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The heroic child: Some thoughts on learning in early childhood mathematics education

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Abstract. *In this paper, I dwell on a common inadequate conception of the child that often serves as a foundation for learning and pedagogy in contemporary early childhood education — the conception that I term the heroic child. Drawing on Vygotsky's work, I plead, instead, for a conception where the child is considered as cognitively and emotionally growing in intimate relations with her social and cultural context.*

Keywords: early childhood education; Vygotsky; scientific concepts

1. Introduction

A few years ago, the Ontario Ministry of Education (OME) released the document *How Does Learning Happen? Ontario's Pedagogy for the Early Years* (Ontario Ministry of Education, 2014). The goal was to sketch its educational approach to early childhood education. Like any policy document of this kind, the document cannot avoid conveying its own conception of the child. Unfortunately, Ontario's official conception of the child does not bring anything new. We read, for instance, that "children are able to explore the world around them with their natural curiosity and exuberance" (p. 7). Through engaging in "play and inquiry, [children] develop skills such as problem solving, creative thinking, and innovating, which are essential for learning and success in school and beyond" (OME, 2014 p. 7). And a bit further, we are told that

active play . . . allows children to explore with their bodies, minds, and senses, stimulating them to ask questions, test theories, solve problems, engage in creative thinking, and make meaning of the world around them. These investigations through play fuse intellect

and feeling to help children make connections and develop the capacity for higher-order thinking” (OME, 2014, p. 34).

The concept of the child put forward by the OME continues a long-standing humanistic tradition that conceives of the child as a natural inquisitor who, through play, engages in exploring her environment and, in doing so, builds theories, subjects them to testing procedures and ends up refining them. The problem is not to conceive of the children as natural inquisitors. Children are certainly curious about their environment. But young chimps and young squirrels are too. As I write these lines, a squirrel comes close to me to see what I am doing sitting at a table in my backyard. The squirrel is certainly curious. I want to argue that the problem with the OME’s conception of the child (and the OME is not alone in this, of course) is that the child is conceived of as already endowed with the rationality that is required to read and interpret the world: the child is portrayed like a miniature-scale scientist.

2. The inadequate conception of the child

Canadian psychologist Jack Martin (2004) has already described (and criticized) this romantic and rational conception of the child. He summarizes it as follows: The concept that implicitly is used to imagine the child in education and educational psychology is a self-regulated adaptive

individual labouring in relative solitude, constituted of componential mechanisms, processes, parts, and strategies . . . an individual actor capable of simultaneous action and reflection on this action, much like a stereotypic scientist in close scrutiny and judgment of experimental phenomena of interest . . . [An individual] whose most vital resources are apparently available within its detached internality . . . a self that already knows its business, one that requires only a facilitative grooming to become more fully socialized and intellectually engaged. (Martin, 2004, pp. 193-194, 197)

More than fifteen years after the publication of Martin’s seminal article, many (most?) educational systems persist on drawing on this truncated conception of the child that Piagetian-inspired pedagogy and constructivism at large have defended in such a fierce manner. If you thought that constructivism is gone, I am sorry to tell you that this is not the case. It is still with us. It should not come as a surprise, then, that in an ongoing research project on numeracy in early childhood education, my research team is systematically reminded that educators’ pedagogical interventions should make room for the child to follow her own ideas and interests. In this view, the educator’s role is to capitalize on the child’s own interests and make sure that she goes as far as she can in her own investigations. Of course, the

problem is not about discarding the child's interests. It is absolutely important to take these interests into account. The problem is that the child's interests might not be enough. It is at this juncture that I find interesting Vygotsky's distinction between spontaneous concepts and scientific concepts.

3. Spontaneous and scientific concepts

Vygotsky's notion of scientific concept is very complex, and it is not exempt from criticism. There is a point, however, where I think Vygotsky is beyond dispute: While spontaneous concepts come from the spontaneous activity of the child (like in free play), scientific concepts, by contrast, require an explicit and systematic reflection on them. What is distinctive of this reflection is not only its conscious and systemic nature, as Vygotsky asserted, but also that now the child's reflection *reflects* a certain way (a *cultural* way) of perceiving and dealing with matters at hand. So, when 2.5-year-old Magalie places an assortment of forms in the spaces carved on a wooden puzzle, her activity is based on perceptual and kinesthetic trial and error actions. Magalie learns to make associations and abstractions (e.g., colour abstraction). What results from her deeds and her use of the cultural artifacts is a spontaneous (cultural) concept. Now, the definition of the triangle she holds in her hand in Figure 1, that is to say (to follow the Euclidean tradition), that a triangle is the enclosed region formed by three-line segments, is not something that we could reasonably expect Magalie to derive from her spontaneous activity. Nor would the classification of triangles according to their angles or their sides be a reasonable expectation. The definition and classification of forms, which are part of the scientific concepts of Magalie's culture, require a reflective conscious and systemic activity, and also a specific cultural way of seeing forms. This specific cultural way of seeing and talking about shapes does not come from Magalie's own deeds only. It comes from her culture too. It is hence not surprising that when we see young children starting to recognize shapes and talk about them in sophisticated ways (e.g., making classifications of them, giving them names) we also see a complex pedagogical support behind the children. Instead of being cognitively neutral, the pedagogical support (e.g., the didactical material and social organization, and the educator's dialogue with the child) becomes thereby part of the child's emerging conceptualizations.



Figure 1. 2.5-year-old Magalie dealing with a shape association task

4. The heroic child

These remarks bring us to the need to rethink the question of learning in early childhood education. I agree that we do need to consider the child's interests. However, the child's interests and her ensuing deeds (as amazing as they can be) might not be sufficient for the child to reach an understanding of the scientific concepts of her culture. This is why I find it highly problematic to assume, as policy documents often do (although in general implicitly), that the child comes to the world already endowed with the competency and rationality that is required to read and interpret the world. From this problematic assumption follows the misleading portrait of the child that we could call *the heroic child*: a miniature-scale scientist "whose most vital resources are apparently available within its detached internality" (Martin, 2004, p. 197) and spontaneously generates hypotheses and theories and engages in falsifying and correcting them.

I should note that the argument I am articulating does not intend to downplay the child's competency to learn. Children are not only curious but also competent (see, e.g., Samara & Clements, 2009). However, the child's competency, I would argue, should not be understood as a *natural* and intrinsic attribute of the child. The child's competency is an evolving and dynamic result of the child's engagement with her conceptual, spiritual, and material environment. Competency is intertwined with the educational tasks that are offered to the child and how the child engages with adults and other children. It is the cultural development of child's competency that allows her to read the world in a cultural-scientific rational way.

By way of conclusion

In this short paper, I dealt with a persistent conception of the child that serves to orient the pedagogical actions of educators in early childhood education. This persistent conception, which I termed the heroic child, has been at the core of the child-centred school and child-centred pedagogy, and is based on the idea that learning comes from the deeds that the child deploys to satisfy her "natural curiosity and exuberance" (OME, 2014, p. 7). One of the

problems with this conception is to consider the child as an auto-sufficient entity for whom the social-cultural-historical-context is no more than an instrumental set of stimuli. Unfortunately, such a conception distorts the ways learning really happens and, worse, alienates the child from her community, and from culture and history. Following a Vygotskian thread, I am pleading here for a view in which the context (considered as a living system) is far from being a mere arsenal of external stimuli. In this view, the child's competency to interpret the world in a rational way is an outcome of learning, not its prerequisite. I am also pleading for a more encompassing view of the relationship between children and educators where, instead of conceiving of them in oppositional terms (like in constructivism or in direct teaching), children and educators are considered *working together* to make mathematics appear in rich and varied ways (Radford, 2021).

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