

Brief report on research project *Wonder-full Education and Human Flourishing*

Project aims and results

The central research question we addressed in this project was: "Does wonder-full education promote human flourishing?" By answering this question we aimed to contribute a partial answer to the 'Big Questions' "What does it mean to flourish as a human being?" and "How can education promote human flourishing?"

To answer our research question we used a multipronged approach, entailing theoretical (philosophical), quantitative, and qualitative research. The overarching hypothesis we tested through these approaches was that 'Wonder-full Education', i.e. education configured to foster children's sense of wonder, promotes children's flourishing by fostering their sense of wonder. In other words, we expected to find relations between the type of education children receive and their sense of wonder - how prone they are to experience wonder, what they wonder about, what type of wonder they experience (inquisitive or contemplative), how this makes them feel, and what it makes them (want to) do - and we also expected to find relations between children's sense of wonder and their flourishing. For instance, we expected to find that children who overall seemed to have a stronger sense of wonder would in general experience greater subjective well-being, spiritual well-being, creativity, aesthetic appreciation, intelligence, empathy, and integrity.

Because there were no existing instruments available with which to 'measure' children's sense of wonder or the extent to which education is likely to foster wonder, an important goal of our project was also to develop such instruments: the Wonder Chart and the Wonder-Full Education Questionnaire (WEQ). The Wonder Chart uses a combination of narrative vignettes and videos to present children with a peer's experience of wonder and (to some extent) elicit wonder in the children themselves, and connects a series of questions to each concerning aspects of their experience. The WEQ consists of a questionnaire for teachers, about their teaching strategies and working environment, and a school policy questionnaire, administered to teachers and school leaders, concerning the extent to which school policy facilitates the promotion of wonder. We were able to develop and successfully validate both instruments. They both have satisfactory psychometric properties, indicating that they do indeed measure children's sense of wonder and 'wonder-full education', respectively. So we were able to use these instruments for the data collection for our quantitative studies.

The Dutch versions of the Wonder Chart and the Wonder-full Education Questionnaire have been published on the Dutch project website (see <https://wonderfuleducation.nl/onderzoek/>), under Creative Commons license Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0) (see <https://creativecommons.org/licenses/by-nc-sa/4.0/deed.en>). We have also translated both instruments, following standard procedures of translating and back-translating; but it proved to be impossible to have them validated as well within the time. Dr. Marina Bazhydai of Lancaster University will conduct a validation study of the English versions. When the instruments are successfully validated they will be made available under the same Creative Commons license.

The results of our research project were mixed. Theoretically, the connections between wonder and various aspects of human flourishing are strong (as suggested by our own research, but also the contributions to the edited volume "Wonder, education, and human flourishing"). Our survey of the existing philosophical and empirical literature also suggests not only that it is possible to evoke wonder in education - that is, to increase the chance that students will experience wonder in connection with the subject matter taught - but also that this is positively correlated with their intrinsic motivation to learn and with retention of material taught. But in our quantitative studies we were unable to confirm our main hypotheses. We found no relation between the different dimensions of wonder-full education and children's proneness to wonder; therefore, we also did not

find support for our theoretical model, according to which wonder-full education promotes human flourishing by fostering children's sense of wonder. We did find weak positive correlations between children's sense of wonder and parent-reported characteristics curiosity, intellect, altruism and aesthetic appreciation; and stronger correlations between children's sense of wonder and self-reported creativity, empathy, intrinsic motivation, well-being and spiritual well-being.

Our qualitative findings confirmed our hypothesis that most children aged 10-12 will be able to describe moments of experiencing wonder, and that they will differ in their experience of wonder. This study also confirmed that schools and teachers differ in how much wonder is elicited. Especially starting teachers reported having difficulty to create space in the curriculum for wonder-promoting activities; they attributed this to classroom management issues. More experienced teachers showed a lot of creativity and resourcefulness, and often said that evoking wonder was part and parcel of their teaching; they also more often reported the confidence and courage to go against the grain in their approach to teaching. Finally, we expected to find that when teachers state that they devote a lot of attention to eliciting wonder, their pupils will experience this. As the children had great difficulty coming up with experiences of wonder specifically at school, and when they did, these examples were often related to social rather than learning situations, it is difficult to report on this. This does not mean there is no relation between teachers' elicitation of wonder and children's experience of wonder, however; it may also, as interviews with some children suggest, reflect children's conception of school, or an ability to reflectively pick up on what teachers do.

As to the lack of a relation found in the quantitative studies between the education offered in schools and students' sense of wonder, and thus also between education and students' flourishing, it would be premature to consider these hypotheses definitively refuted. A plausible explanation for the absence of such a connection - other than the possibility that there is no such connection, which would fly in the face of reasonable, and theoretically well-supported expectations - is that the two instruments developed were not well-enough aligned with each other to be able to show such connections. The Wonder Chart is a well-designed measure of children's general sense of wonder, not a measure of the amount and type of wonder they currently experience (e.g., in the classroom). And the WEQ is, similarly, a general measure of the extent to which the education offered in schools is likely to foster wonder in its students, not a measure of how 'wonder-full' a particular activity going on right now is. Thus, these instruments can't be used to record the immediate effect of particular educational strategies or interventions on children's current experience of wonder. They are only suited - in theory - for recording connections between the type of education offered in a school (how 'wonder-full' this is) and children's general sense of wonder. In hindsight, we may have been too optimistic in thinking it would be possible to find such a connection. In future research, it may be better to investigate (qualitatively and quantitatively) the effects of specific educational activities on children's actual (current) experience of wonder, and the subsequent effects of heightened occurrence and experiences of wonder. It would also be interesting to then try to establish to what extent elicitation of a 'state' of wonder can influence the 'trait' (sense of) wonder.

Further results are:

On the basis of the data collected using the Wonder Chart we could not distinguish statistically between inquisitive and contemplative wonder, though its items (developed on the basis of interviews with children) do offer some support for this distinction. The data also show that children differ strongly in their proneness to wonder and in what they wonder about. No correlation with test scores was found.

Data collected using the WEQ showed that ca 1/5 of the total variation in teaching strategies used was attributable to differences between schools, 4/5 to differences between teachers of the same school, with some strategies being entirely dependent on differences between teachers - highlighting the importance of the teacher for wonder-full education.