interest in something or have a question", "[…] they will eventually learn more about", "[…] room for children to explore their own interests", and "[…] we need inquiry based approach to find out things about the phenomena" stand out as evidence that learners are allowed to explore and are required to lead their own learning. The following extracts give the context to the above phrases:

> What I think it is now is that kids have an interest in something or have a question and then you want to help them as teacher, you want to help them find out some information about that particular phenomenon or question and they will eventually learn more about. But you are the one guiding that learning. That is how I would define that kind of learning. (PT2)

> We have solid plans but also room for children to explore their own interests. Some people tell us that we're not doing real PhBL because it is still lead by you. To which we say, we are only giving them the umbrella to work under. We have to do that and connect it to curriculum. We do have goals to be working towards. We give them a structure to work under. (SL1)

> In PhBL, we of course use inquiry-based learning skills and methods because we need inquiry based approach to find out things about the phenomena. We also do project-based learning because we do projects during these phenomena as well. (SL1)

2. PhBL is phenomena centered learning

The other theme that emerged while trying to define PhBL was regarding its phenomena centeredness. All participants tried to define a phenomenon in order to define PhBL. Phrases such as, "[…] the basic foundation from which we start the exploration" or "[…] the means to discuss something or "[…] different viewpoints we can look at it from" clearly indicate that there is a central something that holds a PhBL approach together – either a starting point for exploration or as a umbrella acting as the context for learning to occur. These excerpts further explain the phenomena centeredness in PhBL:

> The Finnish word for phenomenon is "ilmiö". In science, the phenomenon is the basic foundation from which we start the exploration, how to understand it and how to measure it and then make some conclusions about the situation and work from there. I understand like it's a sort of free form teaching. (PT1)

> Teachers in Finland, especially primary school teachers who do not teach just one subject at a time, they teach the children more than anything. (...) Nowadays, we do have these subjects and I just think about being an English teacher. For me, a language, whether it is English or Finnish or German, the vocabulary, the grammar shouldn't be the main thing, it should be the means to discuss something. You're speaking in English, but you're talking ABOUT something. It's just a means to an end, it's a functional thing. (PT2)

> We combine different approaches like psychology of education or sociology of education or philosophy of education when we study educational phenomena. (...) We talk about learning and how it is defined and what kind of different viewpoints we can look at it from. Discussions are more about the phenomena and themes than the structure of a particular approach. (TT1)

5.1.2 Policy/Curriculum on PhBL

Regarding the policy about PhBL as mentioned in the NCC, all participants seemed to think that the curriculum is open to interpretation. It is built in a manner that it can be contextualised according to different municipalities', schools' and teachers' needs. However, they did not agree on how they each chose to interpret it.

The participant school leader elaborated on why her school team chose to implement a rigorous phenomenon-based pedagogy for her school. Her school

was given a fresh start with a new building the architecture of which had multiple open spaces allowing for interaction between different age groups. She also talked about how given their resources, this was the best way that her team could implement the curriculum.

> We had this excellent place to start – this new school – at the same time as we had this new curriculum. And that is why we thought at the first moment about how we will make a school for this day and this curriculum. It made no sense to us to do yesterday's curriculum or environment for this new school. When you think of all of those difficulties to go with that curriculum and the discussion with those phenomena, I don't know how to do it better. This is the best way that we have found. The point here is not that we do PhBL. The phenomenon is key to what we have in the curriculum, the skills. So it is just a way to learn those skills. They have already given us the key in the curriculum it self. We have just taken that key and put it in the door. (SL1)

A teacher trainer from the University, on the other hand, mentioned that it was only in one of the transversal competencies that she saw PhBL being spoken about.

> Thinking and learning to learn is the first competence and then comes cultural competence and then, taking care of oneself. Then there is ECT competence, working life competence. There are 7 competencies. Multiliteracy is what they talk about as PhBL. That's where the combination of different subjects comes into the picture. (TT1)

This brings to light a major dissonance in the understanding of PhBL as a pedagogical method as understood by these two individuals. On the one hand, it is being interpreted as a holistic system of learning and consumes all of what schooling comprises of today. On the other hand, it is looked at as one amongst many skills that have to be taught to align classroom learning to the curriculum. This dissonance and whether or not PhBL calls for education to be rethought/restructured will be discussed in section 5.3 of Analysis of Results.

The teachers were very pleased with the current state of flexibility and openness as granted by the NCC. They mentioned that it allowed them room to explore and add or delete areas of the field of study depending on the class they were teaching. The fact that there is no penalty for not completing the syllabus for the year meant they could go deeper or broader into different topics. This allowed for easier integration of subjects and more collaboration between

teachers for such integration. This again aligns with the teacher trainer's school of thought that PhBL is an extra something that needs to be accomplished along with the rest of the curricular objectives.

5.1.3 Media myths

The participants had little or almost nothing to say about media's representation of PhBL in Finnish schools. Three out of the four participants had little to no information on the same. The school leader found these reports to be quite absurd in that they did not seem to reflect reality at all.

> When we heard what international media had reported about this 2 years ago, it was quite funny. We were like oh are they talking about us? (...) It is quite funny if someone says PhBL has destroyed Finnish PISA results because how is that possible? The phenomenon-based lessons I have seen are so far and few, it can't be so effective that it has changed the world of education here. It is just a little, tiny pieces of the real PhBL that I have seen. (SL1)

One of the teachers who knew about such reports' existence asserted that we were far from achieving true PhBL in all schools. There was a resource and training gap that needed to be filled before Finland could expect to see that change in all its schools. She mentioned that there was also a need for general awareness about what PhBL is and a common definition for it not just amongst educators, but also parents and the general public.

5.1.4 Difference between PhBL and Project-Based Learning, Inquiry-Based Learning and Problem-Based learning

Another key theme that was highlighted during the data collection was differences and/or similarities or areas of overlap in understanding of the above mentioned different pedagogical methods. One of the participants spoke explicitly about this overlap and mentioned how to implement PhBL, it becomes necessary to use inquiry-based or project-based methods in the learning environment.

> I think they relate with each other very much. In PhBL, we of course use inquiry-based learning skills and methods because we need inquiry based approach to find out things about the phenomena. We also do project-based learning because we do projects during the inquiry about these phenomena as well. But in project-based learning, the project itself as a bigger role than in PhBL. Because here sometimes there isn't any big project or product. Sometimes it might seem very similar to project-based learning. But the main difference is that this phenomenon is in the air, it is something that this relevant at the moment or keeps us interested at the time. It gives space for personal interest that someone is having. We also give students their own space to have their own questions under this larger umbrella of the phenomena. So we kind of orient them at first to some extent in some subjects. After that, we can ask them what is the point that interests them; so it is not the whole world that is open, it is not that vague. But there is still a lot of space. (SL1)

It is interesting to note that there seems to be more overlap of these different methods culminating in PhBL, rather than PhBL creating itself a separate niche in theorizing pedagogy. PhBL seems to be more than just another method that has project making, inquiry and problem-solving aspects embedded in it. Therefore, it calls for a more holistic look at what learning could look like in schools. Because it employs all these methods, it fortifies real-life applicability of learning and ensures skills are being mastered.

5.1.5 General perception of PhBL

The general perception of the participants regarding PhBL was that the positive impact far out-weighed the negatives. Many of their observations about carrying out the practices espoused by PhBL in their classrooms point to them being healthy and effective in learning. The teachers mention that this would be the case whether or not PhBL is practiced holistically and more importantly, whether or not they are practiced under the banner of PhBL. Collaboration amongst teachers, giving space for student dialogue in class, making the topics student driven, are few such practices.

> And yes of course it is a good step. The government just launched the new curriculum. In a smaller context, in the classroom, if a student asks something, teacher should never ignore that just because we are in a

> rush. There are 25 students in a class, and someone asks a question, even though it might not be exactly the thing you are teaching, but it is somewhat related to what you have said because it has come to student's mind at the moment. And mostly in those situations, the other students wake up thinking one of us is asking something and I also want to hear what the answer is or if there is one. Sometimes we have had the best conversations in my class in that kind of a situation. That is when 25 people's eyes are nailed to you and they are into it. They feel like "I want to know this too". And then I have put away everything else and went into that. (PT1)

> Sometimes when questions are not related to my area of expertise, I have fetched the other teacher and we discussed with the students about the question together - two specialists! And then there were new questions followed by new questions! And oohs and aahs! I remember students saying to me that I have never thought about that. Or I know the phenomenon, but I've never thought about it that way or from that perspective. When there are two specialists talking about something, those are really good learning situations. I am always impressed by those. (PT1)

The school leader who has been practicing PhBL holistically, had a broader insight regarding PhBL. According to her, PhBL has just given her the most effective way to implement the curriculum. Skills are at the center of the new NCC and PhBL ensures that the transversal competences are mastered. Therefore, the NCC has given their school goals and PhBL, the best path to reach those goals.

> (A learner) has to be able to communicate and collaborate and have critical thinking abilities and have empathy. It's many of the future skills – I believe that we need those anyway. So, they become our goals. Also, it is very much in alignment with our curriculum. So, It becomes our responsibility to raise those skills. (...) We are of course learning math, language, we are not just saying go and do whatever you want. We believe that without those basic skills, we cannot do any research nor can you communicate. That's why we are really serious about those basic skills lessons. But at the same time as they are learning the basic skills they can already use those. They don't have to wait until university and then use it. (SL1)

She believed that with this, there is more learning and a learner is able to bring more to the basic lesson as well! She added that such learning could

happen at all grade levels. Some may use pictures to depict their research while some others may choose to write a paper. They have different skills and that should be celebrated.

Nevertheless, there were negative aspects of practicing PhBL that were brought out by some participants. These included disruption of current school structures and timetables, training teachers and recreating support systems, forcibly increasing motivation and collaboration amongst teachers, decreasing class sizes, increasing resources and finally, a shift from knowledge to skill mindset.

> It is usually only the negative things. It is usually regarding classroom management techniques, or teaching different kind of students, or supporting students who need more help, or differentiation techniques. We have a challenge in those things more than subjects. So, there is not so much complaining about not having enough skills regarding subject teaching. Finnish schools are quite challenge places for teachers to work because inclusion is also on the rise. It is definitely more important or challenging right now. (TT1)

Through a deeper look at what exactly is being criticized here, it is clear that PhBL, when practiced holistically, with the right resources and training and appropriate planning, is able to counter most of these negatives. Also, many of the negative aspects are practices that should be happening in schools already and should not be seen as extra tasks. Interestingly, these practices are what international media points out as making the Finnish education excellent. Such criticism adds to why PhBL advocates for a restructuring of the current systems and structures of education. Participants' perspectives of this radical change are discussed in section 5.3.

The teacher trainer addressed the complexity of integrating certain subjects especially in higher grades where there is more of a need for isolated, compartmentalised and specialised classes. She argues

> I don't think I'm that radical that I want to change all the schools. There will always be some subjects for certain topics that can't be integrated. But it also depends on what kind of society we will have in the future. (TT1)

5.2 Implementation

This section discusses the aspects of implementation of PhBL in schools and classrooms. Through doing this, it also addresses the support structures in place for such implementation and the challenges that a practitioner might face. Additionally, the participants responses with respect to what is needed for its future success is also discussed here. This section primarily addresses the second research question, "How are teachers and teacher trainees and school leaders supported or hindered to teach through PhBL practices?". It also covers the remaining aspects of the first research question, "How do teachers, teacher trainers and school leaders view PhBL as a pedagogical approach?"

Before we delve deeper into PhBL implementation, it is necessary to understand how Finnish educators view and plan their year of teaching and learning. PT2 was able to succinctly describe this process:

> I plan the whole year in advance based on the textbook. In Finnish we say that the teacher has this kind of punainen lanka, a red thread that you pull the kids along with the whole year. Of course, I'm the boss, I do decide on whether I want to direct their attention to some particular thing and then we start talking about that. I try and motivate them first, show them videos, songs maybe. And then when we are moving on, I do have some time for their questions and their inputs and for being 'side-tracked'. I don't think it is that dangerous if it is not always according to my plan, we can surely talk about other things. (PT2)

It is also important to note that the data shows that only half of the participants were able to connect the two (student driven and phenomena centered) approaches to make PhBL implementation wholistic.

> Well there are two ways to define it I suppose. Hmmm… now that you say it, yes. The first one would be when the kids have a question or are interested in something and that is not just one subject, it is interdisciplinary as well. This is a more natural too! Your brain doesn't work in the way that now you're thinking about Math and now English. So this kind of learning could be motivating as well. And the other is through interdisciplinary projects like the farm one. (PT2)

The broad themes that emerged through data analysis with respect to the second research question are around classroom examples, current challenges and support structures and the necessary additional support needed for the future implementation. These themes are discussed in detail below.

5.2.1 Examples of PhBL implementation

1. Examples from primary grade classrooms (1st-6th grade)

Both the teachers interviewed for this study are secondary teachers, therefore, the primary grade implementation example comes from the school leader whose school currently runs only till grade 3. She mentioned that there is some orientation that may be required either in a subject or into the context in which an issue is being discussed. She also explained how implementation of the same phenomena could look different for different groups of students.

> We kind of orient them at first to some extent in some subjects. After that, we can ask them what is the point that interests them; so it is not the whole world that is open, it is not that vague. But there is still a lot of space. For example, in the safety phenomenon period, someone is studying poisons and someone else traffic and someone else fire workers, all in the same group. Some of the second and third graders are ready to do their own research. They are well self-orientated and can work in pairs to produce very good presentations. But some, of course are not at that level yet and that is why they are working more with the teacher and teacher helps them to get the answers and make the questions and use the tools, etc. (SL1)

She then spoke about two particular student works and their relevance.

> I just found something – it is what a 3rd grader has made a questionnaire for poisons. In their research period, this is the presentation they had made. It is very much inquiry-based learning that had used. (Shows me the questionnaire). They also do art projects similarly, for example they have designed these carpets outside for traffic safety to make sure they are seen. So we keep trying to involve them in their environment and cooperate with other functions in this area. To make it as real-life as possible and then learning becomes personal. The whole time you just have to know why you are doing what you're doing and how to become an active citizen to respond to what is happening. We are not only teaching them to cope with the future world, but we have to teach them to be active and solve those problems. (SL1)

It was interesting to hear that this school leader's simple example of a project involving desiging traffic carpets for the school led her directly to her students becoming active citizens for the future world. Considering the fact that these students being spoken about are currently in primary school, it takes a efficient and throrough future-minded planning to implement PhBL lessons as they're always tied to a larger goal.

2. Examples from secondary grade classrooms (7th-9th grade)

This study was able to gather many examples from secondary classrooms as both practitioners interviewed were secondary teachers.

> Water project - We have this site on a learning platform where every student has a working space, they can write, record videos, etc. In physics they have different experiments in water but also in chemistry they can work on different aspects of water, they can include biology, arts and cooking too! (PT1)

One of the secondary teachers also spoke about multi-purpose studying classes they had carried out the previous year. Explaining this kind of learning, he says:

> We've done multi-purpose studying a few times when we took two days where there were no scheduled lessons at all. And all the students were divided in groups and doing the same topic but from different perspectives and from different methods like some were drawing or building something and some worked with clay or filmed it and put effects on it. It was about Suomi sataa last year. It was the biggest project we've had where the whole school was taking part. (PT1)

The other secondary teacher mentioned a project that involved true collaboration and ensured that the students went out of the school to further their learning. She explained this example as such:

> In class 8B now, there's me (English teacher), chemistry, biology, arts, geography teachers working as a group. We have these different interdisciplinary learning modules. The principal decided we would concentrate on entrepreneurship and ecology/environment. This year, we have gotten together a couple of times and planned to talk about those topics in our lessons more than we otherwise would. So, one day, we went into a farm in the countryside. They had farm animals there. And we heard the folks talk about their work and about entrepreneurship and the animals as well. So that combined entrepreneurship, biology, physics in a project. (PT2)

These examples once again point to how there is always a larger context and goal to learning through PhBL. Rarely is it just about the content being discussed.

3. Examples from the teacher training curriculum at the University

Although, higher education pedagogy is outside the purview of this study, this example is stated here purely with the purpose of getting an insight into what PhBL could look like in higher education. The teacher training curriculum at this University and its implementation is completely phenomenon-based.

> I just started a course called "education society and change" for our fresh students of teacher education program, kindergarten program, special education program and general education program. So, the basic field of education or the educational science structure is sociology of education in that course, but we didn't talk about sociology at all. In my lecture we thought and discussed what are the events and contexts that have caused them to study education or be a teacher and so on. And the approach I give them is that they don't just get the development or psychology perspective but what is the role of this historical and social situation that has caused them to be here. So, the phenomenon is something they can see or experience and we try to give them approaches and also concepts with whose help they can conceptualize they experiences and what they see around them. And this course the concepts come from sociology of education. For example, I give them concepts of life course and life span – what is the meaning of life span when looked from a sociological approach, what is the role of historical situation, what is the role of the life context, where they are born, what kind of families they have and in what kind of community they live in. What is the role of all these things in their life? And also, the concept of socialization – primary and secondary. And how can they conceptualize their experiences using those concepts. This is the way I understand PhBL. (TT1)

It is interesting to note how nuanced and branched out this example is compared to the others. The teacher trainer believed that the key learning from this example for secondary or senior-secondary practitioners should be that PhBL is very much possible at higher grades. Their nature would change, and the specialists might have to plan and conceptualise in detail in order to create a meaningful structure for further exploration and research.

5.2.2 Current challenges

1. Schedules and timetables

The general consensus amongst the participants was that the current scheduling where each lesson is 45 minutes long was not going to be enough for PhBL lessons. Inquiry, projects and student-driven approaches needed longer durations of lessons. For some participants this meant combining 2-3 teachers' lessons making them double-triple periods with sufficient breaks in between. For some other participants this meant an entire restructuring of the school day to accommodate such extended periods of learning.

> I've been cooperating with special education teachers as well. They always remind me that pupils should have the motivation or be interested to doing their tasks, but most often, as teachers in schools, you just don't have the time to wait for motivation to come. You just have 45 mins per lesson. (PT2)

> Well, sometimes in our schedules we have free lessons and then of course some teachers some for the morning shift or afternoon shift only. So there some issues but it is a simple problem with a simple solution. If you have 20 lessons a week, why couldn't they just be anywhere in the week. There are plenty of kids here around 340 from 7th-9th grade. So, if you want to split the teachers and students somewhat evenly at the school for let's say 5 or 6 hours, it is doable on special days like when we have gymnastics or a nature day or something to do for 30 minutes in one place and then we circulate the students in stations. (PT1)

The other challenge with scheduling that came up was with respect to teacher collaboration. Considering tight schedules and over-worked teachers, collaboration amongst teachers heavily rests on their instrinsic motivation based on a belief that such efforts could lead to better or increased learning. It is important to note here that this could be amongst the biggest impediments to implementing PhBL.

> Our schedules also make it hard. I have a class of English here and history teacher has a class only next day or something like that. Every now and then I notice that they have history after lunch, so I go and ask the history teacher if they are discussing India then and what are going to be talking about. Will they be watching a video, well then perhaps we could watch it in my class and discuss the vocabulary. The history can

> then be discussed in your class. I have done this and I know other teachers who have done this too. But it is very much your own initiative and it takes a lot of time. (PT2)

2. Student motivation

Since many of the participants brought up the aspect of student-driven learning in PhBL, the theme of high student motivation being a necessary prerequisite for successful implementation of PhBL emerged. The participants pointed out that motivating students to drive their own learning has become one of the biggest challenges in Finnish education.

> Well it (PhBL approach) doesn't suit everyone. They are not used to working in this manner, or they are not used to working at all. They might have no interest in school. They don't think it is valuable. I always start my courses with the skills. I try to connect that you are studying skills here which you might need later on. And you need these skills to get a job, get paid and you need to be good at something if you want someone to pay you for it. But 10-15% of the students just don't get. They don't get enthusiastic about it, they don't wanna work. They just wanna wait for the class to get over and get to something else or just look out the window. Motivation is the key here. Because I cannot tell that this is important, I can try to give hints about why it is important. Well they have to think for themselves that I need this skill, or this is a good place to learn things which I need in the future. And if they get that idea, then great. Of course, there are different levels, and everyone is not good at all subjects. (PT1)

> I noticed that the ones who were good were getting better. And the ones who were not so good were not improving at all. So I went back to the basics and took the lead again. So I decided to make them take tests on the verb forms and vocabulary quizzes for instance. So well after a couple of years of idealism and PhBL even before it was talked about, I've been going back to the basics and more traditional ways of learning due to a lack of motivation from the students' end. (PT2)

> We have so many problems in traditional schooling. Motivational issues – students are always asking us what is the point or meaning of everything that is happening around them. (TT1)

While pointing out the major challenge that it is to combat low student motivation and sustained interest, they also shared a few methods they have tried to increase the same. These methods and tactics seem to have worked in their favour.

> We keep trying to involve them in their environment and cooperate with other functions in this area. To make it as real-life as possible and then learning becomes personal. The whole time you just have to know why you are doing what you're doing and how to become an active citizen to respond to what is happening. We are not only teaching them to cope with the future world but we have to teach them to be active and solve those problems. (SL1)

> I remember students saying to me that I have never thought about that. Or I know the phenomenon, but I've never thought about it that way or from that perspective. When there are two specialists talking about something, those are really good learning situations. I am always impressed by those. (PT1)

As with any pedagogical approach, it is obvious that the motivation to learn comes from the learner and so, it needs to not only exist, but thrive in a learning environment. In PhBL, it is seen to hold an even higher place of importance, as these participnats have pointed out, since the approach necessarily involves the learner in the planning and implementation of the learning.

3. Content heavy

> Well the knowledge is the number one challenge. If the class teacher from 1st to 6th grade is bound that I have this book in math or english or whatever and until christmas, I have to get through this. Then everything goes the wrong way. Even if half the book is not touched by a pen, it is alright. But you have to use the time that is spared from book learning to do phenomena, and projects and different skill-oriented things. That way you can build in the small ones that this is schooling - "I need to work, not the teacher. I'm not just a passive learner where he tells what to do and I just do it and forget it the next day. I have to be creative, find a subject, make plans with others about how to approach the subject, and then gain knowledge which is related to the subject, ask different opinions and try to see all the different points of view on how to approach the problem". (PT1)

> In the ground level, there is way too much knowledge learning from 1st to 6th grade. But it is changing now. (PT1)

This was the recurring theme regarding the importance given to knowledge learning. The participants all agreed with each other that for many years, there has been significant value placed in knowledge transfer and content learning. These were the trademarks of successful learning. But they see a

changing trend there. The shift is towards a more skill-based system and this has been further explored in the support structures subsection 5.2.3.

> Well, the objective is also building the knowledge. But the structure of that knowledge is different from traditional learning. We try to build knowledge which helps us to build skills. Because knowledge is necessary as the foundation to build skills upon it. (TT1)

4. Effort of planning

Planning became a core theme in understanding the implementation of PhBL. This approach required significant pre-work in order to execute upto the intended standard. All participants addressed this challenge and described the effort of planning as a big hurdle between themselves and PhBL implementation.

> Well at least in the first few times that you do something like PhBL, it is harder for you as the teacher. Because you have to create something new, you have to think about the problems and about the instructions and you have to know how to use different platforms. It is easier to use a book and show 1+1 is 2 and you have done it for 10-20 years! And now you suddenly have to work, you have to write down 5 hours of instruction just to do one project. It is just human - everyone is trying to keep work as work and don't want to always make extra effort to do new things. (PT1)

The above quote sums up most of the participants' view on the extra planning that is required to execute a PhBL lesson. One of the teachers went further into explaining the details of such planning and introduced new themes hitherto undiscussed - differentiation and special education.

> The new 2014 curriculum, the students who first started learning using that curriculum are now in 8th grade. That is the only groups I've been teaching with this curriculum. Half that group has a diagnosis of some sort. ADHD, executive dysfunctions – difficulties in planning everyday life and the like. If you think about PhBL, I think students have to have the basic abilities to plan their studies ahead a little bit, if they are given some freedom, to find out information about something by themselves, half of this group would need really really structured instructions to get anything done. Many might not even be interested in new things, they really try hard to avoid doing anything in class or in school. I'm struggling with this now. Even after twenty years, I find it difficult to give a group of students different things to do at the same time. (PT2)

Such issues could be problematic for any professional teacher to combat successfully everytime. Although, in the case of PhBL, it becomes even more complex and complicated because the approach and pedagogy are still in their nascent forms of practice. It would take years to master an approach that is so radically different from how most teachers seem to be undertaking their jobs. Therefore, will added issues such as the ones mentioned above, the challenge only increases.

5. Parent involvement

Investing and engaging parents in PhBL seemed to be an issue only in the school that was trying it holistically. The other participants did not point it out as one of the challenges as they were only implementing PhBL in certain projects or periods of the year and so it did not seem to have an effect in parent engagement.

> It is very important to collaborate with the parents. We have very highly educated and clever parents here who also want to know why we're doing something. And they also have the right to know it. We have had many meetings called pedagogical cafes where we discuss about what is happening in the school with parents. Over the last few years we have faced some criticism regarding PhBL but not from our own area parents but from other neighboring areas. They had some funny thoughts that we aren't really learning anything here. We are just playing and hanging around here. Our own parents know, and they trust and they have seen that the children are actually learning and are happy to come to school, our teachers are high level. So, they trust us. But it is work we have to do all the time and every year. Because we have new parents and new students and we have to be ready all the time. Just say it out loud, what are we doing, why are we doing it. Also, after every phenomenon period we have an open house and invite parents to come to school and the kids can show what they have done and make their own presentations to them. What we are doing right now is also one of these – a culture event. It is very important that they be here and see what we do. We also have an active Facebook page which is like a window to our school. (SL1)

6. Finding best teachers + collaboration

All participants explicitly spoke about teacher motivation for planning and collaboration to be of cardinal importance for the implementation of PhBL. Additionally, they also indicated at it being one of the toughest challenges. The

school leader mentioned the fact that her teachers are her biggest assets in the school multiple times throughout the interview. She added that they were also the most difficult task to find and hire.

> Our biggest challenge is to find that best teachers. We really do need good teachers to do this. We need teachers who know the curriculum because knowing the curriculum this is very difficult. They have to know what is in there and have to do the course for every period. So as long as we have great teachers, we have no problem. But it is very difficult to work with teachers who don't have interest in this kind of thing. It shouldn't be thought of as extra work. Because I think anyway teachers should plan what they're doing. Just here, more of the planning is done together. You cannot do everything by yourself. But I think that we don't have longer days than others or anything like that. We just have to organize the planning time and when does the team meet. It just has to be effective working what they're doing. It is one and half hours every week on Fridays. Of course, they are doing more because when you start team working, it just grows. Then they don't want to go back to doing their math lessons or plan them by themselves. So, it grows on them. But the minimum is that they have to plan those phenomena periods. The other lessons, they can plan by themselves. At the moment they do most of the planning together. They have phenomena class from 8:30 to 10:00 every morning. Half hour of morning meeting and 1 hour of work. Then they have a break and the rest of the day is for subjects. (SL1)

This brings us to the collaboration aspect of implementing PhBL in any school. It is clear from a theoretical understanding of PhBL that teachers would need to work together to make this work in the school. Even a primary grade teacher who works on his/her own in Finland, would find it impossible to plan all aspects of a holistic phenomenon for his/her lesson. There simply is not enough time in a teacher's work day to be integrating the different subjects into a holistic unit for a lesson everyday. In the case of secondary grades, teachers are already differentiated by subjects and are specialists in those areas of knowledge. Therefore, it becomes even more important for teacher teams to work together to plan phenomenon-based lessons or even rare projects. When asked what the "best" teacher for her school would be, the school leader responded:

> I'm looking for team players. I think that is the most important thing. I'm also looking for high ethics. But being a team player is the most

> important. So, you cannot be selfish or want to work alone. It goes a long way until the next set of important things like being digitally aware. Most of those things you can learn but you need the right attitude. You need to believe in the curriculum, that it is right and there is a point to it. You don't need to be the world's greatest teacher. But you have to be open minded, be able to discuss pedagogical things and be able to collaborate and be kind. (SL1)

There seem to be pockets of collaboration that NCC has mandatorily introduced into the schools of Finland. One of the teachers explained it as planned as coincidental at times.

> I have done this (collaboration) and I know other teachers who have done this too. But it is very much your own initiative and it takes a lot of time and very often you need to be friends with the other teachers as well so you can at least talk about it. Sometimes it becomes a coincidental thing instead of being planned. My colleagues asked the headmaster who is planning the schedules in advance to try and plan in a way so they have lessons following each other so that they can cooperate more with each other. (PT2)

5.2.3 Current support structures

1. Shifting mindset - From knowledge to skills

What was initially pointed out as a challenge, slowly turned into a support structure over the course of my interviews. Heavy emphasis given to knowledge transfer and content learning is seen as a big challenge to PhBL and therefore, the curriculum suggests a shift towards learning skills. This move was brought up in the interviews as being a structure meant to bolster the motivation of teachers to experiment with PhBL.

One of the teachers mentioned that the NCC 2016 has cut down on the topics to cover in secondary grades and since the curriculum is flexible and adaptable, it is really up to the teachers' or schools' discretion to pick and choose the most important parts of it for implementing in their classrooms. He also argued that assessment and learners producing their own content does not have to be restricted to written work.

> Well the new curriculum is helping in a way. Because it is saying less topics that you should be learning. In physics there is less stuff to complete now and so through that there is more space for something

> else. They also say in the curriculum that you should teach skills. In history for example, you don't need to know every date about every war. It is alright. You can use the classes doing a play about signing of some treaty after some war. For 2 weeks you can do a play and film it and do a screening of it. The new curriculum says that is alright. And the new tools are making it easier. All the internet platforms are making it easier. Because they are really flexible. Lots of ways of producing content. Not everyone has to write. Can be drawn or filmed or recorded or some other way too. And of course, they are easily accessible. If we start a water project in Physics, after two months, they can access the same through biology point of view and continue from there. Ten years ago, it would be a paper and in two months, it would be gone. (PT1)

Apart from the curriculum itself acting as a support structure, teachers and school leaders also spoke about the value of skills-based learning in practise. The school leader also mentioned the changing world and the changing needs in education in order to adapt to this changing world.

> I think the modern world is filled with knowledge and it is easy to get it if you have the skills. Why saturate every student with every knowledge because obviously they won't need it all. But they all need skills - how to acquire knowledge and how to be critical about knowledge, and of course how to work as a team, how to listen to others, and how to present yourself and how to use modern ways to communicate like internet to your advantage. Of course, you need the basics like knowing how to write well, read well, you need basic math, you need vocabulary in languages, and maybe have basic knowledge in science and biology and stuff like that. But you most certainly don't need to know every detail about everything. (PT1)

> What I said implies that I don't think of education as just getting you a job. Because the world won't be as it is now, and it shouldn't be as it is now. Because there are many problems now. And so that's why we are creating the future and not just making workers for the companies. Of course, we're giving them the skills to go to any company as adults but not as robots but with high levels of empathy as it is a critical time. (SL1)

2. Not very large or diverse class sizes in Finland

Finland as a country is blessed with lots of natural resources and a small population. This plays a role in education through the ability to maintain small class sizes even with a growing population. Since PhBL demands a larger amount of interaction and support between students themselves and between teachers and students, it becomes necessary to not work in large groups. Even

though open spaces might be advocated for increased collaboration, the working groups themselves have to smaller.

In Jyväskylä, a teacher mentioned that a lack of linguistic diversity makes it easier to carry out certain lesson plans. Especially if they involve working in groups. She cited both aspects as support structures to implement PhBL.

> Average class size in our school is 22 I think. We also have the largest resources. We have special education teachers, assistants and so much help. Almost all of our kids are native Finnish speakers and some subjects still become hard. I don't know how they do it in some Helsinki schools where majority students might not be native speakers. (PT2)

3. In-service training

Finland offers teachers and school leaders training for when the schools demand it. These trainings cover aspects of motivational, pedagogical and practical know-hows. Although many participants agreed that more of this training would be required to implement PhBL in its entirety, they believed that the training they have been receiving until now has been useful.

> Yeah we had one day (of training) at the beginning of the semester. There are a few teachers in Jyvaskyla who are really into this. They gave us inspirational stuff. And Laura Kettonen who I think is now at JYU doing something with phenomenon-based teaching. She is a physics and chemistry teacher and she put out this website for science teaching. Instructions on how to do science teaching with the new methods. That was the starting point. We have absorbed and changed things that we needed to change to suit the things for our school. Now we are trying it out and realise this or that wasn't that good and next year we have to change it a bit. But mostly it has been working really well. Students are not reading the book and doing exercises but doing experiments, studying through them and writing about it. (PT1)

5.2.4 Increased support for its proper implementation in the future

For better implementation of PhBL in all schools instead of having pockets of excellence, there would need to be large scale interventions done at multiple levels. The participants spoke about the need for extra support in both situations whether or not the mandate for PhBL increased over the next few years.

A big area for this improvement was with respect to timetables and schedules where more flexibility would be necessary. This is definitely more a school-level change rather than a larger policy level reform as the NCC does not regulate school schedules in anyway apart from mandating a certain number of hours per subject area every year. They do not control how that time period is split and shared amongst different teachers over the course of the year. Therefore, this suggestion came from teachers for their own schools and municipalities.

The other need brought up in the interviews was to further decrease class sizes as one-one interaction would be even more significant in a fully PhBL environment.

> We definitely need smaller groups. We can't have 20 students if you're planning on doing that (PhBL lessons). You need to have someone who supervises the kids and can't just leave them and hope that they will figure it out or do it on their own. (PT2)

The most important support structures that the participants reported as necessary were regarding teacher support, resource support and teacher collaboration. Teacher support was mentioned with respect to further in-service and pre-service training as well as socio-emotional support for the hard work they are putting in.

> Also teachers need mental support and peace and respect for what they're doing. Lack of this will bring a negative attitude sometimes now. They think don't you see what we're doing, we're doing our best and a good job. Also things are moving too rapidly. We have to give this curriculum a few years time to grow. (SL1)

> Some extra education for the teachers would be needed. Some of us are so stuck with the business that we do and we don't even know what the others are doing. Maybe have the curriculum go hand-in-hand with this and maybe even some lesson plans. Not in a way that you HAVE to do it this way, but some guidance would be nice. (PT2)

Other participants expanded on the curriculum-based support that the above mentioned teacher talks about. Some participants believed that there needs to be detailed lesson plans created for teachers to successfully implement something as new and effortful as PhBL. These lesson plans will be needed at

least until the teachers begin to pick up the skills of integrating different subjects or making lessons skill-based. Proper textbooks and resource material will need to be created to foster inquiry-based approaches like PhBL. One of the teachers even mentioned added monetary benefits for teachers implementing PhBL and for those who are taking part in building these resources.

> Write exact guidelines and ideas what to do with students. Because every teacher isn't modern or enthusiastic about the new systems. They always ask how do I do it? I need instructions. Well write the instructions. But this is one example. You can do this. And leave the freedom for the rest of the teachers to do their own way. But just give the old stubborn ones easy instructions that they could work with. (PT1)

> Materials are also very important. Text books in Finnish schools are currently only subject wise. Whatever phenomenon-based textbooks look like – maybe students themselves seek information. Wikipedia is too difficult, but if we have a kids' version for kids, maybe we won't need any material or textbooks but some sort of guidance to teach how they use it for critical reading and thinking. (TT1)

> If government is doing that (redesigning curriculum to include more PhBL), they should really put money into it. In a way, they need to get teachers from around the country, from big and small cities, take them out of their work, throw in a substitute, pay for that. So hire the teacher to do the new curriculum. The one that we got three years ago was done for free. The teachers were really stressed out, tired because they were drawn out from the classes to do the curriculum. Just anybody was thrown into the classroom to show videos and stuff like that. Kids weren't advancing in anything and teachers were stressed. I know lots of physics teachers who are modern and have lots of ideas how to do things like phenomenon-based and modern ways and they were just exhausted and wondering why we are asked to do this on top of our normal job and not get paid for that. But if for half a year you are put aside from teaching and are asked to throw all your knowledge and professional information and ideas you have, write them down! You would get teachers from every subject to write it together, to figure out! (PT1)

The final important suggestion going forward was regarding teacher collaboration - the mindset and skills required to doing it. The school leader interviewed was of the opinion that intra-school collaboration was anyway bound to happen with increased PhBL. But what was also necessary for learning and growing was inter-school collaboration.

> I think school visits and collaboration with other schools and other teachers can be very helpful. We have those whole days of discussions and planning together. I think Helsinki municipality has tried its best to do those things. Also, before we were doing this curriculum, many times teachers were invited to come and do this planning, maybe it was too abstract at that time, most didn't use that opportunity to go and do it. Also, we this expert colleague teacher network. We have those teachers who are experts in digitalism or phenomena, or whatever and they go to other schools and teach other teachers there. It has been useful and good initiative. Teachers tend to listen to other teachers who also have been doing these things themselves. Because sometimes it is annoying when someone comes from a university or a training institute and tells teachers how to teach. Teachers don't like it, of course, because they thinking it is very easy to talk but come here and see my class, see my problems, see the environment, the big groups and do this there. (SL1)

5.3 Rethinking Education

The process of data collection was suited for going both deeper and broader depending on the participants' expertise. The semi-structured interviews allowed for venturing into new areas of thought previously unplanned. This section addresses a particular recurring theme in all interviews where the participants themselves pointed out that for true PhBL to be practised in schools, the way we look at education needs to change. This could include the purpose of education and what schooling comprises of today. The big question being answered in this section is around a reform versus tinkering of certain aspects.

5.3.1 Reform vs. Tinkering

During the interviews, when the previous questions were being answered, there always came a time when discussing supports and challenges that the participant went into deep thought of how something as revolutionary as PhBL would actually work. They all agreed that it is not simply a pedagogical method that can be added to existing practices. During their description of what it is, they seemed to realise that PhBL is more than that. For it to work, we had to answer some basic questions about the purpose of education and schooling.

> The key here is, if we want to do a totally new Finnish schooling system, we shouldn't be keeping the old stuff, modifying it a bit, taking a few topics off, inputting some new methods, projects and combining subjects. They are just on top of the old things. Something that this is too much because you have to do the old stuff and the new stuff. If the Finnish govt would be brave enough to put this away - no subjects, no schedules. You have the working hours let's say 36 hours a week, students are going to school 30 hours a week. There has to be some amount of arts, gymnastics, cooking and stuff like that during the whole year. They come here, there is room, there is machines, and things to work with and then there is us, specialists. If the government had the balls to throw everything upside down, I think it would work. (PT1)

The obvious next question was why. Why do we need to rethink and restructure something that is not broken to begin with? The teacher trainer gave a very relevant response to not only the above question but also why the teacher training curriculum is also structured in a PhBL way today. She addressed the changing world and why education needs to change along with it.

> When we had society based on industry, we had different groups of workers each did just one piece of something – they worked very effectively in that way. Our schools divided into grades and subjects are quite similar to that kind of factory. But we don't have anymore that kind of society. We have different networks for instance which are not groups like those we had in an industrial society. So when our society changes, we have to change the structure of our schools too. Because if we go back to an age when we had a society where they were no schools, education was arranged very differently - children learned with parents, according to their theoretical thinking. Schooling looked very different from the industrial era's subject based and age-level based (system). (TT1)

Some of the participants seem to highlight just how daunting the thought of rethinking the basics is going to be while believing that it was necessary.

> They would have to redo the whole thing, I think. I don't know if it is an excuse, but I still think what with the traditional timetables and schedules, it would be impossible. And again, to be honest, I don't think I have the knowledge to cooperate with any teacher or help students with any subject matter. That would be very stressful. But still, I think it would be good for the pupils, so who knows! Even I might try it! (PT2)

> When you look at the PISA results, there must have been something right about the way we've done it before. What with the different subjects as well! In a way, some kids don't have a holistic perspective of the world in school. Me included! I remember teachers trying to make me understand that something we were learning in history lesson had something to do with the geography lesson. But I didn't make the connection. So even though I was good at school, I would learn something by heart to get good grades. And then forget it after the test. It makes you ask what the purpose of education is. (PT2)

> I don't think I'm that radical that I want to change all the schools. There will always be some subjects for certain topics that can't be integrated. But it also depends on what kind of society we will have in the future. (TT1)

The collected data also shows a sense of understanding that the NCC envisioned the changing world and the need to adapt to it to some extent. It is definitely not as revolutionary as PT1 hopes, but it does aim to rethink education for today's world. Through stressing on skill learning over knowledge or information sharing, through making learning driven by the students, through mandating all schools to try out at least one PhBL unit in the school year, the NCC attempts to get this process of thinking started amongst the practitioners. But whether or not this is enough of a change for PhBL to work and show the desired results, only time will tell. Nevertheless, some schools have already interpreted the NCC to mean that all learning happens through phenomena.

> We are not doing anything special. It (PhBL) is not something we just thought of either. We are only dealing with the current curriculum that we have. And we have just tried to find the best way to work with the curriculum that already exists for everyone else to use too. Because we had this excellent place to start – this new school – at the same time as we had this new curriculum. And that is why we thought at the first moment about how we will make a school for this day and this curriculum. It made no sense to us to do yesterday's curriculum or environment for this new school. I don't know how to do it better. This is the best way that we have found. The point here is not that we do PhBL. The phenomena is key to what we have in the curriculum, the skills. So it is just a way to learn those skills. They have already given us the key in the curriculum it self. We have just taken that key and put it in the door. (SL1)

School leaders with this kind of thought make it seem easy to begin this restructuring and rethinking. She seems to believe that such an ask is already in the NCC and it is just a matter of everyone seeing it as that and beginning to use it as such. This school leader also mentions that the NCC already fully equips any school to implement PhBL, it is just a matter of motivation and a will to make that change. “Redoing the whole thing”, might not be as hard and daunting as it may seem at first. Her attitude and the school’s success are enough proof that such rethinking need not take years and is not much harder than placing trust in those that created the NCC and implementing it thoroughly to realise its true potential.

6 DISCUSSION AND CONCLUSION

The research questions addressed in this thesis are:

1. How do teachers, teacher trainers and school leaders view PhBL as a pedagogical approach?

2. How are teachers and teacher trainees and school leaders supported or hindered to teach through PhBL practices?

As discussed in the previous chapter, a third theme emerged from the data related to the need to rethink education itself. Upon reflection, I have synthesised many direct connections between the literature and the findings. I wish to address these connections through certain questions I have laid out for each of the three sections (5.1, 5.2 & 5.3) under ananlysis of results: Perception, Implementation and Rethinking Education.

6.1 Perception

6.1.1 Is PhBL something we want?

The general perception of both practitioners and researchers (Mattila & Silander, 2015; Lonka, 2018; Moilanen, 2015) has been that PhBL was a positive and necessary direction to move forward in in the field of education. An important addition to this existing body of thought would be to evaluate student outcomes in order to gauge if all that is being said about PhBL is a hope for a successful pedagogical system and/or model or if it can translate into measurable improvements in teaching and learning practices.

6.1.2 How does this practice fare against other modern pedagogical approaches?

We saw PhBL quite often being compared with inquiry-based learning, project-based learning and problem-based learning (Lonka, 2018). The

important distinction that theorists and some of the participants were able to bring to this discussion has been that PhBL encompasses elements of all these and other pedagogical methods making it a larger umbrella of an environment under which to nest and use these methods as and when the learning situation demands. PhBL has been explained to be larger than just a pedagogical method (Strauss, 2015). It aims to look at education not as learning about subjects in isolation but as a series of problems to engage with, through inquiry and holistically in the form of projects.

6.1.3 Does real life applicability of knowledge increase with PhBL? Is that what education should crave to be?

All the participants agreed with research (Bobrowsky, Korhonen & Kohtamäki, 2014; Moilanen, 2015) that real-life applicability is an important and necessary component of education. Solving for real-world issues ensures a connectedness and an intrinsic motivation in the learner that is unmatched. According to some of the practitioners, PhBL, especially how it was framed in the NCC, via transversal competencies, has been the best way to ensure true real-life applicability in schooling.

Real-life applicability came up in conversations around learner-driven aspects of PhBL too. Most participants believed that when the learner comes with a question that he/she wants to explore, there is an automatic assumption that something that happened in his/her life made them think about it and therefore, if given a chance to explore it through structured education, applicability of what is learnt is ensured.

6.1.4 Changing world, Newer skills - how do we prepare the younger generation for this changing world? What are some of the constants with respect to knowledge and/or skills that should be taught in school today that will be needed tomorrow as well?

These questions have been discussed in more detail through literature as compared to the findings from this study. There is significantly more theoretical research (Karsten, 1990; Pickup, 2000; Taşdelen & Polat, 2015) on the changing

world and the newer structures in understanding this world as compared to practitioners' views on it. The practitioners on the other hand have taken the changing world as a given and instead discussed in detail how education needs to cope with it. There was remarkable emphasis given to skill-based learning instead of a knowledge-based one.

6.2 Implementation

Information about the implementation of PhBL largely came from the data collected as part of this study. This is because PhBL in its current form and understanding has been mandated to be implemented only since 2016 and therefore no large-scale evaluations of learning outcomes or the general success of this intervention has been conducted yet. Since information about the implementation of PhBL is not triangulated by other research or by theory, this section on its challenges and support structures are strictly drawn from the four interviews conducted as part of this study and should be looked at through that lens.

6.2.1 What have been the challenges faced by practitioners thus far and what kind of solutions are they looking for?

Challenges in executing the design of PhBL in classrooms largely involved strict curricular and schedule structures. Considering how a typical day at school is structured and broken down, PhBL has become cumbersome to carry out in full spirit as it calls not only for extra planning time between teachers but also more research time for each teacher involved. This collaboration and increased effort do not fit easily into a teacher's working hours as they are usually always already full. Therefore, if a school decides to implement PhBL as a project or two every year, it would necessarily demand increased working hours from teachers and a significant effort put into planning, scheduling and collaboration within school teams.

The curriculum itself has been noted to be limiting as all teachers might not be trained or naturally inclined to teach using the PhBL approach. Hence, it would be beneficial if the curriculum involved a more detailed break down of how exactly the many skills mentioned could be mastered along with definite instructional support structures like example lesson plans and example weekly, monthly and period-wise plans.

Another interesting challenge pointed out by some practitioners was that all the curricular objectives that currently exist result in innumerable ways of being combined with each other and across subjects. So, with limited teacher training and continued support, it becomes very hard to gauge one's own work and ways of bringing together different subjects' knowledge.

6.2.2 What is the way forward?

Some of the biggest needs in the Finnish system for successful implementation going forward include: increased pre-service and in-service training on PhBL for teachers and school leaders, increased support with resources such as text books, example lesson and long-term plans and assessment rubrics for learning through PhBL, tackling issues of student, parent and teacher motivation and solidifying the shift from learning knowledge to learning skills.

6.3 Rethinking education

6.3.1 Why change?

This section has been discussed separately owing to its significance in relation to PhBL. All that has been discussed regarding the implementation or perception of PhBL seem to suggest that PhBL is a holistic methodology and for it to work as planned, it needs to be the central driving force in the education system. Its practice needs to be more than in just one or two projects in the year. An ongoing structure for how we think of education would be more useful.

There were multiple discussions with the practitioners who participated in this study about whether education systems of today need a little fixing or a complete overhaul. The loudest voices seemed to suggest that educational reform in the last few decades have been tinkering or mending existing systems in small ways. Now, the world is changing at a faster pace than ever before in history (Pickup, 2000). Its complexity is increasing multifold as we read this page. And in order to not only cope with this quantum world, but also to be able to stay ahead and thrive in this world, we need to equip our young generations with skills and abilities that are impossible to truly achieve with traditional systems of learning (Symeonidis & Schwarz, 2016). A curricular overhaul, a pedagogical overhaul, a learning environment overhaul all become necessary features of a large-scale reform.

6.3.2 Why education?

Literature (FNBE, 2016; Taşdelen and Polat, 2015) and findings have shown that in this process of reform, it becomes important for us to question certain basic features about existing education systems: its purpose, its vision and its mission. A learner wanting to learn seems to be the only driving factor in ensuring successful learning. And therefore, there is a need to solve for learner motivation. There is general consensus that this seems to be a huge task for any of us to be taking on and therefore, the NCC at this point suggests and, in some ways, supports the baby steps that educators in Finland can take in order to get accustomed to an impending reform.

In conclusion, this study seems to be pointing us in the direction of realising just how different the needs world of the future is from that of the past. Further, it suggests that education needs to change along with the changing world. And eventually, shows that research and practice have both deemed PhBL a tool and a philosophy worth trying in order to achieve a new and more functional education.

6.4 Generalisability and Limitations

This research aims to understand Finnish teachers' teacher trainers' and school leaders' perspectives on PhBL and its implementation as a pedagogical approach. There are limitations within this study, that must be mentioned so as to present an accurate representation of the data collected and the analysis drawn.

The first of these limitations is regarding the selection of the participants. In order to fulfil the purpose of the study, the partcipants needed to have tried to implmenet PhBL approach in thier classrooms. Therefore, this study was only able to include those who are already motivated enough to think about this approach and have concrete opinions regarding the same. This resulted in a lack of participation from those practioners who have never tried to implement PhBL and therefore, does not address the reasons behind that decision.

The second limitation in this study lies in the chosen method of data collection. Although the interviews were quite long and I was able to delve deep into certain areas of their practise, they do not ensure complete reliability. For instance, an added layer of data collection such as observation of classroom practise would have ensured data trainagulation that has not currently been achieved.

The final limitation of the study lies in its qualitative nature. The nature of qualitative content analysis demands that the number of particpants be kept minimal. This raises questions around the scalability and the generalisability of the findings from this research. Therefore, added quanititative and longitudinal studies are essential to find accurate data that can be used to influence policy or further curriculum development.

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