



Elementary Teachers and Their Perspective on Learning and Teaching Science.

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ABSTRACT

Studies have shown that early science learning opportunities shape an individual's understanding of how scientific knowledge is developed, how it is used, and ultimately places them among users and producers of scientific knowledge. However, elementary teachers have been more focused on teaching Mathematics and English, devoting only about 1% to 11% of classroom time to science activities and not effectively using science resources. This study is looking elementary teachers' ideas of learning science, teaching science and the nature of science. The questionnaire had open ended questions and was completed by 20 total elementary teachers. While the responses are still in the process of being interpreted, we expect that teachers will have solid responses regarding how young children learn and why teaching science is important. On the other hand, we are predicting that the teachers will have difficulty in identifying the nature of science and how to teach it. In light of these results, the teachers may need support in creating assignments, indoor activities, and vocabulary that will give them the skills and confidence needed to be successful in learning and teaching science. The results are also important for teacher preparation programs who might need to include science teaching methodology in their curriculum.

RESEARCH QUESTIONS

In order to find out how a school garden elementary curriculum will affect the teachers' understanding of children's science learning which in turn, influences how they will teach science concepts, we started with these research questions:

1. What is teachers' initial view of how children learn science?
2. What is teachers' initial view of the role of science learning in the elementary curriculum?
3. What is teachers' initial view of the nature of science?

PARTICIPANTS

Elementary Teachers (N: 20)

Grade Level	Number of Participants
PreK	3
K	4
1-2	5
4-5	8



METHODOLOGY

We asked a group of elementary teachers six questions about learning in general, science learning in the elementary grades, the way they think children learn sciences, barriers encountered in teaching science and their own views of the nature of science. The format of the questionnaire was open-ended questions and the teachers were told they can respond with as many words or sentences they wanted. After independently using content analysis to analyze and interpret the responses, the author and the research advisor then met and attained an 85% agreement in combining themes and concepts in categories for each response.



CONCLUSIONS

The results of this study show quite a wide range of perspectives both about the understanding of how children learn science and on how science should be taught in the elementary grades. The teachers view of the nature of science is also quite variable which shows the diversity of backgrounds, education preparation programs and experiences these teachers have. In short, they seem very differently prepared to teach science in their classroom and the results of the post project questionnaire will show whether the integration of a science curriculum related to a school garden will have effects on the teachers views and concepts. The study results show that with the implementation of professional development workshops, and with adequate materials and time support, the teachers in this particular school district could significantly increase their effectiveness of teaching science across disciplines. Workshops could focus on encouraging teachers to share their ideas for science lessons and receive feedback from their students/peers, on obtaining resources through grants or by using cheap, daily materials, as well as how to use science lessons to incorporate other curriculum standards such as math and literacy. The study's results could inform teacher education preparation programs to include science education more intentionally in their curricula.

NOTE: Since our project got cut a little short because of the COVID-19 virus, we had to make some adjustments to our research. For the adjustments, I continued my research online. I researched different opinions from teachers around the world on their idea on how science is taught.

RESULTS

QUESTION	MAIN CONTENT	# OF RESPONSES
How do children learn science?	Hands-on, exploring, experimenting, interacting	18
	Understanding processes	2
	Learning facts and vocabulary	
	Through senses (visual)	5
	Exposure/experiences, observation	4
	Hands-on, exploring, experimenting, interacting	18
What teaching strategies do you think are most effective for helping children learn science?	Hands on	18
	Science games, play	5
	Working in groups	4
	Visual aids, graphic organizers	3
	Scientific thinking, problem solving	2
	Step by step, guided learning	2
	Seeing examples of completed projects	2
	Field trips	1
	Technology use	1
	Describe your view of the nature of science.	Study of the world around us, earth, living, nonliving
Experimenting, discovering, observing		5
Questioning something and then working to learn the answer, understanding why and how things happen		3
Science is part of everyday life		3
The love of nature and the environment		1
Creative and imaginative		1
Collaboration		1
Gain and explore science knowledge		1
When you teach science to children, what image of science do you present to them?		Visual presentations
	Earth, nature, outside, everywhere around us	6
	Experiments, explanations, finding out what, why how	4
	Real world, real life	2
	Having fun, being engaged	2
	Facts	1
What challenges do you think children encounter when they are trying to learn science in elementary classrooms?	Lack of materials/resources for the teachers	12
	Lack of understanding scientific language/concepts	9
	Lack of time	1
	Lack of confidence	

