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Title: Where Is the Mixing? : Trends in Early Childhood Education and Care Research in the Nordic Countries

Year: 2023

Version: Accepted version (Final draft)

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Please cite the original version:

Harju-Luukkainen, H., Itkonen, T., & Garvis, S. (2023). Where Is the Mixing? : Trends in Early Childhood Education and Care Research in the Nordic Countries. In A. Keary, J. Scull, S. Garvis, & L. Walsh (Eds.), *Decisions and Dilemmas of Research Methods in Early Childhood Education* (pp. 97-111). Routledge. <https://doi.org/10.4324/9781003126577-10>

Where is the Mixing?

Trends in Early Childhood Education and Care Research in the Nordic Countries

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Abstract

Mixed methods have become a very popular method in many fields of research. In this chapter we will reflect on the mixed methods approach as one of the main research paradigms and how it is implemented across the Nordic countries in the field of early childhood education (ECE). We will share our insights based on a blend of research method and reflective practice. Our research question we reflect upon is, how much mixed methods are used in the ECE research in the Nordic countries? In order to answer this, two Nordic journal's recent publications (2018-2020), are explored with the help of systematic content analysis. This is done in order to reveal the focus areas of published research as well as to identify possible gaps. According to the results the focus of the published journal articles was on qualitative research methods. Only 4 papers out of 47 were using a mixed methods design. In our reflections, we raise questions about the research methods taught in teacher education programs as well as in the PhD programs.

Introduction

The Nordic countries (Denmark, Finland, Norway, Iceland, Greenland, the Faeroe Islands and Sweden) have been attracting much interest in the field of early childhood education (ECE). The Nordic approach is interesting for several reasons. These countries continually score high in lifestyle measures, quality of life and children's educational outcomes. All of these countries are known for their high level of social welfare as well as for their social cohesion, which has had its implications on the education contexts as well as making the child-services and special education a priority of the society. The Nordic countries have received a lot of attention during the last years regarding their education policies, practices and their social model more generally.

Together these countries create a so-called "Nordic model". However, it is important to note that this "Nordic model" refers to the economic and social policies common to the Nordic Countries. Garvis and Ødegard (2007) suggest that the Nordic model should perhaps be seen more as a Nordic dialogue, which we have as a starting point of this paper. In the Nordic countries this dialogue has had its implications on the education contexts as well as making the child-services and special education a priority for the society. This includes the development of policies and practices that promote equity for all, with equal opportunities. Part of this has meant reforms on how to support parents, for instance child allowances, parental leaves and provision for preschool and schooling. In this, the overall intention is to support all in society and to create independence and equity. How Nordic countries do this, however, varies among the countries.

We know that this "Nordic dialogue" contributes to many similarities between the countries from policies to practices. We can therefore also assume that this Nordic dialogue between the countries also influences teacher education programs and further also the research foci among the researchers. In this chapter our aim is to take a closer look on what type of

research is conducted (what methods are used to collect data) across the Nordic countries. In this chapter we conduct a systematic content analysis on two Nordic early childhood education journals' publications. These are called *Journal of Early Childhood Education Research* (JECER) and a journal called *Nordisk Barnehageforskning* (*Nordic Early Childhood Education Research, NECER*). In this paper our focus will be on mixed methods, since it has become an increasingly popular paradigm in many research fields. From these premises we have formulated a research question: What type of methodological choices are used in the peer reviewed articles in *JECER* and *NECER*? And further, to what extent are mixed methods designs used in these journals? Our aim is to highlight the focus areas of research in the Nordic countries as well as to identify the methodological gaps in the published research. We believe it is important to reflect on the historical overview of research in the Nordic context to also allow researchers to reflect on their own methodological choices and decisions. In particular, we advocate for 'breaking free' of traditional research methods that may become norm through doctoral training and preference of supervisors. We suggest that gaining experience across multiple methods will provide opportunities for different research understandings and perspectives to emerge, overall strengthening the field of Nordic early childhood research.

Before we continue, it is important we disclose our positionality. Positionality is described as "the position the researcher has chosen to adopt within a driven research study" (Savin-Baden & Major, 2013, p. 71). In this instance we take a position of insider perspective with strong support for mixed methods research. We have experience as quantitative and quality researchers and believe that the benefits have the potential to extend early childhood education. We acknowledge that our strong foundation around mixed methods research shapes our world views and understandings of how knowledge is created, analysed and produced. As such, we argue that it is "critical to pay attention to positionality, reflexivity, the production of knowledge... to undertake ethical research" (Sultana, 2007, p. 380).

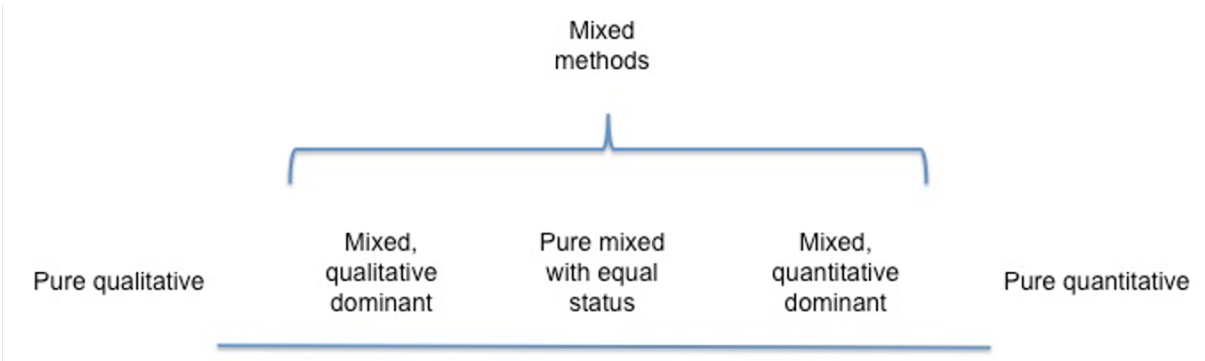
This paper has been developed from our personal experiences in teaching a variety of research methods in higher education across the globe along with an understanding that intentional methodological training in higher education is crucial for the development of research in a country or a region. We also draw from our own mixed methods research in this chapter. Different methods can reveal diverse angles of the studied object and a narrow methodological understanding and application of it will result in impoverished research and results. Therefore, we start this paper by giving the readers an understanding of the different methodological approaches in educational research. Afterwards, we move on to describing mixed methods, why and when to use them, and different ways to “mix.” All of this is crucial information, in order for the readers of this paper to understand the strengths and weaknesses of mixed methods design, but also, as a way forward to diversify research in early childhood education in the Nordic region. We then move on to the research part of this paper, which aims at developing our own understanding as well. Finally, we turn our focus towards the results and conclude our paper with a discussion.

Methodological Approaches in Educational Research

We begin by sharing our understandings of methodological approaches to frame our understanding. The continuum in Figure 1 presents an illustration of the three major research paradigms (adapted from Johnson et al., 2007, p. 124). If we use this continuum as our starting point for defining most commonly used research paradigms, it is easy to understand that there are many different ways to both define but also to conduct research between the main poles. In this paper we provide a closer examinations on only three different types; Qualitative, quantitative and mixed paradigms.

Figure 1.

Illustration of the three major research paradigms. (Adapted from Johnson et al., 2007, p. 124.)



Quantitative and qualitative research paradigms differ in multiple ways. Their *ontology* differs, or the philosophy of reality and what is true. Also, their *epistemology* differs. Epistemology refers to theories of knowledge, especially in regard to methods, validity and scope. From these philosophies then stem differing types of research questions and designs. Quantitative research aims to investigate and *explain* relationships and associations among variables whereas qualitative research, in general, seeks to *explore* a phenomenon in depth. Mixed methods research positions itself in an intersection of the two. As a starting point, we believe, it is crucial for a researcher to understand the underlying ontological, epistemological questions of both qualitative and quantitative research in order to be successful in applying mixed methods. Table 1 summarizes the main differences among quantitative, qualitative, and mixed methods research designs.

Table 1.

Comparison of Quantitative, Qualitative, and Mixed Methods Research Designs

Concept	Quantitative	Qualitative	Mixed Methods
Ontology	Positivism (assertions can be scientifically verified or logically or mathematically proven)	Hermeneutic (a method or theory of interpretation)	Both (emphasis determined by the type of mixed methods design)
Epistemology	Relationships, associations among variables	Exploration of an issue or phenomenon	”Collecting, analyzing and interpreting quantitative and qualitative data in a single study or in a series of studies that investigates the same underlying phenomenon” ¹
Research questions	Descriptive, predictive, causal	Usually open-ended, but can include specific sub-questions	Mixed (sequential or concurrent)
Main research designs	Descriptive Correlational Quasi-experimental Experimental	Grounded theory Phenomenology Ethnography Narrative	a) Sequential (explanatory, exploratory, transformative);

Case study

b) Concurrent
(triangulation,
embedded,
transformative)

Modified from Creswell (2007).

¹(Leech & Onwuegbuzie, 2008, p. 265).

Defining Mixed Methods Research Design

Mixed methods research is the third major research paradigm along with qualitative and quantitative research designs. It can be positioned between these two and is seen as a synthesis that includes ideas from both of the paradigms. Before moving on, according to our experience, it is useful to provide a few definitions for the reader. In this paper, we define research as the design and methods with which one goes about a study (Firebaugh, 2008). Design includes the research questions and the overall plan (we will unpack this further in this paper by going over the different mixed methods designs). By methods we refer to the data sources, ways with which to collect data, and the types of analyses. Mixed methods research in social and behavioral or human sciences started when researchers and methodologists realized that both qualitative and quantitative viewpoints and methods were useful in addressing different research questions or different questions about a phenomenon (Creswell, 2003; Johnson & Onwuegbuzie, 2004; Johnson, Onwuegbuzie & Turner, 2007). Its emergence was partly in response to limitations of research that used only qualitative or quantitative research.

Mixed methods have been used in research since the 1950s and are increasingly used by a large number of researchers. The first methodological movement in the 1950's was called "multiple operationalism" (Campbell and Fiske, 1959), the second reiteration of mixed methods was named "triangulation" and the third one has been assigned several names such as

blended research, multiple methods, triangulated studies and mixed research. However, mixed methods research has over the years become the most popular term used to describe this paradigm (Creswell, 2003).

There is a consensus that mixed methods includes two or more ways of “mixing” qualitative and quantitative methods in a study or a series of studies. However, challenges emerge when the researcher tries to define how these elements relate to one another (see for instance Tashakkori and Creswell, 2007). What should then be considered mixed research? According to Tashakkori and Creswell (2007, p. 4), research can be considered “mixed” at least when it utilizes qualitative or quantitative approaches in one or more of the following stages of the research process:

- types of research questions (descriptive, predictive, or causal, versus open-ended),
- the manner in which the research questions are developed (pre-planned versus emergent),
- types of sampling procedures (random versus purposive),
- data collection (e.g., surveys, rating scales, observation protocols, focus groups, qualitative interviews, ethnography, etc.),
- data analysis (descriptive or inferential statistics versus qualitative analyses such as coding for themes), or
- types of conclusions (predictive versus interpretations).

Johnson, Onwuegbuzie and Turner (2007) further completed a comprehensive study on different leading researchers’ definitions of mixed methods research. As a basis of this study the authors provided a broad definition of the mixed methods and answered the question what it is. According to Johnson, Onwuegbuzie and Turner (2007), mixed methods research can be defined as following:

“Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration” (p. 123).

The authors continue further:

“A mixed methods study would involve mixing within a single study; a mixed method program would involve mixing within a program of research and the mixing might occur across a closely related set of studies.” (p. 123).

Why and When to Choose Mixed Methods?

Beginning and emerging researchers sometimes start the research process from the middle. In such instances, choices on data sources and analyses are made before the research topic and questions are clear. The researcher may choose a particular methodology based on their comfort level and make statements such as “I will conduct a qualitative study” (...“because I don’t know statistics”) or “I will do a survey and report findings with descriptive statistics” (“...because I am comfortable with numbers”).

But in any research, the first step is to find a topic, which the researcher is passionate about, and something that has not been done before (Firebaugh, 2008). A thorough understanding of the literature is necessary for this: What do we know about this topic already? What is something that would provide new information? Would it be taking existing results from earlier studies and examine them with a new population; or could it be to investigate something completely novel about this topic? From there, the researcher formulates questions which then will guide the inquiry. A well-thought-out question will lead to a design that best enables the researcher to answer that question. Design refers to how you complete the different

parts of the study from data sources, data collection, to analyses and conclusions. Let us repeat this because it is so important: *The questions determine how the study will be conducted--the design and methods. In the end, a well-formulated question and a clear design will save time (and headaches) with the data collection and analysis phases.*

So, why mixed methods? Often researchers choose a mixed method design when the “problem” or phenomenon is complex. Examining it from multiple angles is therefore required to paint a fuller picture of the issue (Creswell, 2003). As outlined above by Tashakkori and Creswell (2007), mixed methods can be intertwined in any stage of the research process. Let’s go back and revisit the list with some examples (emphases added).

- *Two types of research questions.* Here the research simply asks a qualitative question and a quantitative question (Harju & Pohjanmäki, 2005). For example, “what is the relationship between parental socio-economic status and preschool enrollment?” and “What are some reasons parents choose not to enroll their child in preschool?”
- *Research question development.* Here the research questions evolve over time. Say, the researcher began with the question about socio-economic status. After finding out some information, decided to then ask the second question about parental reasoning.
- *Sampling procedures.* In quantitative methods, sampling aims to be random. In other words, in the previous example the “population universe” (refer to the chapter of quantitative methods), would consist of *all* parents in the region or area under study. Then to represent this “universe of parents,” the researcher would randomly sample them so that the variation of parents would be captured.

In qualitative methods, sampling can be purposive (choosing only certain types of parents in this example) or utilize snowball sampling (think of it as a network--one participant refers the researcher to the next participant). In mixed methods then, sampling could be where the researcher first sends out a survey to all parents in the region but then chooses some parents

particularly for more in-depth study. (Or the researcher simply uses one type of sampling and the study is “mixed” in other stages of the research.)

The following stages are what most often are thought of as mixed methods--different data sources, collection methods, and analyses.

- *Data collection procedures.* Here the researcher simply uses qualitative and quantitative research. For example, a survey might have closed ended questions using a Likert-type scale (“circle the number that best describes...”). Then, the end of the survey might have some open-ended questions which the researcher will code (analyze) using qualitative techniques, or the researcher might interview participants in person with these open-ended questions.
- *Types of data.* The researcher has data that are qualitative (such as taped interviews) and quantitative (such as socio-economic data of the region) (see closer Harju & Pohjanmäki, 2005).
- *Types of data analysis.* This too is fairly self-explanatory--here the researcher uses different methods to make sense of the data. The researcher may code themes that come from transcribed interviews (refer to the chapter on qualitative methods). For some data, the researcher may also conduct some quantitative analyses (for example correlations, or statistical tests of significance).
 - *Document coding* begs a mention here because it is a specific case of data analysis methods which can be completed with either qualitative or quantitative methods. Coding documents (such as school records) for themes that emerge from systematic reading and analysis is an example of a qualitative data analysis method. But if the documents are first read and coded to categories using some pre-existing or developed coding scheme, then patterns in those categories can be analyzed using statistical methods (see Itkonen, 2007 for first coding the

positive/negative tone of official educational policy documents and then conducting analyses to predict certain types of outcomes).

- *Types of conclusions.* Simply collecting data and analyzing them is not enough. The researcher has to take a step back and ask a bigger question--what does this all mean? Conclusions can therefore also “be mixed.” Using the previous example, the researcher may report reasons (“variables”) which *predict* whether parents enroll their child in preschool. (This would be from quantitative analyses such as regression analyses). But the researcher may then also conclude from qualitative results that parental decisions can also involve many other reasons. Another type of conclusion would be to make theoretical inferences from the results.

What is the value, then, in mixing different methods? A few studies have been conducted on this area. According to Hurmerinta-Peltomäki and Nummela (2006) mixed methods added value by increasing validity in the findings and assisting with the creation of knowledge (see also Molina-Azorin, 2011). The validity is increased since the researchers will have data that look at the question(s) from different angles and therefore gain broader perspectives. Further, the authors also argued that with the use of mixed methods researchers gain a deeper, broader understanding of the phenomenon compared to studies that do not use it. The mixed methods give researchers but also the readers more confidence in the results as well as in the conclusions that they draw from the study (McKim, 2017). According to Doyle, Brady and Byrne (2009) the main rationales or benefits for using mixed methods study are as follows (the list is adapted, emphasis added):

- *Triangulation.* Allows greater validity by seeking corroboration between qualitative and quantitative data.
- *Completeness.* Combining research approaches gives a more comprehensive picture of the phenomenon.

- *Offsetting weaknesses and providing stronger interfaces.* Using multiple research approaches can help in neutralising the limitations of individual approach.
- *Answering different research questions.* Answering questions that one method alone cannot and using a larger repertoire of tools to meet the aims and objectives of a study.
- *Explanation of findings.* One research approach can be used to explain the data generated from a study using the other research approach.
- *Illustration of data.* Using qualitative approach to illustrate quantitative findings helps to form a better picture of the phenomenon.
- *Hypothesis development and testing.* A qualitative phase of a study may be undertaken to develop hypotheses to be tested in a follow-up quantitative phase.
- *Instrument development and testing.* A qualitative study may generate items for inclusion in a questionnaire to be used in a quantitative phase of a study.

When should the mixed methods then be used? Firstly, any research paradigm or mixed methods design can generate research questions and provide warranted answers to these questions. Secondly, according to Johnson et al. (2007) mixed methods should be used

“...when the nexus of contingencies in a situation, in relation to one’s research question(s), suggests that mixed methods research is likely to provide superior research findings and outcomes” (p.129)

In summary, mixed methods could be used when they can be seen as giving added value to the research outcomes compared to using only a single design.

Three Main Types of Mixed Methods Designs

We will next review three mixed methods designs in more detail: Concurrent design and two types of sequential designs (exploratory and explanatory).

Concurrent Designs

In a concurrent design (sometimes also called the triangulation design) the qualitative and quantitative methods are used simultaneously, and their emphasis is equal. Here the data collection happens more or less concurrently, and one data type is not influencing the other, for example, survey responses (quantitative) are not used to design interview questions (qualitative). Instead, in this example, the surveys and the interviews would take place at the same time independent from one another. However, the results are then used in order to provide more information or a clearer picture of the phenomenon. This is called triangulation: The findings are checked for consistency across multiple data-collection methods. Using again the previous example, did the surveys and the interviews provide similar findings? Or did they provide different results, and if so, what might explain it?

Another subtype of concurrent designs is the embedded design. In an embedded design, one data set provides a supportive, secondary role and the study (or series of studies) is based primarily on the other data type. Finally, a transformative concurrent design refers to a research design in which a theory guides the entire research process from asking research questions through data collection and analysis decisions to drawing conclusions.

Sequential Exploratory Design

Whereas in the concurrent design the qualitative and quantitative data are collected simultaneously, a sequential design involves *a two-step process* (Creswell, 2003). Either qualitative or quantitative is first in this process.

The first of these two-step designs is a sequential *exploratory* design, where a qualitative design guides the research. The word “exploratory” is used because qualitative methods guide the research, as qualitative methods are considered to “explore” a phenomenon. But because the sample might not represent all persons in the population universe, or the sample

is small, generalizations cannot be made. This does not mean that the results are not important -- quite the contrary. Qualitative results often provide depth to understanding a phenomenon (Creswell, 2003). But because of the limited nature of generalizability of qualitative data, Creswell (2003) and others refer to this design as exploratory.

From qualitative results (the first step in the sequence), a hypothesis is generated to gather further detailed information through quantitative means (such as developing a survey based on the themes from the qualitative findings). For example, during the first step diaries, interviews or focus groups might be collected with findings used to create a survey for the second phase.

Johnson et al. (2007) defines the qualitative dominant mixed methods research approach as following:

“Qualitative dominant mixed methods research is the type of mixed research in which one relies on a qualitative..., view of the research process, while concurrently recognizing that the addition of quantitative data and approaches are likely to benefit most research projects” (p.124).

Sequential Explanatory Design

Sequential explanatory design is also a *two-step process* in data collection, but here quantitative methods are used as the main method and the qualitative is used afterwards, to better understand the quantitative results (Creswell, 2003). The basic idea is the same in this type of sequential design as the one above--there are *discrete* stages where one set of data is collected first, followed by the other. The term “explanatory” is used (Creswell, 2003) because statistical analyses are said to *explain* the relationships between and among variables through their relative significance (referred to as *p-values*), predict outcomes (through coefficients or probability), and/or provide associations among variables.

In this design, greater emphasis is placed on quantitative results. However, they are then used to inform the qualitative stage of the design. This design is appropriate when the researcher wants to understand quantitative results more in depth, for example by first designing qualitative interview questions based on the quantitative findings to probe deeper into the patterns found in the statistical analyses and then selecting some individuals for in-person interviews (see Itkonen, 2009).

In sum, quantitative dominant mixed methods research has been defined as following by Johnson et al. (2007, p. 124):

“Quantitative dominant mixed methods research is the type of mixed research in which one relies on a quantitative... view of the research process, while concurrently recognizing that the addition of qualitative data and approaches are likely to benefit most research projects.”

We will next turn to examine the prevalence of mixed methods in ECE research in Nordic countries.

Research Aims and Questions

The aim of this research was to get an understanding of the research paradigms used in research in the Nordic countries on the field of ECE in order to analyse and get an understanding of methodological research trends of the Nordic countries. Further, this research allows us to reflect upon:

- 1) What type of methodological research paradigms are used in the Nordic ECE research as the main paradigm of the study?
- 2) How much mixed methods are used in the ECE research in the Nordic countries?

These research questions are developed from our personal observations. We all work closely with methodological questions in our work and have observed, anecdotally, that the use of

mixed methods in education research seems to have somewhat of a minor role in the Nordic countries. With this research we want to take a closer examination at the actual current situation and to develop our understanding further. Our personal goals are to use these findings to inform our own teaching and for the development of teaching in higher education in ECE programs more broadly.

Data

For this chapter we conducted a systematic content analysis on two Nordic ECE journal's publications. These are called *Journal of Early Childhood Education Research (JECER)* and Journal called *Nordisk Barnehageforskning* (Nordic Early Childhood Education Research, *NECER*) Both of these journals are published in the Nordic countries, compressing mostly research from the Nordic region. These two journals publish articles in many of the Nordic languages. These are for instance English, Swedish, Norwegian and Finnish. Articles in Finnish are only published by *JECER*, which is a journal based in Finland.

In this study the data consisted of a total of 47 papers published in *JECER* and *NECER* journals during 2020-2018 (see Table 1). It is important to note that special issues and short papers were not included into the analysis. Further, only articles that had undergone a peer review were included in the analysis. The short papers were found only in *JECER*, and these are not peer reviewed. Also, thematic issues were not included, since they might skew the results regarding the methods used.

From *JECER*, all papers published in 2020-2018 were included in the analysis. These were in total 24. From *NECER* all papers published between 2019 and 2018 were included in the analysis. From *NECER* an issue from 2020 was not published at the time of the data gathering. In total 23 papers were included into the analysis from *NECER*.

Method

Qualitative research involves purposeful use of describing, explaining and interpreting collected data (Williams, 2007). In this study, we engaged with content analysis of 47 peer reviewed journal articles. Leedy and Ormrod (2001) describe content analysis as “a detailed and systematic examination of the content of a particular body of materials for the purpose of identifying patterns, themes or biases” (p. 155). “The method is designed to identify specific characteristics from the content” (Williams, 2007, p. 69). In this study, the content is the textual data of journal papers.

The research team reviewed the papers and on the highest level divided these into qualitative, quantitative or mixed methods strands. After that the team examined these categories closer. According to Leedy and Ormrod (2001), this approach leads to the highest level of objective analysis as the identification of material can be studied and discussed, allowing the quality examined to be mutually agreed upon. The approach also leads to trustworthiness of descriptions as patterns, themes, and biases are discussed within the research team. In the final phase, a table describing the different methodological approaches was produced.

Results

All of the journal articles were coded into three categories. This was done according to what methodological approach was used to obtain or analyse the data. In total 47 peer reviewed journal papers were categorised into qualitative, quantitative or mixed methods approaches.

Table 1.

Different main research approaches used to gather data in recent papers published between 2018-2020

Year	Qualitative	Quantitative	Mixed methods	In total
2020	5	2	2	9
2019	19	0	1	20
2018	13	4	1	18
Total <i>n</i>	37	6	4	47

As can be seen in Table 1, the most used approach of research in the field of ECE in the Nordic countries is qualitative. In total, 37 out of 47 (79%) papers were categorised as predominantly qualitative. Further, quantitative approaches were used in only 6 papers out of 47 (13%). Mixed methods designs were also seldom used, only in 4 papers (1%). During the last two years (2019-2020) in these two journals only 2 papers could be categorised as quantitative. The Finnish *JECER* journal published most of the papers using a quantitative approach. In total it published 5 papers out of 6 during the last two years.

The data of the papers was gathered mainly using interviews, in groups or individually. Here, some type of content analysis was then used to analyse the obtained data. In a few studies a much rarer approach was used to obtain the data. One study for instance used artography, one accelerometer and one used photo as the main way to obtain data. The quantitative papers published did not use any advanced statistical methods. The results were presented with the help of basic statistical analyses as well as with factor analysis, for instance.

Reflections

In this chapter we briefly reviewed qualitative and quantitative research designs, and then situated mixed methods designs in their landscape. We then discussed different types of mixed

methods designs with the hope that the readers would be able to pinpoint which particular design within the mixed methods “family” they are or might be using. We finally presented results on our prevalence study of the use of various designs in ECE research in two Nordic journals.

The findings from this study show a strong focus on qualitative research within the Nordic region within ECEC research. It is unclear why the focus relies on qualitative research; however, questions can also be raised around generalisability, reliability and replicability of research (see Creswell, 2003). We reflect on what research is and how it is produced, especially in some of the Nordic studies. In particular, there is a strong tradition of phenomenology where research appears largely descriptive and less analytical. Given the small sample sizes, it is also unclear how impact of research is given beyond the initial small sample from the dataset. As researchers from a pragmatic background, we have concern around how studies can help inform future practices in early childhood education if they are related to individual contexts. One argument could be that qualitative research provides voice and individuality to research participants. However, in another perspective, how relevant the phenomena explored is relevant to a larger sample is unclear, with the reliability of findings being questioned due to limited statistical power size (see also Hurmerinta-Peltomäki and Nummela, 2006; Molina-Azorin, 2011).

The most common research method associated with qualitative research was interviews. This may have been because certain qualitative paradigms were more aligned with interviews as a data collection tool. It is important to acknowledge however that interviews are also self-report data.

One hypothesis on qualitative research may also be around a culture in the Nordic regions away from standardised approaches that are based on demographic profiling. For example, some Nordic countries will not engage in collecting specific variables based about

children or their families as there is no focus in collecting some individual data. The group would have a norm rather than looking at individual characteristics within the group. The focus on a group rather than an individual then provides a culture perhaps more around qualitative research.

We hypothesise that the reproduction of qualitative research within Nordic early childhood education and care may be created from long traditions of qualitative research being based within Nordic universities. As such, there is a continual reproduction around research (including doctoral education) around qualitative research, with research supervisors teaching students in their own research traditions. Given the lack of quantitative researchers in ECEC, there is limited possibility to grow quantitative or mixed methods approach that would allow greater depth and breadth when exploring and explaining research phenomena (Molina-Azorin, 2011; Hurmerinta-Peltomäki and Nummela, 2006). This may create long term problems around early childhood education research, especially in regard to support children's learning and development at a larger scale. Policy decisions are also generally made on larger data sets of children. We also suggest that for qualitative research to become more informative and transformative, greater conversations are necessary between qualitative, mixed-methods and quantitative researchers to challenge and extend ECEC knowledge. To create such opportunities, we suggest growth and support for quantitative and mixed-methods research within early childhood research education at universities. This means broadening the current skills and capacity of academics across universities to create possibilities for rigorous academic research debate and discussion within ECEC around ontology, epistemology, research questions and main research design. The use of different research designs also has the possibility to move Nordic ECEC research to become exploratory as well as explanatory.

ECEC represents a complex interagency system of education and supports, which invite researchers and practitioners to use a sophisticated methodologies to examine questions both

at the macro level (agencies, schools, other systems) as well as the lived experiences of families, teachers, social workers, children and other involved persons. Mixed methods therefore can help paint a fuller picture of complex phenomena in ECEC by analyzing the phenomenon both at the aggregate and individual levels. Put another way, mixed methods can be used to conduct program and/or policy evaluations and to develop policy proposals through the use of larger-scale, quantitative data, while also providing a deeper, richer understanding through qualitative information.

We also return to our initial positionality statement, we realise that our understandings and reflections are shaped by our own views of the world we do acknowledge however that by engaging in reflective practice and sharing our inner thoughts, we can reduce bias and partisanship (Rowe, 2014).

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