Applied Education Research

Who Will Teach in a Teacher Shortage?

A Study of Three Approaches to Addressing a Teacher Shortage

Edited by: Ruhama Even and Ohad Leslau

Workshop Report

The Initiative for Applied Education Research
The Israel Academy of Sciences and Humanities

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Analysis of Three Strategies for Coping With a Shortage of Teachers

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The Expert Team on "Who Will Teach in a Teacher Shortage?"

edited by

Ruhama Even **Ohad Leslau**

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The Initiative for Applied Education Research
The Israel Academy of Sciences and Humanities

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The Israel Academy of Sciences and Humanities was founded in 1959. Its membership currently comprises one hundred and one top Israeli scientists and scholars. According to the Israel Academy of Sciences and Humanities Law, 1961, its principal objectives are to foster and promote scientific activity; to advise the Government on research activities and scientific planning of national importance; to maintain ties with equivalent bodies abroad; to represent the Israeli scientific world at international institutes and conferences; and to publish articles that can further scholarship.

The Ministry of Education was founded in 1948, when Israel became an independent, sovereign state. Under the State Education Law, 1953, the Ministry is responsible for the education of Israeli children from preschool through high school, up to and including the twelfth grade. In addition, the Ministry is in charge of teacher-training in colleges of education. The Ministry sets both pedagogical policy (e.g., development of curricula, teaching methods and standards) and organizational policy (e.g., budgeting for the education system, logistical planning, attention to special population groups and inspection of educational institutions).

The Rothschild Foundation (Yad Hanadiv) is continuing the Rothschild family's philanthropic activity in Israel, which Baron Edmond de Rothschild began in the late nineteenth century. The Rothschild Foundation works on improving educational achievement, especially by increasing opportunities for all Israeli pupils to receive a high-quality education. The Rothschild Foundation makes cutting-edge knowledge and expertise available to education workers, thereby spurring innovation, which can improve vital components of the Israeli education system.

The Initiative for Applied Education Research was founded in late 2003 as a joint venture by the Israel Academy of Sciences and Humanities, the Ministry of Education and the Rothschild Foundation (Yad Hanadiv). The Initiative's objective is to provide decision makers with up-to-date, critically-appraised knowledge that may assist them in their efforts to improve education achievements in Israel. Issues considered by the Initiative are raised by Israeli decision makers, and are undertaken following consultations with senior officials of the Ministry of Education (MOE) as well as other stakeholders.

The Initiative for Applied Education Research was conceived along the lines of similar initiatives in the United States and Europe – in which national academies of science engage in collaborative activities to improve national education systems in frameworks designed to draw both on research findings and on past experience. It has been shown that in these countries, under specific circumstances, there is a link between improvement in students' educational achievements and the systematic use of knowledge and scientific research results by teachers, principals and policy makers.

Three working assumptions were at the core of the Initiative's establishment:

- Emerging knowledge in various disciplines – from brain research to operations research – can contribute to education policy and practice. Within the field of education and in other disciplines as well, Israel has the research capacity that can be channeled toward improving achievement in education.
- Research questions raised by decision makers' agendas can encourage education researchers to broaden their activity, and through cooperation with researchers in other disciplines, generate knowledge useful to education. Investing in the effort to provide answers to these questions often leads to the development of new theories and research tools, advancing the education system, the quality of education as a whole and educational research.
- Decision makers in the education field – from teachers to MOE directors – will want to benefit from carefully reviewed and objective consensus-based knowledge, and to contribute from their own professional experience to the further development of such knowledge.

The Initiative serves as a hub for the consulting activity which the Academy provides to the government and to other authorities in the field of education. In recent years, in response to requests from various authorities, and at the Israel Academy's initiative, such activities have expanded beyond education, leading to the formation of guidance and consulting teams for various disciplines (such as society and welfare, health and environment). An amendment to the Israel Academy of Sciences and Humanities Law, recently deliberated by the Knesset, would institutionalize and regulate the Academy's advisory role vis-à-vis the central government and other authorities, making it structurally similar to the National Research Council in the United States.

As of 2010, the Initiative operates under the Israel Academy's full auspices, and is slated to become the Division of Education within the new framework being established alongside the Israel Academy.

Expert Team for "Who Will Teach in a Teacher Shortage"

Prof. Ruhama Even, Weizmann Institute of Science – Committee chair
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Dr. Ohad Leslau, Study coordinator

The Mandel Foundation-Israel supported the committee's activities and the joint advisory committee (together with the Initiative) followed its work.

Committee members: Annette Hochstein, Prof. Mordecai Nissan, Dr. Varda Shiffer, Ben Dansker and Noa Padan (The Mandel Foundation- Israel); Prof. Ruhama Even, Dr. Ohad Leslau, Udit Nissan and Dr. Avital Darmon (The Initiative for Applied Education Research)

Acknowledgements

Throughout its work, the expert team was fortunate to receive the help and assistance of a number of people and for this they have our gratitude.

First, we would like to express our appreciation to the Mandel Foundation-Israel which commissioned this activity and sponsored it. We would especially like to thank Annette Hochstein, president of the Mandel-Foundation-Israel, for her encouragement and interest all along the way; to Prof. Mordechai Nissan and Dr. Varda Shiffer for contributing their knowledge, critical assessments and useful suggestions, and to Ben Dansker and Noa Padan, who ensured that our joint work progressed efficiently.

Dr. Yitzhak Tomer, Gila Nagar and Noah Greenfield at the Ministry of Education loaned us their attentive ear and in their intelligent presentation laid out both the key questions confronting Ministry of Education executives, as well as the ministry's activities in this field.

We also extend our thanks to all the speakers and participants – from the field and from academia, from Israel and abroad – who took part in the workshop.

This report was subject to the customary independent peer review process. The team would like to thank the reviewers who helped refine the boundaries of this report and ensure its reliability and independence. Responsibility for the content of this document rests entirely with the expert team.

We would like to thank the staff of the Initiative for Applied Education Research for their good will and assistance throughout. We thank Dr. Avital Darmon, director of the Initiative, who supported and encouraged the team from start to end; Ada Paldor, Vered Milles-Gross and Riki Fishel for their professional assistance and logistical support.

Ruhama Even, Chair Ohad Leslau, Coordinator

Table of Contents

Introduction

General Background

Claims have been made in recent years about anticipated teacher shortages in Israel and around the world. Against this background, the Mandel Foundation-Israel approached the Israel Academy of Sciences and Humanities with a request to shed light on the problem and the attempts being made to address it, for the purpose of helping decision makers with their efforts in this area both in Israel and in Jewish education in the United States. Through the office of the Initiative of Applied Education Research, an expert team, working voluntarily, was established to gather, elucidate and make available knowledge in this field within a short period of time. Likewise, a Mandel Foundation advisory committee followed all the expert team's activities, and provided them with assistance. While the expert team could not examine every possible angle of this problem, it was decided in consultation with the Mandel Foundation advisory committee and in coordination with the Ministry of Education, to focus on three methods that may address the challenges of a possible teacher shortage: (a) alternative routes of entry into the teaching profession, (b) enhancing the teaching profession's attractiveness and (c) use of distance learning technologies.

The expert team commissioned scientific reviews (written in Hebrew) to provide material for its discussions. Four reviews whose English abstracts appear in Appendix A are: (1) Ohad Leslau's review of the book *Alternative Routes to Teaching: Mapping the New Landscape for Teacher Education*, edited by Pam Grossman and Susanna Loeb, (2) a review by Nachum Blass on the topic of enhancing the attractiveness of the teaching profession, (3) a review by Yehudit Judy Dori, Orit Herscovitz and Zvia Kaberman on the topic of teacher training and professional development via distance learning and teaching and (4) a review by Alex Pomson, Marcelo Dorfsman and Fabian Glagovsky on the subject of distance education in Jewish schools in North America. The reviews were followed by a workshop for experts and other stakeholders to clarify key questions and the efforts made to address a possible teacher shortage. The workshop's agenda appears in Appendix B and symposium notes appear in Appendix C.

This document summarizes all the activities related to the topic in which the team engaged and brings the main insights gained from the activities to the public's attention.

It is important to again note that the discussion and conclusions appearing in this document are focused on a subset of issues and partial review of the literature concerning the broad topic of a shortage of teachers, looking at three methods among many that have been suggested for addressing the problem.

This document is based on scientific reviews commissioned by the expert team, on opinions and ideas raised in the workshop and on the team members' insights resulting from the entire range of activities.

The first part of this document deals briefly with clarifying the teacher shortage issue and explains several basic concepts in the field. The second part discusses various strategies that would help in addressing a shortage of teachers. Discussion of each of the possible strategies begins with a brief review of the scientific knowledge on the subject and continues with a description of the way the education system in Israel and Jewish education in the U.S. have implemented similar ideas to address this problem. The decision to focus on the Israeli education system and on Jewish education in the U.S. stems from an examination of how a formal education system (Israel) and various, non-formal, decentralized schools (Jewish education in the U.S.) deal with the problem. The third, concluding part of this document turns the reader's attention to the team members' shared insights gained through each part of its activities.

Discussion and explanation of the concept called "teacher shortage"

In recent years, there have been growing claims that many countries are already coping with teacher shortages or will in the future need to deal with various instantiations of a teacher shortage. Owing to the widespread

use of the term "teacher shortage" it is only fitting to devote a few sentences to clarifying and refining the concept.

First, it must be noted that "teacher shortage" has been conceived in different ways. The scientific reviews and discussions have shown that use of this term in the research literature and in public and professional discourse is widespread, although their meanings are not always the same and this is obviously likely to have various implications on decision making processes. Below are examples of various conceptions that we found through our work:

(1) A teacher shortage describes a situation wherein an education system does not have enough teachers, certified and not certified, and as a result there are classes without teachers. This is the most extreme example of a teacher shortage.

(2) A teacher shortage can describe a shortage of certified teachers, a situation stemming from insufficient certified teachers filling the system's needs. One of the signs that this kind of shortage may take place is a high average age of teachers within the system. Thus, several years ago the OECD found that in 15 of the 19 countries examined, the average age of teachers was above 40. In Germany and Italy, close to half the teachers were over the age of 50 and in Sweden, Iceland, New Zealand, Holland and Finland approximately one third of teachers were over 50 (OECD, 2003). As of 2008, in Israel, over 30% of junior high school and high school teachers were above the age of 50 (Central Bureau of Statistics, 2008). Based on data in other countries, it would appear that in several years a general shortage of certified teachers will take place in Israel.

(3) A teacher shortage can describe a situation in which, though there are enough teachers, there is the feeling that a great many of them do not meet the expectations associated with being a "good teacher." Clearly, this definition of a teacher shortage is subjective, owing to the disagreement regarding what constitutes the "desirable teacher" (Liebman, 2008: 230). Use of different adjectives to describe the preferred teacher – effective, high quality, professional, appropriate, good, an educational role model and others – and particularly the absence of agreed-upon measures that may in practice characterize these traits, bear testimony to the lack of consensus regarding the teacher's desired character. The lack of agreement is expressed on two levels: at the basic-normative level relevant to the aims of education, where from the outset there is difficulty in defining how the desired teacher's "success" will be determined – i.e., is it according to students' improved achievements; imparted values; fostering intellectual abilities beyond the straightforward subject-area knowledge in a specific field? Even when agreement is reached on the normative aspect, at the scientific level there are still no agreed-upon measures for assessing "success." Until such time when measures are developed, it will be very difficult for research to offer an appropriate response to the shortage in teaching.

(4) The teacher shortage describes a specific situation of uneven distribution from the perspectives of geography and subject-matter. For example, certain studies show that the shortage in teachers is more acute in the periphery, or in schools of low socio-economic populations (Murphy, DeArmond & Guin, 2003). Research has shown that there is a greater shortage of teachers in mathematics and sciences and a lesser shortage in the humanities (Ingersoll & Perda, 2009). In the state of Florida, 30% of the English teachers in high school and the lower schools have not received the appropriate training (U.S. Florida Department of Education, 2008). Roughly 80% of elementary school math teachers in Israel in 2008 were not trained to teach the subject.[1]

Use of the term "teacher shortage" should therefore be accompanied by a more precise characterization of the problem that includes, for example, the subject matter and age group involved or the geographic areas affected

[1] This according to David Maagan of the Central Bureau of Statistics. Protocol of Meeting No. 374 – the Education, Culture and Sports Committee, the 17th Knesset (Feb. 19, 2008). (Hebrew)

by the shortage. The need for precise explication of the shortage's attributes is required in order to devise appropriate strategies for addressing the problem.

As will be seen further on, the three strategies discussed within the current report may to a degree serve to respond to any of the four types of teacher shortage.

Research has shown that there is no unanimity with respect to the reason or reasons leading to a teacher shortage. This question has great importance since understanding the source of the problem may be the first step along the path to finding a resolution and response to the problem. Researchers propose various hypotheses to describe the genesis of the problem: there are those who claim it stems from a decline in the number of people with an appropriately high quality background that pursue the teaching track. According to them, this trend is a consequence of the diminished attractiveness of the teaching profession due to the relatively low salaries it offers on the one hand, and a decrease in the social status accorded teachers in post-modern society, on the other. As a result, the number of candidates of suitable background for teaching drops and the system has not managed to close the gap between the increasing demand for teachers created by population growth and the policy designed to reduce the number of students per class (Hargreaves, 2009).

Another approach holds that the number of those pursuing the teaching track meets the system's needs both from the quantitative and qualitative perspectives, however, the problem lies in the percentage of young teachers that leave the profession, which has a higher dropout rate than other professions (Ingersoll, 2003). This claim is based on a series of data showing that 50% of teachers leave the profession during the first five years of work and that there is a tendency for good teachers to transfer to schools where the majority of students come from high socio-economic backgrounds (Ingersoll, 2003; Hanushek, Kain & Rivkin, 2001). The problem of the high dropout rate is exacerbated further, considering research showing that five years of teaching are required for new teachers to realize their potential.

Another view holds that teaching is an acquired skill that can be improved through training and professional development. Accordingly, the shortage of teachers that meet expectations of being a "good teacher" could be addressed by adequate training and professional development for teachers (Ball & Forzani, 2009).

The teacher shortage: The situation in Israel

In recent years the problem of a shortage of teachers has once again surfaced on the public agenda. For example, the Knesset's education committee was convened on this matter several times during the last two years.[2] It became clear, however, that the claims articulated on this subject were not always based on reliable and accurate information. In 2006, Prof. Avraham Yogev warned (based on data from 2000) of an impending shortage of teachers in all subject areas (Yogev, 2006). In contrast, the Ministry of Education claimed that a shortage in only three areas was expected: English, mathematics and the sciences (Vorgen, 2007). One year later, the Ministry said that the problem is complex and it was difficult to consolidate a detailed and precise response on the topic. At the same time, the Ministry of Education reported that, based on the information it received from its various districts, there is a nationwide shortage of teachers of English, mathematics and the sciences while in the periphery there is a shortage of teachers in all subject areas (Vorgen & Fidelman, 2008). In his 2004 report, the state comptroller warned that despite the great amount of discussion on the topic, a clear picture of the status of the education system's teaching force was not available and there was no data-based analysis of future trends.[3]

[2] Protocol of Meeting No. 524 of the Education, Culture and Sports Committee, the 17th Knesset (Aug. 27, 2008). Meeting No. 374 of the Education, Culture and Sports Committee 17th Knesset (Feb. 2, 2008) dealt with the lack of teachers in a general way. Three other meetings that took place in February and March 2008 were devoted to the shortage of mathematics teachers. Likewise, the Knesset's Research and Information Center prepared two reviews on the topic for Knesset members. (Sources in Hebrew)

[3] "The Ministry of Education does not have an organized and up-to-date database on the teaching system's manpower needs and, therefore, it is not known how many new teachers must be trained in each one of the subject areas. Accordingly, the number of students that should be absorbed by teacher training institutes and universities cannot be known and the student quotas the Ministry budgets

It is clear that without an accurate picture of the education system's manpower it is impossible to formulate the most responsive policy for this situation; this realization motivated the current study. At the Ministry of Education's request, in 2008 the Central Bureau of Statistics (CBS) developed several models to analyze trends with respect to the education system's manpower. The initial reports predict a shortage of thousands of teachers by 2013. The studies do not yet include a breakdown of the expected shortage by subject area and geographic area.

One of the studies showed that in the last two decades, the proportion of certified teachers in Israel increased but the problem of disparity between the subject studied and the subject taught has continued (Blass et al., 2008).

The teacher shortage: The case of Jewish education in the United States

The Jewish community in the U.S. and Canada is comprised of different denominations and covers a wide geographic area. This situation is also reflected in the characteristics of Jewish education on that continent:

Day schools where studies take place on a daily basis is a framework attended by about 230,000 students, most of them concentrated in the greater New York area, of which three-quarters are affiliated with various Orthodox streams. Another approximately 230,000 students study in the 2,000 *supplementary schools* where classes are conducted several afternoons a week, and/or on Sundays. About 60% of the students in this framework belong to the Reform movement (Schick, 2009; Wertheimer, 2008a). Furthermore, most of the schools were established by local communities, not by any authority or state-level body (Wertheimer, 2008b), and in some cases the number of students is small (in 40% of these schools, there are less than 100 students). Due to their variety and the lack of an overall-nationwide organizational system of Jewish education it is difficult to describe the status of manpower for Jewish education in a precise and reliable manner or to make generalizations. A partial picture can be gleaned from surveys carried out in several geographic areas that explored this issue. For instance, in the early 1990s a survey was conducted among teachers in Jewish schools of different types in three large U.S. cities (Baltimore, Atlanta and Milwaukee) which examined the teachers' background and experience in education (Gamoran et al., 1997). The survey data showed that 19% were trained both in education and in Jewish studies; 35% in teacher training alone and 12% had studied Jewish studies alone. 34% of all teachers had no training in either education or in Jewish studies. In supplementary schools, 44% of the teachers had no formal training in either education or Jewish studies. There is little professional development for these teachers (teachers reported that in the two years preceding the survey they had participated in an average of only four day long workshops that had dealt with areas related to Jewish education instruction). A decade later, a survey conducted among teachers in Jewish schools in the San Francisco area had similar findings (Stodolsky & Dorph, 2007). The survey showed that half of day school teachers have a B.A. in Jewish studies or education. In supplementary schools, less than a third of teachers had received professional training in Jewish studies or education. A recently conducted study that examined the scope of professional development opportunities for teachers in Jewish education came to similar findings (Stodolsky et al., 2008).

It is clear that these studies do not draw a complete picture of the shortage of teachers in Jewish education in the U.S., its various elements, its scope or its attributes. In practice, comprehensive information and precise data on the shortage of teachers in Jewish education in the U.S. is not available. Thus, we cannot determine with certainty whether this kind of shortage indeed exists, or the characteristics it possesses.

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for are not determined by data based upon the education system's needs. The Ministry commissioned a forecast on the topic from the Central Bureau of Statistics, however, the forecast was based on data the Ministry itself provided which do not include details about teachers' subject areas. Therefore, even when this commissioned forecast will be complete it will not be possible to know how many teachers are required for each subject area" (Israel. State Comptroller, 2004: 214). (Hebrew)

Ways of addressing a teacher shortage

As was mentioned at the outset of this work, the expert team had already concluded that the limited framework of its activities would not allow consideration and examination of the scope and complexity of this issue. Therefore it was decided in advance – in consultation with the Mandel Foundation advisory committee and in coordination with the Ministry of Education – to focus on examining three methods that may address a shortage of teachers: (a) alternate routes of entry into the teaching profession, including the examination of findings supporting the hypothesis that such tracks can attract high quality candidates (b) enhancement of the teaching profession's attractiveness and (c) integration of distance learning technology to teach students and train teachers. There are clearly other important ways to address a teacher shortage – for example, improving teacher education or restructuring schools-- and these were not included in this study.

Discussion of each of the three strategies will include: (a) a scientific review of the advantages and disadvantages as revealed by the reviews commissioned by the expert team and from the discussions held during the workshop, and (b) how the Israeli education system (a formal, organized system) and the Jewish education system in the U.S. (a decentralized, non-formal system) use these methods to address situations in which teachers are scarce.

Alternate entry routes into the teaching profession

There are those who claim that the teacher shortage is the outcome of a decline in the number of those pursuing a teaching track – the result of the lack of training paths suited to candidates' backgrounds (Finn, 2002; Hess, 2001). On the basis of this perception, the idea crystallized that increasing access to the teaching profession through the diversification of the routes available should increase the number of teaching track applicants (U.S. Department of Education, 2002; Wilson, Floden & Ferrini-Mundy, 2001; Finn & Madigan, 2001; McKibbin, 1998; Jianping, 1999). This thinking inspired the founding of alternate teaching tracks in the U.S. and Britain. Some alternate routes, including Teach for America (TFA), New York City Teaching Fellows Program and Teach First, are geared to high-achieving college graduates and offer them a teacher training track comprised of several weeks of advanced study during the summer, and work as a teacher at the beginning of the school year, under supervision, with professional guidance received during the initial years of work. It should be noted that studies have shown that these fast-track programs represent only a small portion of all the alternate routes to teaching; most of the tracks appeal to people pursuing a second career, to those with informal teaching experience who do not have an official teaching certificate and to others. Due to the trend to expand and diversify the entry routes into the teaching profession, researchers have begun, in recent years, to compare the various aspects of training tracks (Constantine et al., 2009; Darling-Hammond et al., 2005; Grossman & Loeb, 2008). The simple dichotomous division of standard tracks versus alternative tracks does not suffice.

Most of the studies carried out in the U.S. which compared various training tracks focused on the comparison between abbreviated tracks (primarily the TFA) and the customary tracks available in universities (Wilson, 2009). A recently published volume (Grossman & Loeb, 2008) which summarizes current scientific knowledge on the issue of alternative routes presents some interesting conclusions. The research indicates that, according to several criteria, the quality of teachers trained in the TFA program is similar to graduates of traditional teacher training programs: it appears there are no significant differences in the standardized test achievement of elementary school students taught by teachers who were trained in an alternative path and those taught by teachers who completed a traditional track. On identical tests of mathematics and reading comprehension administered to the two groups, there were no significant differences in the scores (Glazerman, Mayer & Decker, 2006; Kane, Rockoff & Staiger, 2008; Raymond, Fletcher & Luque, 2001). Likewise, in a survey that asked school principals to rank the quality of their teachers, no significant difference between the two groups

of teachers was found, and an adjusted statistical analysis found there was no difference in their dropout rate from the profession (Grisson, 2008). Moreover, a study conducted by the New York school system showed that the alternate routes contributed to narrowing the gap in teacher characteristics between different schools (Boyd et al., 2008). In contrast, studies that examined "second career" programs revealed that most of the participants had not come from high status professions such as law or high-tech (Hammerness & Reininger, 2008).

At the same time, the research contains criticism of some of the alternative routes (Darling-Hammond, 1992; Darling-Hammond et al., 2009). Most of the criticism is directed toward the abbreviated training programs designed for candidates with outstanding academic backgrounds. Their argument is that a few weeks of training will not produce the "desired teacher" (Darling-Hammond, 2003). Moreover, some argue that the institutionalization of alternative routes could in the long run hurt the image of the profession. In their opinion, if the view that following a short training period it is possible to begin teaching and later acquire the rest of the skills on the job is given a stamp of approval, it can cause the image of the teaching profession to further deteriorate and, as a result, reduce the willingness of high quality candidates to pursue the profession (Ariav, 2008).

Alternate routes: The case in Israel

The use of alternate routes of entry into the teaching profession is not something new in Israel, and actually they have been in place since the establishment of the State, where there has been a shortage of teachers. For example, in the 1950s, following the large waves of immigration, a great shortage of teachers ensued, particularly in outlying areas where many new immigrants were housed. The problem was addressed by training teachers through alternate, shorter training paths, such as soldiers acting as teachers or teachers trained in night courses, abbreviated courses and intensive courses (Peled, 1999). After a decade during which a sufficient number of teachers to meet demand were conventionally trained, the number of alternate routes to teaching decreased significantly.

Approximately three years ago, the Council for Higher Education approved the Ariav Committee's guidelines which are designed, on the one hand, to encourage a range of entry routes to the teaching profession and, on the other, to determine the core curriculum common to all teacher training programs (the Committee to Promote a Training Framework for Teaching Report, 2006).[4] As a result, there currently exist various university and college majors with tracks especially designed for selected populations or specific subject areas. In 2009, about 1,050 students studied in these tracks.[5] During the workshop, Noah Greenfield described several alternate routes created with the Ministry of Education's support:

"Outstanding Students to Teaching" – This is a complete, though shortened, curriculum in comparison to that offered by teaching colleges (three years instead of four), with the addition of special courses that lead to a teaching certificate. For those accepted to the program, tuition is fully subsidized in return for three years of work following completion of studies. There is also the possibility of a living expenses grant. The qualifications for admission into the "Outstanding Students" program are higher than those for acceptance to a regular teacher program. According to Ministry of Education data, there are about 350 students in the current cohort (Kloyer et al., 2009:30).

[4] http://www.che.org.il/template/default.aspx?PageId=206 (Hebrew)

[5] Ministry of Education: Main points of the 2010 Work Plan – www.pmo.gov.il/files/plans2010/edu.ppt (Hebrew)

"Educational Pioneer" – This is a program developed by the Ministry of Education and the Institute for Democratic Education, designed for student teachers in the third or fourth year of study, or for B.A. graduates.[6] The duration of the program is five years during which time those needing to complete their B.A. studies do so, and all continue to the M.A. degree and a principal training course. In addition to the regular training, the students take supplementary courses developed especially for the program. During the years they are studying for their B.A. and M.A. degrees, the students have a half-time teaching post in a designated school, located in a disadvantaged area. The students in this program receive a scholarship throughout their years of study. The fact that the program includes a principal training course indicates that within a number of years, the program graduates are expected to become principals.

Retraining for Academic Degree Holders – A range of tracks that retrains people with academic degrees has been in effect for many years at all the teacher training institutes. We did not find precise data with respect to the number of students in these tracks or follow-up data regarding their work in the education system. In order to expand the number of teachers in the sciences, mathematics and English, the Ministry of Education recently launched a new track to retrain academics for the teaching profession; the track provides tuition scholarships and grants.[7] The program's training period lasts for about one year and includes courses on pedagogic theory as well as practical experience in the classroom. When the period of study is completed, the teachers start to work in schools under the guidance of mentoring teachers. During their first year of work in the field, the teachers are required to participate in training workshops and continue in-service education. Conditions of admission to the program are a B.A. in a relevant subject area and work experience of five years during the preceding seven-year period. Program participants are entitled to a tuition waiver and a grant in return for three years of teaching in the education system. Another option in the third year is to start studying for an M.A. during a two-year period with a commitment to work for one more year following receipt of the M.A. degree.

Parallel to the efforts to encourage more new applicants to go the teaching route in the education system, the Ministry is acting to moderate the existing shortage of teachers in schools in the periphery. Among the programs in this vein is the "ATIDIM for Education" (http://82.166.38.91/tabid/1350/language/en-US/Default.aspx in Hebrew) project. This is a track of academic study in the field of mathematics, sciences and English education and is a part of the "ATIDIM Project" carried out in cooperation with the Israel Defense Forces. This track makes it possible to complete study for a B.A. and a teaching certificate within three years but requires a commitment to serve six years as a teacher-officer in schools located in the periphery. Students in this program are eligible for a living expense grant during the period of study. In 2008, 14 teachers had completed this track and, in total, there are currently 33 such teachers working in the education system.[8]

We are not aware of any systematic attempt to collect data on the percentage that complete training, the percentage that actually enter teaching, the percentage that drop out of the profession and the total cost of training these teachers. Such data would make it possible to know more about each track's degree of success in meeting its stated goals (training teachers for the sciences, teachers for the periphery, etc.). Likewise, we are not aware of related research that compares the different tracks and follows up on the degree of their success, effectiveness or utility. This type of comparative research would examine students' achievements according to the distribution of teachers among the different programs; it would examine the costs of the various training tracks; the degree of success each track gained in having its graduates inducted into the profession and could even contribute to reducing the dropout rates of graduates from teaching work.

[6] http://www.democratic.co.il/HALUTZ/ (Hebrew)
[7] http://cms.education.gov.il/EducationCMS/Units/academic/ (Hebrew)
[8] http://www.atidim.org/_Uploads/dbsAttachedFiles/horaaperes(1).pdf (Hebrew)

Alternate routes: The case of Jewish education in the United States

Owing to the decentralized nature of Jewish education in the U.S. and the absence of an organized network or system to supervise and arrange teacher training, it is impossible to point to a "standard" model of teacher training in that context. Those teaching Jewish studies have either a degree in education or in Jewish studies; however, only a minority have training in both education and Jewish studies. In recent years several academic centers have developed a formal training track for teachers in Jewish schools. Thus, for example, during the past few years the Mandel Center for Studies in Jewish Education at Brandeis University has been operating a program called DeLet/MAT designed to train teachers for Jewish schools. For the past two decades Yeshiva University has been operating a teacher training program (Azrieli Graduate School of Jewish Education and Administration). At McGill University and Gratz College, there are similar teacher training tracks. These programs are intended for students who have already completed their bachelor's degree. In 2009, the University of Miami inaugurated a major in Jewish education for bachelor's degree students.

Enhancing the teaching profession's attractiveness

Another method of addressing the situation of a teacher shortage is to devise a comprehensive policy to augment the profession's attractiveness, assuming this will bring a quantitative and qualitative increase of people interested in a teaching career and a decrease in the rate of those dropping out of the profession.

It is known that the teaching profession's attractiveness is not comprised of a single factor. Thus, enhancing the profession's attractiveness is dependent upon the ability to formulate and implement a wide-ranging plan that deals with several factors. In Israel, it is agreed that an important component of the plan must be improving teachers' financial remuneration (as reflected in the "New Horizon" reforms), but there is a need to relate to additional factors such as physical and professional working conditions, support during the first years of work, raising teachers' professional status and so on. From Blass' report it appears that it is possible to improve teachers' material remuneration according to various criteria:

(1) **Teacher attributes**. It is possible to raise teachers' salaries across the board or in a differential manner based on seniority and educational level criteria. It is possible, for example, to raise beginning teachers' salaries to a greater degree than more senior teachers' salaries, this for the purpose of reducing the dropout rate during the initial years of work and to raise the profession's attractiveness in the eyes of capable young people. Alternatively, it is possible to construct a wage scale that would include a large jump in pay for teachers with seniority to encourage new teachers to persist in their work in the education system, and to retain more experienced teachers (Blass, 2009:6).

(2) **The system's needs**. It is possible to raise teachers' wages so that they correspond to the education system's needs. One possibility is to award grants or salary supplements based on the characteristics of the school where the teacher teaches. A substantial salary supplement would be given, for instance, to a teacher teaching in a school located in the periphery, or in a class where a significant percentage of the students have special needs, or in a school with greater discipline problems or low achievement levels. Clearly, this type of policy would be targeted to the problem of a teacher shortage in particular geographic areas or in weak schools (Blass, 2009:9-10). A similar possibility is to award substantial benefits to teachers of subjects in which the most severe shortages exist.

(3) **Outputs and results**. A third possibility is to award financial benefits to outstanding teachers. With this approach, the major challenge would be the manner in which the rules for excellence are set up. Would they be determined on the basis of standardized tests administered to teachers, on the basis of a decision at the level of school principal, on the basis of students' achievements on nationwide tests or on an agreed combination of them all?

Working conditions – Studies that examined the reasons for teachers leaving the profession indicate that difficult working conditions represent one of the major factors for the high dropout rate among teachers during their first years of work (Ingersoll, 2001; 2002). It is possible to point to two types of factors that shape teachers' working conditions (Moore et al., 2005, Chap. 5).

(a) **Physical conditions (facilities and equipment)** – Schools' physical conditions affect teachers' level of satisfaction with their work and, as a consequence, their willingness to continue teaching. The lack of space to sit and talk with students, lack of a library, laboratory equipment or proper administrative services are likely to create resentment among teachers and influence their decision to cease working in the education system because it does not afford them the conditions that would enable them to succeed in their work to the degree they would like, or could (Buckley et al., 2004; Schneider, 2003).

(b) **Teaching functions imposed on the teacher** – Surveys have shown that, in practice, for a variety of reasons, there is a mismatch between the teacher's training with respect to age group and subject area and the duties he is obliged to perform (Ingersoll, 2002). In other cases, the teacher must divide his or her time among a great number of classes or schools. These kinds of conditions deepen the new teacher's feelings of insecurity regarding his or her skills and pedagogic and educational abilities and may in the end lead to the decision to stop teaching.

Therefore, better induction of teachers into the education system, reducing the number of students per class or the number of classes a teacher teaches at any one time, scrupulously implementing a policy ensuring teachers teach only those subject areas for which they were trained, improving school climate and conditions – are all likely to enhance candidates' willingness to embark on a teaching career and to reduce the dropout rate among new teachers.

As a part of its activities, the expert team commissioned a scientific review to describe the policy formulated to enhance the attractiveness of the teaching profession. The commissioned review dealt with the reforms instituted by the British education system in the mid-1990s (Blass, 2009). The review showed that the reforms grew from the desire to enhance the teaching profession's attractiveness and status by taking system-wide action with respect to a great number of relevant components. First, teachers' salaries rose significantly. The wage improvements, however, were not across the board and inclusive, but rather zeroed in on a significant rise in the salaries of new teachers, whose wages rose 24% from 1996 to 2006 as compared to a rise of 7% for veteran teachers. In addition, teachers teaching in "difficult" schools were awarded a grant, and teachers of certain subject areas had their salaries supplemented. Second, surveys had shown that there was a large reserve of fully trained teachers who had left the profession at an early stage. This group of teachers was offered special grants to encourage their return to teaching in the education system. In any case, it is important to note that despite the significant improvement in starting teachers' salaries and in the salaries of teachers of special subject areas such as mathematics and the sciences, there still exists a substantial gap between teachers' salaries and the average salary of a university graduate working in a non-teaching profession.

Alongside the improvement in financial remuneration, the reform included improved working conditions: a reduction in the number of teaching contact hours and recognition of the hours spent preparing for classes as work hours, clear and detailed definition of teachers' duties and rights, a promotion scale and the tasks and demands required to transition from stage to stage. Likewise, a portion of the teachers' administrative tasks were transferred to teaching aides and new career advancement tracks were developed. Of course, the key question is whether all these steps were helpful in the end. Despite the difficulty in providing a research-based answer to this question, there are indications showing that these measures have brought about an improvement: there has been a significant reduction in teachers' dropout rates, and in 2009 there was a 26% increase in those seeking teacher training, as compared to the previous year. Moreover, there was an even more significant increase in the number of applicants interested in pursuing a teaching track in areas where the shortage of

teachers is more severe. At the same time, this must be qualified with the realization of the possibility that the global recession influenced the situation and it is therefore advisable to examine the data sometime in the future when a longer view will provide historical perspective.
Aside from these ideas, familiar from the professional literature, the workshop devoted a session to this issue wherein the participants were asked to propose unconventional ideas that could contribute to raising the profession's attractiveness. During the lectures and discussion that ensued, thinking on the topic took several directions:

Diversifying professional challenges – One of the reasons for the teaching profession's low level of attractiveness is the lack of variety in teachers' work, which is mainly teaching in the classroom. For this reason, many see the profession as wearing and intellectually unchallenging as compared to other professions, such as teaching in an institution of higher learning where research is part of the teaching position. During the workshop, Dr. Oren Shriki raised the notion of enabling teachers interested in doing so to engage in research as part of their professional role and to thus enhance the attractiveness of the work of teaching. In this way, the teacher would be able to better learn lessons based on his or her own experience and independently improve his or her teaching abilities. Furthermore, the daily contact with students, school staff and the entire system can afford teacher-researchers a relative advantage over academic researchers, who are not expert in the actual workings of the education system, and thus can lead to research that will more directly contribute to the education system. In other words, their intimate familiarity with the system can enable teacher-researchers to conduct scientific research together with students, and can lead not only to diversifying and enriching the job of teaching but can even contribute to the improvement of the entire system.

Building up the profession's professional status – Another way to strengthen the teaching profession's attractiveness is to raise teachers' professional status. During the workshop, Pierre Kletz related the French example where teachers are considered professional authorities and enjoy many benefits stemming from their high status as civil servants. The status accorded them stems in part from the training requirements which include (a) a Bachelor's degree, (b) oral and written competitive examinations testing the knowledge of the discipline in the subject area (in practice, 60% of those taking the exams pass, though this figure varies by subject matter area as well as primary versus secondary certification) and (c) a year of paid internship at the end of which the candidate is tested by a panel of judges (Liebman, 2008). According to Dr. Kletz, the system assumes that the student teacher who has succeeded in fulfilling the strict requirements is now a teacher in possession of the tools and abilities to handle what occurs in practice in the best possible way, and thus the system affords him or her wide latitude in choosing the mix of curriculum, teaching manner and pedagogic method to employ in the classroom.

Another direction of thought on this topic was presented by Josh Glazer, who based his ideas on the central thesis put forward in the book *The System of Professions* (Abbott, 1988). Dr. Glazer believes that the teaching profession's level of attractiveness is dependent upon the public's belief that the average teacher can indeed influence the character of those who pass through the education system. Since the public's prevailing sense is that the education system does not meet expectations, the teacher is not portrayed as a professional with educational skills and abilities. Only when the education system has met the success criteria, will the public be convinced that the system can successfully train teachers who shape the future generation's character and, at that time, the profession's attractiveness will grow.

"The social work model" – One of the questions raised during the discussions preceding the workshop was why is it that a profession such as social work, where salaries are not much better than in teaching, is in greater demand than the teaching profession. Shimon Spiro of Tel Aviv University's School of Social Work was invited to the workshop to offer his explanation of this state of events. At the start of his talk, Prof. Spiro explained

that the situation stems in part from the simple economic condition of supply and demand – since the number of social workers the system requires is much lower than the number of teachers the system requires, the number of available places in the university schools of social work is significantly lower than the range and number of institutions offering teacher training and, as a result, schools of social work can allow themselves to set higher admission standards. Prof. Spiro also presented several developments that served to enhance the social work profession's prestige and attractiveness: (a) Social workers' status is anchored in law (Social Workers Law – 1996), providing the profession's status and authority with a legal imprimatur. Establishing the profession's status in this way raised its prestige in the public's eye. (b) The profession's transformation into an academic discipline and area of scientific research strengthened its image as an academic field for all intents and purposes. (c) Social workers' professional autonomy has expanded as a result of the accumulated authority granted them (Youth Law and Rules of Procedure). (d) The monopoly it has in its fields of operation as well as the differentiation between various domains and professional levels led to the creation of high-prestige niches that reflected on the profession as a whole. (e) Organization of a professional union that, among other things, accompanies struggles over working conditions and stimulates frank public debate about current and desired social policy. This casts the profession's image in a positive light in the public's eye.

Enhancing the teaching profession's attractiveness: The case in Israel

There is a claim that in Israel the profession of teaching is not an attractive one. As the Dovrat Commission noted, "The status of the teacher in Israel today is not commensurate with the education system's social and national expectations… teachers whose efforts and achievements are outstanding do not receive the appreciation they deserve from society, or in terms of salary. Despite a series of initiatives to raise teachers' status, to date too little has been done, and that which has been accomplished has been quickly worn away." (Dovrat, 2005: 46). A 2005 survey conducted for the "Education Watch" association found that although the teaching profession is considered second in importance only to medicine, no more than a small minority of parents (13%) would strongly recommend their children pursue it.[9] The profession's lack of attractiveness has not escaped the Ministry of Education's notice, and in recent years several steps have been taken to address this trend.

The "New Horizon" reform, whose implementation began in 2008 in portions of the education system, includes a mix of components designed to raise the profession's power of attraction. First, the program precisely defines how the teacher's hours are to be distributed between contact hours, work with individuals and hours at school devoted to a variety of tasks. The plan includes a raise in teachers' salaries according to a scale based on educational level, seniority and additional duties given to the teacher. Second, the plan includes a seniority scale in which movement from one rank to the next is based upon years of seniority but conditional upon participation in professional development programs. The 2009 Ministry of Finance wage commissioner's report indicates that during the past year, there was an 8% rise in the average salary of teachers, apparently as a result of the integration of this program in elementary schools (Israel: Ministry of Finance, 2009).

Findings regarding the high dropout rate among teachers new to the profession signaled alarm and motivated the Ministry of Education to devise the "Teaching Residency" program. This program is designed to reduce new teachers' dropout rate by providing mentoring, support and guidance during the first year of work as a teacher. In recent years, first year teachers have been required to participate in an apprenticeship process in both an individual and a group setting (Smith & Reichenberg, 2008; Nasser Abu al-Hija et al., 2006). This requirement has been in effect for teachers' college graduates since 2000 and, since 2003, for university graduates. The apprenticeship on the individual level includes work with a mentor teacher whose role is to help the new teacher acclimate to the school.

[9] A survey commissioned by the Education Patrol association in 2005 from the Geocartographia Institute was conducted among approximately 1,000 parents of children of all ages in the public school system (Jewish and Arab) in Israel. Survey is quoted by Blass and Romanov, 2009. (Hebrew)

In parallel, the Ministry of Education awards financial benefits to teachers of subjects in which there is a severe shortage. As an example, within the framework of the plan to train academics to teach math and science, grants of tens of thousands of shekels are provided in return for a commitment to teach for three years at the junior high or high school level.[10] The "New Horizon" program relates to this in that the school principal's salary is influenced by the school's attributes ("level of complexity"), including: average number of students in class, number of classes, existence of special education classes in the school and the student's average socio-economic level.[11]

Despite many efforts, apparently it is difficult to manage the shortage of teachers in schools located in the periphery. The State Comptroller reports of 2000 and 2006 voiced criticism of the steps taken to encourage quality teachers to relocate and teach in the periphery, including the plan for differential remuneration offering salary supplements and rent subsidies for those living and teaching in the periphery, and even tuition subsidies should they wish to continue their studies. In its 2006 report, the Ministry of Education admitted that the present incentives were inadequate for solving the shortage of teachers in certain geographical areas.[12] The major criticism in the comptroller's report focused on the lack of systematic follow-up regarding the extent of the incentives' success, and on the fact that no additional steps were being taken to improve the situation.[13] Blass et al. (2009:20-22) found that the teachers in disadvantaged schools hold the same educational level as teachers in better schools and this leads them to the conclusion that the problem in the periphery is not qualitative but rather quantitative.

Distance learning/teaching for students and teachers[14]

The information revolution has brought about a substantial change in the lifestyles of many around the world while the internet's growing accessibility has, among other things, led to an increase in the use of distance teaching within various education frameworks. Thus, for example, in a survey conducted among students in higher education in the U.S., it was found that the percentage of those who had taken at least one course via distance learning rose from 10% in 2002 to 20% in 2007 (Allen & Seaman, 2008). This trend raises questions about the possibility of harnessing distance learning technology to aid in addressing a shortage of teachers. For example, would the use of distance education make it possible to overcome a shortage of teachers of certain subjects in the periphery and, if so, how? Is it possible to improve teachers' training and professional development via distance education and, if so, how? Because of the similarities in distance education for students and for teachers, the discussion will address them both as one topic, and relate specifically to each, as needed.

We will preface the discussion by noting that in the literature, the teaching-learning process that is not face-to-face is described using a variety of terms. Among others, the terms used are "distance education," "distance training," "distance learning," "distance teaching," "virtual learning," "computer assisted instruction," "online learning" and more (Dori, et al., 2009). We use the term "distance learning/teaching" in the sense of learning/teaching that "takes place when a teacher and students are separated by physical distance and technology is used to make contact between them" (Willis, 1994).

[10] http://cms.education.gov.il/EducationCMS/Units/academic/Klaly.htm (Hebrew)
[11] New Horizon agreement, section 66. (Hebrew)
[12] State Comptroller's Report, 2006, Annual Report for 2006 56B, p. 39 (Hebrew)
[13] From the State Comptroller's Report, 2006, Annual Report for 2006 56B, p. 42: "The earlier criticism raised the fact that during the many years the ministry paid incentives to teachers, it did not engage in any research, evaluation or survey to examine the incentive program's effect and the individual contract arrangements made to attract good teachers to the communities. The ministry did not have answers to fundamental questions such as: Did the incentives encourage good teachers to transfer to areas of national priority, and what was the weight given to the incentives in teachers' considerations in choosing their place of work?" (Hebrew)
[14] This section is largely based on Dori, Kaberman & Herscovitz's (2009) review, commissioned by the expert team; an executive summary appears here in the appendix.

Distance teaching's inherent advantages: The literature cites several advantages distance teaching has over traditional classroom teaching. First, owing to the availability of the information without the constraints of time and distance, distance teaching can enable greater flexibility for students to participate in the learning process. In addition, distance teaching can enhance the correspondence between study content and the student's areas of interest. As a result, the student's motivation can increase, as this type of learning enables the student to freely and flexibly organize his or her learning activities, as well as the opportunity to learn anywhere, without constraints (Dori, et al., 2009). Second, distance teaching allows an educational institution to absorb a great number and variety of learners, and at a relatively low cost, to offer a broad range of knowledge areas and to employ a wide-ranging staff of experts (del Valle & Duffy, 2009; Moore & Anderson, 2003). Third, distance teaching enables nationwide standards to be set for a curriculum and to ensure that all students have access to high quality learning materials, regardless of school or geographic location (Eisenberg, 2003: 49-50).

Nevertheless, research shows that integrating distance learning in educational institutions encounters difficulties and the impact of the various distance education technologies on the culture of teaching and learning is limited (Lawless & Kulikowich, 1996; Cuban, Kirkpatrick & Peck, 2001; Bonk, Wisher & Lee, 2003). According to its advocates, distance teaching's minor impact is due mainly to the incomplete assimilation of distance teaching's significance. Thus for example, one of the studies showed that teachers and learners did not acquire the cognitive skills required for efficient use of online technologies, a lack that led to incorrect use of technologies for teaching and learning (Eshet, 2004). Another study pointed to online academic learning environments being perceived as supplementary to lecture-based courses and therefore the pedagogic methods appropriate for teaching-learning situations where the teacher and students are in the same physical space are used rather than methods suited to distance learning (Andrews & Haythornthwaite, 2007). Moreover, there is trepidation about using distance teaching in that the tool significantly limits the personal contact between the teacher and student. In one of the studies of the topic, students who took part in a distance lesson reported feelings of loneliness and social isolation due to the absence of physical reinforcements that exist in a face-to-face learning environment. These feelings had a negative effect on scholastic achievement (Bates & Khasawneh, 2007). It should be noted that there have been recent technological developments that enable and encourage reinforcement of the communication components (interpersonal and intergroup) involved in distance teaching processes. These are new options, and we have not found studies of their potential utility.

These developments strengthen the claim found in the research that distance teaching should not be used on its own, but rather finding the right mix that combines face-to-face teaching and online technologies is recommended. That is, the distance teaching tool should be a complementary component to traditional learning that takes place face-to-face (Garrison & Kanuka, 2004; Osguthrope & Graham, 2003; Rovai & Jordan, 2004; Singh, 2003). Those researching the field note that the "perfect formula" for combining learning components has not been found, and they therefore emphasize the challenges facing learning environment designers in their efforts to achieve the best dose for each of these learning situations (Dentl & Motsching-Pitrik, 2005).

When considering the introduction of elements of distance teaching into the system for students, student teachers or practicing teachers, the fact that the process involves a shift in perception of teaching must be taken into account. Research findings suggest that in distance learning the teacher has less control over the learning process while the learners take a more active part and take on greater responsibility (Anderson, Rourke, Garrison & Archer, 2001; DeLaat & Lally, 2004). The pace of learning and its phases (coordinate and regulate) are transferred from the teacher's hands to the learner's and the teacher's main function is to guide and mentor the students in the learning process. This means that it is not possible to implement distance teaching systems without providing teachers with the appropriate pedagogic training and support; a required condition for its implementation is developing understanding of online teaching and providing the required skills and qualifications to engage in distance teaching (Bonk & Cummings, 1998; Stephenson, 2001). While the factors required for successful face-to-face teaching and distance teaching overlap (Roblyer & McKenzie, 2000), as Herscovitz, Kaberman & Dori (2009) demonstrate, the research shows that teachers must acquire

additional skills such as teaching without the ability to make eye contact with students, mastery over the required distance learning-teaching technologies and comfort in using them. In addition, the teacher must learn to fit the learning process' goals to the appropriate medium. During the lesson, the teacher must also navigate learners' participation and use the online technologies to monitor the learning process.

Moreover, the teacher must verify the true extent of the learner's work, and must try to challenge the learners to participate in the learning process and support them as individuals and as a cooperative learning group; he must summarize key points in the discussions that develop and steer them so that they remain within the course's well-defined boundaries (Goodyear, et al., 2001; Harasim, et al., 1997).

There are those who claim that in light of the fast pace of development and change taking place in knowledge content and pedagogic tools, distance teaching can be effective in enhancing the teacher's professional development process. Those holding this opinion believe that distance teaching's main advantage is its ability to connect experts and practitioners and to create learning communities while overcoming geographic distances and other constraints (Hanna, Glowacki-Dudka & Conceicao-Runlee, 2000). And indeed, empirical studies that examined the degree of participation and involvement of teachers taking part in such programs show that these frameworks developed the attributes of a learning community, due to the ability to communicate and owing to the ease of accessibility both to experts and to knowledge on the topic (Dede, 2006; Dede et al., 2009). Nonetheless, researchers in the field note that the effect of distance professional development on student learning in the classroom or on preventing good teachers from dropping out of the system has not yet been examined.[15]

In the U.S. and the U.K., there are teacher training tracks at colleges and universities that include a large number of distance learning courses (Dori et al., 2009:19-22). To illustrate, Tennessee State University in Nashville offers a comprehensive teacher training program that integrates distance learning with face-to-face learning. In the U.K., the Open University has teacher training programs in which all the teaching and learning theory courses are given via distance learning. In 2007 in the U.K., an online teaching training track (iTeach) was established designed to train teachers of chemistry, physics and mathematics. The TEGIVS (Teacher Education Goes into Virtual Schooling) project is another initiative of a distance teacher training program. It is funded by the National Science Foundation and is designed to train teachers for all age groups and subject areas. The project's goal is to develop – by creating virtual schools – a model for integrating distance teaching into the teacher training process. [16]

During the round-table discussions that took place at the workshop, several additional insights and key questions on the topic came up.

Most of the participants agreed that, on the one hand, it is impossible and unwise to ignore the existence of distance teaching but, on the other hand, it must be remembered that this is one tool alone which cannot completely replace all other teaching methods. There is room to increase use of the distance teaching tool as an auxiliary tool, in concert with other methods.

Some of the speakers were of the opinion that even if certain of the profession's content can be taught remotely, there are other aspects learned at school – value-based education, relating to the other, group discussion and development of critical faculties and more – that cannot be learned remotely. Handling these layers of education demands teacher-student face-to-face interaction and it therefore can be assumed that distance teaching will not be able to replace a teacher in these cases.

Simulating a laboratory experiment, mentoring and practice might be the areas in which the use of distance teaching will have the highest efficacy. Since many schools find it economically difficult to build and operate laboratories, there is room to examine the degree to which the distance teaching tool can be used as a substitute for real experiments. There are also subject areas in which practice significantly contributes to the learning

[15] It should be noted that a large project on the topic is currently being conducted with results expected to be published during 2010 (Fishman, B., Edelson, D., & Konstantopoulos, S., 2004).

[16] A more in-depth description of the project is available in Herscovitz, Kaberman & Dori, 2009.

process. Distance teaching can be used to increase practice sessions given to students. Because today's technological capabilities enable synchronous learning, the teacher and student can together simultaneously conduct a simulated experiment or engage in a practice session. Distance teaching also permits schools to expand the range of course and subject area offerings on different levels.

At the same time, from what the review on the use of distance teaching in Jewish education in the U.S. suggested and from what workshop participants stated, the cost of distance teaching must be taken into account. Distance teaching requires a large monetary investment – both to create and maintain the required infrastructure and to prepare distance teaching curricula and lessons. There is a need to evaluate in advance whether the economic cost-benefit of such a transition is preferable to an additional investment in the teachers themselves. The review of Jewish education in the U.S. showed that, for example, there are schools with the appropriate infrastructure for distance teaching but due to the high cost of preparing curricula, they are not used.

Distance learning/teaching of students and teachers: The case in Israel

Since the 1970s in Israel, there has been an effort to assimilate new distance teaching technologies in the education system. This policy has gained important momentum since 2000 following the recommendations of the Committee to Determine Information and Communication (ICT) Policy, which set 24 goals on the topic.[17] Implementation of the committee's recommendations found expression in the development and application of innovative models that combine ICT in teaching and learning including distance learning (such as before matriculation exams), cooperative ICT-mediated learning and learning management (Eschola, Virtual Olympics), development and operation of school websites, self-guided learning and ICT-mediated learning for special needs children. The ICT policy experience showed that more than a few schools had integrated innovative models for teaching and learning but were failing at the infrastructure level (the need for fast internet or upgrade of the computer system) and deficient in providing in-service training for suitable teachers to implement the various programs (Eisenberg, 2009).

In Israel today there are several organizations specializing in development of distance teaching technologies for teachers and students. During the workshop, Guy Levi, Ada Chen and Olzan Goldstein presented examples of various distance learning programs. CET (the Center for Educational Technology) established a virtual campus for the Ministry of Education that allows teachers to continue their in-service education remotely (via synchronous and asynchronous technologies).[18] On the websites created by the MOFET Institute (school for research, curriculum and program development for teacher training and teaching in colleges), ORT and Snunit, sample lessons and lectures by experts, educators and teachers in various areas of knowledge can be viewed.[19] There are also subject area internet sites which include digital and regular content, as well as discussion forums. For students there are ICT learning environments which include projects such as the "digital book" designed to extend the boundaries of the printed book and enable joint teacher-student learning, or the "Horizon" project which makes interactive, experiential learning possible through use of an ICT environment for teaching, learning and evaluation. Another example is the "Spring is for Matriculation" portal established by ORT which is actually a virtual school helping high school students study for their matriculation examinations. The portal includes study materials and students can take sample tests, receive immediate feedback and receive teacher support through its interactive forums.

Within the framework of the expert team's activities, we did not find systematic or up-to-date information regarding the scope of use of distance teaching technologies with respect to students or to teachers, nor did we find research demonstrating such programs' effectiveness.

[17] www.atarnet.net/nodewebimages/17416/Files/20-%התקשוב20%מדיניות.doc (Hebrew)
[18] http://www3.cet.ac.il (Hebrew)
[19] ORT – http://www.aviv.org.il; MOFET – http://hl.macam.ac.il/default.asp ; Snunit – http://www.snunit.k.12.il (Hebrew)

Distance learning/teaching of students and teachers: Jewish education in the United States

The potential distance teaching presents did not escape the eyes of Jewish education policy planners outside of Israel. For example, a report published by the Jewish People Policy Planning Institute in 2005/6 looked at how distance learning and computer use can help the Jews in the Diaspora overcome challenges such as distance and geographic dispersion.[20]

The Avi Chai Foundation also supports and initiates various distance learning projects for Jewish education in the U.S. Within this framework, it launched the chinuch.org site, which makes lesson plans and educational material from various fields available to teachers and educators, and participates in funding the "Remote Teacher" project operated by the Lookstein Center. This project makes use of video conferencing technology, with teachers located in Israel using it to teach classes in the U.S. In 2009, nine schools participated in this project. The foundation also offers grants to teachers in the U.S. who come up with new ideas in the area of educational technology.

It would also appear that in the U.S., distance teaching of Jewish studies in practice takes place through private companies and the schools themselves. For example, the "Israconnect" program, operated by a private company, uses video-conferencing to link lessons given in Israeli schools to classes in U.S. schools. In the Chabad emissary communities throughout the world, intensive use is made of distance learning technologies: emissaries' children study through an online school. The review the expert team commissioned as well as the workshop discussions revealed that only limited use is made of distance teaching technologies for Jewish education in the U.S. (Pomson, Dorfsman & Glagovsky, 2009). It seems that this does not stem from the lack of required infrastructure since the review showed that most of the schools in the study have fast internet, intelligent classrooms and video-conferencing equipment. Thus, it is likely that distance teaching's minimal use is due to other reasons, for example insufficient content customized for distance teaching of Jewish studies, lack of appropriate training for the educational staff, lack of awareness, doubt regarding distance teaching's effectiveness and the like.

[20] *The Jewish People Policy Planning Institute,* 2005, pp.43-44

Fundamental questions, knowledge and insights gained during our work

Based on the entirety of its work, the expert team consolidated a series of insights and ideas with respect to the issue of addressing a teacher shortage. **It is important to stress that these insights are based on the small set of topics and studies reviewed by the expert team, and represent conclusions made on the basis of the team members' accumulated experience and knowledge, and from the discussions that took place among workshop participants. Accordingly, these ideas should be viewed as proposals for topics on which future research might focus.**

Shortage of teachers – general

To formulate effective methods for addressing a shortage of teachers, a precise and detailed picture of the problem's causes and characteristics must be constructed and mapped. It would seem that in Israel, despite significant advances in the collection and processing of data on the teacher shortage and its attributes, there is still no clear picture of the present situation or an analysis of future trends. It is known clearly that there is a shortage of teachers in specific subject areas, however the required data have not yet been consolidated and many questions on the topic are still fraught with disagreement. For example, is there a general shortage of teachers, or a shortage of "good" teachers or a shortage in particular geographic areas? Is the education system already feeling the effects of the shortage or is this only a forecast? Is the shortage quantitative or qualitative? To what extent is the problem due to the high dropout rate of teachers new to the system? Since there are no clear answers to these questions, formulating methods of addressing the problem are not based on complete information about the actual situation. Similarly, little is known about the characteristics of the U.S. Jewish education's teaching force and whether it is suffering from a shortage and, if so, of which type. It appears that a crucial step in devising methods of addressing the problem of a shortage of teachers must include creation of a data bank to be used as the basis for formulating a snapshot of current teacher supply and demand and to delineate future projections. After the knowledge data bank is constructed, it will be possible to formulate a policy to encourage teacher training for subject areas or age groups where there is an extreme shortage, to encourage teachers to move to areas where a significant shortage of teachers exists and to enhance teacher retention in general, as well as in the age groups and the areas where they are needed most.

Throughout the team's work, great emphasis was placed on studies in the field carried out in the U.S., despite the great difference that exists between the Israeli and the U.S. school systems. Clearly, the large amount of studies conducted in the U.S. as well as the close relations between the two countries promote this application; however, in the future, further research is needed on education systems that are more similar to the Israeli system. Furthermore, goals and objectives should be set for research analyzing the situation in Israel, as well as Jewish education in North America.

Alternate routes to teaching

Rather than focus on the distinctions between "traditional" teacher training tracks and "alternative" certification routes, the expert team suggests that future research consider what goes on in specific programs and the degree to which any program sufficiently prepares candidates for effective teaching work. The main point arising from research is that effective training and professional development for teachers in any track requires correspondence among three factors: the training curriculum, the candidate's background and characteristics

and the school where he or she will ultimately teach. There is therefore a need to methodically clarify the components of existing professional development and training tracks, and how they fulfill teachers' various needs.

During the team's work it was apparent that there is a tendency to replicate the alternative teacher training models used in other countries. Again, the Israeli education system and Jewish education in North American have unique characteristics that distinguish them from other education systems. In Israel, for example, there are separate education systems for the different sectors and a widespread system of informal education, while in the U.S., Jewish education is decentralized and comprised solely of private schools. Accordingly, duplication of teacher training and professional development models developed in the U.S. or other countries must be carefully carried out, with customization for the Israeli and Jewish-American realities.

For several years now, the Ministry of Education has enabled and even encouraged establishment of different teacher training tracks that appeal to different target groups, on the basis of the Ariav guidelines. The degree of various training tracks' success is apparently not systematically followed up. Thus, for example, the rate of teachers that have trained in the different routes and later leave the system is not followed, nor is the level of their students' scholastic achievement. Despite the methodological difficulties in studying these questions, existing studies, especially in the U.S., show it is possible to arrive at conclusions, if only partial. Accordingly, it would be beneficial to examine the degree of different tracks' success over time, systematically and according to various parameters.

Enhancing the teaching profession's attractiveness

Research shows that enhancing the teaching profession's attractiveness does not depend on financial considerations alone, but requires investment on additional levels to bring about improvement of physical and professional working conditions in schools – i.e., improving how new teachers are inducted and improving working conditions in the classroom and the school, enriching and broadening teachers' professional development opportunities and the professional challenges they undertake, etc. The social work field's success in improving its attractiveness by means of developing differentiation between domains and various professional levels, and the establishment of prestigious areas of endeavor, as well as the fact that there are countries in which the teaching profession is in demand, show that increasing the teaching profession's attractiveness is not an impossible mission. Enhancement of the teaching profession's attractiveness must be carried out system-wide, through an all-inclusive look and accompanied by basic and systematic research.

Distance teaching/learning for students and teachers

During the expert team's activities it became clear that to date the scientific corpus the field of distance teaching technology usage requires has not been consolidated, with reference to both teaching students and to training teachers. As a consequence, many aspects relevant to the field – the age groups and content suited to distance teaching, the financial benefit of distance teaching and more – are still unknown. Hence, the field should engage in a research effort that would provide support for meaningful and system-based decisions. In parallel, it is possible to already point to several directions – exercise, laboratory experiments, etc. – in which distance teaching can be useful in improving the quality of learning.

The research also showed that distance teaching technologies may provide advantages for teachers' professional development. There are indications that the distance teaching vehicle supports the establishment of learning communities among teachers.

Furthermore, we discovered that the majority of teachers of Jewish studies in Jewish schools in the U.S. do not undergo full and comprehensive training before entering the profession, though, on the other hand, they

demonstrate great willingness to participate in programs designed to advance their professional development. Development and encouragement of distance teaching as a professional development tool can ease the way for these teachers to acquire professional tools they lack and to foster the formation of learning communities among teachers.

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Appendix A: Scientific Review's Abstracts

Teachers' Preparation and Professional Development via Distance Teaching and Learning as a Way of Coping with Lack of Teachers

Orit Herscovitz, Zvia Kaberman and Yehudit Judy Dori

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Abstract

Since the last two decades, the use of various forms of distance learning has been on the rise in the business, government and educational sectors. Distance learning is defined as an interactive teaching-learning process, of which at least part is carried out online via text, audio and/or video. Distance learning occurs when the student and the teacher are physically separated and technology is used to connect them. The teacher in distance learning is not in full control of the learner, so the learner has to be more active and take more responsibility for the learning process. It is customary in distance learning to refer to a virtual classroom, which is defined as the learning environment induced by technology mediation.

Distance learning provides for life-long learning. It enables the learner to be flexible with respect to time and distance and individual adaptation of the domains of interest, the pace and the academic level. At the level of the institution administering the teaching, distance learning enables catering to a large number of learners of diverse backgrounds, offers a variety of learning subjects and employs a large team of experts at relatively low costs.

In recent years, universities are finding distance learning increasingly attractive, as it enables increasing the enrollment without the need to invest in additional physical classrooms and other teaching facilities. Moreover, with distance learning, universities can have access to segments of the population who, up until now, have not taken higher education or would not choose a particular institution due to large geographical distance and long commutes.

Research has shown that most of the difficulties associated with distance learning are related to reading text in digital formats, sense of loneliness, social disconnect and lack of cognitive skills for effective use of technology for learning. This might lead to ineffective use of technologies for distance learning and to lack of pedagogical approaches to distance learning and teaching processes. Other research describes hybrid courses, in which distance learning is combined with face-to-face meetings.

It is a common practice to integrate formative assessment into distance learning in order to improve and update distance learning processes and distance learning management. The factors usually examined often refer to learner characteristics, such as the extent of the participation of the distance learner in the learning process, his/her views and attitudes towards distance learning, academic achievements and the effectiveness of technology usage. Distance learning characteristics, such as the combination of technologies applied and their usefulness and usability, are also subjects of research.

Early comparative studies, carried out at the beginning of the decade, have shown that academic achievements of distance learning students were identical to those of students learning in traditional classes or in hybrid courses. The satisfaction of students who experienced distance learning was higher than that of their peers in aspects of accessibility to learning materials and teachers, confidence in their knowledge and improvement in computing skills.

Teachers in distance learning courses reported a high level of teacher collaboration, including informal collaboration with teachers from different institutions, which included exchange of learning materials and ideas. Yet teachers who had experienced virtual teaching claimed that some courses, notable introductory ones, are not appropriate for distance learning due to the lack of self-discipline of novice students. Self-discipline is

required in this type of course much more than in traditional courses. Recent studies confirm the early findings of lack of significant differences between distance and traditional learning in terms of students' academic achievements and their level of interest and enjoyment. The great benefit of distance learning was found to be the collaboration that had been formed among the learning peers.

Contemporary distance learning courses are integrated into student teachers' preparation and teachers' professional development. Studies conducted recently and have indicated increase in student teachers' critical thinking and problem solving that is attributed to their ability to exchange information among colleagues and observe peer groups thanks to distance learning technologies.

Teaching in a distance learning environment is complex, requiring the teacher to master pertinent skills. The literature indicates that experienced teachers have advantages in this regard over their inexperienced peers in managing the teaching, which is expressed in their ability to clarify their expectations of the students and in the way they direct the deliberations amongst the learners.

TEGIVS – Teacher Education Goes into Virtual Schooling is a leading national, USA-based and international project for preparing teachers for distance learning in the 21st Century. Involving four universities, the objective of this project was to develop a model for integrating distance learning in a virtual school for preparing pre-service teachers for teaching all the age ranges (K-12) and all the domains of learning. Three types of teachers were identified for distance learning: (1) the Virtual School (VS) Site Facilitator, or M-Teacher, who is present in school, helps with online learning, and serves as local mentor; (2) the VS Teacher, or E-Teacher, who teaches from a distance, presents activities, interacts with students and their facilitators, undertakes assessments, and grading; and (3) the VS Designer, or D-Teacher, who designs the asynchronous learning materials, is in charge of course development and works in collaboration with teachers in the virtual school. As part of the project, scenarios were developed for various domains, which provide for distance learning and teaching. Research tools included observations and interviews of teachers who teach courses online. The study has indicated that experiencing distance teaching using the various scenarios has elevated the level of pre-service teachers' self-confidence, their awareness of various distance learning aspects and their understanding of the different roles in distance learning.

Significant resources are being invested worldwide, and especially in the USA, for preparing teachers and pre-service teachers for distance learning. These investments reflect the realization that teachers play an increasingly important role in educating the future generation, hence they need to master teaching in general and distance teaching and learning in particular. While there exist courses that prepare pre-service teachers for distance learning and teaching and that enhance teachers' professional development, accreditation of teachers for distance learning is still in early stages. The few researchers that have examined this new trend agree that additional qualitative and quantitative studies are needed in order to assess the preparation, accreditation and professional development of teachers in programs of and for distance learning.

Review of distance learning programs in Jewish Schools in the US

Alex Pomson, Marcelo I. Dorfsman and Fabian Galgovsky

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Abstract

The integration of technology into instruction is a process that has been taking place for a number of decades in Israel and around the world. Nonetheless, many studies point to the under-exploitation of technological facilities in teaching, both in academic institutions (Nachmias & Shemla, 2008; Parker, 2003) and in schools (Inbal-Shamir, 2007; Mioduser, Rochelle et al., 2000; Nachmias, 2002).

Around 250,000 students are studying in 850 Jewish day schools in North America. While these schools are to be found all over the continent, the vast majority – more than half the total number – are located in the greater New York area.

In the framework of a review of educational programs that use distance learning in Jewish education in schools in the United States and Canada, 35 umbrella organizations, 24 schools, 8 institutions/programs and 3 private companies were surveyed.

The bulk of the survey was conducted via the internet and through a review of up-to-date material in the field. In addition, eight interviews were conducted with personnel in this field in Israel and the United States.

Following the internet search, we have concluded that the field of distance learning in Jewish education in elementary and high schools in Israel and the United States is insufficiently developed.

This finding is surprising given the expansion of technological infrastructures in schools, expressed in the installation of ADSL connections in most schools, acquisition of video-conferencing equipment, the installation of smart-boards and the availability of other amenities that enable easy use and access to distance learning facilities.

Possible explanations for this incongruity include:

§ Lack of awareness in schools of the potential and possible applications of these types of programs;
§ Lack of available funding (not for equipment but for the training of educational personnel who themselves would participate in distance learning programs, as well as for teachers and senior instructors who would be involved in such programs in their classrooms);
§ Lack of interest amongst adolescents in "distant" teachers;
§ Adolescents' impatience with technological glitches that might occur;
§ Absence of suitable subject-matter and program suppliers for Jewish schools in the United States.

We related to reports of the actors in the field with a certain degree of caution. The team of researchers collecting and analyzing the data in this survey had no preconceptions, and the review was conducted with the purpose of clarifying the situation in as objective a manner as possible. The survey therefore includes descriptions of existing programs, reference to programs that no longer exist and the testimonies of personnel in the field.

Finally we offer our conclusions and recommendations.

Improving the attractiveness of the K-12 teaching profession

Nachum Blass

Abstract

This literature review consists of three main parts. In the first part we describe the wide range of elements and variables that have an impact on the appeal and attractiveness of the teaching profession. In this description we focus our attention mainly on the analysis of various possible and expected effects of different factors and policy measures on the teaching profession's attractiveness, and these factors' scope, modes of use and the impact they have in different countries. For each of the issues we touch upon we try, when the data allow, to relate back to relevant aspects in the Israeli educational system. Due to space limitations imposed by the designated scope of the review, the description and discussion of each subject in this part is very brief and relates only to the most essential aspects. The variables described in the first part are categorized into two main subsections, the first deals mainly with issues of salaries and the second with working conditions. In the section discussing salaries, we gave separate consideration to: a) basic salary scale, b) permanent adjustments and addition to the salaries that depend upon either "teacher-related factors" or "school-related factors" and c) occasional and temporary salary increases. The discussion of working conditions focuses on the definition of teaching as a job, in terms

of the time devoted to teaching and regulations regarding the amount of time teachers are required to spend on various aspects of the job, either at school or at home (classroom teaching, preparation and so on), on rights associated with the profession and public opinion vis-à-vis the status of the teaching profession.

In the second part of the review we describe British government educational policy in general, and with respect to teachers in particular, and their consequences. In this part of the review we briefly describe the political and ideological background in Britain which led to the extensive organizational and legal changes in the British educational system in the last thirty years. We point out the main developments in working conditions and salary changes and their cumulative impact on the fact that, currently, the shortage of teachers that loomed in the past as a real threat is confined to a few subjects and geographical areas.

In the concluding section we focus on the two main insights that can be drawn from this review. The first is that long term, sustained improvement of the attractiveness of the profession can be achieved, in all probability, only by a comprehensive approach that combines steps and measures from all aspects and phases related to the teaching career. Namely, if government wants to prevent teacher shortages and improve the quality of its existing teachers, it must relate to both salaries and working conditions (in the broadest sense of these terms) at the stages of recruitment, active career and retirement. Success is then not a result of one single step or program but the fruit of a holistic approach.

The other insight that can be drawn from this review is that any manpower policy step must consider not only the impact on the specific target group but also on other groups of teachers, and even on the entire teaching force (and, at times, the entire economy). We emphasize that this point works both ways. Occasionally, programs ostensibly intended for a small number of teachers can affect very large numbers (e.g., the Israeli policy to attract teachers to remote geographical areas), and at other times, policy makers use wide range actions when only minor measures are needed (e.g., opening many new avenues and institutes of teacher training when the apparent teacher shortages exist only in very small parts of the system).

Appendix B: Symposium – Program & Schedule

Wednesday, September 9, 2009

8:30-9:00 Registration and Coffee
9:00-9:15 Opening: Introduction & Greetings
Annette Hochstein (President, Mandel Foundation-Israel)
Ruhama Even (Chair of the expert team and Weizmann Institute of Science)

9:15-10:45 Session 1: Different paths into the teaching profession

Chair – Analia Schlosser (Member of the expert team and Tel Aviv University)
Speakers – Noach Grienfeld (Head of Teacher Training Division, Ministry of Education): Different routes for teaching in Israel 2009/2010
Ohad Leslau (The Initiative for Applied Education Research): Review of *Alternative Routes to Teaching: Mapping the New Landscape of Teacher Education,* Grossman & Loeb (2008)
Respondent – Tamar Ariav (President of Beit Berl Academic College)

Key Questions:

1. What is the required degree of suitability between the type of training (short-term training, focus on pedagogic tools, emphasis on tutoring) and the teaching candidate's background (academic, second career, informal education experience, etc.)?
2. Are there subjects and age groups that should not be taught by teachers with alternative training?
3. When teachers are scarce, in which cases are alternative types of training suitable?

11:00-12:15 Session 2: Distance learning for students

(This session will be organized in two parts: First we will learn about developments in distance learning and current research in this field. Following these presentations, participants will meet in small groups to discuss one of three proposed questions, as well as a common fourth question).

Chair – Eli Gottlieb (Director of the Mandel Leadership Institute)
Speakers – Guy Levi (Products Director, CET, Center for Educational Technology)
Eli Eisenberg (Deputy Director, R&D, ORT Israel)

Key Questions:

1. What do we know about the effectiveness of distance learning?
2. What cross section of students and subjects are suitable for distance learning?
3. What are suitable ways to combine distance learning in other learning environments?
4. Summary: When teachers are in short supply, in which cases can distance training serve as a solution and in which cases is this solution not suitable?

12:15-13:15 Break

13:15-15:00 Session 3: Distance learning for educators

(This session will be organized in two parts: First we will learn about developments in distance learning and current research in this field. Following these presentations, participants will meet in small groups to discuss one of three proposed questions, as well as a common fourth question).

Chair – Jennifer Lewis (Member of the expert team and University of Michigan)
Speakers – Ada Chen (Head of Projects, Center for Educational Technology)
Ulzan Goldstein (MOFET Institute)
Orit Hershkovitz & Dr. Tzvia Kaberman (Department of Education in Technology and Science, Technion, Israel Institute of Technology)

Key Questions:

1. What is known about the effectiveness of distance training and of distance professional development for teachers?
2. What types of training and development programs for teachers (teachers' characteristics, fields of study, type of training) are suitable for distance learning?
3. What are the required conditions for productive distance learning for teachers?
4. When teachers are in short supply, in which cases can distance learning be effective?

15:30-16:45 Session 4: Addressing teacher scarcity: The case of Jewish education in North America (in English)

Chair – Alan Hoffman (Member, the Initiative's Steering Committee and Director General of the Department for Jewish-Zionist Educational, Jewish Agency for Israel)
Speakers – Alex Pomson (Melton Centre for Jewish Education, The Hebrew University of Jerusalem)
Gabriel Horenczyk (Melton Centre for Jewish Education, The Hebrew University of Jerusalem)
Discussant – Sharon Feiman-Nemser (Director of the Mandel Center for Studies in Jewish Education, Brandeis University)

Key Questions:

1. What characterizes Jewish educators in the U.S.?
2. What is the current state of teacher preparation for Jewish education in the U.S. and what are future directions?
3. What is known about distance learning for Jewish students in the U.S.?
4. What is known about distance learning for teachers in Jewish education in North America?

16:45-17:45 Panel: Improving the attractiveness of the profession

Chair – Ruhama Even (Chair of the expert team, and Weizmann Institute of Science)
Speakers – Shimon Spiro (Bob Shapell School of Social Work, Tel Aviv University)
Oren Shriky (Physics teacher, The Israel Arts and Science Academy)
Pierre Kletz (Mandel Foundation-Israel)
Josh Glazer (the Rothschild Foundation, Yad HaNadiv)

17:45-18:00 Concluding Remarks – Prof. Adam Gamoran (University of Wisconsin-Madison) **(in English)**

Appendix C: Workshop Notes

Session 1: Alternative routes to teaching

Presenters: In this session Noah Greenfield (Ministry of Education) and Ohad Leslau (Initiative for Applied Education Research) gave lectures on alternative routes to enter the teaching profession. Tamar Ariav (Beit Berl Academic College) responded to the two lectures. Greenfield described the historical development of teacher training tracks in Israel and stressed that a range of alternative routes exist allowing entrance to the profession from a number of different pathways. Leslau surveyed the main findings in the recently published book "Alternative Routes to Teaching," which describes scientific knowledge on alternative pathways in the American context. Leslau described the advantages alongside the disadvantages found when the various alternative tracks were examined. Ariav emphasized the risks involved in giving official endorsement to alternative tracks, which are fundamentally different than conventional tracks. She added that the new guidelines formulated by the Ariav Committee and adopted by the Council for Higher Education provides a suitable standards and in practice regulates teacher training methodology in alternative tracks as well.

Discussion: The participants emphasized that: 1) There cannot be a dichotomous separation between conventional training and alternative training, as differences between the alternative tracks also exist; 2) Both conventional and alternative training tracks must be structured to meet each group of teachers' specific needs. For example, a training program for those seeking a second career must be different than training geared for candidates with mastery over subject-area content; 3) The research does not include unequivocal conclusions about various measures to use for evaluating the success of alternative routes. Only in a small number of cases was a significant difference found between the quality of learning of students taught by teachers who studied in a conventional track and those taught by teachers accredited through an alternative track.

Session 2: Distance teaching for students

Presenters: Guy Levi (CET) and Eli Eisenberg (ORT) gave lectures on distance teaching for students. Levi shared with the audience examples of internet portals developed for the purpose of enhancing students' quality of learning. Eisenberg provided a theoretical framework for understanding distance teaching's role and place.

Discussion: Parallel discussions held in small groups took place in this session. The different groups raised the following points: 1) Distance teaching can be a useful and effective resource for teachers but is not a substitute for quality face-to-face teaching. 2) Scientific knowledge on distance teaching is in its infancy. 3) Widespread use of distance teaching must be viable from an economic standpoint. 4) Distance teaching for students is based on a number of hidden assumptions regarding how children learn that have yet to be scientifically tested.

Session 3: Distance teaching for teachers

Presenters: Ada Chen (CET), Olzan Goldstein (MOFET) and Orit Herscovitz (Technion) gave lectures on the various possibilities found in distance teaching as a tool for teacher training and professional development. Chen presented examples of remote professional development programs that include mentors for the teachers, suggestions for exercises, filmed videos of sample lessons and more. Goldstein reported on research examining the extent of distance teaching technology used by student teachers during their training. Herscovitz described the historical development of the distance teaching field, defined the terminology of distance teaching and distance learning and presented an example of a remote teacher professional development program.

Discussion: In this session there were also parallel discussions held at several roundtables in which the following points were raised: 1) Understanding the place of distance teaching for teachers must be examined in the broader context of learning for teachers, and the required components of high quality teacher professional development must be defined. 2) It would seem that distance teaching and learning for teachers holds great potential but there is a need for more in-depth knowledge about these areas and the tool's degree of efficacy. 3) Distance teaching and learning enable ease of accessibility and this can encourage the development of learning communities regardless of the participants' geographical distance. 4) Distance teaching programs for teachers must be kept up to date and based on current knowledge in the field.

Session 4: Alternative routes and distance teaching: The case of Jewish education in the U.S.

Presenters: Alex Pomson and Gabriel Horenczyk, both of the Melton Centre for Jewish Education at the Hebrew University, gave lectures on using distance teaching as a tool in Jewish education in North America. Sharon Feiman-Nemser (Mandel Center for Studies in Jewish Education at Brandeis University) responded. Horenczyk opened his talk with the fact that Jewish education in the U.S. is not part of an overall system, and this is the point of departure for understanding, in general, how schools perform and function, and how teachers are trained, in particular. Horenczyk related three examples of distance teaching in U.S. Jewish schools, described in the review commissioned ahead of the workshop. Pomson described a study recently conducted in the U.S. examining how principals of Jewish schools handle teacher recruitment. In her remarks, Feiman-Nemser emphasized the need at the first stage of the discussion to clarify and elucidate the concepts and terms used in the field. For example, what precisely is the significance of tagging a training track as "regular" as opposed to "traditional?" What is the current reality of U.S. Jewish education, to which we are relating (day schools or supplementary education)? On what type of shortage is the discussion focused? What type of training is required of every teacher with respect to background and the subject area s/he will be teaching? Answering these questions will make it possible to move to the next stage of discussion on methods for coping.

Discussion: The participants stressed that the limited use of distance teaching in U.S. Jewish education is due to the fact that Jewish education is not part of a "system" and schools have no policy or guiding dictate to implement. Because creating and maintaining distance teaching portals requires a large monetary investment, only when a large number of educational institutions will express willingness to participate in the costs will it be possible to establish the infrastructure. The participants showed great interest in the online schools operated by the Chabad movement for the children of their emissaries worldwide, though due to the unique context characterizing this program, doubt was raised as to whether it can be generalized to regular educational institutions.

Panel discussion: Enhancing the teaching profession's attractiveness

Participants: Shimon Spiro (Bob Shapell School of Social Work, Tel Aviv University), Oren Shriki (physics teacher, Israel Arts and Sciences High School), Pierre Kletz (Mandel Foundation-Israel) and Josh Glazer (Rothschild Foundation, Yad Hanadiv) considered the problem of enhancing the profession's attractiveness from different perspectives and presented a wide range of opinions on what has been done and what can be done in different contexts to transform teaching into a more attractive and prestigious profession. Spiro described how the social work profession upgraded its status to an attractive profession by, among other things, expanding the social workers' autonomy and responsibility in a range of areas. Shriki spoke from personal experience as a science teacher and claimed that teachers need to be professionally challenged during their career, and that the system must give teachers greater support so that they can jump start their ideas and

implement them toward improving the quality of their teaching. Kletz described the profession's status in France, where teachers have professional autonomy owing to their four-year period of training, after which they are perceived as experts in their field. Glazer analyzed the issue, basing his remarks on the work of Andrew Abbott's "The System of Professions." In his opinion, each profession's prestige is directly dependent upon the public's belief that the profession in question is capable of solving the problems in its field. Thus, intensifying the teaching profession's prestige and attractiveness requires a real improvement in teachers' work and in the quality of students' learning – necessary conditions in order for the public to be convinced.

Concluding remarks

Adam Gamoran of the University of Wisconsin reviewed the three approaches discussed at the workshop: alternative routes of entry into the profession, distance teaching for students and teachers and enhancing the profession's attractiveness. Gamoran concluded that based on Ingersoll's research, the core of the problem stems from the high dropout rate of new teachers and is to a lesser degree due to a decline in the number of people pursuing teaching or due to problems in professional development. Accordingly, he believes that the main efforts to cope with a teacher shortage must be geared toward reducing the rate of teachers leaving the profession.

Appendix D: About the Participants

Tamar Ariav is the president of Beit Berl Academic College. She is a member of the Ministry of Education's steering committee (Pedagogic Secretariat, New Horizons) and was formerly the head of the Council for Higher Education's committee to develop new guidelines for teacher training. Her main research interests are teacher policy and curriculum planning and evaluation. Prof. Ariav holds a Ph.D. in curriculum planning and evaluation from the University of Pennsylvania in Philadelphia, USA, which she received in 1983.

Ada Chen heads the project administration for professional development at the Center for Technological Education. She is involved with the development of distance learning models, professional development and implementation of innovative models that integrate online learning into routine school instruction. She holds a B.Ed from the David Yellin Teachers Training Seminary in Jerusalem, received in 1982, and an M.A. in educational administration from the University of Derby in the UK, received in 2000.

Eli Eisenberg is deputy director general for research, development and training at ORT, Israel. He was influential in establishing the ORT Center in the UK and a technology education network in South Africa. He also developed and implemented research and evaluation of curricula, led numerous initiatives to develop teaching and study materials and was instrumental in implementing technology education in schools, colleges and professional organizations. In the past, Dr. Eisenberg was a faculty member at the Technion where his research and instruction focused on technology education. He holds an Sc.D. in technology education from the Technion in Haifa, which he received in 1987.

Sharon Feiman-Nemser is the Mandel Professor of Jewish Education and director of the Mandel Center for Studies in Jewish Education at Brandeis. She is currently directing a national study of three induction programs that reflect important variations in policy and practice. Under the auspices of the National Center for Research on Teacher Learning she directed a cross-cultural study of mentoring in England, the United States and China. Prof. Feiman-Nemser holds a Ph,D. in Education (Ed.D.) from Columbia University.

Adam Gamoran is a professor of Sociology and Educational Policy Studies at the University of Wisconsin-Madison and the director of the Wisconsin Center for Education Research. His areas of interest include the sociology of education, organizational analysis and social stratification. His research interests include school organization, stratification and inequality in education and resource allocation in school systems. He obtained his Ph.D. in Sociology of Education from the University of Chicago in 1984.

Josh Glazer is the program officer and head of Education Research at Yad Hanadiv. He has published on the topics of educational professionalism and comprehensive school reform. His forthcoming book, with David Cohen and colleagues, reports on six years of research into three leading school reform programs in the United States. He received a Ph.D. in education policy from the University of Michigan in 2005.

Olzan Goldstein heads the "Integrating Technology and Science in Teacher Training" research network at the Mofet Institute in Tel Aviv and is a lecturer in education at the Kaye Academic College of Education in Beer Sheba. Her main areas of research are online instruction, learning styles and teacher training program evaluation. She holds a Ph.D. in physics and mathematics from the University of Moscow, received in 1980.

Eli Gottlieb is the director of the Mandel Leadership Institute. Prior to joining the faculty in 2004, he served for three years as a visiting professor of cognitive studies in education at the University of Washington. His research examines the relations between cognition, identity and education. Dr. Gottlieb holds degrees in

philosophy and developmental psychology from Cambridge and a Ph.D. in the psychology of education from the Hebrew University of Jerusalem.

Noach Grienfeld directs the teacher training branch at the Ministry of Education. With expertise in the field of teacher training, he develops programs for training and for changes in training and advances the field through promotion of first and second academic degrees for teachers. He is among the founders of the program to train outstanding students at teachers' colleges.

Orit Herscovitz is a researcher and senior lecturer in the Education in Technology and Science Department at the Technion, and a member of the Chemistry Group headed by Prof. Yehudit Dori. She is also a lecturer at the ORT Braude Academic College in Carmiel and chairperson of the college's "Center for Teaching and Learning" research committee. She has most recently been involved in the field of case-based professional development for science teachers, integrating advanced teaching and learning technologies and development of higher order thinking skills. Dr. Herscovitz holds a Ph.D. in science education, received from the Technion in Haifa.

Annette Hochstein is president of the Mandel Foundation-Israel. Ms. Hochstein is a member of the founding group of the Mandel Foundation's endeavors in Israel, including the Mandel Leadership Institute. A policy-planner by training, she established the Institute's policy studies department. Ms. Hochstein has contributed to major policy analysis projects, including the West Bank Database Project, and the Commission on Jewish Education in North America. She was trained in public policy at the New School for Social Research (M.A.), MIT (as a Humphrey Fellow) and at the University of Michigan.

Alan Hoffmann has served as the director-general of the Education Department in the Jewish Agency for Israel since January 2000. In 1980 he joined the Melton Center for Jewish Education at the School of Education in the Hebrew University of Jerusalem, later serving as its director. In 1994-1996 he served as Director of the Council for Initiatives in Jewish Education in New York, and in 1997 he was appointed director of the Mandel Center for Jewish Continuity at the Hebrew University. His Ed.M. and doctoral studies were in educational policy, at the Harvard University Graduate School of Education.
He is a member of the Steering Committee of the Initiative.

Gabriel Horenczyk is a professor in the School of Education at the Hebrew University of Jerusalem where he directs the Melton Center for Jewish Education. His main research interests are the social psychology of ethnic, national and Jewish identity; transitions in identity and immigrants in schools. Prof. Hornchik holds a Ph.D. in the actualization of national identity from the Hebrew University, which he received in 1989.

Zvia Kaberman is a lecturer and researcher in the Education in Technology and Science Department at the Technion, and a member of the Chemistry Group headed by Prof. Yehudit Dori. She is a researcher in the field of medical education at the Technion's School of Medicine. During the past decade, she has taught chemistry, been involved in advancing its instruction in Israel and in developing study materials for a new chemistry curriculum that integrates advanced technologies and higher order thinking skills for teaching and learning. Dr. Kaberman holds a Ph.D. in science education, received from the Technion in Haifa.

Pierre Kletz is the director of the Graduate Unit at the Mandel Leadership Institute. In the past, he served as the academic director of the Eastern and Central Europe Centre at the HEC School of Management – Paris and was associate professor at the François Rabelais University in France, where he established and directed the M.A. program in public management. Dr. Kletz's research focuses on organizational theory. He holds a Ph.D. from the HEC School of Management – Paris.

Guy Levi, since 2005, has been the e-learning product manager at the Center for Educational Technology. He is a 1995 graduate of the School of Educational Leadership. Mr. Levi holds an M.A. in sociology from the New School for Social Research in New York, which he received in 1988.

Alex Pomson is a Senior Researcher at the Melton Center for Jewish Education at the Hebrew University. He was associate professor and Koschitzky Family Chair of Jewish Teacher Education at York University, Canada. He conducts research in the sociology of schooling; Jewish teacher education and development and education in Israel. He received a PhD in religious education from the University of London in 1994.

Shimon Spiro is professor (emeritus) of social work and sociology at Tel Aviv University and also professor and head of the degree program in social work at Tel Hai College. His main research interests are evaluation of social programs and professionalization processes in the field of social work. Prof. Shapiro holds a Ph.D. from the University of Michigan, which he received in 1968.

Oren Shriki is a researcher in the field of brain sciences, focusing on computational approaches to neurological and neuropsychiatric disorders. He is a lecturer in brain sciences at the Weizmann Institute of Science, Bar-Ilan University and the Hebrew University of Jerusalem. During the last nine years he has worked as a physics teacher at the Israel Arts and Science Academy and established a brain research and robotics laboratory there. He received his PhD in Computation and Information Processing in the Brain from the Hebrew University of Jerusalem, 2003.

Appendix E: List of Workshop Participants

Shlomit Amichai	JDC – Israel
Tamar Ariav	Beit Berl Academic College
Assaf Baner Michal Baum	Hakol Hinuch, the Movement for the Advancement of Education in Israel Hakol Hinuch, the Movement for the Advancement of Education in Israel
Nachum Blass	The Taub Center for Social Policy Studies in Israel
Gabriel Bukobza	The Initiative for Applied Education Research
David Buskila	Ministry of Education
Naomi Chissick	ORT Israel
Ada Chen	CET, The Center for Educational Technology
Ben Dansker	Mandel Foundation – Israel
Avital Darmon	The Initiative for Applied Education Research
Ruhama Even	Weizmann Institute of Science, Chair of the Expert Team
Eli Eisenberg	ORT, Israel
Sharon Feiman-Nemser	Brandeis University, USA
Riki Fishel	The Initiative for Applied Education Research
Devora Fried	The Initiative for Applied Education Research
Adam Gamoran	University of Wisconsin, Madison
Yosi Gidanian	Central Bureau of Statistics
Josh Glazer	The Rothschild Foundation in Israel (Yad Hanadiv)
Olzan Goldstein	MOFET, Research, curriculum and program development for teacher educators
Eli Gottlieb	Mandel Foundation – Israel
Noah Greenfield	Ministry of Education
Vered Gross	The Initiative for Applied Education Research
Hagit Hartaf	RAMA, National Authority for Measurement and Evaluation in Education
Orit Herscovitz	Technion, Israel Institute of Technology
Annette Hochstein	Mandel Foundation – Israel
Alan Hoffmann	Jewish Agency for Israel, Member of the Initiative Steering Committee
Elie Holzer	Bar Ilan University
Gabriel Horenczyk	The Hebrew University of Jerusalem

Zvia Kaberman	Technion, Israel Institute of Technology
Eli Kannai	The Avi Chai Foundation
Pierre Kletz	Mandel Foundation – Israel
Helena Kimron	RAMA, National Authority for Measurement and Evaluation in Education
Ohad Leslau	The Initiative for Applied Education Research
Guy Levi	CET, The Center for Educational Technology
Jennifer Lewis	University of Michigan, USA, Member of the Expert Team
Ditza Maskit	Ministry of Education
Mordecai Nisan	Mandel Foundation – Israel
Udit Nisan	The Initiative for Applied Education Research
Noa Padan	Mandel Foundation – Israel
Ada Paldor	The Initiative for Applied Education Research
Ruth Peled	Ministry of Education
Alex Pomson	The Hebrew University of Jerusalem
Leah Reiman	Ministry of Education
Dita Salman Eli Shalev	JDC – Israel Hebrew University High School
Miri Shlissel-Adler	The Rothschild Foundation in Israel (Yad Hanadiv)
Analia Schlosser	Tel Aviv University, Member of the Expert Team
Orna Schatz-Oppenheimer	Ministry of Education
Hany Shilton	RAMA, National Authority for Measurement and Evaluation in Education
Varda Shiffer	Mandel Foundation – Israel
Shriki Oren	Israel Arts and Science Academy
Yehuda Schwartz	Ministry of Education
Eyal Sinai	ATIDIM
Shimon Spiro	Tel Aviv University
Chana Steinberg	Ministry of Education
Edna Ullman-Margalit	The Hebrew University of Jerusalem, Member of the Initiative Steering Committee
Sara Zilberstrom	Ministry of Education

Appendix F: Members of the Expert Team

Ruhama Even (Chair) is professor at the Weizmann Institute of Science, heads the Mathematics Group in the Department of Science Teaching and directs the Teaching Certification program at Weizmann's Feinberg Graduate School. Her main research interests include math education; education and professional development for math teachers and teacher educators; and the interactions among math curriculum, teachers and classrooms. Prof. Even earned her Ph.D. in Mathematics Education from Michigan State University in 1989.

Analia Schlosser is a lecturer in the School of Economics at Tel Aviv University. She has held a number of research positions in the Ministry of Education's Department of Assessment. Her research focuses on economics of education, economic development and labor economics. Dr. Schlosser received her Ph.D. in economics from the Hebrew University of Jerusalem in 2007. Her post-doctoral work was carried out at Princeton University.

Jennifer Lewis is a lecturer and research associate at the University of Michigan. Her professional experience includes a decade of elementary and middle school teaching, as well as a decade of teacher training at the University of Michigan. Her research focuses on mathematics teacher education for both preservice and inservice teachers. Dr. Lewis earned her doctorate from the University of Michigan in 2007.

Ohad Leslau (Coordinator) has as his main areas of research interest decision-making processes and implementing policy in public administration. He has been a research assistant at the Israel Democracy Institute, served as a consultant to the Winograd Commission investigating the Second Lebanon War and is a researcher in the Israel Defense Force's history department. Dr. Leslau holds a Ph.D. from the University of Haifa's School of Political Science, received in 2009.