

Mentoring and science education - can they "dance" together?

Dr. Ariel Heimann

מכון
דוידסון
לחינוך
מדעי
Davidson
Institute
of Science
Education

**Davidson
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The Educational Arm
of the Weizmann
Institute of Science

- Science
- Education
- Mentoring



80 years



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50 years



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The Perach Mentoring Project

40 years



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- **Science**
- **Education**
- **Mentoring**



Weizmann Institute of Science

- Science research institute
- Chemistry, biology, physics, math & computer science, archeology.



WEIZMANN
INSTITUTE
OF SCIENCE

Weizmann Institute of Science


- One of the world's leading research institutions in the natural exact sciences
- 238 research groups



WEIZMANN
INSTITUTE
OF SCIENCE

Are the scientists of the Weizmann Institute of Science having an impact?

Citation ranking based on scientific publications only

2006-2009		2007-2010		2008-2011		2009-2012		2010-2013	
Rank	University	Rank	University	Rank	University	Rank	University	Rank	University
 1	MIT	 1	MIT	 1	MIT	 1	MIT	 1	MIT
 2	Harvard Univ	 2	Harvard Univ	 2	Harvard Univ	 2	Harvard Univ	 2	Harvard Univ
 3	Princeton Univ	 3	Princeton Univ	 3	Univ Calif - Berkeley	 3	Univ Calif - Berkeley	 3	Stanford Univ
 4	Stanford Univ	 4	Univ Calif - Berkeley	 4	Stanford Univ	 4	Caltech	 4	Univ Calif - Berkeley
 5	Univ Calif - Berkeley	 5	Stanford Univ	 5	Princeton Univ	 5	Stanford Univ	 5	Princeton Univ
 6	Caltech	 6	Caltech	 6	Caltech	 6	Princeton Univ	 6	Caltech
 7	Univ Calif - San Francis	 7	Univ Calif - San Francis	 7	Univ Calif - Santa Barb	 7	Univ Calif - Santa Barb	 7	Univ Calif - Santa Barbara
 8	Yale Univ	 8	Univ Calif - Santa Barb	 8	Univ Calif - San Francis	 8	Univ Calif - San Francis	 8	Univ Calif - San Francisco
 9	London Sch Hyg & Tro	 9	Univ Texas - Southwes	 9	Univ Texas - Southwes	 9	Rice Univ	 9	Rice Univ
 10	Univ Texas - Southwes	 10	Yale Univ	 10	London Sch Hyg & Trop	 10	Yale Univ	 10	Weizmann Inst Sci
 11	Univ Calif - Santa Barb	 11	Rice Univ	 11	Yale Univ	 11	London Sch Hyg & Tro	 11	London Sch Hyg & Trop Med
 12	Northwestern Univ	 12	London Sch Hyg & Trop	 12	Weizmann Inst Sci	 12	Univ Texas - Southwes	 12	Univ Calif - Santa Cruz
 13	Univ Chicago	 13	Northwestern Univ	 13	Univ Calif - Santa Cruz	 13	Weizmann Inst Sci	 13	Yale Univ
 14	Univ Calif - San Diego	 14	Univ Calif - San Diego	 14	Rice Univ	 14	Univ Calif - Santa Cruz	 14	Univ Texas - Southwestern Med
 15	Rice Univ	 15	Weizmann Inst Sci	 15	Northwestern Univ	 15	Univ Calif - San Diego	 15	Ecole Polytech Fed Lausanne
 16	Univ Washington - Sea	 16	Ecole Polytech Fed Lau	 16	Univ Colorado - Bould	 16	Northwestern Univ	 16	Univ Calif - San Diego
 17	Univ Texas - Dallas	 17	Univ Washington - Sea	 17	Ecole Polytech Fed Lau	 17	Univ Chicago	 17	Univ Oxford
 18	ETH Zurich	 18	Univ Chicago	 18	Univ Calif - San Diego	 18	Univ Colorado - Bould	 18	Univ Chicago
 19	Weizmann Inst Sci	 19	ETH Zurich	 19	Univ Chicago	 19	Ecole Polytech Fed Lau	 19	Columbia Univ
 20	Ecole Polytech Fed Lau	 20	Columbia Univ	 20	Univ Calif - Los Angeles	 20	Univ Oxford	 20	Univ Calif - Los Angeles

- Science
- **Education**
- Mentoring





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The Davidson Institute of Science Education

The educational
arm of the
Weizmann
Institute of
Science and is a
world leader in
science literacy.

1964 - Youth activities

1972 - Perach

1999 - Clore Garden of Science

2001 - Davidson Institute

2008 - All the activities under the
umbrella of the Davidson Institute



Our Mission

Inspiring
curiosity and
creativity
around science



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The Davidson Institute of Science Education

Dedicated to the advancement
of science and technology
education in Israel and abroad

Offering a wide range of
activities which target
three main audiences:

Teachers

Students

General Public



**We offer
science for
all**

Over **70** educational programs
for more than **500,000**
participants and visitors
annually, and more than **1.5
M** online visits

We cater science education to
all ages (k-99) with a variety
of programs. Some nurture
talent while others provide
support to disadvantaged
populations

We travel to schools
throughout the country and
school classes and individuals
come to our labs on campus



**Helping
Bright
Students
Shine
Brighter**

We promote and nurture high-achieving students from across the country in multiple unique programs:

Exploring new frontiers in science and technology through the School of Contemporary Science

Conducting year-round research projects in Weizmann labs



The School of Contemporary Science

- Geared toward the most curious and talented high school science students as it offers specialized extra-curricular courses; Computational Science, Computer Science and Industry, Physics and Industry, Computational Biology, Earth Science, Randomness and Order, Chemistry online



Science Program for Classes

The program offers classes from remote communities to experience science through hands-on activities at the Davidson well-equipped labs.



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Science Mobile

Traveling science lab for schools that lack lab equipment or the ability to bring their students elsewhere to experience a high level of science activity

Some 14,000 students per-year



Science Camps

Since 1969, thousands of students from around the world have taken part in the Bessie F. Lawrence International Summer Science Institute. They spend time working in campus laboratories, experiencing the challenges and rewards of scientific research firsthand.



Science made Fun

The Safe-Cracking
Physics Tournament
is an international
competition that
develops knowledge
and teamwork
with the chance to
win
awards and
recognition.

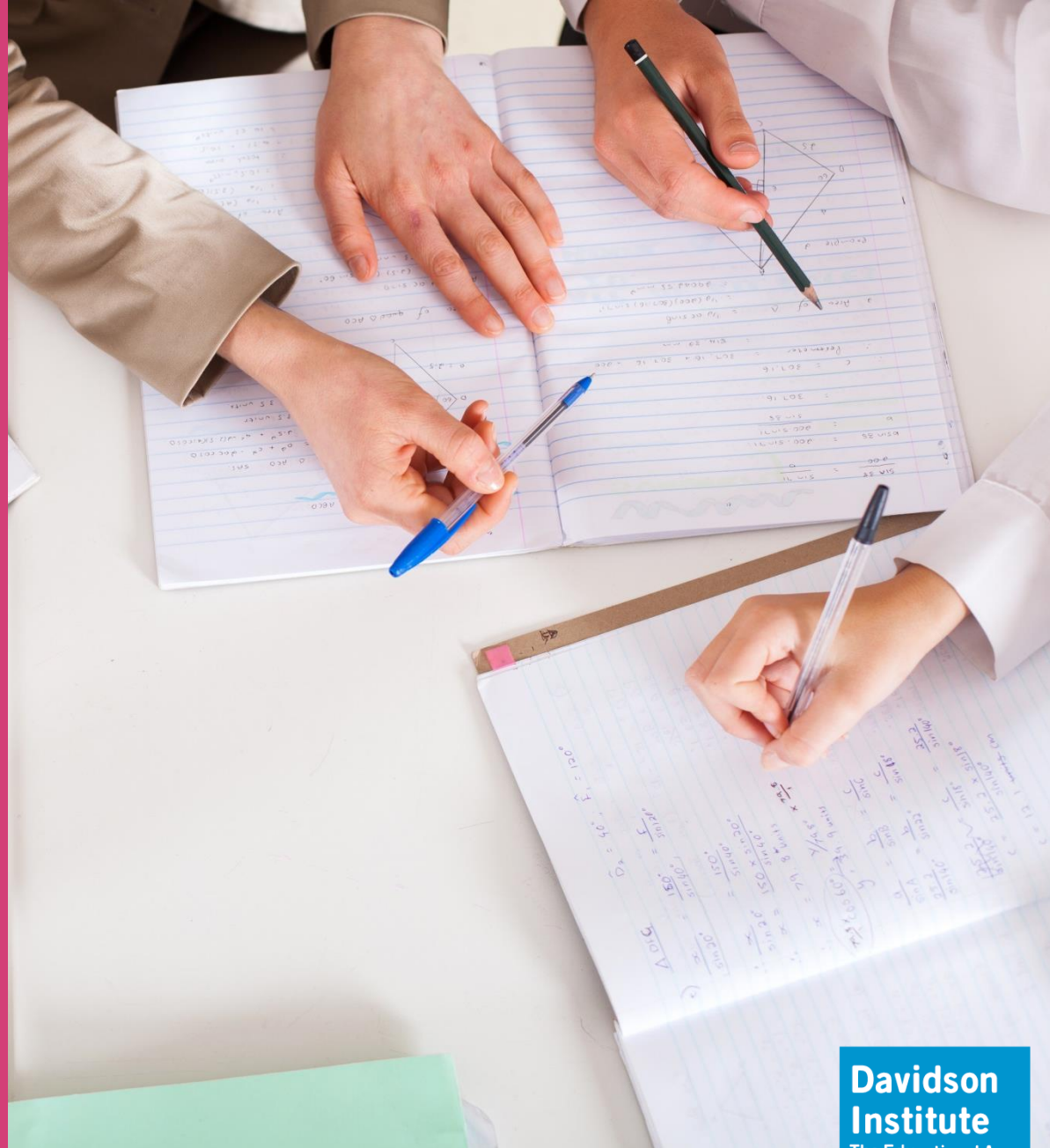


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Helping Teachers Excel

The Teachers' Professional Development Unit assists over 3,000 science teachers annually to keep up with the challenges of their profession and the latest developments on the frontiers of science.



**“Tell me and
I forget.
Teach me
and I
remember.
Involve me
and I learn.”**

Benjamin Franklin

Teacher training through a variety of activities designed to keep teachers updated on the latest innovations and advancements in science:

Courses

National seminars

Workshops

Conferences

Personal support



Science for the Public

The Clore Garden of Science open-air museum introduces natural science phenomena via unique exhibits to a wide range of more than 150,000 visitors per year.



Empowering Youth at Risk

Target population - youth at risk, underachievers and youth with criminal records

Some 1000 participants take part in the programs for youth at risk, using hands-on activities to boost confidence and develop social, academic, communication and teamwork skills, and logical and critical thinking abilities



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Online Learning

- Davidson Online – 1.5 million unique visits
- Math-by-Mail – 4,500 participants
- The Brain app and the Brain Junior



Investing in the Future Generation

To ensure the future of the State of Israel as a “start-up” nation, there is a true need to nurture the love of and interest in science among junior-high and high school students



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Albert Einstein

“It is a miracle that curiosity survives formal education”

- Science
- Education
- **Perach**



The Perach Mentoring Project

Launched in the
1970s by 12
scientists from the
Weizmann
Institute and was
set at the Youth
Activities Section.



How did a research institute
create science education and
a mentoring project?

What happens when these
entities work together?



Mentoring through science education

Using the expertise of the Weizmann & Davidson Staff for the mentors & mentees





Mentoring through science education:

Projects

“HAVAYEDA TEVA”

Science Centers

Some 90,000 children per-year visit the science centers, play with interactive exhibits, which allow them to experience first-hand some natural phenomena.



HEP Health Education Program

- Geared toward elementary school students who are taught to take responsibility on their health and body.
- Medicine students visit schools and discuss healthy nutrition habits, hygiene, risks of sun burns, preventing home accidents and more.
- Some 180 students and 2,500 pupils participate in HEP annually.



The Nature of Chemistry

- A collaboration with TEVA the largest pharmaceutical company in Israel
- Chemistry students teach 9th graders chemistry to encourage the love and interest in chemistry



Science Perach

- Collaboration with the Ministry of Science to support science and math education among 420 high-school students
- More than 50% of the students are girls
- Students' grades were improved after the program



Sparks of Science

Advancing
science
education of
underprivileged
youth from the
Ethiopian
community



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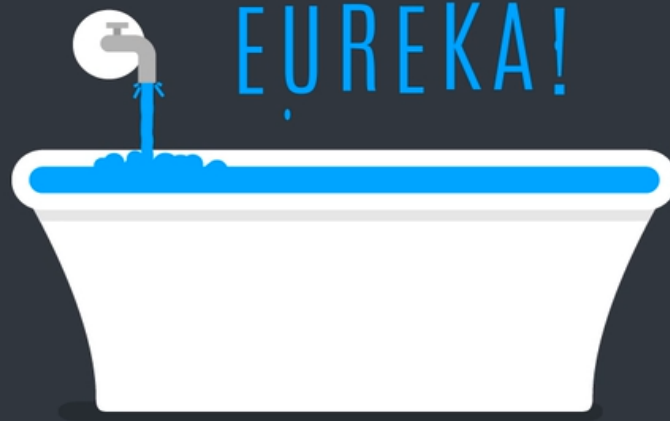
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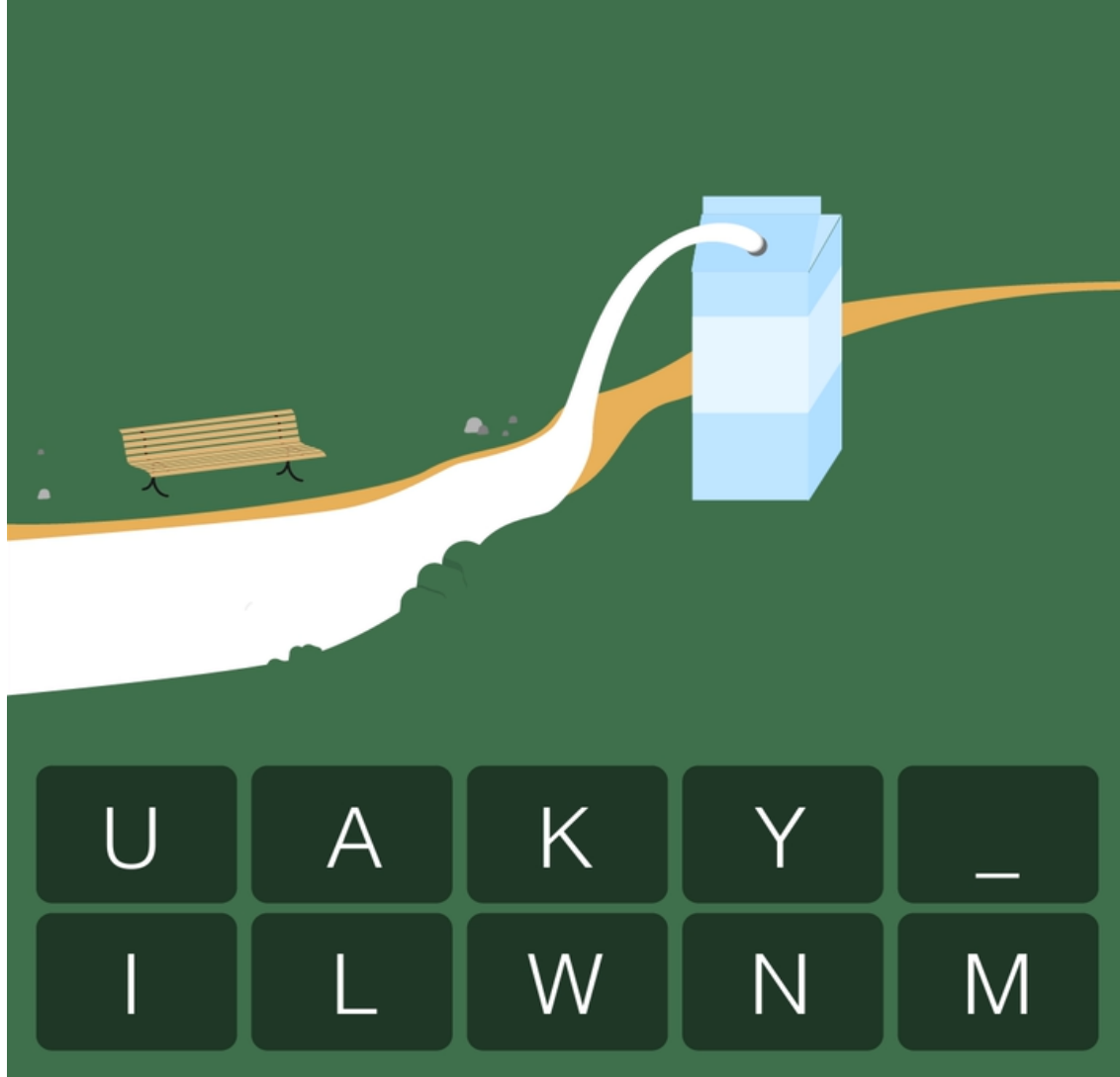
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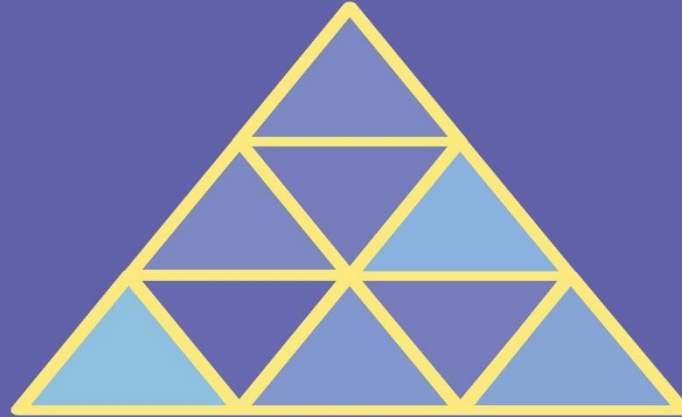
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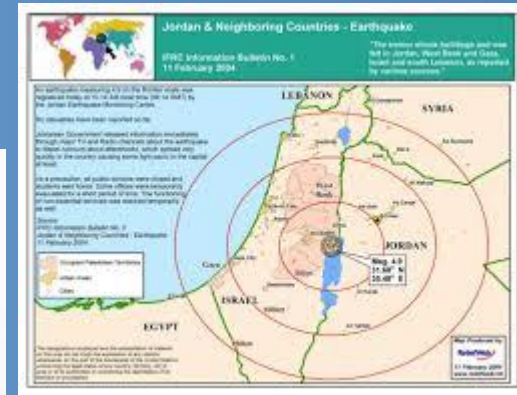
We are lighting
the spark of
curiosity and
conveying the
thrill of discovery
in science

We are activating
the imagination,
encouraging
students to dream
and think
creatively





1985



1927

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