מכון ויצמן למדע
WEIZMANN INSTITUTE OF SCIENCE

Research abstract for a
MSc Thesis

By

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מאת

אלה יונאי

שילוב נושאים בסיסיים בננוטכנולוגיה בתכנית הלימודים בפיזיקה בחטיבת ביניים: ניתוח איכותני של שיחות עם מומחים מתחום הננופיזיקה.

Experts' views on insertion of nanoscale science and technology concepts into the physics middle school curriculum: a qualitative analysis.

Advisor:

Prof. Ron Blonder

מנחה:

פרופ' רון בלונדר

February, 2019

אדר, תשע"ט

Abstract

The goal of this research is to provide a net of rich and diverse connections between two fields: 1. Nanoscale science and technology (NST), 2. Topics from a common middle school physics curriculum. NST is emerging as one of the most promising new fields of the 21 century which is one of the many arguments for including NST topics in secondary science education. This work identified the connections between NST and physics discipline as taught in middle school. In this qualitative study I used a method of multiple case study in a community of expert scientists in the field of NST and physics. A specially designed guided discourse was used to form a map of connections between the two fields. The guided discourse was tailored to fit the way scientists communicate science and what we refer to as “the making of nanoscience”. The influence of this design on the scientists' communication skills was examined in this study by pre and post discourse evaluation using a specified instrument that was validated elsewhere.

The MSc has yielded two publications:

Yonai, E., & Blonder, R. Use your own words! Developing science communication skills of NST experts in a guided discourse. (2020). *International Journal of Science Education, Part B, 10*(1), 51-76. doi: 10.1080/21548455.2020.1719287

Yonai, E., & Blonder, R. (2020). Physical Review Physics Education Research. (2020). Let's get down to nano: Scientists suggest insertion of nanoscience and technology into middle school physics. *Physical Review Physics Education Research, 16*(1), 010110-101011021. doi:10.1103/PhysRevPhysEducRes.16.010110