MOFET NETWORK

"We can lift ourselves out of ignorance, we can find ourselves as creatures of excellence and intelligence and skill."

(Richard Bach, Jonathan Livingston Seagull)

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Abstract

Being a unique anthropological phenomenon Mofet has had an impressive impact on the Israeli society, in the areas of schooling, development of thinking skills and education towards values, by causing a fundamental change.

The article shows the exclusive process of the non-profit Mofet organization, from the beginning in the 1970s by a group of teachers from the former Soviet Union, until present times. In 1997, Orna Schneiderman became the Israeli director of the Mofet Association. Schneiderman, who apprehended Mofet's potential for implementation in Israel's mainstream, realized that the approach could work for any student and therefore should be disseminated amongst the non-immigrant Israeli population as well. In 2007, Mofet's entry into the Arab and Druze sectors was a radical event.

Currently Mofet has five pedagogical departments (Mathematics, Physics, Computers, English and Empowerment) all of which are conducted by a highly qualified teaching staff who possess advanced degrees (MA & PhD). Mofet is implemented within a broad integrative nationwide scope: 20,000 students study in 120 educational institutes within 60 authorities, specifically in the peripheral areas of society, including the Jews secular and religious sector, the Druze sector and the Arab sector.

Mofet's vision and goal is that its graduates are those who lead research and development of science and economy, thus basing a strong foundation for a creative, stable and reasonable society in Israel.

1. Preface

"The mediocre teacher tells. The good teacher explains. The superior teacher demonstrates. The great teacher inspires." (William Arthur Ward)

The main goal of the non-profit organization of Mofet is to cause a fundamental change in the Israeli society in the areas of schooling, development of thinking skills and education towards values. This fundamental change can only occur by an educator, who knows how to lead the students to a creative judgment, to a striving for excellence and to an instilling of values, thus being the source of influence for inspiration.

Having in mind the fact that Israel's future depends on the preservation of the advantage in quality Mofet has placed excellence as a main goal and invests in encouraging and fostering distinction and outstanding students. Thus, the state of Israel can continue to lead in many areas within an economic and social growth.

Prof. Dan Shechtman delivering his banquet speech on receiving the Nobel Prize for Chemistry in 2011 said, "Science is the ultimate tool to reveal the laws of nature and the one word written on its banner is TRUTH... It is therefore our duty as scientists to promote education, rational thinking and tolerance. We should also encourage our educated youth to become technological entrepreneurs. Those countries that nurture this knowhow will survive future financial and social crises".

In order to guarantee the stability of the state of Israel in future crisis, the educational system has to keep up with the development of technology and the global changes. The Mofet team is obligated to adjust an up-to-date syllabus, which provides tools to the development of judgment and inquisitiveness and the endowment of wide-ranging values.

"Old ways won't open new doors" (unknown) – is the motto for Mofet's aspiration to be a driving force and inspiration for the Mofet students who will be a solid foundation for the future generation of leaders.

Orna Schneiderman

2. Introduction

Mofet (the acronym for Mathematics, Physics and Culture in Hebrew) is a non-profit public association, which promotes personal excellence in the studies of mathematics; physics, computers, English and social science, in a constant strive for the development of a valuable Israeli community.

Mofet's Programme is based on the adaptation to the characteristics, community needs and believes of formal schooling.

The integration of Mofet's multidisciplinary programme in schools consists of the implementation and application of the principals and distinction of the programme based on a number of aspects:

1. The selective identification of outstanding students
2. A favorable approach to mathematics and physics
3. A continuity of study from one grade to the next
4. Extra - curricular programmes
5. An ongoing relationships with institutions of higher education
6. A highly qualified teaching staff who possess advanced degrees (MA & PhD)

Mofet's team consists of highly experienced senior management and educators who are responsible of the instruction and guidance of the team school in charge of the integration of the programme following Mofet's principals, in approximately 120 Junior High and High Schools all over the country.

3. Mofet's Vision

Mofet's graduates are those who lead research and development of science and economy, thus basing a strong foundation for a creative, stable and reasonable society.

This is achieved through:

- Education towards excellence as a way of life.
- Development of multidisciplinary excellence.
- Encouragement of highly learning motivated students.
- Formation of a six-year multidisciplinary-programme-classroom-framework, which serves as a stimulus to the designing of a culture of excellence in school.

4. Nationwide Scope

Mofet is implemented within a broad integrative nationwide scope: 20,000 students study in 120 educational institutes within 60 authorities, specifically in the peripheral areas of society, including the Jews secular and religious sectors, the Druze sector and the Arab sector.

Diagram 1: Mofet in the junior-high school education 2012 - 2015

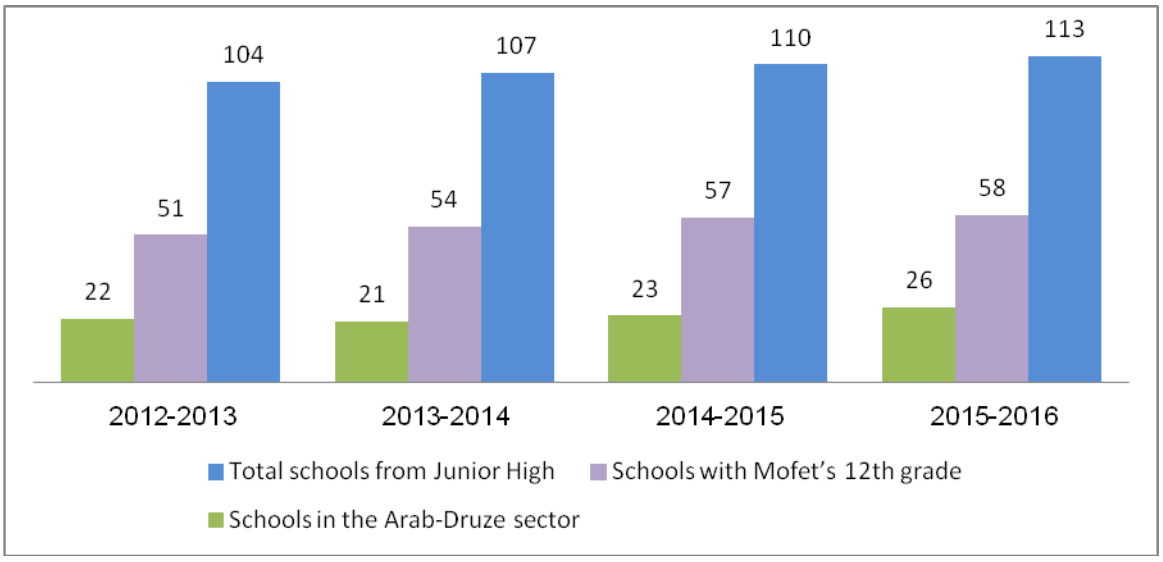


Diagram 2: Educational institutes in the various sectors (57)

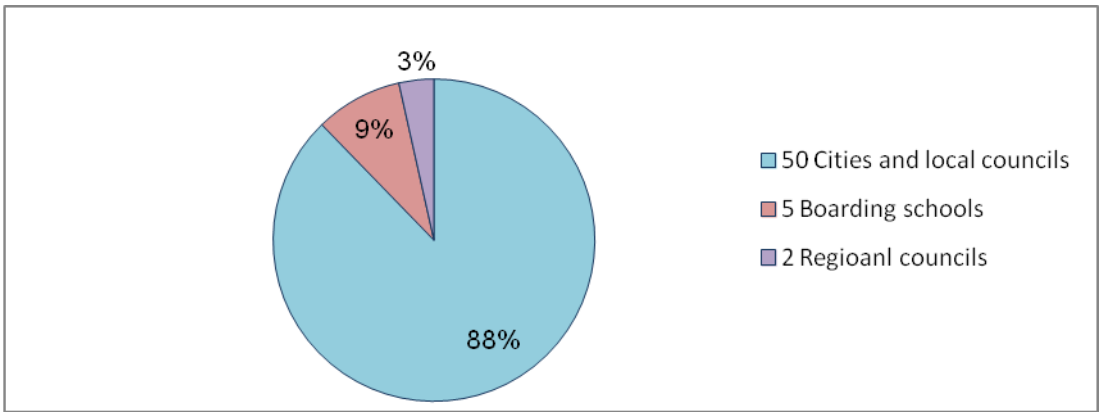
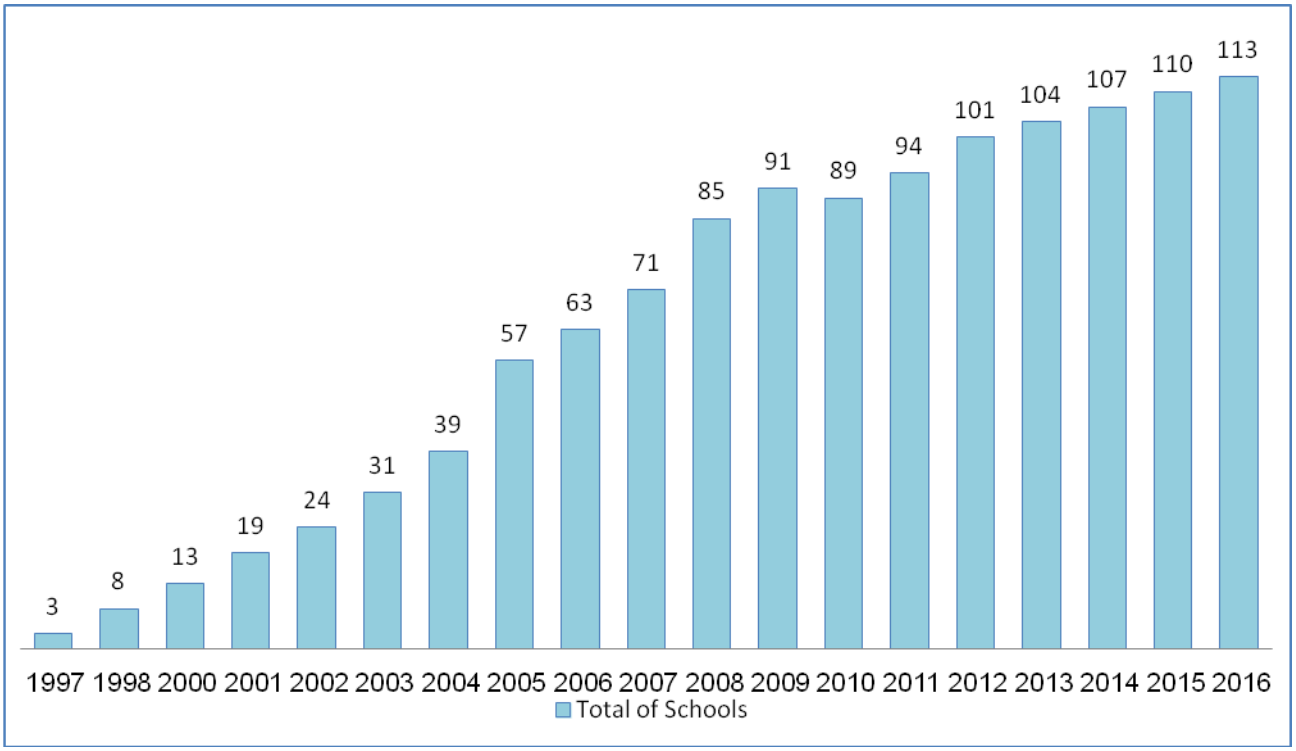


Diagram 3: Mofet's scope of activity in mainstream education (junior and high school)



5. The Beginning

Mofet's unique anthropological process

The initiative of founding in Israel a school, which emphasizes mathematics education for the talented and motivated students, was first suggested in the 1970s by a group of teachers from the former Soviet Union. However, Zeev Geizel and Yakov Mazganov, two new immigrants who had many years of experience as teachers in schools for the gifted in the former Soviet Union, applied the idea only in the 1990s. Their idea was to base such a school on a number of aspects, which are applied to this day. Initially, their efforts to build an independent route within the Israeli educational system without any institutional assistance were not successful.

In 1992, Mazganov opened up an educational centre in the Shevach School in Tel Aviv that offered extracurricular activities in the afternoon, which ultimately brought about the establishment of the Mofet Association. There was substantial demand for the afternoon enrichment programmes offered by Mazganov and his colleagues. Following the success of these activities Mazganov and Geizel, established an association with the objective of setting up a network of schools for mathematics and physics in Israel. Both wanted the name of the association to include the letters M, F, and T, which make up Mathematics, Physics and Culture (in Hebrew). Eventually, they came up with the name Mofet, which included all of the letters and had the implication of excellence.

The opening of special morning classes, in 1994, for highly motivated students, immigrant from the former Soviet Union, marked the beginning of the move from enrichment studies to classes in the formal education framework, which was a crucial step in the association's development. In 1997, Orna Schneiderman became the Israeli director of the Mofet Association. Schneiderman, who understood Mofet's potential for implementation in Israel's mainstream, realized that the approach could work for any student and therefore should be disseminated amongst the non-immigrant Israeli population as well. In 2007, Mofet's entry into the Arab and Druze sectors was a radical event.

6. Mofet's Departments:

Diagram 4: Team's academic degrees division

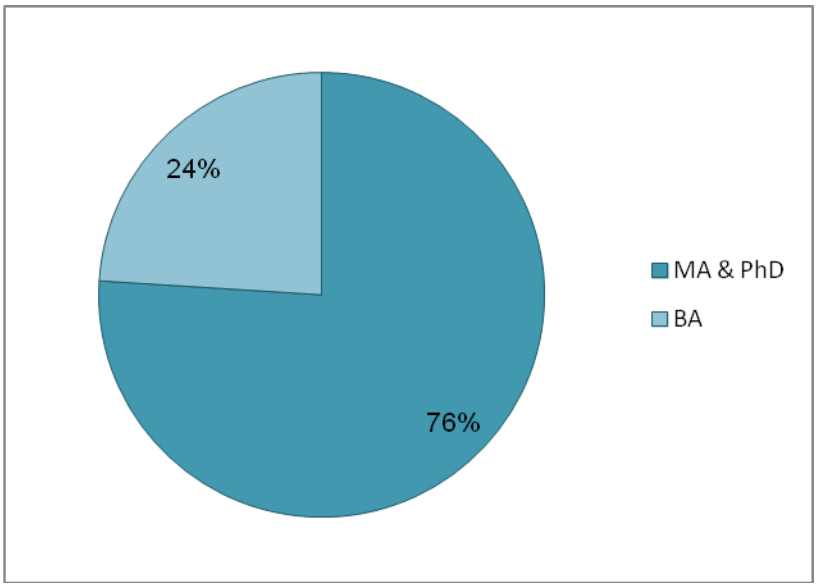
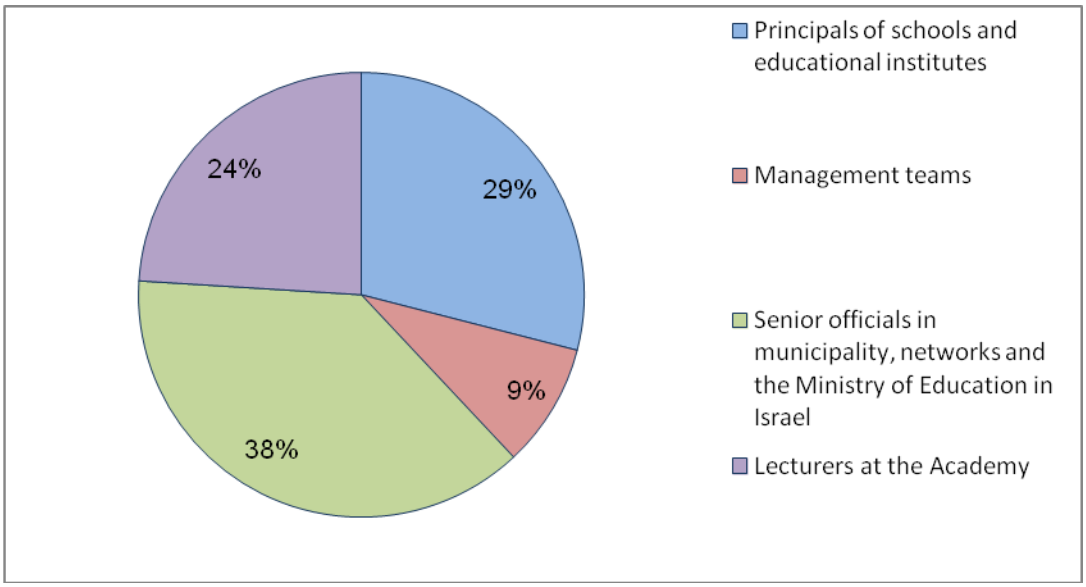


Diagram 5: Team's past and present occupation division



6.1 Mathematics

The Mathematics Department's goals are the exposure to the richness and beauty of the mathematic discipline thus causing a familiarity to it, on the one hand, and to elevate curiosity and motivation so to struggle with challenges, on the other. The development of logical, creative and critical thinking of solving problems will prepare students for research, development, initiation and knowledge-intensive industry. Students, who experience and expand knowledge according to the Mofet's goals in the mathematics discipline, are better prepared for academic studies in general and specifically in the domains of science and technology.

The departments' team consists of mathematicians all of whom possess an MA or a PhD and are experts in the discipline of teaching mathematics. The team has built a unique teaching programme based on the Israeli Ministry of Education curriculum to be added to the development of supplementary learning materials for enrichment and deepening. The team provides of individual instruction and group teachers' training courses for the school staff. The mathematics department team constructed of comparative tests and analysis of their results as a tool for evaluation in Junior High School, with its ultimate peak the running of a biennial Mathematics Olympic Game in Junior High School.

6.2 Physics

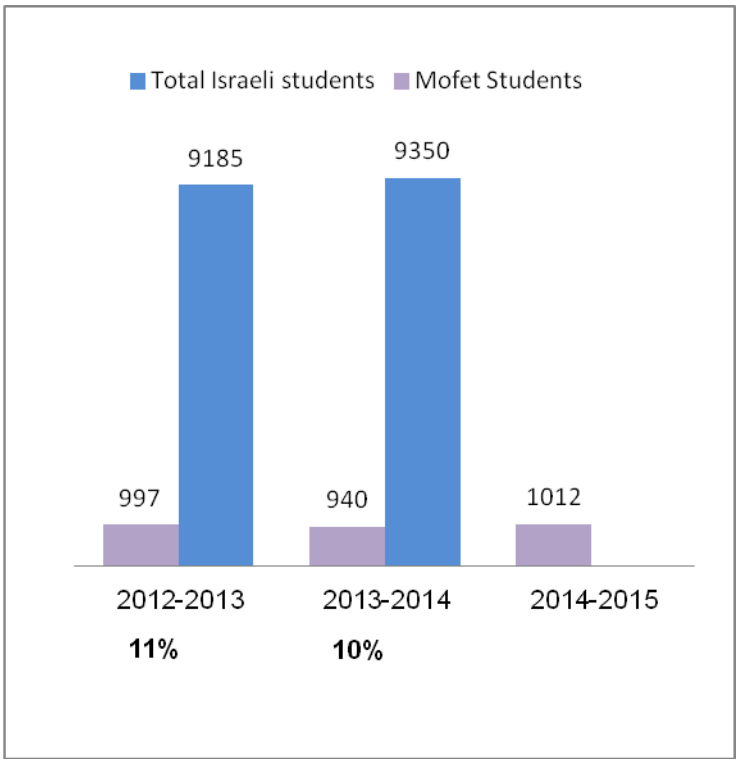
The Physics department's goals are the exposure of young students to a multidisciplinary academic subject and to novice technologies, in addition, to encourage their curiosity and motivation to struggle with challenges in physics. The development of logical, creative and critical thinking of solving problems in physics will prepare more students for research, development, initiation and knowledge-intensive industry.

The departments' team consists of physicians all of whom possess an MA or a PhD and are experts in the discipline of teaching physics. The team has built a unique teaching programme based on the Israeli Ministry of Education curriculum to be added to the development of supplementary learning materials for enrichment and deepening. However, the programme is taught from 7th grade of Junior High School, and not from 10^{th} grade as customary in Israel.

The departments' team provides individual instruction and group teachers' training courses for the school staff, and runs a biennial Physics Olympic Game in Junior High School.

The physics department uses the online communication-teaching platform CASEbook (**C**omputer **A**dvanced **S**ystem for **E**ducation). The platform is meant to allow the teacher to track after the students' progress, to train the students to acquire self-responsibility for their progress and to create group study.

Diagram 6: Mofet's students entitled to a scientific matriculation exam (5 points Mathematics plus 5 points Physics) as a portion of the total number of Israeli students entitled to a 5 points Matriculation exam



6.3 Computer Science

The Computer Science department's goal is the exposure of young students to the study of all aspects of computer systems, from the theoretical foundations to the very practical aspects of managing large software projects. The students study ***Python***, which is the programming language used by NASA, GOOGLE, DROPBOX and the intelligence units in the IDF. The study of this programming language will encourage the students' curiosity and motivation to struggle with challenges in Computer Science on the one hand, and will reinforce the students' awareness in mathematics and physics, on the other.

The development of logical, creative and critical thinking of solving problems through the learning of ***Python*** will prepare more students for future research, development, initiation and knowledge-intensive industry, thus acquiring tools for the writing of a compulsory final project.

The department's manager is an experienced well-appraised Computer Science teacher.

The departments' team provides individual instruction and group teachers' training courses for the school staff.

6.4 English

Keeping in mind the fact that English is the official language of science and international communication the English department's goals are to introduce students to different English literature genre and to enable students to acquire translation skills of multidisciplinary texts, through the development of low and high order of thinking skills. These skills will facilitate the acquirement of communication, translation, conflict management and resolution skills, thus preparing the students for diplomacy and global communication in English.

The department's manager is a PhD professional in the field of teaching English as a foreign language and writing materials for the teaching of it to different populations

The English department has built learning materials for the extracurricular activities of the 4th, 5th, and 6th grades of elementary school (in the Mofet centres for enrichment and excellence), the booklet for the 6th grade preparatory course and its teacher's guide. For Junior High School, the department has constructed supplementary learning materials for the enrichment of the English curriculum programme, which prepare the students for diplomacy and global communication in English. In addition, the department provides individual instruction and group teachers' training encounters for the English school staff.

6.5 Empowerment

Viewing the student as the core, the department for Empowerment's goal is to provide tools to the students, parents, educators and the school staff, to cope with education to excellence, which is meant to cause an enhancement of self and social values excellence.

The departments' team consists of educational counselors, coaches, groups' instructors, schools' principals and remedial teaching teachers.

The aim of the empowerment programme is to enhance the student's self-esteem and individual sense of achievement by building a set of values, which emphasizes contribution. This enhancement develops sensitivity to others, on the one hand, and factors of success for coping with difficulty and failure, on the other.

The department emphasizes the development of a mutual language portrait to Mofet values, by providing the parents with tools for the support of the student towards development of excellence and for keeping a parent-student dialogue, which will enable a resolution of characterized dilemmas of Mofet students.

The department's team organizes teachers' training courses for the school staff, which develop creative thinking within society norms and limits, enhancement of self-image of the teachers and design of an individual and class vision.

7. The Mofet Centres for Enrichment and Excellence

The Mofet centres for enrichment and excellence were founded by a group of teachers and scientists from the former Soviet Union who were aware of the need to enhance their private children's extracurricular education beyond the formal Israeli one.

These teachers and scientists organized for their children groups of studies in the afternoons, thus placing the cornerstone for the Jerusalem centre for excellence. The academic and social success of the new immigrants' children in their classes constituted a role model for their Israeli peers, who joined the afternoon group studies. In the late nineties, this phenomenon caused the need to increase the scope of the activity in the Jerusalem centre for excellence.

The Jerusalem centre for excellence operates as an evening school rather than an extracurricular afternoon activity. That is, it operates following all the characteristics of a formal school, except for the small size of the learning groups. The success of the Jerusalem centre for excellence (currently 700 students) brought about the founding of other 12 centres in Israel.

At the beginning, the school subjects taught in the centres were mathematics, physics, biology, chemistry, logics, chess and Russian. Over the years, the variety of subjects was expended and the teachers were not only new immigrants from the former Soviet Union.

The teachers in the Mofet centres for enrichment and excellence are highly qualified and very experienced, thus providing its students with a high standard of study proficiency and motivation. The centres activities improve the students' independence and prepare them to cope with stressful situations in higher and academic education and future jobs.

8. The Process of Acceptance to the Mofet Classes

The process of acceptance to a Mofet class, in the Junior High School educational system, is done in the course of the 6th grade of elementary school. The process consists of a personal interview, the preparatory courses and the admission committee of the school staff.

The rationale for the preparatory courses is to assess a student-teacher mutual inspection of suitability to participate in the programme. Suitability from the point of view of an academic level and motivation, on the one hand, and measure up expectations of the students themselves with the numerous meanings of integration in a Mofet class. After the preparatory courses, the students are assessed for the extent of their motivation and their discipline, which are in the foundation of excellence. Mofet's belief is that motivation is the key for success and is a stimulus for the development of every child. Thus, due to motivation, even a weak student can reach significant achievements.

9. The Purpose of the Preparatory Courses

The preparatory courses, in mathematics, physics and English, measure the extent of motivation of the students as well as their earnestness and capability to cope with challenges. Therefore, the preparatory courses enable the acceptance of students to a Mofet class, who show in the course of the process, a constant improvement. In addition, the preparatory courses simulate the learning environment of a real Mofet class, thus providing knowledge and learning skills on the one hand, and the opportunity to mingle with future peer students, on the other.

9.1 Structure of preparatory course:

As mentioned above, the three school subjects of the preparatory courses are mathematics (38 academic hours), physics (8 academic hours) and English (12 academic hours). The preparatory courses consist of frontal lessons and group work. The students are assessed several times during the courses to classify their progress. These assessments consist of an important component of the students' personal feedback for their acceptance.

9.2 The process of acceptance to the preparatory courses:

1. Exposure to the essence of the Mofet classes which is done by a representative from Mofet. The exposure is done to the interested parents and students.
2. Interview of the interested students. The interview is conducted in the premises of the Junior High School which the student is meant to join, and is done by a representative from Mofet and the school's counsellor. The interview's purpose is to detect the highly motivated suitable students for the Mofet classes.
3. The preparatory courses in mathematics (38 academic hours), physics (8 academic hours) and English (12 academic hours) consist 58 academic hours. The preparatory courses are conveyed in two phases: the first in which there are 34 academic hours (mathematics 26 and physics 8 academic hours), and the second in which there are 24 academic hours (mathematics 12 and English 12 academic hours).
4. There is a symposium of the school's Pedagogical Council, after the first phase of the preparatory course, which includes the school's headmaster, the school's counsellor, the teachers who conveyed the preparatory courses and a representative from Mofet. The symposium is carried in order to identify and decide on the suitable students for the 7th grade Mofet class. The identification is based on the student's academic and social achievements in the preparatory courses and the teacher's impression of each student.
5. The school's Pedagogical Council designates the selected students to the second phase of the preparatory courses. This phase's purpose is to prepare the students for the academic level and social requirements of a Mofet class.

10. Mofet in the Academic World

The goals of the integration of Mofet students in universities is to implement their achievements, on the one hand, and to fulfill the importance of challenges Mofet places to its students, on the other. This is done by exposing Mofet students to the academic world and preparing them for it by twinning between High School and university, personal escorting and assistance to the student when integrating into academy and accumulating academic courses up to gaining a BA degree parallel to High School studies.

Diagram 7: Mofet's Students in the Academy

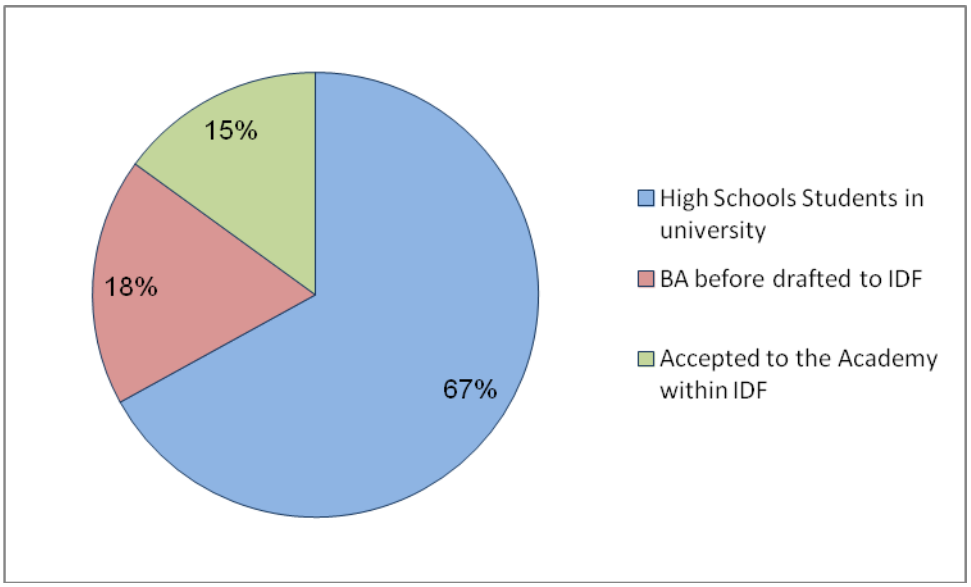
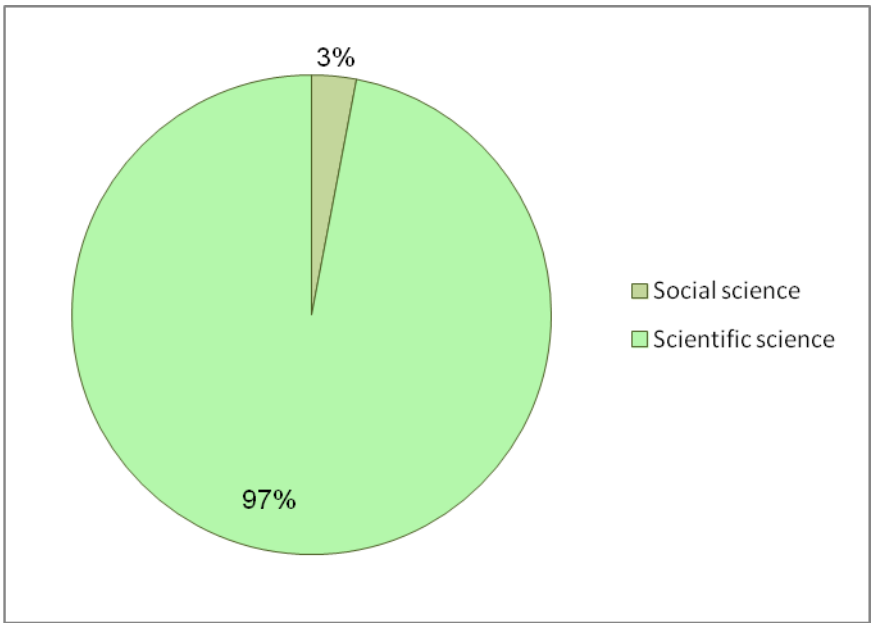


Diagram 8: Academic fields' students' distribution



11. Mofet Alumni

Mofet Alumni represents devotedly the Mofet vision, in the IDF, in the academic world and in the Israeli society.

Mofet alumni view the academic world as an integrated part of their future. Due to the strong foundation, the tools they have acquired in the course of their studies, their motivation and desire to be part of the decision makers; they contribute to the Israeli society.

Diagram 9: Distribution of Mofet graduates academic title holders (2002-2013)