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# Polish parents' views on mathematics education in Swedish preschools

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*This paper describes the results of a survey of Polish immigrant parents' views on mathematics education in preschool. In alignment with the Swedish preschool curriculum, the results show that parents viewed learning as being connected to play. The parents to a large extent see similar frequency of mathematical activities occurring at preschool and at home. Parents often commented on children's involvement in collaboration when playing. Swedish preschools' pedagogical practices about learning through play seem to have been adopted by parents. The findings suggest that parents, like children, can be socialized into the norms and values of Swedish preschools through their children's attendance of them.*

*Keywords: Immigrant parents, mathematics, preschool, socialization.*

## Introduction

Mathematics education, as a part of everyday life, is embedded within a variety of settings. These settings include institutions, such as schools and preschools, but also homes. Within each setting, there are structures and expectations which contribute to the development of norms and values (James, Jenks, & Prout, 1998). Therefore, Swedish preschool as being framed by institutional norms and values (Skolverket, 2011), must also be considered as shaping society's understandings about the world of children and their families. As James et al. (1998) state: "Childhood diversity considers the infinite variety of the social context in which children live, leading to a deconstruction of childhood's conventional, singular and reductive form" (p. 34). As a consequence of migration, culturally diverse societies can represent different views of what kind of childhood is available and thus the learning that children should receive in Swedish preschools. Therefore, newcomers' perspectives on mathematics education in preschool can contribute to a better understanding of the variety of children's childhoods, when those views are recognized as legitimate. As part of a wider project investigating this topic, I aim in this paper to provide insights into Polish parents' views about mathematics in Swedish preschools. In 2012 Polish immigrants were the third largest group of immigrants in Sweden (Statistics Sweden, 2012), yet their views on education have rarely been investigated. My research question is: How do Polish parents view mathematics activities in Swedish preschool and at home?

## Socialization and parents' views on mathematics education

The theoretical framework for this study is socialisation, through which people who inhabit a society create it (James et al., 1998). Socialisation processes have two components, the production and reproduction of (1) norms and values and (2) skills and knowledge. Socialisation processes situate society members as needing to acquire relevant knowledge to sustain society over time and involve reproducing culture from one generation to another. As well, as the milieu in which a society operates changes, a need arises to produce new ideas and culture. Ebrahim (2011) stressed that social interactions contribute to the production and reproduction of rules and structures within a society.

Children acquire the understanding, skills and awareness of different mathematical concepts, through their experiences outside educational institutions (see for example, Brenner, 1998). This provides opportunities for children's own experiences to be the basis for developing their mathematical thinking in preschools (Lembrér & Meaney, 2015). In the Swedish preschool curriculum (Skolverket, 2011) four goals are related to mathematics: one is connected to content; while three require preschools to provide opportunities for children to develop mathematics skills, abilities and concepts. It also suggests that children should use their interests and experiences when acquiring mathematical knowledge and skills in preschool.

However, the institutional values and norms of Swedish preschools may constrain immigrant parents from being able to recognize experiences from their country of origin as being valued in the new setting (Lunneblad, & Johansson, 2012). This may have long term implications for families' involvement with educational institutions in new countries. For example, Giovannini and Vezzali (2011) focused on how contact between teachers and immigrant parents affected children in elementary schools. They found that parents' views about their role in the relationship with school can define boundaries of that role. The education institution has a role in changing those boundaries. In Goodall and Montgomery's (2014) study, parents' reflective involvement in their relationship with schools was strengthened by an acknowledgement of their contribution to children's learning. Yet language differences may impede these possibilities. Civil, Bratton and Quintos (2005) suggested that the dominant language spoken in school, can affect children's interest in identifying with their home language. As a result, children can have difficulties talking with their parents about their school work.

With an increase in immigration, there can be challenges around gaining the active participation of immigrant parents into the education system. Kaur (2010) suggested: "creating strong links between families and early childhood settings extends children's learning, fosters a sense of community and acknowledges the expertise of families" (p. 53). It has been found that when refugee and immigrant parents are included in education systems, there are academic benefits for their children (Krasteva, 2013). Yet, Whyte and Karabon (2016) found that relationships between home and school are often built on one-way communication, with information going from school to home. This creates boundaries between families and school. Wager and Whyte (2013) investigated how preschool teachers valued children's home experiences of mathematics. They found that preschool teachers act in two different ways to children's home mathematical experiences. The first involved only recognizing activities already familiar to the preschool teachers. In this way existing norms and values are recreated. The second integrates children's home experiences into new activities, providing opportunities to create new norms and values. Wager and Whyte's study raises a question about whose ideas are used in mathematical activities, also how these ideas are recognized as valuable. Understandings about socialization indicate that institutions need knowledge of immigrant parents' norms and values. Otherwise, opportunities offered by institutional settings and arrangements focus on integrating into the existing Swedish societal norms and values and not considering possibilities for creating new norms and values to match the changing milieu. Preschools have the opportunity be influenced by parental views, which could contribute to widening the variety of mathematics activities that can be based on children's own interests.

## Method

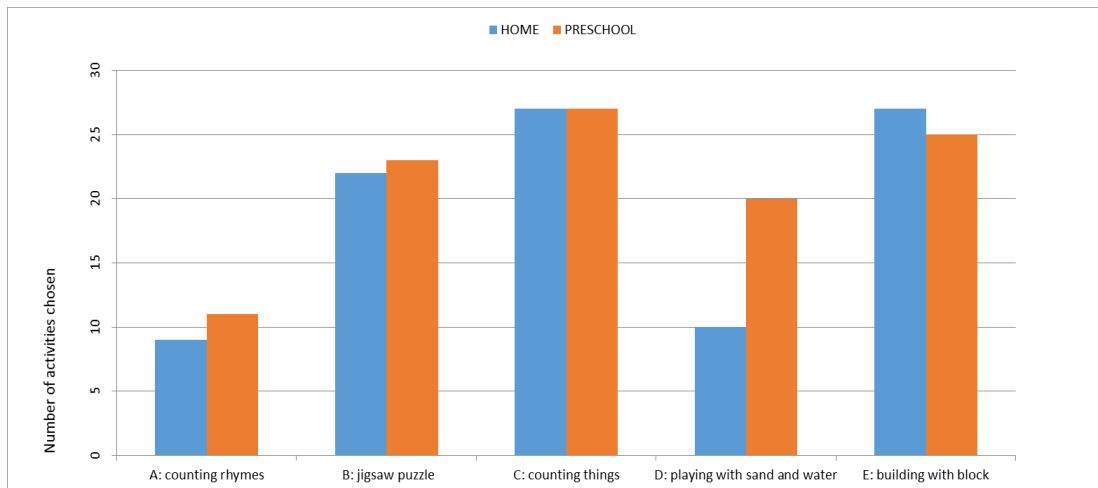
The data were collected through a digital survey, consisting of 16 questions in August, 2016. The survey was provided in Polish and Swedish. Participants were identified through a snowballing approach (Cohen, Manion, & Morrison, 2000). First a Polish organization and an internet forum for Polish citizens living in Sweden were provided with a link to an anonymous online questionnaire. People who completed the digital survey were then asked to share the link with others. All participants had a Polish linguistic and cultural background and were immigrants to Sweden. They had children who had attended preschool in Poland and/or in Sweden. The participants were a convenience sample and cannot be considered representative of the population of Polish parents in Sweden. As such, the survey results can provide information (Coyne, 1997), which can be investigated in more in-depth studies at a later date. At the time of the survey, the participants had lived in Sweden between 2 and 19 years. 31 participants responded to the survey (1 male, 30 females), aged between 22 and 47 years. Participants were described in the study as: P1–P31.

The survey's questions were divided in three parts. The first part consisted of demographic information: gender; age; number of years living in Sweden; if participants' children attended preschool in Sweden (30 did, 1 did not); and if participants themselves had attended preschools in Poland (23 did, 8 did not). In the second set of questions, participants were asked to describe their experiences of learning mathematics, including their experiences of learning mathematics in preschools in Poland (Question 6). Question 7 asked about the experiences of both themselves and their children. Questions 8 and 9 asked about situations in which children could learn mathematics at home and at preschool in Sweden. The next question was about possible mathematical situations, in Polish preschools. However, only one participant had children attending preschool in Poland so this data were excluded from the analysis. The third part used multiple-choice questions (Questions 11 and 12) to investigate parents' perspectives of mathematics activities. Five activities were suggested as occurring at preschool and at home and these were based on what had been found in research by Bottle (1999) of observations, at home and outside home. In Bottle's research, parents talked about mathematics activities such as: number and counting; doing puzzles; making towers; putting things in and taking them out again and things like full, empty and half full. The multiple-choice responses in the questions about parents' perceptions of mathematical activities were: counting rhymes; jigsaw puzzles; counting things; playing with sand and water; and building with blocks. Participants were also asked to express what was important for them based on their own experiences of mathematics (Questions 6, 13 & 16) and to describe the importance they attached to their children learning language and mathematics (Questions 14 & 15). The final question was open-ended and provided parents with a possibility to share something about their children's learning of mathematics with teachers in preschools.

Two analyses of collected data were done. The initial quantitative analysis was of parents' views about mathematics activities at home and at preschool. The second, qualitative analysis used the socialisation components of production and reproduction of societal norms and values (James et al., 1998), to understand parents' views about mathematics in preschool. By analyzing the parents' responses, it was possible to identify the norms and values that parents held about mathematics in kindergarten and consider how these were related to production and reproduction.

## Quantitative analysis

Asking about particular activities was seen as a way of concretizing what could be considered mathematics for the parents. The questions were “Which of these things do you do at home, which you think might help children learn mathematics?” and “Which of these things do your children do at preschool, which you think might help them learn mathematics?”. The parents could provide more than one answer.



**Figure 1: Frequency of home or preschool activities**

Figure 1 shows which activities been chosen by parents as being present at home and at preschool. From most parents’ perspective, the children engaged in similar types of activities at home and at preschool which would contribute to them learning mathematics. For example, 27 out of 31 participants considered that Activity C: counting things, was something that parents considered children would do at preschool and home and would support their learning of mathematics.

The only significant difference between perceptions of what kind of mathematics activities are present at preschool and home was for activity D: playing with sand and water. Parents did not chose this activity, as something their children engaged in at home. Although more research on this is needed, a simple explanation may be that they did not have the facilities at home for it. Similarly, none of the participants, when they responded to question about describing their own ideas about how and when children learn mathematics, suggested playing with sand and water.

## Qualitative analysis

In this section, I describe parents’ views about mathematics education for their children, as expressed in the survey. Analysis highlights why parents considered it is important for children to engage in mathematics activities in preschool and at home. The focus is on parents’ perceptions of the institutional norms and values in Swedish preschool through their responses to the survey questions.

Parents’ experiences, from their children attending Swedish preschool, seemed to have shaped their views about mathematics activities. This is clear in statements, such as the one made by P2, where mathematical experiences seemed to be transferred from preschool to home.

P2: Children learn basic shapes while playing. Shapes are used in different situations and aspects. My child comes home and continues asking us about different shapes "which is a shape of"? (in relation to various everyday objects).

It would seem that P2 in this statement is reproducing the norms and values about the importance of children knowing about shapes and about learning through play. Learning through play situates children as being active participants in the socialisation processes. It is unclear whether P2 had the same set of norms and values before her contact with Swedish preschools, but it is possible to claim that they are in alignment with the Swedish preschool curriculum (Skolverket, 2011).

The parents' reflections of their experiences from the institutional practices of the preschool in Poland, were evident in some of their answers. For example, P11 referred to ways of learning in preschool by saying:

P11: They (her children) attended (Polish preschools) and learnt exactly the same ways as I did at their age.

P11's perception was that Polish preschools had not changed in the generation since she had attended preschool. This suggests that she did not see Polish preschools as sites for producing new norms and values, just of reproducing the same ones across time.

The milieu in Swedish preschool was seen as a source of knowledge and learning of mathematics for children.

P21: It seems to me that the Swedish preschool have a big focus on mathematics. There is always enough mathematical activities, children usually have access to lots of toys/games which also are developing their mathematical skills.

The emphasis on preschool materials focusing on mathematics is viewed positively. P21 highlighted the mathematics that could be learnt through playing with toys at preschool. Opportunities for learning mathematics are in the environment and children have the possibility to explore them, as active agents reproducing societally-valued understandings about mathematics. However, it is unclear what the responsibility of a preschool teacher is, apart from making activities and toys available to children. It is unclear how the children learnt that what they are doing is mathematics.

P28 made reference to how everyday situations could support children's curiosity. Like many of the parents, points such as these were linked to the importance of children playing. The norm of Swedish preschool is for children to play and interact together. Play is *considered* as a stimulus for learning in interactions. Children's own knowledge can initiate interaction in play and, as Ebrahim (2011) stated, children can bring in imaginary characters during play. In this way, children produce and reproduce knowledge and understanding about their lives.

P28: Children learn through play with toys and friends in everyday situations. Children should be allowed to use their curiosity and discover new things so they can learn more easily.

A particular aspect of play that parents highlighted was that children could make their own decisions, situating them as active participant in the socialisation process. P13 expressed how much she valued this aspect of Swedish preschools.

P13: I like it here (in Sweden), that children have a lot of freedom in choosing and directing their play activities.

Responses such as this are in alignment with values expressed within the institutional practices of preschool (Skolverket, 2011). Children being active participants in activities, which they design or adapt, seems to be a shared value in Swedish society about what is normal for childhood. Children are socialised into this shared norm while engaging in these activities.

Parents' views of how children should learn mathematics through play is in alignment with the Swedish preschool curriculum (Skolverket, 2011). Parents mentioned play explicitly as an approach which was beneficial for learning generally, including the learning of mathematics.

P29: In preschool, play is the main form of learning. Children are enthusiastic and learn about the world around them through play. They should receive many interesting incentives in order to actively gain knowledge about the world in general, as well the mathematical world.

In responding to the final open-ended question in which they could share something about their children's learning of mathematics, the parents highlighted the importance of mathematics in everyday activities, such as: counting things; classifying objects; doing arithmetic; recognizing numerical symbols; building with Duplo. P30 reported that children gained a better understanding of mathematics while playing, but seemed to equate counting with mathematics.

P30: Through play children learn to count and get to know the numbers. I think that play is a good way to learn mathematics.

Counting objects during play, can be about making sense of existing knowledge. Awareness of this knowledge (counting) involves an active process of interpretation of this activity as mathematical. Similarly, P11 referred to everyday activities and emphasizing the value of learning mathematical terms and problem solving.

P11: Learning mathematics, vocabulary and mathematical concepts is necessary for children. They develop their abstract thinking, analyzing, reasoning and decision-making processes.

P11 emphasises what children need to learn, and why that is important. This indicates what this parent considers to be the valuable knowledge that children need to reproduce. What is interesting is that these practices reflect the goals and guideline in the curriculum, "develop their ability to distinguish, express, examine and use mathematical concepts and their interrelationships; develop their mathematical skill in putting forward and following reasoning" (Skolverket, 2011, p. 10). As in the first example in the results, it is unclear if this parent held these views of mathematics before coming to Sweden, but the fact that they are so closely aligned indicates that more research is needed to investigate this further.

These parents viewed play as a vehicle for learning and children's participation in mathematics activities as an active form of play. This is in alignment with the Swedish preschool curriculum (Skolverket, 2016), which state that play should be a stimulus for children learning and development. By expressing children's possibilities to make choices and decisions, parents show that they accept that children should be active participants in the socialisation processes. They also

had expectations that their children would have opportunities to engage in a variety of mathematics activities. They exemplify activities that promote the learning of knowledge of mathematics which is socially-valued. Within this perspective, socialisation appears as a process of recreating knowledge.

## Conclusion

In this paper, I have presented the views of a set of Polish parents about the mathematics activities their children engage in at Swedish preschools. The findings suggest that, in alignment with the Swedish preschool curriculum (Skolverket, 2011), the parents emphasized that young children's engagement in mathematical tasks in preschools should focus on learning through play. However, whether the parents' views had changed since they arrived in Sweden is unclear. It is also unclear if this group of parents can be seen as representatives of Polish parents in general, living in Sweden. Therefore, more research is needed to investigate if and how parents' views of mathematics in preschools are before and how opinions change once their children begin preschool in Sweden.

We need to gain a better understanding of how immigrant parents align with the pedagogical structures in the new country of residence. Much of the research based on work with immigrants' families (e.g. Civil et al., 2005; Giovannini & Vezzali, 2011), show gaps and struggles with parent's involvement with educational institutions. The group of Polish parents in this study show the opposite. This article gives a very brief indication of what is the potential for the group of immigrants from Poland. Their views are interrelated with their children attending preschool. They seem to interpret and adopt the Swedish preschool norms and values, through their children participation in preschool.

The educational structure, in which both children and parents adopt the norms and values of the society in their present country of residence, can be seen through processes of socialisation. Parents become learners of educational and pedagogical practices by using their experiences to recognize and work towards an understanding of the present. Socialisation is a complex and dynamic process with range of interconnected aspects operating simultaneously. Thus, more research is needed to understand the complexity of this process.

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