

Home Science of Astronomy and Earth Science for Childcare Educators and Elementary School Teachers

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The significance and importance of introducing children to the world around them, and the vast world of science, including astronomy and earth science, at all times, from infancy through elementary, middle, and high school, has been pointed out not only by researchers in science education but also by researchers in early childhood education. Various surveys have shown that many adults, even those who do not work in science, are interested in scientific topics, and would like to talk about science if given the chance. School teachers in elementary, middle, and high schools can have opportunities to train themselves in astronomy and earth science, although the problem of inadequate environment still needs to be tackled with. However, early childcare and after-school care educators have little time to do so due to not just the busy schedule of childcare, but the lack of understanding and environment for science education inside and outside the childcare actual site.

For this reason, the author has been working with researchers and practitioners of science education in childcare settings to implement activities that incorporate scientific play about the universe and the earth in everyday life (for convenience, I will call this "home science" in this presentation; e.g., the 73rd Annual Meeting of the Japan Society of Research on Early Childhood Care and Education, Symposium J-C-10 "Home Science, Home Math: What you need to encounter is always in the scenery, and you are the one who intervenes in the encounter!").

In this presentation, I will introduce some examples of the practices and evaluation methods. Please refer to the following figure for the subject to be covered. The target age range is from 3 to 15 years old, from early childhood to school age. The practices include observation of the sky during the day, evening, and night, both outdoors and in the room; scientific play with light and color in the room; stories and awareness activities to notice the heavens throughout the year, especially the motion of the sun, and the accompanying changes of weather and living things throughout the year; and the yearly cycle of our lives. The practices presented in this presentation are intended to be used by childcare educators (nurseries, kindergartens, preschools, and after-school care) and elementary school teachers. Although this practice is not an activity of formal education in a school classroom according to the official curriculum, it can serve as a foundation for increasing children's and students' interest in the astronomy and earth science, and for better connecting the formal educational content with life and society. There are many elementary school teachers who are interested in the field of astronomy and earth science but are not good at teaching in this field. Not only childcare educators but also such elementary school teachers will benefit from this study. In addition, it can provide good contents on astronomy and earth science, which are rarely covered in life classes for lower grades of elementary school. In response to the spread of infectious diseases, we are now in a social situation where we have no choice but to keep a physical distance from each other, and this is expected to continue for some time to come. Activities that do not require special equipment and can be done outdoors and in a relaxed indoor environment have the potential to be used in schools under these circumstances, as well as for independent learning by children and students. As an evaluation method, I will introduce the method of recording episodes in childcare settings. Although this is different from the official evaluation method used in formal school education, it is in the same direction in that it looks at thinking, expression, and proactive attitude, and expects the acquisition of knowledge and skills based on these. In addition, I will show how this activity has helped improve the confidence of teacher-training students who are not good at science teaching.

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