

Activities and Values in School-Age Educare Mathematics

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Abstract: Based on an empirical study of policy enactment and mathematical enculturation in Swedish school-age educare, a conceptualization of *mathematics* as the assemblage of *activities* and *values* is proposed. Observations were analysed using policy enactment theory and the lens of mathematical activities. The result shows that making creations, describing relationships and addressing problems are mathematical activities evident in the practices of school-age educare. Values of plausibility, critical stance and connectedness are evident. This alternative conceptualization of mathematics offers possibilities for respecting a balance between education and care in practice. The result opens for alternative ways of thinking about mathematics as a complementing and compensating area that resists the tendency towards *schoolification* in educare.

Keywords: extended education, mathematics, activities, values

Introduction

It is afternoon at the educare centre the Moon and children are engaged in various activities. I approach Gabriel and Michael who are sitting around a table. They are cutting out cardboard figures to build a city in which robots—that they had also assembled—can travel around. Gabriel designs a parking meter and calculates the fees. I ask Gabriel how much it costs to park. “Fifty kronor for four hours”, and he continues drawing. “Okay”, I say. “But how much is it to park one hour?” He thinks: “Well... 50 divided by... four...” Gabriel estimates: “Per hour it will be around 15 kronor, or we can say ten”. Michael objects: “It may not necessarily be division. This isn’t math... I mean, if it is 80 kronor, and if you park for two hours, it’s not certain that you should pay 40”. Michael continues as he gestures with hands and fingers: “If you buy three pieces of something in the store for 15 kronor...” He shakes his head, shows one finger and continues: “... and then you want to buy just one, it’s not certain one-piece costs five kronor”. I ask: “Why is that?” He shrugs: “I don’t know, maybe they want to earn money. One piece might cost seven or so...”

This vignette illustrates what could be considered mathematics in Swedish school-age educare. Children perform activities at will, based on their interests. The adult asks questions and invites children to explain. Materials are touched, cut and put together. Children’s stories and reasons for what they do emerge in conversation. There is a clear expression of what the situation *is not* about: “*This is not math...*” Michael exclaims when Gabriel tries to calculate prices using a typical school maths division: If a price for $4x$ equals 50, then x equals 50 divided by four. Michael points that in their robot, paper city another logic is valid—it may not necessarily be division. As in a real shop, they also want to earn money for the price of a unit. Still, there is a logical explanation for the price, and it is reasonable.

The vignette captures the tension explored in this paper. On the one hand, the practice of *school-age educare*—“*fritidshem*”¹ in Swedish—has held an “exceptional position [...] promoting both education, care, play and leisure in a beneficial way” (Klerfelt, Haglund,

1 85% of Swedish children between six and nine participate in school-aged educare, *fritidshem*. While school is compulsory from the age of six, school-aged educare is not. To participate in the latter, a child’s caregivers need to be working or studying (SNAE, 2018b). For more details, see Klerfelt et al. (2020).

Andersson, & Kane, 2020, p. 187) for children's general well-being and development. Education in this setting prioritizes meaning making and playful learning in caring ways. On the other hand, recent education policy in Sweden has tended to extend the teaching discourse of compulsory school to school-age educare, aiming to improve student achievement in international comparative measurements such as OECD's PISA tests (Government, 2016). The term *schoolification* highlights the tendency to assimilate other educational settings into schooling in content and character, subordinating their own value and importance to the goals of compulsory schooling (e. g., Gunnarsdottir, 2014; Lager, 2015). We claim that the tension between the possibilities of educare and the tendency towards schoolification is visible when mathematics is made explicit.

In 2016, the Swedish National Agency of Education (SNAE) revised the curriculum for school-age educare to support learning in different areas such as mathematics. "Mathematics as a tool to describe ordinary phenomena and solve ordinary problems" (The Swedish National Agency of Education [SNAE], 2018a, p. 25) is stated as an aim. The problem emerges since the term "mathematics" carries a meaning closely linked to the practices of compulsory schooling which are characterized by structured content, with a high priority given to formalization and the dominance of rules, numbers and symbols, the authority of math books, and solutions that fit the right answer in the book (Helenius et al., 2018; Holmberg, & Ranagården, 2016). Such an idea of mathematics is strongly rooted in the collective experience of formal school education, probably shared by most school-age educare participants—adults and children alike. If not challenged, there is the risk that the views, activities and relations typical of school mathematics will colonize and inhibit the emergence of other possible meanings of mathematics that are pertinent to school-age educare.

Indeed, the limited research that explores mathematics in extended education has pointed to this tension. For example, Haglund and Peterson (2017) explored why practitioners use board games in school-age educare. They showed that supporting social competences and structure were the most predominant reasons. Learning cognitive abilities was a secondary reason that appeared when mathematics was made evident. However, practitioners pointed to the difference of the use of board games for the development of mathematical skills in the context of school age educate and in school. Harvard Maare (2015) points to the tension between teachers' and children' intentions for developing mathematical relationships. Game designs that allow peer collaboration and children's affect and motivation bring attention to mathematics in school age educare. Nonetheless, the nature or characteristics of mathematics are not interrogated but remain subordinated to the interactions. Other intervention studies in countries such as Germany have emphasized that participation in extracurricular activities in a variety of areas, including mathematics, supports the development of social and academic competences (e. g., Fisher, & Klieme, 2013). In other locations, such as Hong Kong, studies have highlighted general competencies and lifelong learning abilities, encompassing non-formal and formal learning, as well as mathematics (e. g., Sivan, & Po Kwan Siu, 2020; Bray, 2013). It is evident in these studies that the meaning of "mathematics" in extended education is not interrogated. In some cases, the mathematical elements seem intended to supplement school; in other cases, the presence of mathematics seems intended to amend for the children's lack of success in school.

In this article, we propose an alternative understanding of what could be labelled as "school-age educare mathematics" in harmony with the formulation of education and care. Since school-age educare has a valuable offering that combines education and care for chil-