Matriculation in a New Millenium:
Analysis of a constructivist educational reform in Israeli High-Schools

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by

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Abstract

For over fifty years the Israeli Ministry of Education has relied on matriculation examinations as the exclusive measure of student evaluation. Curricula were developed vis-à-vis the exams, and school studies were predominantly comprised of conservative methods of frontal teaching and written exams. In 1996, a new program (called “Bagrut 2000”), based on constructivist ideas, was initiated to overcome some of the examinations’ drawbacks. The project was implemented in 22 high schools across Israel.

This study examines the merits and shortcomings of the new teaching method versus the old one. The traditional modes emphasis presented structured material, and called for students to mainly use rote learning. Process outcomes are measured in standardized tests. The constructivist method, in contrast, assumes that learning is created through a lengthy process of collecting data, discussing it and solidifying it into idiosyncratic knowledge.

This study explored the attitudes of 330 sampled 11th and 12th grade students, 22 teachers, 11 project-coordinators and 11 principals, from 11 out of the 22 schools that participated in the program, using both positivist and interpretive paradigms by pre / post questionnaires and semi-structured interviews. High-ranking governmental officials were also interviewed. The findings support the beneficial impacts of the new method. Both students and teachers reported higher motivation and a shift to more autonomous learning methods. To a lesser degree, the students felt more satisfied and self-assured about their capabilities, compared with the situation before the program. The teachers reported that the use of the new teaching methods proved to be more rewarding and increased their motivation to teach. In all, the project’s outcomes support Vygotsky’s claim that discussions are an effective mode of learning. The new method improved student-teacher relations (though not pupil-pupil relations) and the schools’ social atmosphere.

Based on four years of follow-up and interviews with the project’s leaders, it becomes clear that the results justify the relatively high project expenses and the increased teaching hours that were necessary to operate the program.
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This research work bears my name on its cover; but in fact it is the product of the effort and talent of many individuals and organizations. In the same way that scientific research puts an emphasis on attributing references to the publications and researchers it relied upon, as a way of acknowledging their contribution, I feel it is necessary to “reference” the assistance I received from the individual involved. Therefore, my special thanks go:

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1. Introduction

In 1968, I arrived at the gates of the “HaKfar Hayarok” [the Green Village] Boarding School near Tel Aviv as a 13 year old son of new immigrants. In those difficult years for the country, the school was like my second family, and after graduation I remained there, this time as a teacher. In my 30 years of educational work at the HaKfar Hayarok, I have often noted the separation between the theoretical research I came across at University and professional literature, and the daily work with pupils and teachers.

When I started considering subjects for my doctoral thesis, this gulf between academia and the real-life of school prompted me to research an issue that would have tangible benefits for educators in Israel and beyond. As it happened, I did not have to look far. My school has been involved in a groundbreaking reform of high-school matriculation, and I felt that there was an impetus for a deep analysis of the program. My position as the boarding school’s director prevented me from being directly involved in the project, but the uniqueness and innovativeness of the program have permeated through several layers of administrative middle-management. I felt that the academic community has failed to research the deployment of new teaching methods in a sufficiently rigorous manner, and that some of the benefits reported to me as a director, were not reflected in published research or in governmental funding.

The following study therefore researches the program known as “Bagrut 2000”, from a detached and academic point of view, yet with an intention to provide educators and policy makers a better understanding of its advantages and disadvantages.

1.1 Overview of Israeli Education

From the time of the British Mandate in Palestine till this day (about seventy years), it has always been customary to examine pupils according to the traditional method – that is, by making them take external written examinations. The Israeli educational system sees the Matriculation Examinations as the primary means of assessing the school leavers' eligibility for Matriculation Certificates. Hence these examinations are of central importance in Israeli high schools, and the curriculum and teaching methods
are aimed primarily to prepare pupils to pass the matriculation examinations successfully. Less attention has been paid to the unique needs of individual pupils, while the autonomy of pupils, teachers and schools is sharply curtailed.

Post secondary studies, open to all, are socially acceptable and vocationally popular in Israel, but only 38% of school leavers become eligible for such studies by receiving Matriculation Certificates. In spite of a comparative rise in the success rates of pupils of Asian / African origin, there is still a wide gap between their achievements and those of American / European / Israeli pupils. There is also a gap between the achievements of Jewish and non-Jewish pupils. Hence certain social groups are in fact barred from certain job possibilities and further education.

However, the educational community is becoming increasingly aware of the importance of rethinking teaching and study methods and of diversifying methods of evaluating pupils' academic achievements. Birenbaum (1997) summarized the position of advocates of a different approach to the entire process of evaluating the student’s achievements by saying:

... The way we conceive of the student’s position and responsibility with regard to the evaluation process has changed; from being the powerless subject of a concealed evaluation processes he has become an active participant in this process - even in deciding the standards by which his academic achievement is to be evaluated. He is required to reflect on his/her own learning process. He carries on a continuous dialogue with the teacher on the subject of evaluation and participates in the evaluation of his fellow-pupils as well (Birenbaum, 1997 p.26).

Israel responded to arguments in this vein in the context of other national goals. The fact that Israel is a country of diverse immigration and has relatively large minorities only intensifies the difficulties faced by the educational system in this country. A parliamentary committee headed by Prof. Miriam Ben-Perez recommended a work plan to diversify the range of existing assessment methods in order to meet the changing needs of the education system in Israel. Special emphasis was put on achieving a national-social aim of narrowing gaps in academic achievements between groups of different background, origin and nationality. Based on the recommendations of the Ben Perez Committee, a new project called “Bagrut 2000” (“Bagrut” is the Hebrew word for “Matriculation”) was initiated.
The Ben-Perez Committee (October 1994) found that, pedagogically speaking, the existing external-exam format impeded true learning and imposed heavy and unreasonable pressure both on pupils and on teachers. The committee argued that a summary assessment of pupils by means of external, one-time examinations fails to provide a genuine reflection of pupils' range of knowledge or their capabilities. Consequently, the committee recommended that most of the responsibility for pupil assessment should be turned over to the schools. Valid and reliable pupil assessment, which would also reduce the pressure on teachers and pupils, was to be carried out by alternative assessment methods such as writing papers, conducting research projects and work portfolios.

As a result of the “Bagrut 2000” project, the Israeli educational system is at a crossroads; it will have to choose between two completely different assessment methods. To do so, an evaluation of the contribution of the “Bagrut 2000” Project is necessary. Implementation of the program has begun and adequate data have accumulated to enable an assessment of the proposed reform in practice. The purpose of the present study is to investigate the management of the project in the context of the Israeli educational system and society and discover whether the attitudes of pupils, teachers and principals towards the teaching-learning processes have changed in comparison with the period preceding the “Bagrut 2000 Project” (Matriculation Examinations 2000 Project).

Specifically, the study will investigate how project participation influenced various affective outcomes which are known to have significant effects on learning outcomes and achievements. These include pupils' feelings of self-esteem in the school context, the extent to which pupils and teachers participating in “Bagrut 2000 project” are satisfied with the results of the project and the motivation of both teachers and pupils. The study also aims to capture the extent of pupils' autonomous learning and the climate and relationships in the school. This study also compares pupils' "satisfaction index" scores prior to the initiation of the project and their responses to questionnaire while the project is in progress.

The forthcoming chapter first examines the educational and cultural perspective in which high school studies are taught and evaluated.
1.2 The background

A short review of the educational system in Israel is necessary to understand the great significance of matriculation exams in Israeli society. A typical attribute of the Israeli education system is its capacity "to adapt and adopt". Borrowing from European models, this system has undergone gradual reforms in recent decades, in response to both global patterns of decentralisation in education and local pressures grounded in Israel's unique nature as a westward-looking immigrant-absorbing society. Knowledge of the bureaucratic and centralist underpinnings of the educational system is necessary to understand the implications of any movement towards change and reform.

The history of education in Israel begins far before the establishment of the State of Israel. Primary schools for children from the ages of six to thirteen were set up in Jewish Palestine at the end of the nineteenth century. The structure and the educational subject matter were copied from Europe. With time, the subjects taught began to change and were adapted to the reality of Jewish Palestine at that time. When compulsory education was enacted in 1949 school fees were abolished. Israeli primary schools taught from first to eighth grades, a practice which drew wide criticism (Yunai, 1997).

The Ministry of Education, Culture and Sport was founded in 1949, a year after the inauguration of the State of Israel. It took over from the British Mandatory Department of Education and the Department of Education of the *Vaad Haleumi* (the governing body of the Jewish community in Palestine), which were then jointly responsible for children's education.

The Central Office of the Ministry of Education is located in Jerusalem and operates several regional offices for Jerusalem, the Northern area, Haifa, the central area, Tel-Aviv and the Southern area, Beer-Sheva. These offices' main function is implementing the Compulsory Education Act of 1949 and the National Education Act of 1949 (Shmueli, 1997).

Compulsory education deals with the basic education of children between the ages of five and sixteen. This period is defined by the Act, paragraph one, as:
...Education meant for children and young people to last about thirteen years including three years in kindergarten between the ages of three to five.

The Act requires parents to send their children regularly to a school officially recognised by the Ministry of Education and this is enforced by officially appointed Attendance Officers. All education is free from the beginning of the kindergarten to the end of the twelfth grade (Givton, 1997).

The first high school was founded in Palestine in 1905 – “The Hertzlia Hebrew Gymnasium,” which copied European standards. The structure of high schools in Israel has been the subject of continuing discussion ever since. In the 1950's and 1960's it became apparent that pupils of Asian and African extraction, as against other groups, were under-represented in high schools. Their school results were also very disappointing. As a result, various programs were set up including “Second Chance,” which gave soldiers from this group a second chance to pass their Matriculation exams during their Army service. Special classes were set up for this purpose and the results were satisfactory. A high percentage of those eligible for the program succeeding in passing their Matriculation (YogeV, 1997).

In 1968, a parliamentary committee resolved on a reform which was enacted by the Knesset (Israel's ruling parliamentary body) and a reform was instituted, according to which primary schools were to teach only six grades. Since 1969, reform high schools have been divided into junior high (grades seven to nine) and senior high school (grades ten to twelve). Junior high schools teach three grades, from grade seven to grade nine and continue the studies started in primary school, according to the resolution of the committee. The purpose of this change was to raise the standard of teaching and improve learning outcomes. It was hoped that this change would reduce the educational gaps between children from different backgrounds and prepare them to take part in society. It was also intended that greater integration would result from grouping children from various areas in central schools.

The reform to a “6-3-3” structure started in 1969 and was to have been completed within a few years. However, to date, this reform has reached only about 70% of the children in Israel (Cahana, 1997) and many primary schools still teach eight grades.
Today the Ministry is responsible for the entire school system in Israel. It implements the Education Laws and the Education Budget, sets school curricula, is responsible for overseeing school examinations at all levels up to and including the Matriculation Examinations and is empowered to issue Matriculation Certificates. The Ministry is also responsible for all Teachers’ Colleges; it appoints teachers and fires them.

1.3 The Matriculation Certificate.

A detailed description of matriculation examinations in Israel is necessary to understand this research, which deals primarily in the attempts to bring about changes in these examinations. Hence it seems appropriate to survey the deliberations, the processes and the attempts to change the format of the exams during the last five and a half decades in Israel. This section also addresses the advantages and disadvantages of these examinations as a method of assessment, and presents the context of the “Bagrut 2000” project.

As early as 1788, the Prussian Government issued a decree, which made it compulsory for all pupils finishing high school to pass government exams if they wished to study in the University. Until then, there were no entry exams of any kind (Levy, 1995, p.1). The rationale was that pupils must prove they have the knowledge and capabilities needed for university studies.

Since then many changes have been attempted in Israel and elsewhere. However,

Studying the chronicles of these examinations over time shows, surprisingly, that the discussions about the subject matter of the examinations and about the very existence of the examinations themselves have changed very little over time. Changes have been made in the configuration of the various elements but not in their quality (Levy, 1995, p.2).

1.3.1 Matriculation examinations in Israel

Matriculation examinations have been used in Mandatory Palestine and in Israel for sixty-five years, and the Matriculation Certificate is awarded to pupils who succeed in passing them. The purpose of the examinations is:

To check to what extent pupils have succeeded in acquiring the knowledge and skills included in the curriculum.
To ensure a high standard of studies within a national context.

To enable classification of school leavers who wish to continue their studies.

To allow statistical analysis of national educational standards.

During the British Mandate, until 1948, the British Board of Education set matriculation examinations and these were continued by the State of Israel in much the same format, although over the years new subjects have been added according to the changes in Israeli high schools. The examinations have always been the subject of many committees and various reforms.

During the 1970's the matriculation exams were modified considerably. In 1975, changes were instituted in the structure of the senior high schools and in the matriculation exams. The schools were given greater autonomy, and pupils were given the right to choose which subjects they wished to be examined in and could choose the level of the examination, and whether to take them during the summer term or during the winter term - within certain limitations.

For example, pupils were given a wide choice of subjects according to their interests and talents and were allowed to stagger the exams over the three years of the senior high school, rather than having to pass them all at once at the end of the twelfth grade. Certain subjects remained compulsory: subjects in the Jewish tradition such as Bible, Hebrew Language and History and general subjects such as English Language and Mathematics. Subjects connected with the student's chosen major were also compulsory. However, the system of "major" and "minor" subjects has been changed and the curriculum is now organized around "study units". A study unit is defined as three weekly lessons during a single academic year in a given subject. When the student has accumulated twenty units, he or she is entitled to sit for the Matriculation exam in that subject.

Hence external examinations have become paramount in the high school; the main goal of both curriculum and teaching methods is passing the exams. There is less time for the particular problems of the student body and the autonomy of both teacher and school are compromised (Ben-Perez, 1997).
1.3.2 Advantages of Matriculation Exams

A comprehensive assessment of any proposed alternative to the existing matriculation system must take into consideration the advantages and shortcomings of the present system and evaluate how and to what extent the alternative offers a solution to its drawbacks without sacrificing important educational and social benefits. Despite the fierce criticism voiced, the examinations are not without merit. Nevo (1980), for example, enumerates the advantages of the Matriculation exams.

1. Exams allow collection of data about the student. Grades make it possible to estimate a student’s academic aptitudes and forecast his/her degree of success in further studies.

2. Exams allow collection of data about groups. The teacher, the school and the relevant government offices can use the grades to determine to what extent academic goals have been achieved. Results of the finals help the school and the Ministry to detect classes or entire schools that are lagging behind the others. This will allow measures to be taken in a timely fashion. Examinations are a useful tool in assessing the relative success of new methods of teaching a subject.

3. Exams create motivation through competition and fear of failure. Many teachers think that without finals, pupils would be apathetic and that both discipline and academic quality in high schools would suffer.

4. Exams help administrators. Exams create a unified baseline in the content and level of teaching since teachers follow Ministry-approved curricula. This helps university administrators use the results of the finals to sort applicants. Otherwise the administrators would have to set up a whole new structure of University entrance exams to ensure minimum entrance levels. Matriculation results are superior to the grades awarded by the student’s teachers, because Matriculation exams are more professionally constructed than those set by class teachers. Checking Matriculation papers is done objectively, without the subjective pressures felt by the class teacher giving a grade to his/her own student. Unlike class grades, matriculation results are universally accepted by all schools.
1.3.3 Disadvantages of Matriculation Exams

On the other hand, the examinations embody numerous shortcomings, which cannot be neglected. Grouped by topic, these include:

1.3.3.1 Educational and didactic problems:

Many pupils will not really be prepared for the exam, since their aim will not be to master the subject but to know just enough to pass. As a result, the material will be forgotten soon after the exam. Some teachers collaborate in this limited goal. Standard matriculation forms “punish” creative pupils since these exams are largely based on rote learning and on repeating, as accurately as possible, the words of the teacher and of the books.

As to motivation – teachers wish their pupils were inquisitive and interested and not motivated only by fear of failure or by the competitive instinct. External motivation, such as that supplied by Matriculation exams, is short-lived. Better to create a freer, more open class atmosphere, in which the student can be motivated by his/her interest in the subject itself.

Exams cause mental stress and real suffering, especially among more sensitive pupils. Stress and fear of failure affects the pupils’ families as well. Matriculation exams put pressure on the teachers as well, since the results are an indirect way of assessing the teacher’s didactic skills.

The great importance of the matriculation exams in the eyes of both parents and pupils are the direct cause of cheating, a phenomenon which is impossible to eradicate completely.

1.3.3.2 Public and administrative considerations.

The matriculation has several administrative drawbacks: Doubt has been expressed as to the value of the information to be derived from the results of the exams since this information is extremely limited. The cost of these exams is high and their elimination would save a great deal of money and manpower.
In drafting the examination forms, errors unavoidably creep in, which cause pupils, teachers and parents to complain and express resentment. Additionally, matriculation examinations suffer from defects arising both from the validity of their contents and from the reliability of some exams.

1.4 The “Bagrut 2000” Project

The present study focuses on a specific proposal, initiated in the framework of a parliamentary committee, for an alternative assessment method, as a supplement or substitute for the Standard Matriculation exams in Israel. The “Bagrut 2000” was the pilot project developed to test the feasibility of the ideas and concepts regarding alternative assessment, which were raised and discussed by the Ben Perez Committee. To understand the underlying considerations and aims of the pilot project, some background on the development of the program is necessary.

Professor Ben-Perez is a leading education scholar in Israel. As the former head of the Faculty of Education at the University of Haifa, she has been influential in analyzing and developing educational policy.

1.4.1 The Ben-Perez Committee

In response to public pressure for reform, the “Ben-Perez Committee” was appointed by the then Minister of Education, Ms. Shulamit Aloni in 1993 to examine the format of school-finishing exams in general and Bagrut exams in particular. Its main goal was to inquire into the possibility of empowering schools to issue school-finishing certificates that would be as valid as Matriculation Certificates.

When the committee first met, it turned to the public and asked for opinions about the matriculation examinations. Many people appeared before the Committee, including public figures, teachers and representatives of the national pupils’ council.

Furthermore, in the summer of 1993, high-school pupils who were sitting for their finals were set the following essay subject:

Many protests are heard against the Bagrut Examinations. In your opinion, what are
the reasons for this? Do you think a suitable alternative could be found for Bagrut examinations? Explain your position.

The committee took into consideration the opinions expressed by the pupils’ council and by the many finalists who chose to write essays on the above subject. This step, which is without precedent in Israel, underlines the importance attributed lately to pupils’ opinions. The committee also based its conclusions on statistical analysis.

In its recommendations, the committee weighed two separate aspects of the problem; the pedagogical value of the Bagrut examinations and their social value. It presented its conclusions in 1994 in a report called “Bagrut 2000” to the next Minister of Education, Professor Amnon Rubinstein, who adopted the committee’s conclusions in full.

1.4.2 The recommendations and their underlying analysis

The Ben Perez Committee Report dealt with the following issues:

1. The connections between the high-school system and that of the colleges and universities.
2. The special needs of specific sectors within the school system such as religious schools, Arab and Druze schools and the vocational schools.
3. Alternative ways to assess the pupils’ academic achievements.
4. Stages in carrying out changes in the Bagrut examinations.

The committee found that the current form of matriculation examinations fails to allow insufficient expression of the depth of pupils’ learning or their creativity. The exams also put heavy pressure on both pupils and teachers.

The Committee reported that over half of all high school graduates in any given year have no entitlement to a Matriculation Certificate and further found evidence of significant differences in the academic achievements of pupils from Asian and African origins compared to the achievements of pupils who were born (or whose parents were born) in Israel, Europe or America. Large gaps were also present between Jewish and non-Jewish pupils.
One of the central assumptions of the committee in formulating its recommendations was that full school education is the right of all youth at all ages. Committee members were of the opinion that such a situation, which they reported, was unacceptable. Hence the school system should attempt to achieve one hundred percent student participation in school studies.

The committee defined the final goal of its proposals as a system in which pupils sit for three or four national matriculation examinations. In addition, internal evaluations are to be conducted by the schools themselves in other subjects. The objective of the proposed change was to create a pedagogical and organizational infrastructure which would increase the number of high school graduates entitled to a Matriculation certificate.

The recommendations of the Committee were intended to establish a pedagogical and organizational foundation that would support the gradual development of dependable and reliable internal school student evaluations on par with national evaluations. Final evaluations in the different subjects would be of two kinds: external (national) and internal (carried out by the schools themselves). The two would have equal standing. Nonetheless, the Committee recommended that the existing linkage between Matriculation examinations and University entry requirements would remain unchanged.

Another important premise underlying the committee’s proposal was the assumption of a strong linkage between teaching and learning methods and those of assessment.

Diversification in teaching methods depends largely on adjusting assessment to the various teaching methods practised, by making assessment fit the learning-process in question and by authorising the school to carry it out. School assessment can be strengthened by ensuring a combination of examinations and alternative testing methods such as student papers, carrying out projects, assessment by the ‘portfolio method’ and so on (Ben-Perez, 1994, p.12).

A new system for internal academic assessment was required to be the outcome of a continuous evaluation process, which integrates examinations with alternative assessment methods, including essays, projects, portfolio evaluation and other methods. The committee proposed that “the high-school system should focus on
improving both teaching and study methods and adapting evaluation methods to these changes" (Ben-Perez, 1994, pp.11-12).

The committee called for the following: Curricula and the accompanying evaluation structure should be structured on three levels: basic, intermediate and advanced. The structure should be modular and cumulative, to allow pupils to pass from one level to the next. Different examination papers would be drafted for each grade and for each level. Writing research papers should take the place of final examinations whenever possible. Changes in the format of all final examinations must be facilitated.

Innovative curricula as well as transferring testing and evaluation methods from the national to the school level were encouraged. The Committee also recommended setting up a new training and inspection system to help schools to improve the validity and reliability of student evaluation methods in the schools and to use alternative methods of evaluation where possible.

Finally, the Committee determined that preparations would be made for the changes during the school year September 1995 – June 1996. The Committee recommended a gradual, protracted and controlled implementation process to increase control, in order to increase the probability of success.

It was also hoped that the pilot program would show evidence of producing the “ideal graduate”, as reflected in a recent Ministry of Education Directive (No. 20, 1997). Characteristics of the ideal graduate included: He or she should be a person characterized by intellectual curiosity and interest which stem from a desire to understand diverse subjects, one who is capable of finding the information he needs and the tools with which to satisfy his/her curiosity; a person possessed of a moral world-view, which draws on the values of his/her society and of humanity; a person who is actively involved in Israeli society and is prepared to undertake tasks and carry them out with responsibility and devotion, and; a person who is aware of his/her roots and of his/her identity and respects those of others.
1.4.3 “Bagrut 2000” - Implementing the recommendations

As a pilot program, the “Bagrut 2000” project was activated in twenty-two high schools (senior high) during the years 1995 till 1999. This was an experiment designed to test how best to implement the recommendations of the Ben-Perez Committee.

Based on the Committee’s recommendations, the requirement that all pupils were subject to external examinations was abolished and selected schools were allowed to assess their own pupils in certain subjects. Schools were allowed to diversify their teaching and assessment methods as necessary. Therefore, one of the first steps in this direction implied the official recognition of internal final grades in several subjects, in addition to matriculation grades. In the pilot program, both national and internal school evaluations took place. School evaluations were spread out over the three years of senior high school (from tenth to twelfth grade) and employed a range of different evaluation methods, including tests and other alternative methods of assessment. The Ministry of Education, Culture and Sport approved and authorized internal school evaluations by certifying these exams and participating in the supervision over them.

As another step in this direction, the Ben Perez Committee recommended a shift to a modular method of assessment which allows pupils to gather credits and pass from a lower (non-matriculation) stream to a higher stream, without having to pass an examination on material they had already been examined on.

In the first stage, schools received authorization to give nationally accepted evaluations in one to three subjects. The grades for these subjects, based on predefined curricula, were added to the recognized internal school grades.

In order to facilitate the division between “national evaluations” and “recognized school evaluations”, subjects were divided into three groups, to support each school’s choice of the subjects for accredited internal school evaluation. Schools could request recognition of school grades in one subject from each group, up to a maximum of three subjects.
1.4.3.1 Selection of schools

The Directorate for the High School System in the Ministry of Education applied to receive governmental approval to conduct a pilot test in selected senior high schools (grades ten to twelve). After the application was approved, fifty high school principals were convened along with the regional school inspectors. The general plan for the project was presented to the principals and the school inspectors; monetary support was promised to those who chose to take part.

Out of the fifty principals present at the meeting, thirty expressed their desire to take part in the project. At the end of the selection process, twenty-two schools were selected; the ones chosen had student bodies drawn from heterogeneous socioeconomic backgrounds. Each school appointed a project supervisor who was requested to take part in a series of thirteen symposiums during the school year. It was recommended that the school principals also take part.

The following table reflects the distribution of schools participating in the “Bagrut 2000” project according to areas and sectors to show the schools that took part in the project. The next table (Table 1.1) presents the distribution according to subjects.
Table 1  `Distribution of “Bagrut 2000” schools by region and sector

<table>
<thead>
<tr>
<th>Area</th>
<th>Number of schools by sector</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gene</td>
<td>Religi</td>
</tr>
<tr>
<td>Jerusalel</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Tel-Aviv</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Center</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>South</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Settlemen</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Haifa</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>North</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: Directorate of High Schools, Ministry of Education

The list of all twenty-two schools appears in Appendix 7.

1.4.3.2 Classifying Subject Clusters

When a school was authorized to award pupils Matriculation credits, teams of volunteer teachers were chosen (up to three teams in each school). Table 1.2 shows the distribution by subject clusters (Groups of subjects). Clusters one and Two include compulsory subjects. The difference between them is that Cluster Two is made up of subjects that will almost certainly remain compulsory, no matter what changes are made in the Matriculation format. Group Three is made up of the elective subjects. That is, pupils can choose to study and be examined in these subjects to the limits of the school curriculum.

The teams reflect which compulsory and elective subjects are chosen to take part in the “Bagrut 2000” project. So we can see that, on one hand, the preferred compulsory subjects were History and English language; and in the preferred elective subjects were Biology and Life Sciences. On the other hand, we see that no school chose subjects such as Torah and Mathematics, as is reflected in the following table.
### Table 2 Distribution of subjects taught in “Bagrut 2000”

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>Group 1 (Compulsory sub)</th>
<th>Group 2 (Compulsory sub)</th>
<th>Group (Electiv)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bible</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>History</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Literature</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civics</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Torah</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hebrew</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>English</td>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biology and L. Sciences</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Chemistry</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Social Science</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Art</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Land of Israel</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Vehicle Mechs</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Jewish Thought</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>18</strong></td>
<td><strong>11</strong></td>
<td><strong>14</strong></td>
</tr>
</tbody>
</table>

Total: 43 teams from 22 schools.

Source: Directorate of High Schools, Ministry of Education

These teams dealt with defining teaching aims, planning alternative assessment methods, re-writing study material in accordance with new teaching aims, preparing the project’s three-year curriculum, preparing feedback methods, working on team development processes and organizing sub-teams for various purposes.

### 1.4.3.3 Training, Symposia and Study Groups

During the school year of 1995-1996, school administration staffs were selected and trained. Their task was to explain the principles of the project in their school and set up professional teams, one for each subject, comprised of teachers expressing interest in participating in the new assessment structure. Teams formulated and presented plans for approval, including study plans and actions plans. These plans presented suggestions on alternative assessment methods in each subject and recommendation on how the shift could be implemented over the three grades of senior high school. Schools were allocated extra hours for weekly staff meetings on each of the subjects designated for changes. In addition, additional teaching hours were allocated, including hours dedicated to one-on-one meetings between teachers and pupils.
In September 1996, counselors from the Ministry of Education commenced guidance of the school staffs and discussed the planned changes in instruction and assessment methods. In addition to the symposia attended by the principals and the project supervisors, special study groups and one-day meetings were also held for teams of teachers, librarians, and youth counselors. In order to facilitate the reorganization of teaching attitudes and the rethinking on the subject of student evaluation, expert counselors were brought in. Extensive discussions focused on alternative assessment methods. The purpose of the symposia and the study groups is to train and give guidance to the teachers and the rest of the staff taking part to get them to work according to the principles and guidelines of “Project 2000”. It was important to create a "common language" among the teachers of the various schools to facilitate the exchange of ideas.

At the end of this stage, based on the teachers’ involvement, a general paper was drafted, explicating the aims of the entire project and its anticipated results. The aims were: 1) to expand the learning process, reinforce and diversify teaching methods, adapt assessment methods to teaching goals. 2) To shift full responsibility for assessment to the school, in one or all of the three subjects out of the list of subjects set for matriculation examinations. Anticipated results included developing pupils as autonomous learners, conveying the development activities to other schools while using it as an interior mechanism for control and supervision in each school.

1.5 The Present Study

As a result of the “Bagrut 2000” project, the Israeli educational system is at a crossroads; it will have to choose between two completely different assessment methods. From the time of the British Mandate in Palestine till today (about seventy years), it has always been customary to examine pupils according to the traditional method – that is, by making them take external written examinations.

The “Bagrut 2000” project aimed to implement the Ben-Perez Committee’s recommendations (1994). The committee focused on two important considerations related to the pedagogical and social dimensions of the “Bagrut 2000” project. On one
Hand, the Committee adopted the national-social aim of narrowing gaps in academic achievements based on background, origin and nationality. The fact that Israel is a country of diverse immigration and has relatively large minorities only intensifies the difficulties faced by the educational system in this country. Hence, there is a need for a reform that can deal with the pedagogical and social needs of the country. In addition, the Committee stressed the need to expand the diversity of existing assessment methods to meet the changing needs of the educational system.

1.5.1 The purpose of the present study

The purpose of the present study is to examine the “Bagrut 2000 Project” and assess the attitudes and perceptions of all those involved: pupils, teachers, project coordinators and principals.

The purpose of the present study is to examine the influence of participation in the project on various affective outcomes which are known to have significant effects on learning outcomes and achievements. These include pupils’ feelings of self-esteem in the school context, the extent to which pupils and teachers participating in “Bagrut 2000 project” are satisfied with the results of the project and the motivation of both teachers and pupils. The study also aims to capture the extent of pupils’ autonomous learning and the climate and relationships in the school. A comparison will be made between pupils’ "satisfaction index" scores prior to the initiation of the project and their responses to questionnaire while the project is in progress.

This study hopes to ascertain the changes the project has made in the pupils' and teachers' satisfaction with their progress in the school context and the effects it has on the school environment. Specific objectives include the measurement of:

- Pupils’ satisfaction
- The impact of participation in the project on pupil’s self-esteem
- The project’s impact on pupils’ motivation
- How the project affects classroom relationships and climate.
- Teachers’ motivation and satisfaction from the project.
1.5.2 The research questions:

1. To what extent can the pupils who participate in the “Bagrut 2000” Project be defined as autonomous learners? One of the goals of the project was defined as creating autonomous learners. The present study seeks to examine the extent to which this goal has been realized.

2. How does participating in the project affect the pupils’ motivation? One of the arguments advanced against abolishing the external finals in their traditional form is that this will undermine the pupils' motivation to work hard in school. This question will ascertain whether this fear is justified, or whether the pupils' motivation has remained unchanged or even risen. To what extent do the pupils actually participate in the learning process? This question is meant to check whether, and to what extent, the student participates actively in the learning process. One of the fears expressed with regard to the project is that no real change will be made in teaching methods and that teachers will remain the main - or the sole - source of knowledge; that they will remain the only ones in the class who decide on teaching strategy and methods.

3. To what extent are pupils satisfied with the change resulting from the “Bagrut 2000” Project? The basic assumption of this research is that pupils participating in the project will feel more satisfied with their studies while the project is in progress than they did before it started. At the same time it will be possible to compare pupils’ satisfaction with subjects covered by the project with their feelings about subjects outside the project. The hypothesis is that the student's rise in satisfaction will be caused in part by his/her increased participation in the learning and teaching processes.

4. How does participating in the project affect the pupils’ self-esteem? Pupils who take part in the project will have their scholastic achievements evaluated in new and different ways. This should enable them to develop various skills and to interact with the teachers in a new way. This should ultimately have a beneficial effect on their self-image.

5. How does the project affect the atmosphere in the class and at school? This question is meant to check whether, as a result of enhanced participation in the learning and evaluation process, the atmosphere has improved in class and even in the school in general. This may come about even though not all the classes and not all the subjects are taking part in the project, as a result of the halo effect.
6. To what extent do the pupils trust their teachers? This question is meant to check whether the pupils' trust in their teachers has risen in classes taking part in the project and whether this has come about because of their participation in the learning process and because the fear of the external matriculation no longer hangs over.

7. How does the project affect teacher satisfaction and motivation? The hypothesis is that, as a result of a better and more open relationship with the pupils, and as a result of the fact that both teachers and pupils participating in the project are doing meaningful work, and since teaching methods are more efficient and team-work is more professional - all these factors will influence teacher satisfaction. Our hypothesis is that if teacher satisfaction rises, so will the teachers' motivation. Teachers will be prepared to invest more time and effort in their work.

1.5.3 Contribution of the research

The potential benefits of alternative assessment methods are now widely recognized. In this regard, MacDowell and Sambell (1999) add:

A major advantage of many innovative forms of assessment is that they encourage pupils to work hard by promoting intrinsic motivation and interest in the tasks involved. We noted that such interest tends to be generated by assessment tasks, which appear to be meaningful and relevant to pupils and which are clearly vehicles for learning and developing useful knowledge and skills, which will be of long-term benefit to pupils. Personal involvement can also be enhanced when pupils have some choice over the nature of tasks and the way they are carried out (p.75).

However, Birenbaum (1995) found that little research has been carried out on alternative assessments and their benefits. This research paper can contribute knowledge about the influence alternative teaching methods have on selected parameters within the processes of teaching and learning.

It is important to note that this research is one of the few, which focuses on the “Bagrut 2000” pilot program, despite the fact that this project is the leading study program today in Israeli high schools. Unlike previous research papers, including those by Teicher (1997) and Sever (1999), the present study focuses on several aspects which have not received sufficient research attention, especially with regard to individual student’s satisfaction, the teacher’s perspectives regarding the project, and
pupils’ attitudes towards and feelings about how learning and teaching takes place in the classroom.

Theoretically, this research aims to analyze implementation of constructivist reform in high schools. The constructivist approach for learning, based on work of Lev Vygotsky and thoroughly explained in chapter two, emphasizes the students’ role in the learning process. Constructivists advocate learners’ participation in context-bound, real-world problem solving and calls upon students to engage in metacognition. The Ben-Peretz committee has embraced these principles and made them a cornerstone of the “Bagrut 2000” program.

However, although constructivism appears to be attracting a growing following in many countries, its adoption was not uniform across the educational system, and in particular was lacking in secondary school level (Hackmann, 2004). Arguably, constructivist practices may be more easily implemented in self-contained elementary classroom, and have been cornerstone of the research work at university level. However, high schools tend to be departmentalized and more concerned with curriculum, and secondary teachers may be less willing to employ methods perceived as reducing emphasis in content and its physical manifestation: matriculation results.

In this context the uniqueness of the “Bagrut 2000” emerges as an attempt to implement constructivist reform in an environment where traditional teaching, based on behaviorist theories, remained unchallenged. In this same context, this study is important, as it is the only study of its kind which looks at the program from a medium-term time perspective, and analyzes theory in light of administrative policies and empirical results.

Constructivism is still, to some extent, an emerging theory that is currently more descriptive than prescriptive in nature, especially when compared to well developed models of traditional teaching (Hackmann, 2004). Considering that this is the case now, it must be appreciated that when the Ben-Perez committee began its work in 1994, the theoretical framework were considerably thinner. As teachers strive to create constructivist environments, they initially find it difficult to grasp how specific instructional methods align with constructivist principals. Also, in the shift from
traditional to constructivist teaching, educators sometimes revert according to Airasian and Walsh (1997) to catch phrases such as "hands on learning" or "active engagement of the learner" without explaining how these concepts are applied in the classroom.

These problems in the closing the circuit between the field, the research about the field, the models based on the research, the policies based on the research, and the implementation of those policies back in the field, still exist. This research, which studies the last three links in the chain, provides understanding of how educational theories match up to reality when implemented in Israeli high schools.

1.6 Structure of this research

This research is constructed of seven chapters, which in general are ordered from the established and general information to new and novel knowledge. It began 30 pages ago with an introduction describing the existing educational situation, the second chapter presents the existing scientific literature in the field, the following chapter presents the research plan and methodology employed by this research, then chapter four explains the results achieved using this methodology. The fifth chapter discusses the findings and attempts to infer knowledge out of data, and the seventh chapter makes recommendations for the future based on this knowledge. In between, chapter six attempts to put this research, conducted since 1999, in context with the updated situation as of 2004.

The next chapter (chapter two: literature review) surveys the relevant professional literature, focusing on issues as autonomous learning as a goal for education, particularly how "open education" programs have been implemented in Israel. This chapter discusses additional factors in the learning process, which are both factors affecting outcomes and are perceived as outcomes themselves. These include satisfaction and motivation of pupils and teachers. The concepts of self-esteem and school and classroom climate are also discussed in relation to their impact on learning outcomes. The chapter finally reviews previous research conducted on the "Bagrut 2000" project in Israel.
The following chapter (chapter three- methodology) presents the research plan and methodology. The chapter explains the *ex-post facto* approach, which measures differences between before the event ("Bagrat 2000") and after it, which was used. It also details the research tools and explains why both qualitative means such as semi-structured interviews, and quantitative means such as questionnaires, were used. Disclosure is also given to the ethical aspects of the research. Finally, the chapter describes the actual progress of the research, including accessibility issues and the pilot study.

After discussing the methodology, the next chapter (the fourth) presents the findings of the research. The findings are presented according to populations- first about pupils, then about teachers, then about the interaction between pupils and teachers. For each group, the chapter presents the quantitative results, and then explains them in light of the qualitative responses. This approach was chosen (rather than division according to research tool or to research question) to provide a more comprehensive picture of the impact "Bagrat 2000" had on the relevant group.

Once the empirical findings of the research are presented, the next chapter (the fifth) attempts to analyze them, and resolve the underlying meaning of the data. This chapter too is organized by subjects: It first discusses the pupils and their learning, then the teachers and the changes they have undergone, and then a system wide analysis of the project within the context of educational policy in Israel.

The sixth chapter, which deals with political developments behind the scene of the "Bagrat 2000" project, and its current status, was not part of the original research program. The need for it arose because of the rapid changes in Israeli politics and economics that took place while the research was conducted. As a result of those changes, funding and bureaucratic support for the program varied greatly over the years, leading to profound impact on the project and its participating schools. The chapter details those developments and attempts to explain their meaning.

The seventh and final chapter offers some recommendations for the future in terms of policy suggestions and ideas for further research. On the practical side, it suggests changes to the educational and administrative practices of Israeli high schools. On the
theoretical level, it offers suggestions on handling the difficulties encountered in this research, and filling the remaining gaps about understanding "Bagrut 2000" in particular, and constructivist learning in general.

In a sense the structure of this research completes a full circle which begins in chapter one where it looks at existing policy, and chapter two, where it relies on existing research, and attempts to promote both through the knowledge achieved in this research.

1.7 Conclusion

The introduction chapter presents an overview of the school system in Israel and the background for its development, with a special emphasis on the development of matriculation exams as a means for a final, summary assessment of pupils leaving high school. This section also discusses the matriculation system in Israel and analyzes its strengths and weaknesses, along with the reforms recommended by the Ben-Perez Committee. Followed is an introduction to the "Bagrut 2000" Project, which is an educational experiment, initiated with the aim of achieving national goals as well as educational ones. The section finally introduces the present research program, its aims, research questions, its significance and contributions.
2. Literature Review

The aim of this study is to examine the effect of a process of change in the educational system in Israel, specifically the implementation of a series of innovations in the Bagrut assessment format in Israeli high schools. The effect of the “Bagrut 2000” program will be assessed in terms of its impact on the following clusters of outcomes that corresponds to the research questions posed:

- The learning process (the degree of autonomous learning reflected, the characteristics of this process and the extent to which students are active participants therein).
- Students' attitudes (in terms of satisfaction, self-esteem and motivation), including a comparison between student and teacher satisfaction resulting from the project.
- Teachers' attitudes (in terms of satisfaction and motivation).
- School and classroom climate reflecting student – teacher relationships (in terms of pupil’s trust in their teachers).
- The existing body of research about Israeli matriculation examinations in general, and “Bagrut 2000” program in particular.

A comprehensive review of the literature of these topics provides the theoretical underpinning of the research hypotheses of the present study. It will be used in this research in several ways. The methodology chapter will attempt to fill known gaps in the existing knowledge base by measuring areas that have not been previously observed by triangulating existing findings through new methods. The findings chapter will look at how the actual progress of this educational reform conforms to the theoretical models presented in this chapter. The discussion chapter will look at whatever differences are found, and attempt to understand their meaning. Finally, the recommendations chapter, aside from making recommendations for governments and educators, will make suggestions for researchers on how to use new methodologies or different focuses for future implementation.
2.1 Autonomous Learning

The first section of this chapter delves into what is arguably the greatest goal that the Ben-Peretz committee set for the “Bagrut 2000”, namely to turn passive pupils into active learners who have initiative. This section is divided into three main areas: First it looks at the practical sides autonomous learning, meaning what differentiates autonomous learning from traditional learning. The second section deals with the internal, psychological, processes of learning, according to the constructivist theory of learning. The last section details existing experiments in reformed education in Israel.

In response to growing criticism of traditional teaching in the post-war period, especially in light of the values of democracy, self-expression and independence, the value of fostering learners’ ability for autonomous thinking, learning and action was recognized. Corresponding with democratic values, all learners were seen as the citizens of the future, with the educational system being the means by which learners would become productive and independent citizens, sufficiently knowledgeable to be able to participate in democratic processes and able to undertake the responsibilities of citizenship in an independent manner. Educators recognized that the acquisition of formal knowledge was insufficient to prepare the majority of persons for responsible citizenship and that it was up to the educational system to provide a foundation for its citizens, their understanding of the their rights and duties as equal citizens in a modern state. This recognition obviously led to significant changes in curricula and to a general change in the orientation of educators regarding expected outcomes of learning.

2.1.1. Overview of the movement for autonomous learning

In a survey of the history of schools, Birenbaum (1997) notes that in the second half of the 19th century, schools were seen as instruments to provide mass education for a entire sector of the population who had never attended school, with the aim of preparing them to enter the modern workplace. “These schools taught basic skills, whereas teaching formal thinking and intellectual pursuits were for the few who belonged to the social elite...administration was based on a fixed hierarchy of power an on harsh discipline; it was always aimed at the product.” (p. 9). In the traditional approach to teaching, reflected in these schools, “the teacher was seen as one who
knew exactly what the pupil had to know in order to achieve successful social integration. The teacher knew which methods could best achieve this goal and which skills should be taught in order to turn the pupil into a useful citizen of the future” (p. 9).

From the post-war period until the 1960s, it was customary, in many countries including Israel, to classify pupils according to their intellectual abilities, and indirectly, by their socio-economic backgrounds. In the second half of the twentieth century, a number of projects in the USA have attempted to reduce the link between a poor background and school environment. These projects were the start of a reform aimed to integrate pupils into a new “uniform education for all”. This meant that the state was required to effect maximum equality in the composition of the student body and in the selection of teachers, in culture and climate, teaching methods and amounts invested in education (Coleman, 1966).

Despite these programs, academic achievements dropped while the gap between pupils from different socio-economic backgrounds remained unchanged in the USA in the 1970s. New reforms were proposed, including “effective schools”, which introduced new standards of teaching and higher academic standards. This led to the individualization of the teaching and learning processes in order to diversify them (Reynolds, 1989). Although these reforms met with partial success, the following criticisms were voiced by Skager (1984): 1) Pupils were only responding to the initiatives and actions of their teachers; they were not actively participating in or responsible for their own progress; 2) The programs failed to develop pupils’ intrinsic motivation, and; 3) The school climate did not develop a lifelong affinity for learning.

New programs were also aimed at rectifying the deficiencies and problems of traditional teaching, especially in light of the values of democracy, self-expression and independence. Traditional teaching not only promoted passivity, it was claimed, but turned pupils into vessels that teachers are expected to fill with knowledge (Freire, 1973). Other critics, such as Rogers (1984) claimed, “Human beings have a natural ability to learn. They are curious about their surroundings if this curiosity is not dulled, until it is dulled, by experiencing our educational system” (p. 159).
Much criticism was directed at traditional schools and learning. Frankel (1984), for example, discusses how pupils wish to learn but they hate school studies. School studies "send them to sleep...make them shallow...bores them...School studies demand only the lowest of human functions: learning by heart and memorizing. Pupils feel insulted; instead of being offered a 'Mercedes' they are offered a scooter..." (p. 103). Kohl (1975) notes that schools do not teach pupils the right things. "They fulfill neither the needs of the adults or the needs of the young people. The schools teach 'objective' knowledge and obedience. They teach that one should ignore conflicts and given in to tradition. They teach equality and democracy and, at the same time, oppress the pupils and keep the teachers under surveillance. Worst of all, they teach both pupils and teachers to keep silent and never express what they think or feel..." (pp. 100-101). Fromm (1983) notes that such education impairs the development of the child and the adolescent and "is the basic cause of mental pathology, especially destructiveness (p. 91).

Indeed, Ericsson and Ellet (1990) suggest that the reforms in American educational systems delegated authority to the teacher and at the same time, made teachers largely responsible for pupils' learning, for their success or failure. They noted that such a situation encourages pupils' passivity in both functioning and in achievements.

Although a new type of "alternative" school also developed, based on principles of humanistic philosophy, Zimmerman and Schunk (1989) believed that this was not sufficient to awaken awareness, motivation and balanced choice in pupils. It was also noted that schools should impart the suitable foundation, which should enable pupils to function independently in society. "A person who lacks such a grounding, and is therefore unable to take an independent part in the life of our society, clearly represents a failure on part of the school or schools which he attended" (Letwin, 1995, p. 241).

Skilbeck (1995) noted that the purpose of the school is "to develop in children the ability to think and act independently" (p. 233). Lum (2000) believes that the educational system should seek to develop "...an autonomous person, who is able to weigh, to understand and to decide without too much dependence on others; neither on public opinion nor on leaders, neither on superstition not on prejudice; a person who
isn't bound by conventions or by 'what everyone knows.' Education in modern societies is aware of all possible aims and makes use of all possible means to achieve these aims.... When such an educational system emerges, it will be the...beginning of a new period in the field of education.” (p. 400).

Israel followed the western world in that the movement for the development of autonomous learners, in contrast to traditional education aims of acquiring knowledge, evolved as a reaction to criticism voiced on traditional teaching. Indeed, in Israel, one of the goals the Ben Peretz Committee defined for the proposed educational change was to foster autonomous learning among high school pupils. However, a clear definition of autonomous learners and learning was not self-evident.

2.1.2 The autonomous learner defined

Reviewing the literature, one immediately notes that the concept of ‘autonomous learning’ and ‘autonomous learners” is also described as “self-regulated learning/learners’. Some researchers, however, distinguish between these two concepts, including Skager (1984), who suggests defining the self-directed learner as one who can learn on his/her own or in a group, is aware of his/her needs and goals for personal development, is capable of planning and executing learning activities as necessary. A self-directed learner simultaneously and continuously monitors his/her own progress. Skager (ibid) claims that such learners can be cultivated during the early years of education in a school framework.

In contrast, Skager defines the “autonomous learner” as a late developer. An autonomous learner, after having acquired the capacity for formal and moral reasoning, forms definite values with the aim of integrating him/herself into suture social and employment situations (1984, p.10).

Most researchers, however, use the terms interchangeably. We adopt their conceptualization in the present work. Avinon (1983) claims that the concept of autonomy, as applies to learners, involves the following four factors:

- Self-regulation - the individual's desire for self-control
- Rationality and awareness; actions are driven by extrinsic causes and goals
• Choice – actively shapes goals and policy for achievement
• Accountability – is prepared to take responsibility for the effects of his/her choices.

Kramer (1984) adds that autonomous learners exhibit a distinct relationship concerning problem solving: they are sensitive to problems, events and modes of action, are able to identify and analyze problems, divide problems into sub-problems and seek appropriate solutions. In the problem-solving process, autonomous learners utilize diverse sources of information, organize and summarize data and finally assess the results of the problem solving process.

Dickenson (1993) discussed autonomous learners in the area of language learning and specified that autonomy is more of an attitude, which does not necessarily have observable features. This attitude is comprised of the following points: the ability to identify what is taught; the ability to formulate their own learning objectives (in collaboration with or in addition to what the teacher is doing), the ability to select and implement appropriate learning strategies and discard ineffective strategies, and finally, self monitoring. Dickenson’s definition is consistent with the perception of autonomous learners as capable problem solvers.

Referring to the element of self-monitoring in autonomous learning, Flavell (1978) states that meta-cognitive skills are need for autonomous learning; these are the skills which learners use to regulate their own cognition and learning process.

In the late 1970s, Skager (1984) formulated a model to implement autonomous learning in educational systems. This model, which was expanded in 1984, was based on research conducted in cooperation with UNESCO’s Institute for Education over several years. Skager conducted case studies in four countries: Germany, Hungary, the Philippines and the USA. Based on these studies, he developed one of the significant contributions of the research, a conceptual model of self-regulating learning. This flexible model was comprised of 15 elements: seven elements describe behavioral and personal attributes of the self-regulating learner while eight describe the characteristics of the school and class environments, which foster self-regulating learners. According to this conceptualization, the characteristics of the self-regulating learner are:
1. Self-acceptance – the learner, as a result of positive personal experiences, believes he/she is capable of tackling learning assignments and improving his/her performance.

2. Planning – the learner is capable of managing his/her own studies including assessing his/her learning needs, setting goals in light of these needs and planning effective strategies to achieve these goals. Learners are also prepared to utilize assistance from others during this process.

3. Intrinsic motivation – the learner is motivated by inner needs which are reflected in curiosity and interest, rather than by external monitoring. This learner wishes to learn outside the formal framework of his/her studies as well and is capable of rejecting rival demands on his/her attention.

4. Intrinsic evaluation – the learner acts as an evaluation agent and is capable of evaluating his/her own achievements according to external evidence that he/she has collected. The learner will accept feedback from others but will adopt it only if it is consistent with his/her own considerations. The learner is not over-awed by the status of the feedback source.

5. Flexibility – the learner is prepared to amend his/her goals or methods and is willing to work according to a process of trial and error.

6. Openness to experience – the learner is curious and is not afraid to experience uncertainty or ambiguity. The learner is prepared to try whatever new experiences arise out of the goals defined or the learning process itself.

7. Autonomy – the learner independently chooses subjects for study, paying no attention to the degree of popularity, which these subjects may currently enjoy.

2.1.3 Constructivist (Vygotskian) Autonomous learning

Having reviewed the procedures necessary for promoting autonomous learning, and some of its benefits, there is evidence that autonomous learning entails a set of complimentary skills, each with its own value. This leaves open the question of the intrinsic value of independent learning. The following section looks at a theoretical model of learning known as ‘constructivism’, which attempts to duplicate, through different teaching methods, the natural way in which people learn.

The constructivist theory is largely credited to Lev Vygotsky, who developed his educational theory in the 1930’s only to be later neglected and forgotten, but has
recently regained a prominent stature. His approach allows for relations between spontaneous common sense and formal school-based concepts. Vygotsky sees school-based learned concepts as conscious, reflective concepts originating in the classroom and systematic. His understanding of intelligence is radically different from Piaget's. Vygotsky views a capacity to learn through instruction as central. He argues that intelligence is determined not only by a capacity to learn, but also by a capacity for being taught, and he introduces the concept of 'zone of proximal development' in his theory of learning. This concept refers to the gap between what an individual pupil can do alone, and what they can achieve with the help and introduction of a more knowledgeable person.

What a child can do today in co-operation, tomorrow he will be able to do on his own" (p. 25, Vygotsky, 1962)

Burton's reading of more recent research in this area (Topping, 1992) has indicated that reciprocal peer tutoring can also promote learning. Crucially, however, children need to be given specific preparation and guidance by the teacher in order to work effectively. Brown (1994) developed the idea of learning communities where group-work and seminars provide the main vehicle for learning. Rogoff (1990) found that homogeneous student grouping and pairing, such as setting provides, and has advantages in promoting argument and sharing complex ideas. However, Doise (1990) found that in pair work, a slight difference in the intellectual functioning of partner was best because it promoted cognitive conflict.

Vygotsky's ideas were translated into many instructional programs. Bruner (1996) formulated a theory of instruction, central to which is the notion of systematic structured pupil experience. He concentrates on the different processes individuals use in creative problem solving, and lays great emphasis on the point that language communication and instruction are paramount to the development of knowledge and understanding. He argues that individuals develop different types of thinking strategies depending on their knowledge, the situation and the learning materials. For Bruner, learning involves the search for patterns, regularity and predictability. One aspect of the teacher's role is to assist pupils in the formulation and discovery of such patterns and rules – thus enhancing and expanding their knowledge.
2.1.3.2 The influence of social constructivist theories

Burton identifies the importance of ‘talk’ in classrooms as being highlighted by the ideas of Vygotsky and Bruner. Essentially, it is argued that, in order to learn, pupils must discuss what new ideas mean to them with others. In so doing, further thinking is generated with more complex links between ideas afforded. The role of the teacher in facilitating learning situations involving talk is of critical importance.

Bruner’s ideas about the power of systematic and well-structured pupil experiences to promote cognitive development are fundamental to this approach. Maybin, Merer and Stierer (1992) have used Bruner’s (1983) ideas of ‘scaffolding’ in relation to classroom talk. The ideas of pupils emerging through their talk are scaffold or framed by the teacher putting ‘steps’ or questions at appropriate junctions. For example, a group of pupils might be discussing how to solve the problem of building a paper bridge between two desks. The teacher can intervene when he/she hears an idea emerge which will help pupils find the solution, by asking a question which requires the pupils to address that idea explicitly. Bruner argues that the scaffolding provided by the teacher should decrease in direct correspondence to the progress of the learner. Wood (1998) has developed Bruner’s ideas describing five levels of support, which become increasingly specific and supportive in relation to the help needed by the pupil:

- General verbal encouragement
- Specific verbal instructions
- Assistance with pupil’s choice of material or strategies
- Preparation of material for pupil assembly
- Demonstration of task

Thus, having established the task the pupils are to complete, a teacher might give general verbal encouragement to the whole class, follow this up with specific verbal instructions to groups who need it, perhaps targeting individuals with guidance on strategies of the approaching task. Some pupils will need physical help in performing the task and yet others need to be shown exactly what to do, probably in small stages.

We turn now to a theory which actually bears the name ‘constructivism’. Whilst sharing a Brunerian and Vygotskian emphasis on the social construction of meaning,
constructivism places much more importance on the conceptions of learners and gives them responsibility of directing their own learning experience. Less emphasis is placed on the role of instruction.

Constructivism has been a dominant approach in the last two decades, especially with respect to science education (Nicholas, 1990). Constructivism explains conceptual change as the product of interaction between existing concepts and new experiences. Driver and Bell (1986) list six features of a constructivist perspective that have a potential impact on teaching and learning situations in school:

- Learners are not viewed as passive but are seen as purposeful and ultimately responsible for their own learning. They bring their prior conceptions to the learning situation.
- Learning is considered to involve an active process on the part of the learner. It involves the construction of meaning and often takes place through interpersonal negotiation.
- Knowledge is not 'out there' but is personally and socially constructed. Its status is problematic. It may be evaluated by the individual in terms of the extent to which it fits with their experience, and is coherent with other aspects of their knowledge.
- Teachers also bring their prior conceptions to learning situations in terms not only of their subject knowledge, but also their views of teaching and learning. These can influence their interaction in the classroom.
- Teaching is not the transmission of knowledge but involves the organization of the situation in the classroom and the design of tasks in a way which promotes learning. The curriculum is not that which is to be learnt, but a program of learning tasks, material and resources from which pupils construct their knowledge.
- Constructivism generates different view of what constitutes teaching/learning and how it might be carried out in the classroom. It is consistent with the national curriculum requirements.
- Children’s ideas will change as their experience expands. There is an essential role for the teacher as enabler in this process: the teacher may interact with the pupil, raise questions, build in appropriate challenges and experiences and offer new ways of thinking.
2.1.3.3 Constructivism and “Bagrut 2000”

As a national project, “Bagrut 2000" was based on innovative notions of constructivism, and on Vygotskian work. The body of research accumulated over the past two decades has highlighted the essentials of good teaching based on studies of Anderson (1989), Prawat (1989) and Brophy (1992). The planners of “Bagrut 2000” intended, and this research shows that they have largely succeeded in implementing some of those features.

In those studies, the emphasis was not only on teaching the subject matter but also on using generative knowledge so that pupils are better able to grasp the information, be more involved in its structuring. This implies that the teacher should not only explain an issue, but he or she should also provide the students an opportunity to answer questions, to discuss the implications, debate about those implications, and be involved in an authentic solution of real-life problems. Beyond that, the teacher should narrow down his/her role from being the sole provider of information to assisting students in acquiring, understanding and analyzing information from other sources. Furthermore, once teachers expose students to multiple sources of information, students are required to evaluate the quality of those sources, and decide whether to use them. They thus develop their own judgment, and subsequently critical thinking skills.

The project completely changed the teaching methods because the teaching was planned by the same teachers who implement them for every grade. Teaching methods were diversified, starting from worksheets through group discussion to paper writing based on frontal learning, reading various articles and integrating them. (Vocational teacher reply)

According to the teachers, the writing, the progressive drafting and repeated corrections crystallizes the understanding of the student who learns from his/her own mistakes by correcting them himself.

2.1.3.4 Learning to learn

It is generally accepted that schools and teachers should not restrict themselves to the presentation of information but should also teach students how to process this information to construct knowledge (Weinstein and Mayer, 1986). The growing attention on teaching students how to study independently is in line with research on
cognitive and meta-cognitive strategies. Research has shown that the ability to use a variety of cognitive meta-cognitive strategies is important in successful learning and educational tasks (Pintrich and De Groot, 1990).

Existing literature has no generally agreed definition of “independent learning.” It is described as a multi-dimensional entity whose meaning varies according to the meaning given to the word learning (Candy, 1990, Gibbons, 1990). Learning to learn could be described as “a skill or more plausibly a package of skills, involving study skills, critical analysis, time management, planning, goal setting and so on” (Rawson, 2000, p.225). The skills could be study skills of a learner understanding a structured program, or a skill set of a self-managed learner.

More modern researchers place independent learning against the backdrop of the “restructuring movement” (Murphy, 1991), where a focus is shifted to “the behavioral-psychological model that highlights the innate capacity of the learner is replaced by ‘cognitive or constructivist psychology’ and newer sociological perspectives of learning” (Murphy, 1993b, p.116). An increased emphasis is placed on the pupil’s role that is considered “active constructors of their own understanding (Murphy, 1993a, p.12). Teachers implementing active learning (in the broad sense) not only change their teaching activities but also their attitudes and assumptions about the educational process (Kember 1997, Trigwell, Prosser and Taylor, 1994).

According to Vand den Houte (1992), learning to learn can be implemented to fulfill three different functions. First, there is the supportive function, where the ultimate goal is to improve pupils’ success in exams and tests. The “supportive” way, which fits with Hounsell’s (1979) “narrow definition”, improves the means used by pupils to achieve success within standard educational environment. The second function is remedial. Here the aim is to remedy learning problems. Finally, a developmental function is where independent learning is used to teach how to acquire and process new information, and can be correlated to “broad” definition of independent learning. Such teachers try to make pupils familiar with information processing or problem solving strategies so they can solve new problems and process new information. They want their pupils to enjoy learning and to be intrinsically interested in what they are studying.
Teachers that ascribe to the developmental approach, and the broad vision of independent learning, hold different opinions on the role of teachers and pupils, compared with teachers who use independent learning in the narrower supportive or remedial ways. Those with the wider vision have been found to consider themselves as guides, facilitators or coaches of the students learning process (Bonk, Oyer and Medury, 1995, Prawat, 1992), and less as transmitters of subject material (narrow vision). Also, in the broad view, the learning process is considered as "an intensely personal activity characterized by search for meaning and understanding" (Hounsel, 1979, p.461). In the narrow sense, learning is conceptualized as the accumulation of facts and information, or as a quantitative increase in knowledge (Boulton-Lewis et al., 2000).

2.1.4 Autonomous education and "open education" programs - the case of Israel

In response to social changes brought about the WWII, "open education' developed, first in England and more recently in the US. In Israel, support for open education also developed in the late 1960s, comprising one of many elements reflecting the changing Israeli worldview in the wake of the 1967 war. In England and to a larger extent in the US, open education placed great emphasis on individualization, freedom, spontaneity, minimum teacher intervention while de-emphasizing the importance of cognitive achievements (Walberg and Thomas, 1972).

Studies which examined experiments in the field of education, especially those which emphasized pluralism and personal choice rather than academic achievement, reached the interesting conclusion that such experiments succeeded in times of prosperity, i.e. in the absence of economic and political pressures (Berger, Berger and Kellner, 1973). Israel has not been a suitable candidate for the implementation of such educational experiments until recent decades. Only within well-established and financially secure social strata did conditions make practical the opening of schools which practiced "open education" based on democratic principles.
Furthermore, implementation of open education in Israel is far from a trivial task and entails a change in the general conceptualization of public education. Harrison and Glaubman (1982) hold that Israeli culture has channeled the educational system in the direction of intellectualism and socialism rather than individualization. Hence, the concept of open education in its Western format is, in some respects, foreign to Israeli culture.

According to Walberg and Thomas (1972), studies conducted in the Israeli educational system indicate that open education in Israel is characterized by an emphasis on intellectual achievement, and on the small group as the primary unit of learning, while individualization is relegated to a secondary position (Silberstein and Geva, 1992). Instead of radical changes in the traditional class structure, teachers in Israel tend to reorganize their classes into small groups, each working on a separate assignment during the school year, while the teacher retains considerable control over class activities. Teachers also retain sole responsibility for methods of instruction and pupils assessment (Klein and Eshel, 1980). Researchers also found that pupil's freedom and autonomy only becomes possible under the watchful eyes of teachers. Klein and Eshel (1980) attribute the differences between the results in Israel and those from abroad to the emphasis on results rather an emphasis on the process, despite declarations to the contrary. They found that intellectual and technical products are attributed high significance in the Israeli educational system.

In the last ten years, many efforts have been directed at examining and analyzing the impact of autonomous learning processes. Studies in Israel have repeatedly confirmed the advantages of implementing this approach in the Israeli school system, in terms of favorable outcomes.

Avrahami (1986) examined the impact of integrating autonomous study methods in academic studies and in practical laboratory classes in electronics. He found that the achievements of the experimental classes were not inferior to those of the control groups. In laboratory skills, the experimental groups surpassed the control group despite the significantly inferior background attributes of the experimental group. Barak (1986) found similar results. He also used electronics students as research
subjects. These pupils, who were classified as under-achievers, showed results comparable to high-achievers.

In terms of impacts on pupils' attitudes, Silberstein and Geva (1992) found that the majority of pupils who participated in a program designed to encourage autonomous learning, expressed satisfaction at having taken part in the program. Most noted that they had found the program to be interesting and challenging. Yadid (1993) also found that pupils in a test group which implemented meta-cognitive methods were more satisfied with their studies and more capable of autonomous learning than the control group. Steter (1998) also found that participation of an autonomous learning program had a positive effect on the interpersonal relations, self-confidence, initiative, responsibility, independence and motivation for achievement of participants.

Other researchers, such as Immanuel (1998), tested changes in behavior and personal attitudes of both pupils and their teachers towards self-guided, autonomous learning. Autonomous learning affected pupil's beliefs regarding the attribution of their success or failure. Pupils-teacher relations improved, with everyone working together to achieve common learning goals, exchange ideas and improve feedback. This study also reported a significant increase in pupil's satisfaction with their studies and the school.

Yadid (1993) found that a teaching system that combines meta-cognitive processes in preferable in terms of the quality of achievements. She found that pupils learning in the meta-cognitive condition were more satisfied with their studies and were more capable of autonomous learning.

Brew (1999) points out that the assessment methods used in schools are linked to issues of power and authority. He maintains that the days when everything depended on the teacher are over. Not only has the methodology of teaching and learning changed, the new orientation towards autonomous thinking of learners requires a corresponding change in assessment methods. The current movement towards independent learning, Brew claims, will demand changes in the current assessment methods.
2.1.5 Assessment of Autonomous Learning

Birenbaum (1997) concurs that the traditional assessment methods should be amended and adapted to autonomous learning. “All these changes are part of the school restructuring process aimed at producing self-regulating learners and providing meaningful learning experiences for learners”, She notes (p. 189).

These new methods of assessment, also known as ‘alternative assessment methods” can take many forms yet all share a reliance on authenticity: pupils are assessed on authentic assignments and tasks. Finally, the methods of reporting assessment results also are modified - instead of a single grade, the pupil receives a full performance profile comprised of descriptions which provide meaningful feedback on the learning process itself.

In formulating its program, the Ben Peretz Committee recognized and discussed the need for a more flexible system of assessment at the crucial stages of high school. Reflecting the orientation towards a goal of autonomous learning, the Committee recommended significant changes in the method by which high school students were being assessed in order to capture a more realistic and broader picture of learners’ achievements. From this perspective, the Committee suggested a top-down systemic change, in that modification of assessment and grading methods would be expanded to reflect a larger variety of learning outcomes and necessarily lead to changes in how teachers teach and how learners learn.

2.2 Motivation in pupils

One of the effects educators and researchers have identified in the shift from traditional learning to the goal of autonomous learning is the enhancement of pupils’ motivation. By its very nature, autonomous learning means that the pupil, not the teacher, performs the tasks that comprise the learning process, and pupils’ inclination to shoulder this burden is a fair approximation of motivation (a more rigorous definition follows shortly).

The Ben-Peretz Committee found that low motivation was one of the factor’s inhibiting disadvantaged youths from low SES strata from attaining high academic
achievement. Motivation towards learning is undoubtedly the key aspect of pupil learning and a factor that significantly effects pupils' learning outcomes. Motivation has been identified as a source of important differences between pupils (Leo and Galloway, 1996; Slavin, 1991).

This research peers into the effect “Bagrut 2000” had on the motivation of the participating pupils (a further chapter discusses their teachers). The goal is to see whether motivation increased, and if so, which element of the program contributed to the change. However, any discussion on the need to improve pupils’ motivation must be grounded in a clear definition of the concept of motivation, without which any program and assessment of changes in pupils’ motivation is doomed to fail.

2.2.1 An introduction to an illusive concept

Motivation, however, is an illusive concept. Despite its major role in the learning process, and indeed in a wide range of human actions, there is no agreed definition of the term. As Smith et al. (1990) noted, motivation is "...probably the most confused, confusing and poorly developed concept in organizational psychology." (p.224). The etymological root of the term provides a clue: ‘motivation’ is the Latin word movere, meaning 'to move'.

Ziv (1975), for example, defines the term ‘motivation’ as the answer to the question of why an organism behaves as it does (p.16). However, this general definition does not contribute to our understanding of the following facets which constitute motivation:

- The goals people have (e.g., power, status, friends, money), towards which their behavior is directed.
- The mental processes or energetic forces by which individuals pursue particular goals, including decisions about which behaviors to use and how to sustain them.
- The social processes through which some individuals, e.g. managers, seek to perpetuate or change the behavior of others
- Processes or factors which cause people to act in certain ways.
Johannson and Page (1990) provide one comprehensive definition which incorporates all these aspects. In their definition, motivation is defined as the processes of factors which induce an individual to take action. The motivation process is comprised of the following elements: 1) appreciation of an unsatisfied need; 2) definition of a goal to satisfy the need, and; 3) determination of the action required to satisfy the need.

Most discussions on motivations classify motivating factors into two groups, based on the source of the motivation: from within (intrinsic) or from the outside (extrinsic).

2.2.1.1 Intrinsic motivation

Indeed, intrinsic motivations tend to be deeper and more personal than extrinsic motivations. Haasen (1997) discussed the intense power of intrinsic motivation:

Intrinsic motivation is itself the 'outcome' e.g. the result of a work situation that people enjoy - because they are in charge, because they have the opportunity to acquire new skills and abilities to match a different challenge, or because they are part of a successful team. Intrinsic motivation leads to astounding creativity and productive energy that seems to have virtually no limit. (p.92).

Kushel (1994) presents examples of these powerful intrinsic motivations: enjoyment of work for its own sake: desire to "have a piece of the action", such as sharing visions; missions; leadership; authority and responsibility; pride in performing excellently; the need to prove some secret point to oneself; achievement of a deep-seated value (such as helping another person); a deep and abiding belief in the importance of the work one is doing; the excitement and pleasure of a challenge and, finally; the desire to exceed one's previous level of job performance (being self-competitive).

2.2.1.2 Extrinsic motivation

Extrinsic motivation is motivation which arises from sources outside the person himself. The impulses guiding action are external rewards and/or punishments. In such cases, the question of inner satisfaction or dissatisfaction is secondary. For example, many pupils make great efforts to get ahead in their studies because they wish to achieve high marks and have no interest in knowledge nor in the wider understanding they could be acquiring (Lexicon of Psychological Terms, 1992).
2.2.2 Developing a conceptualization

The question of motivation has been dealt with at length by many philosophers and psychologists. By the second half of the nineteenth century, a general consensus developed, according to which human beings were motivated by volition (Ziv, 1975).

In Europe, in the first half of the twentieth century, the psychoanalytic theory was introduced in Europe by Sigmund Freud and developed by his followers. According to psychoanalysis, individuals are motivated by their subconscious, which is hypothesized to have a significant influence on our behavior, even if we are unaware of the factors in our subconscious which drive our own behavior. Freud argued that all human activity may be analyzed according to what he called pleasure principles, and that pleasure also included subconscious satisfaction.

At the same time, another opinion gained support, according to which human behavior was based on instinct. Lorenz (1966), and other ethicists influenced by him, are of the opinion that almost all animal behavior – and in this sweeping generalization they include the behavior of human beings as well - is based on instinct. This means that every behavioral activity carried out by every creature is guided by a hard-wired mental pattern. Creatures’ reactions to stimuli are pre-determined and all members of the same species will react in the same way.

Among the harshest critics of what may be called the Instinct School were behaviorist psychologists, who were then gaining the upper hand in American psychology. The behaviorists’ rejection of the instinct-motivated theory was caused by two main reasons: First, Behaviorists held that only that which can be directly observed is fit subject-matter for psychological research; instincts are merely theoretical constructs; hence, they are disqualified.

Second, Behaviorists also disqualify any explanations of behavior based on inherited characteristics (According to reason number one they are unobservable, i.e. meaningless from a scientific point of view). They held that the human being is born Tubule Rasa [a blank sheet] and his/her behavior is formed only by contact with his/her environment, e.g. as a consequence of the learning process. In fact, in American psychology, the "Instinct School" lost credibility as a scientific method and
was replaced by a new school of thought, based on learning and conditioning (Crystal, 1984).

Maslow (1954, 1968) developed a model which focused on the hierarchical relationship between the needs which drive human behavior. In addition to incorporating the idea of self-realization, into this model, Maslow also combined physiological and psychological needs. Maslow sees the existence of these needs and the desire to satisfy them as natural in the healthy human being. He also sees a society that does not allow the expression of these needs as conducive to pathological phenomena.

According to Maslow's Hierarchy of Needs (as his model is called), the most basic of human needs are the physical demands for the survival of the organism. If a basic need such as hunger is not met, higher needs will never be expressed. Only when all basic needs are satisfied, do higher needs appear and demand satisfaction. Above basic survival and procreation, the next need is the need for personal security, which includes a basic need for day-to-day order and predictability. Once the person's survival is assured and he/she feels secure, individuals feel a need to belong to a human group, to love and be loved in the family and beyond. Only then will such a man feel the need to be appreciated and respected — and to achieve self-respect as well. Maslow's highest need is that of personal achievement; the need to feel that one's potential has been realized to the full.

Maslow's hierarchical model is especially relevant to educational problems. This model is at the basis of the educational approach that pupils are driven by their own inner motivation rather than external motivation (i.e., through rewards and punishment, positive and negative reinforcement).

Maslow's Hierarchy of Needs:
Despite the elegance and simplicity of Maslow's conceptualization, Riches (1994) has pointed out that Maslow's theory has not been proved empirically and has several shortcomings on the individual level. He admits that although the theory may be useful when using the society as the unit of analysis, the following drawbacks must be considered:
• There is a methodological issue at play: The theory was intended to predict changes in individuals' needs but most of the research has been cross-sectional, comparing the needs of different people at one point in time.

• It is not easy for psychologists to define constructs such as self-actualization, let alone to test them.

• It is difficult to see how the theory can predict behavior by assessing the amount of satisfaction that one has to achieve at one level before passing on to the next.

• People do not satisfy their needs, especially higher order ones, through a single area of their life (such as work); they are satisfied through other areas of their life as well.

• The hierarchy may simply have reflected American middle-class values and the pursuit of the good life, rather than capturing universal truths about human psychology. (Buchanan and Huczynski 1985).

• Individuals attach different values to the same need.

• Some outcomes satisfy more than one need.

• Even for people with the same hierarchical level, the motivating factors at play may well be different.

• The theory seems to ignore the notion of altruistic behavior.

• The theory does not acknowledge gender variables

Other philosophies and models have been developed in the framework of management theory, with the aim of identifying how managers can motivate their subordinates to act in the best interests of organizations or in accordance with organizational tasks and roles. McGregor's Theory X, for example, assumes that people are basically lazy and therefore require constant monitoring. A more current philosophy stems from an underlying belief that, given a choice between success and failure, most people would rather succeed – and almost everyone has the potential to be successful. This second philosophy is the extensively discussed Theory Y by McGregor, which leads to the conclusion that positive results are a function of the right conditions, including the right atmosphere, that allow for achievement. If these conditions are not met, however, the negative consequences will occur. Theory Y emphasizes the role of the manager " in creating the appropriate conditions which motivate individuals (McGregor, 1960, p.48).
2.2.3 Developing Motivation as an Educational Aim

Motivation towards learning is undoubtedly the key aspect of pupil learning and a factor which significantly effects pupils' learning outcomes. Moon and Mayes (1995) in "Widening the Achievement Concept" argue that:

This aspect of achievement involves motivation and commitment; the willingness to accept failure without destructive consequences; the readiness to persevere; the self-confidence to learn in spite of the difficulty of the task. Such motivation is often regarded as a prerequisite to achievement, rather than as an achievement in itself (p.48).

Advocating the exclusive development of intrinsic motivation for learning, Holt (1964), one of the representatives of radicalism in the field of education, argues that:

We are destroying the disinterested love of learning in children, which is so powerful when they are small, by enforcing their attendance and encouraging them to work for paltry and contemptible prizes - gold stars, pieces of paper inscribed with the number 100, honor lists on the blackboard and so on. By the dishonourable self-satisfaction that arises from feeling they are better than someone else, we encourage them to feel that the purpose and the goal of all their school activities are only to get good marks and thus to make an impression on somebody else. We are destroying not only their intellectual curiosity but also the belief that curious is a good thing to be; to such an extent that at the age of ten most children no longer ask questions and show only contempt for those that do (p.153).
Darom (1989) argues that:

Most motivation problems can be creatively solved if and when the pupil senses that what goes on in class touches him or her as a person, helps him in working out his or her problems, opens horizons - even if it raises new questions - in every area in which he or she lives and has doubts (p.67).

Neil (1983) argues furthermore that a child is interested in the subject and not in teaching methods. He pays no attention to the question of creating learning motivation in the child and argues further that motivational means such as prizes, marks, competitions and tests only divert the child from the path of personal development.

2.2.4 Factors which affect motivation for learning

Heren and Brown (1997) state that motivation can be positively impacted by providing pupils praise, encouragement and prompt feedback. Regarding feedback, they noted that frequently, assessment have the opposite effect and decrease pupils' motivation if they focus on errors and faults and provide little information or guidance about specific actions they need to remedy errors.

2.2.4.1 Kyriacou's model

Kyriacou (1997) summarizes several important factors which have been found to influence pupil motivation:

- The pupils' home atmosphere is an important factor in determining their scholastic motivation, especially during the pre-school years,
- The teacher also has an important part in shaping the pupil's motivation. Because of the child's need to identify with authority figures, the teacher may become the child's object of identification. In such a case, the above identification will affect both the pupil's behavior in general and his or her motivation to learning in that teacher's class. Teachers can increase pupil's motivation by giving pupils more control over their studies, encourage their self-confidence and raise their interest in their scholastic commitments.
- Through their identification with groups of peers, pupils are motivated to adopt group norms.
Some degree of anxiety contributes to the motivation to learn. If, however, anxiety is excessively intense, it becomes counter-productive, paralyzing the pupil's will to learn.

Kiryacou's findings were supported by findings of a study by Pinchas (1989) on 2,277 twelfth-grade (graduating) pupils from 68 high schools in Israel. He studied the influence of home and school on these pupil's scholastic achievements in the sciences. Findings indicated that the pupils' domestic atmosphere had a great deal of influence on their motivation to learn, their interest in their studies and their achievements. The school and teachers also had a marked influence.

Evidence for the influence of the teacher's effect on the pupil's motivation to learn may be found in the study made by Cohen (1997), who examined the results of the "New Study Environment" project which was implemented in the lower-level vocational classes in comprehensive schools in Beer Sheva, Israel. Teachers who participated in the project adopted and implemented the principles of team-work, personal teacher-pupil meetings and the use of non-frontal teaching methods. Results of this study showed a decline in the number of dropouts, an increase in the level of pupil satisfaction and an improvement in teacher-pupil relationships. Student also expressed a more positive attitude towards their studies and a rise in scholastic achievements was indicated.

Lazarowitz et al. (1996) examined the effect of instruction methods and motivation, focusing on a 'Controlled Group Learning' system which stresses learning that directs pupils to do as much of their own research as possible; co-operative and interactive learning goes on within the group. The purpose of the study was to compare the attainment levels and learning motivation of these pupils in Biology with those who were taught by the 'Individual Learning' system. The study found that pupils taking part in the 'Controlled Group Learning' classes had a significantly higher level of scholastic attainment and showed a rise in self-esteem and an improvement in their attitudes to the school in general. On the other hand, pupils who studied in the 'Individual Learning' system showed a marked decline in all these values.
2.2.4.2 Socio-economic status

Conley (1993) agrees that motivation comes largely from inside the child. He states motivation is a function of the child’s social context, which is an important factor in determining the child’s interest in learning. In effect, he claims that certain groups are being disenfranchised from public education in large measure because their experience has given them no motivation to do the things teachers ask (pp.48-49). In other words, motivation for learning must be supported by the child’s environment outside the school.

Harpaz (cited in Lum, 2000) supports this view. He argues that families of high socio-economic status encourage motivation to learning and that these children are mentally prepared for school long before they begin attending.

The fate of children in school is determined by the motivations, attitudes, expectations, and habits, skills and knowledge they bring with them.... schools contribute to the success of the few and the failure of the many since its structure - its teaching methods, its quality of learning, its curriculum, its inner codes are an extension of the middle-class and upper-class family. Children of lower class families see it as an alien world to which they find it hard to adjust (p.205).

Lum (2000) concurs with this view and ascribes the differences in achievements of so-called “lower” and “higher” class children to differences in motivation. Since he believes that motivation is an attribute which can be modified through interventions, this very fact provides optimism for change in terms of improved achievements. He notes

What they [lower-class children] clearly lack is motivation. Intelligence is given by Nature, but motivation is a human creation. Hence it is far easier to rehabilitate a child lacking in motivation than one lacking in intelligence (p.208).

An interesting related finding from the Israeli context is that presented by Naphtali (1986), who examined the various components of the motivation to succeed in a group of Ethiopian-born pupils (new immigrants) in Israel’s Southern District and in a group of Israeli-born pupils in the same area in whose classes there were Ethiopian-born pupils. The findings showed that the Ethiopian-born pupils showed higher levels of motivation to learn and also higher levels of school-related anxiety and tension than did their Israeli-born counterparts. The main factors driving the Ethiopian-born
children's desire to succeed and their functioning in the school environment were motivation and the fact that they saw schooling as a way to achieve important goals.

In their extensive literature review on the subject of integration of immigrants in education, Kfir and Chen (1985) presented the following thesis: Integration compensates pupils by strengthening their motivation to learn and acquire an education; it sends a clear message that this is the way to social mobility and other important ends. Horowitz and Mosher (1997) came to similar conclusions, as a result of a study in which they examined the degree to which Ethiopian-born pupils showed motivation to succeed in their studies.

2.2.4.3 Hope and optimism

Motivation is intimately linked with hope and optimism. Shnir (1994) studied a group of pupils in the 12th grade to explore the connections between their cognitive strategies of optimism or defensive pessimism on the one hand, and their orientation towards their future in the social and academic fields on the other. She found that optimism is connected to a more-developed future picture, which includes both the motivational and the behavioral dimensions of future-orientation.

Goleman (1995) also discusses the link between hope and optimism, which he presents as 'the great motivator'. Like hope, the essence of optimism is in expectation that in the end, everything will come out all right. From the point of view of emotional intelligence:

Optimism is an inclination which defends people from falling into apathy, lack of hope and depression when faced with unpleasant events (p. 106).

The possibility of enhancing educational outcomes through the increase of student motivation was confirmed in several studies. Concentrating on studies conducted in Israel, we note the following: Barenholz and Tamir (1997) examined an educational project aimed at advancing pupils from 'developing areas' (weak socio-economic areas) in the field of science studies in general and biology in particular. The children tested were about 120 pupils from towns in 'developing areas' and from Arab villages in the north of Israel. During the last two years of high school these pupils had been receiving an enrichment program in Biology once every two weeks. The findings were that these pupils did as well in their finals as the national average. The project had
succeeded in mobilizing the interest and motivation of the pupils in the selected field of study.

2.2.4.4 Teaching programs

Tzuriel and Alfassi (1994) examined the effectiveness of an instrumental enrichment program for adolescents, based on Feuerstein's theory of cognitive change, which aimed to improve the cognitive capabilities and the motivation of pupils from weak socio-economic backgrounds. The pupils tested took part in an intensive two-year enrichment program. Before and after this program, pupils underwent testing aimed at assessing their learning potential (Feuerstein et al., 1979), motivational orientation (Harter, 1981), and their opinion of their own capabilities (Harter, 1983). Results were compared with those of a matching control group. The findings were that the enrichment program had contributed greatly to the learning potential of the pupils tested. A rise was noted in the pupils' motivation, especially in those who started with a high cognitive capability. These studies support Lamb's opinion (2000) about the importance of motivation as a factor in success and advancement.

2.3 Pupil Satisfaction

Very few school children enjoy going to school, and even fewer admit to enjoy going to school. The pupils' enthusiasm for going to school is only one aspect of a multifaceted feeling of satisfaction. The previous section explored the notion of motivation in pupils, and it is important to note that satisfaction and motivation are strongly inter-related, as Kyriacou (1997) notes:

Intrinsic motivation stems from the biologically based drive of curiosity. Such motivation involves an interest in the learning task itself and also satisfaction being gained from the task (p.26).

Measuring pupil satisfaction, as this section will show, offers the dual benefit understanding how educational policies contribute to pupils, but it also serves as a subjective measurement of the program’s success.

This last point is important, because previous researches of “Bagrut 2000” (e.g. Teicher, Sever, and the Ministry of Education) sought to measure the program’s success by objective yardsticks. While these are undeniably important, there is also
room find out what the program's 'clients' thought about it. This section addresses the issue of satisfaction both from an educational viewpoint, and as a management issue between an organization and the recipients of its services.

2.3.1 Understanding students' satisfaction

Wold, Bente, Bronis and Oddrun (1999), in an international research project, explored the relationship between students' perceptions of school environment, their satisfaction with school and how they perceived their academic achievement. Noting that although numerous studies have been conducted with the aim of finding predictors of an effective school environment measured in terms of the average level of the students' academic achievement, only few efforts have been directed to investigate how students' perception of their work environment at school influences their academic achievement. The study by Bente supplies theory and findings from research and analyses based on self-reported data from the “Health Behavior in School-aged Children Survey” (the HBSC study) and data from countries in both Eastern and Western Europe. Their findings suggest that the most important psychosocial school setting predictors of students' perception of their academic achievement are that they feel satisfied with school, that they feel the teachers do not expect too much from them, and that they have a good relationship with their fellow students. The findings imply that “interventions which enhance the students' satisfaction with school are likely to improve their achievement as well” (p. 296).

Darom (1989) also discusses the importance of the satisfaction of both pupil and teacher in the education system. He notes that generating self-satisfaction is especially important in the field of education, more so than in other fields. In an industrial setting there are ways to force a worker to do its job, even though job satisfaction is low. However, professional literature is full of admonitions about the limitations of coercive methods of management and descriptions of the ingenious ways workers manage to get round them. In the educational system, pupils are experts at working to the letter of the law. If the system works by coercion, for example by threats of punishment rather than by intrinsic motivation, the pupil will be able to 'succeed' in producing the standard quantified results. However, this activity has no connection with true learning.

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Many researchers discuss the mutual reinforcing relationship between satisfaction and success – pupils’ satisfaction with school can be the result of success in their studies and can promote further academic success (Coleman and Colling, 1993; Finn, 1989). In a comprehensive research project, carried out in numerous Israeli schools, these researchers confirmed that satisfied students are better able to realize their full academic potential than students who expressed dissatisfaction with their schools.

“A Letter to the Teacher” (1969) was written by poor Italian village children and presents an extreme picture of ‘pupil dissatisfaction’. The children wrote:

Dear Teacher,
You probably don’t remember me or my name. After all you failed so many of us. But very often I think about you, the other teachers, the other children that you fail and about what you call a school. You fail us and throw us into the fields and the factory. There you forget us...Who are you doing this for? What does it give you that you make the school a hated place and throw the Giannos into the street? ...But who is the school? We are the school. To serve the school means to serve us (pp. 74-75).

2.3.2 How to achieve student satisfaction

A classic example of a school that stressed the satisfaction of the pupils was Summerhill. School inspectors were sent to investigate what was being done in the school. The report was surprisingly favorable, in view of the accepted views at the time. The inspectors were impressed by the children’s behavior and maturity. They found them full of life and excitement; showing not the slightest signs of apathy or boredom. The school was full of satisfaction and tolerance. It was clear that the affection the children showed for their school was the best proof of its success.

The report noted that over thirty children took part in end-of-term dramatic and dance shows and many even turned the school into their headquarters during the holidays. The report pointed out that at the beginning of the school’s activities most of its pupils were “problem children”, whereas at the time the report was written, the pupils presented a normal broad spectrum. The children’s behavior was described as very pleasant, though they lacked politeness here and there; on the other hand, they were so friendly and easy-going, so utterly lacking in shyness and self-consciousness, that the
inspectors found them easy to relate to and to deal with. The report pointed out that the school encouraged initiative, responsibility and integrity and that the pupils did in fact develop these qualities. They found that Summerhill school-leavers were fully capable of integrating with society. The report noted that Neil’s main aim was the pupils’ welfare; hence work done in class was not focused solely on academic achievement.

However, the inspectors were agreed that academic achievement was not strong; and that, in fact, a great chance had been missed. Their opinion was that academic studies should have been more intensive, especially in the lower school, but that a “fascinating and very valuable experiment is being carried out, that all educators should see with their own eyes” (Neill, 1983, pp. 74-75).

2.3.3 Management and pupil satisfaction

In recent years, educational practice has adopted many concepts and theories from the field of management. One is the perception of students as ‘clients’. Bush (1995) explains how changes in societal attitudes have led to students and their parents to being regarded as ‘clients’ in every sense of the word.

...These developments in England and Wales place schools at the heart of the ‘educational market place’ with students and parents as customers, choosing from a range of providers.

2.3.3.1 Theories of Total-Quality-Management (TQM)

West–Burnham (1992) expands the ‘client’ concept and suggests that, according to the TQM organization, the customer or client is defined as the person or group in receipt of a product or service. Thus the customer is external to the organization but exists at every stage required to complete the manufacture of a product or delivery of a service. Ensuring and quantifying the degree of satisfaction of a client is at the heart of Total Quality Management (T.Q.M.) theory, a management theory that is unique in its emphasis on the role attributed to the client's feedback.

The Total Quality Management method advocates that managing for quality requires organizations to find out customer requirements by asking and listening. TQM requires listening organizations which ask the right questions of the right people and
then act on the replies. A further crucial concept is that the organization exists only for its clients; it has no other purpose or justification. Many TQM companies have statements of philosophy which argue that quality comes before profit – the logic is simple: if customer needs are met then profitability is inevitable. TQM companies are obsessive about customer care and satisfaction because they have established a correlation between customer satisfaction, reducing costs and enhancing profitability.

There is a moral obligation on all suppliers to find out customer needs, to seek to meet them and then to find out the extent to which they have been met. There is an equal obligation on customers to articulate requirements and then to participate in monitoring and review. This section is concerned with some of the methods available to gather data, many of which are familiar to most schools; the crucial difference is the extent to which listening takes place and action results (West–Burnham, 1992, p.40).

Thompson (1989) summarizes the ‘student as client’ approach, and discusses the necessity of assessing student satisfaction. This paper points out that in the U.K., the school system is becoming more and more complex, forcing educational institutions to develop new strategies in order to survive in this growingly competitive market. Marketing secondary education is a new idea and, as such, may be misused. Some would like to use it to further their own interests and others are just against any new ideas, no matter which. Some are afraid that parents will control the school curriculum and some fear the schools will be taken over by unthinking sets of marketing patterns. Those who wish to further their own interests welcome the new ideas, hoping to undermine the authority of the school staff. They would say that the staff should supply whatever the ‘clients’ demand – or else risk their jobs.

While education cannot be run as if it were a business, TQM provides indications of how the satisfaction of ‘the clients’ can be assessed without compromising the academic quality of the education itself. Notably, the TQM method implies that satisfaction of service providers – the teachers – is equally important for successful process outcomes, as is the satisfaction of the clients. After considering a ‘professional educationist’s marketing model’, the paper concludes that the ‘client satisfaction’ approach is applicable to secondary schools in the U.K.

2.3.3.2 Quality Management and Pupil Satisfaction

Stone (1997) argues that in order to achieve satisfaction of pupils, it is important to ascertain their attitudes and opinions:
The use of client surveys to establish the levels of student or employer satisfaction or gather information on a range of other issues is now well established. In some colleges, surveys of internal customers are undertaken as recognition of the need to provide services of an acceptable standard to avoid breaking any link in the 'quality chain'.

A wide range of models is available and increasingly colleges are developing their own approaches as they focus in on particular areas, in line with the overall development of their quality strategy (p. 115).

In practical terms, this means obtaining regular feedback to ensure that services are as required, for example that school prospectuses are written in appropriate language, teaching strategies are relevant and reports provide significant data. This implies regular monitoring and evaluation at each stage of the provision of a product or service. Horne and Browne (1997) point out that providing good feedback for pupils is crucial in helping them to know how they are doing and can be a major contributor to individual and cohort improvement. It takes time and energy to do well, but this is a worthwhile investment in terms of learning pay-off.

Stone also adds that conventional quality management literature often stresses the importance of dealing effectively with complaints. He concludes that organizations should encourage people to complain to us when they have a grievance and should be as effective as possible in dealing with them.

Thomson (1989) stresses the importance of feedback from the students in order to assess the students' satisfaction as a means of improving the school. Schools should use the information they gather to ensure that appropriate development work is carried out and that present and potential clients are aware of what the school offers and persuaded of its merits. Schools must interpret the information they collect and, on its basis, make the best professional decisions for the school and the students.

Quality monitoring activity allows schools to review their academic and other services taking a client-centred perspective. Central to this is the canvassing of client (pupil and parent) satisfaction...Feedback from students and parents is particularly important. It should be viewed positively in terms of the contribution which it can make ...with regard to the central factors in school improvement (p.188).

One way schools can improve student satisfaction is adapting to fit students' expectations regarding their learning experiences. MacGilchrist et al. (1997) address the importance of schools adapting themselves to students' expectations. They
reported their findings from an ongoing survey they conducted, interviewing young people in a number of schools about their views on education. They found that responses to questions about how they learn are almost always the same, whatever their age. The interviews clearly stated that they learn best with teachers who explain things well, listen to them and are concerned with them as individuals, show them how to improve, keep control of the class and have a sense of humor. They discuss the need for schools to adapt themselves to pupils’ needs in order to improve learning outcomes. However, this goal is not without difficulties.

Some learners respond well to a competitive classroom environment, others do not. Some learners prefer to learn on their own and others learn best by working with other people. This preference may have as much to do with the task at hand as with the favoured learning need. Some learners prefer to work in peace and quiet, others like background noise such as music and others like to work in the midst of hustle and bustle. One of our colleagues who has her own office chooses to write her academic papers in the midst of the comings and goings of the secretaries’ office. When questioned about this she answered that she cannot work in silence. Schools may find it difficult to respond to these varied preferences but during the course of the day or the week it should be possible to ensure that learners experience a range of conditions, some of which will suit them more than others (p.36).

However, student satisfaction does not derive exclusively from the conditions of the learning environments in which they learn. Ruddock, Chaplain and Wallace (1996) suggest several principles which they found are important to pupil’s satisfaction. The principles they discuss also refer to the climate of the school in general rather than specific learning environments. These principles include, respect for pupils; fairness to all persons and equality of treatment, independent of identity or status; autonomy and a feeling of being in control of their own destinies, as far as possible; providing an intellectually challenging environment; emotional and academic support and finally; security and protection against threats to the self-esteem of pupils.

### 2.4 Pupils’ Self Esteem

We have seen how the concepts of motivation and satisfaction are necessary elements in achieving successful educational outcomes. Again from the perspective of the learners, self-esteem is a personality element which plays a role in influencing pupils’ learning experience and outcomes. Self-esteem is both a condition for a successful educational process and well as one of its outcomes. In studying the impact of
education on pupils’ self-esteem, researchers have treated self-esteem as a concept which reflects pupils’ emotional well being.

This section attempts to explore the concept of self-esteem to clarify its relevance in the framework of the present study which aims to evaluate an entirely new approach to classroom ‘tactics’ and examine their impact on school and class climate in general and on pupil’s self-esteem, in particular.

### 2.4.1 Achievements and self-esteem

Noting the links of self-esteem to achievements and to the role self-esteem plays in school, Decker (1999) stated that all children need positive self-esteem. However, as Bayle (1998) noted, in our current educational system, emphasis is placed on academic achievements while insufficient attention is given to pupils’ emotional needs.

As Lawrence (1996) notes, a vast body of research indicates a positive relationship between achievement and self-esteem, especially with regard to school achievements (e.g., Decker, 1999; Lawrence, 1996; Merry, 1998; Stoll and Fink, 1995; Thornes, 1997). Indeed, Merry (1998) notes that self-esteem is most important for an individual during his/her school years. High self-esteem provides children with the confidence they need to explore new environments and tackle new challenges. “…it does seem obvious that a child with high-self-esteem will be a more successful learner than one with low esteem” (Merry, p. 79).

Bruner (1999) also conceptualizes self-esteem as a product of achievement measured against aspirations. Self-esteem, he says “combines our sense of what we believe ourselves to be (or even hope to be) and what we fear is beyond us” (p. 173). Many studies assume that success is expected to be the result of a combination of high expectations and high self-esteem.

Lawrence (1996) states that low self-esteem is not only a product of the failure to achieve; it is primarily a product of the way significant people in the child’s life react to that failure. The values of school age children have been set to some degree, but their self-esteem is still vulnerable. In contrast, older children may develop low self-
esteem irrespective of the opinions of others; for better or worse, they have already set their own standards.

2.4.2 Managing self-esteem

Lawrence (1996) discusses how teachers' roles are linked to their pupils' self-esteem and their behavior. He attributed teachers a significant role in the way pupils develop into adults. Bruner concurs and explains that school is one of the first organizations outside the child's family which have a deep and lasting influence on his/her self-esteem, aspirations, self-confidence and optimism — or their lack. He states conclusively that "any system of education...that diminishes the school's role in nurturing its pupils' self-esteem fails at one of its primary functions" (p. 174).

In a classic study, Rosenthal and Jacobson (1968) demonstrated the "Pygmalion Effect," which is the influence of teachers' expectations on students' scholastic achievement. A group of primary teachers were told by researchers that certain of their pupils had been identified on a test as likely to succeed in their studies during the next school year, when in reality these pupils had been chosen by the researchers at random. These pupils did indeed make greater gains in I.Q. scores on average than their peers. Rosenthal and Jacobson interpreted this as evidence that the teachers' expectations must have influenced their behavior towards these pupils in ways that helped them to progress and produced a 'self-fulfilling prophecy' effect. Kyriacou (1997) adds that subsequent studies by other researchers using this type of research design produced a mixed picture, but the findings of the original study and the notion of a teacher expectancy effect have had a great impact on thinking about pupil learning.

The influence that teachers have on their pupils beyond the acquisition of formal knowledge, is sometimes termed under the heading "the hidden curriculum". Thornes (1997) defines the hidden curriculum as "...all those messages conveyed to pupils by their experience of school in regard to values, attitudes and expectations about themselves and their behavior. Such messages may be intended or unintended by the teachers" (p. 35). According to Bruner (1999), in traditional teaching, the intense preoccupation with formal criteria of 'performance' and the bureaucratic demands of
education sometimes lead to the neglect of this personal, more 'hidden' side of education.

Charlton and Hunt (1993) found that when teachers exhibited a humanistic attitude towards their pupils, showed empathy towards them, respected their capabilities and showed an understanding for their problems, they had a beneficial effect on pupils' self-esteem and on their success in their studies. Many researchers suggest practical methods of how teachers' behavior can positively impact pupils' self-esteem, including "good relationships and thoughtful encouragement" (McKeever, 1999, p. 8), show understanding and take pupils seriously, show them respect even at moments of failure (Aspy and Roebuck, 1983). Lawrence (1996) claims, "we all tend to perform better when we like the teacher and feel that the teacher likes us" (p. 26).

Many researchers stress the importance of feedback and the teacher's role in helping pupils build positive self-esteem. Elliott (2000) states that the pupil's self-esteem depends on the teacher's recognition of the pupil's worth. According to Barnes (1999), teachers affect their pupils' self-esteem by transmitting their optimism and by creating a climate of belief in success. Darom (1989) expands the concept of 'feedback' to include assessment:

Humanistic assessment has two aspects. The first ...is the inclusion of the pupil in the process of assessing his/her own work. The second aspect is in focusing on the whole learning process – past, present and future – and not only in the past. The aim is to turn assessment into a continuous process of feedback rather than judgmental process accepted today. Feedback does not serve to sum up a process but to allow the learner to make changes in his/her learning process, so as to make this process more efficient, fruitful and satisfying (p. 43).

Decker (1999) explains that when children fail, this does not encourage them to do better. Traditional grading in many cases actually harms the pupil's self-image and self-esteem. To be motivated for success, children must experience success in the areas of failure to gain a more positive view of themselves and influence their self-image.

In light of research findings, Eshel and Klein (1981) suggested treating academic self-image as a dependent variable rather than an independent outcome that can be predicted by achievements. Cohen (1985) found that specific interventions can have a
positive effect on pupils’ self-image. For example, he studies the effects of a preparatory program for pupils in anticipation of their entry into junior high school and found a clear increase in pupils’ academic self-image as a result of participation in the program. Maor (1993) found that specific individual and group interventions brought about an improvement in pupils’ self-image and academic achievements.

Lawrence (1996) summarizes that although there are many aspects of the classroom environment which may influence the student’s self-esteem, research shows that it is the teacher’s day to day contacts with the students which have the greatest effect. From the evidence presented, it can be appreciated that all teachers are in a position to enhance self-esteem. When teachers are genuine, empathetic and accepting, they will automatically provide a self-esteem enhancing ethos in the classroom.

Therefore, in devising a tactical program to support a strategic change such as the recommended changes of the Ben Peretz Committee, we would expect specific reference- or specific training programs – in directing the awareness of teachers to those actions which have a positive effect on learners’ self-esteem. On the other hand, teachers should also be taught to be attentive to their pupils’ self-esteem and harness it as a lever to help them achieved the required outcomes. An understanding of this concept and its impact on the learning process, is therefore a necessary element in any program devoted to the enhancement of learners’ achievements.

2.5 Motivation and satisfaction in Teachers

The first four sections of this chapter dealt with psychological variables in pupils, and understanding how educational policies might affect them. This research, however, is intent on studying the “Bagrut 2000” program from all its angles, and it is thus important to find out how the teachers who participated in the program were affected. The following section deal with how teachers’ motivation and satisfaction increased.

The first part of section builds upon the concept of motivation, as it is explored in section 2.2, and applies it to teachers. In particular, this section looks at methods and policies to improve motivation in teachers. The second part similarly extends the discussion of satisfaction from pupils to the teachers.
The importance of this section is that it assists us in understanding how the changes brought about by “Bagrut 2000” affected the teachers. Moreover, since teachers’ behavior and performance affects their pupils, an interaction between the changed attitudes of teachers and that of their pupils may be discerned.

2.5.1 **Analysis of teachers’ motivation**

West-Burnham (1992) also points out that according to the T.Q.M. (Total Quality Management) theory, satisfaction is as important for teachers as it is for pupils. Kelly (1999) shows that great efforts spent in the dissemination of school projects are usually in vain because of a lack of team motivation.

Leithwood *et al.* (1999) deals with the connection between teachers' burnout and their motivation and job satisfaction. They identify positive rewards, sources of satisfaction and excitement experienced from day to day as motivating influences. "These are 'emotional arousal processes' (p.197)."

Sharan and Shachar (1990) see a close connection between good teamwork and teachers' job satisfaction. In their opinion, when the team works well, this is an important factor in the teachers' satisfaction in the workplace. At the same time, the school's ability to attain its goals is improved. In a wide study carried out in junior high-schools in Israel, they also found a higher degree of co-operative teamwork in decision-taking among the teachers, which was reflected directly in the degree to which teachers expressed satisfaction in their work as teachers (pp.19, 53).

Principals are very important in raising the job motivation of their teachers. Nias (1980) found that teachers derive maximum job satisfaction from their work with positive leadership which encouraged them to contribute and gave them the chance to do their job effectively (p.184). Moos, Mahoney and Reeves (1998) carried out a study in Denmark, England and Scotland, in which teachers were asked to choose and to prioritize five statements from a list of twenty-eight. There was a cross-country consensus on ‘encouraging and motivating staff’ as a top priority (pp.63-64).
A similar picture emerged from the answers to a questionnaire given to the principals of schools in each of the three countries. On the other hand, for parents in Denmark and in England, 'encouraging motivation' was in the second place and in Scotland in fifth place (p.70).

2.5.2 How to motivate teachers

Morrison (1998) describes the implications of the Japanese model for education in motivating staff. She stresses the importance of:

The respect for the professional judgement and autonomy of the people closest to the job; the importance of job satisfaction and an involved, committed workforce; support and development from within the organisation in order that promotion from within be effective; the obligation of the organisation to address the all-round welfare of participants; the replacement of coercive styles of management by enabling, facilitating and empowering styles of management, releasing the creative energy of staff; the importance of catching and developing motivation in the planning, implementation and evaluation of change; the commitment to bottom-up decision-making and improvement; the visibility and public celebration of success (p.69)

Horen and Brown (1997) enumerate ten ways to raise staff motivation: Their conclusions are derived from their personal experience and from feedback received from fellow workers in this field.

- **Use appraisal to give positive feedback.** The appraisal process is an ideal situation for the appraiser and the appraisee to develop an excellent working relationship. An appraiser should always start with the positive. Everyone feels good if his or her achievements are recognized.

- **Recognize and acknowledge the skills of an individual teacher.** Use an appraisal system to increase motivation by recognizing the skills of individual teachers. Use these skills as part of your staff development program. Teachers feel flattered when asked to share their expertise.

- **Organize peer-coaching strategies.** It is one of the highest compliments you can pay anyone when you ask him or her to share or demonstrate their expertise to others. Coaching another person offers excellent staff development opportunities for both parties.
• **Devise a framework for staff to disseminate new knowledge and skills.** Staff members who undertake any external projects should be given the opportunity to share their knowledge with others. This offers the giver high prestige and the receivers an opportunity to gain new skills and knowledge themselves. Needs should be coordinated in relation to an individual's appraisal targets.

• **Use the follow-up interview to develop good relations.** Both the appraiser and the appraisee benefit from the relationships formed in an appraisal cycle. Appraisees feel valued if they are given time to talk about themselves and their staff development; appraisers also feel valued for being able to give their help and advice.

• **Positive meaningful feedback.** After any observation, teachers want to hear meaningful comments, linked to observable factors in the lesson. It can often seem patronizing to offer broad and bland statements. Constructive criticism does not mean destruction.

• **Acknowledge and celebrate strengths.** So often teachers' jobs are conducted behind closed doors. Appraisal is a formal, and hopefully non-threatening, means of teachers sharing experience.

• **Collect data from a wide range of people.** This can help to motivate. If information comes only from the observation of teaching skills and not from the other aspects of a person's job, then individuals will feel undervalued. If the collection of information is biased, appraisal will then be viewed as too narrow and restrictive.

• **Appoint a member of staff with responsibility for staff development.** This means that clear lines of communication can be devised. It also means that if the targets from appraisal systems are channeled to the staff development coordinator, coherent policies for staff development can be devised. When this happens, all members of staff feel that their contribution is valued.

• **Create a climate in school where appraisal is seen as a useful process.** Appraisal should be viewed as a mechanism that helps learning for all. This will happen when
staff begins to see results and when resources, however small, are used to meet the identified needs.

It is clear, then, that any change towards greater autonomy for pupils with the aim of enhancing their educational outcomes as autonomous learners cannot be detached from treatment of teachers' motivation and satisfaction and the specific factors which enhance it. This is especially true in a situation which calls for a major change in the educational system, where objections to the change can constitute a major obstacle in implementation.

2.5.3 Teachers' Satisfaction

Just as pupil's motivation for learning and satisfaction with the learning process are tied, teachers' motivation and satisfaction is similarly related. However, teachers' unique position in the educational process generates specific foci of discontent and frustration which diminish both their motivation to teach and their satisfaction from teaching.

The classroom brings together two worlds: that of the young people and that of the adults – represented by the teacher. In this process, the teacher is perceived as to some extent coercive. The teacher strives to teach, to control. The pupils strive to limit his/her intrusion and to avoid the tasks he/she wishes to impose, as far as possible. The process is independent of this school or that; it derives from the nature of the process itself. While teaching, the teacher channels the pupils’ activities into difficult and competitive situations which tend to make the teacher an unpopular figure; relations between the two worlds always border on crisis. This troubles the teacher and feeds into increased discontent, Arieli (1994, pp. 5-6).

On the other hand, Arieli finds that this discontent is “not always a necessary experience” (p. 11). He defines the teacher’s ‘discontent’ as “a feeling of continuously frustrating experience which stems from the feeling that getting stable and dependable cooperation from the pupils is beyond his power. Hence he turns to ways of evading ‘the frustrations of confrontation” (pp. 13-14). Arieli (1994) carried out a comprehensive research into what he calls “Teaching and its Discontents”. A teacher
who perceives himself as being in a position of power finds himself less vulnerable and in class may tend to exchange his position from one of 'power over' the pupils for one in which he exercises ‘power with’ the pupils (pp. 146-147).

Secondary school teachers interviewed in the course of research into the subject of improving teaching methods noted that interesting, effective and meaningful teaching is the best method for preventing discontent in teaching. Simultaneous frontal teaching of whole classes was condemned unanimously by the interviewees, since it ignored the heterogeneity of the normal class, which is made up of pupils with varying levels of knowledge and learning potential. Several reported that teaching could be bettered by improving the teacher’s methods. This, in their opinion, could be achieved by observing class activities, analyzing them and sharing their conclusions with their colleagues (e.g., during study meetings). The aim should be improvement of the relationship between the teachers and their pupils.

2.6 School and Class Climate

As noted earlier, the educational process brings together the worlds of learners and the world of teachers. This encounter takes place in a dedicated environment – an environment devised especially for the learning process: the school. The elements comprising the educational process, then, are like three sides of a triangle- the school, the teachers and the pupils.

The school is an institution, which has both a formal and an informal affect on the teachers and pupils. From a formal perspective, the school structures the learning experience through its policies, rules, regulations and mission. However, on a more informal level, each school generates a certain climate, an atmosphere, in which the educational process takes place. Researchers now concur that the general atmosphere of a school, and the specific climate in the classroom, have a strong effect on how teaching is carried out and how pupils learn.

Until the late 1980s, most researchers sought the factors for academic success or failure within the mental processes of the learner, often to the exclusion of all outside factors. However, as Burden and Fraser (1993) note, during the last ten years
educators have been studying the process of learning as a process in itself, one which can be influenced by many external factors, including the general atmosphere within which the learning takes place. In this way, "within-child" explanations for success or failure have given way to a "systems-oriented" approach which also seeks to evaluate the total context within which learning takes place. Both school climate and classroom climate may be defined as factors representing the context of the learning process.

Although Kyriacou (1997) notes that classroom and school climates often overlap, many researchers have failed to distinguish between the climate of the school and the specific climate inside the classroom, mediated by specific teachers. They conceptualize the relationship between these levels as follows: outcomes will be affected directly, while the effects of the school climate are mediated by the classroom climate.

2.6.1 Classroom Climate

Classroom climate consists of several elements which work together in influencing the learning process. These include the physical environment of the classroom, the classroom social system (relationships between teachers and pupils and among pupils), arrangement and ambiance and finally, teachers' expectations about student outcomes (Creemers and Reezigt, 1999). According to Freiberg and Stein (1999), class climate is the term which encompasses the intangible quality of a class which creates a positive environment, nurtures the dreams and aspirations of pupils and their parents, stimulates teachers' creativity and enthusiasm and has a positive effect on all.

Darom (1989) stresses class climate as an all-inclusive terms, which includes all the elements concerning the educational processes. Not only are the attributes and nature of the processes, involved; climate also includes the perceptions of all the individuals involved in these processes. It is the sum total of the impressions and experiences of all the individual acting within the framework of the class or the school. Kyriacou (1997) discusses the unspoken elements of class activity, stressing the multitude of unwritten and unspoken assumptions which have a great influence, because of the fact that they are implied rather than explicit. The class climate runs as a continuous, unspoken commentary to teachers' actions and the lesson itself.
Without doubt, the most important aspect of the classroom climate is the hidden curriculum and how teachers’ expectations and behaviour convey this. What is particularly interesting about the hidden curriculum is the extent to which much of the information signalled to pupils may be unintended by the teacher and may serve to undermine the effectiveness of the teaching (p. 12).

Using a metaphor of health, Miles (1969) defines a healthy organization as one as which possess an element of adaptability and ability for change, an organization that “...not only survives in its environment but continues to cope adequately over the long haul, and continuously develops and expands its coping ability”. Using the same metaphor to conceptualize school climate, Hoy and Feldman (1999) state “…healthy schools are better places to work and learn than unhealthy ones. Teachers are more productive, administrators are more reflective and students achieve at higher levels. Academic emphasis is an integral part of a healthy school” (p. 98).

Many researchers agree that a healthy classroom atmosphere is one which tends to pupil’s scholastic and emotional needs (e.g., Freiberg and Stein, 1999; Schmuch and Schmuch, 1978). Kyriacou (1997) notes that the climate which appears to be most effective in terms of learning outcomes are classrooms with a task-oriented atmosphere, yet the mutual respect and good rapport ensure that pupils’ social and emotional needs as met as well. Goleman (1995) adds that an emotional aspect emphasize, among other things, the importance of class relationships.

Instead of teachers being only concerned with achievements, they should be devoting lesson periods to dealing with emotional problems, settling disputes amicably and nurturing amiable inter-personal relationships (p. 254).

The climate of the classroom has a great impact on students’ achievements. Creemers and Reezigt (1999) point out that while schools are and have always been a place for learning thing, educators should also address the state of mind in which learning is carried out, since the way pupils feel about what is being done significantly affects their ability to do it. They discuss the clear connection between climate, on one hand, and motivation and other outcomes on the other.

A school should pursue outcomes in the cognitive domain, simply because children go to school to learn things they cannot learn anywhere else. But this does not mean that affective outcomes are not important...Affective outcomes are not only important in their own right, but they are also thought to influence cognitive outcomes positively.
2.6.2 School Climate

Wang, Haertel and Walberg (1997) created a database of 11,000 statistical findings, from which they sought to determine the factors in the school environment which most influence learning. They classified factors into 28 categories and found that “when averaged together, the different kinds of instruction and climate had nearly as much impact as the student aptitude categories” (p. 205). The most influential categories were (in descending order): classroom management, cognitive process and the reflection thereupon (meta-cognitive processes), parental support and general home environment, interactions with teachers, social attributes, motivational and affective attributes, peer-group interactions, quality of teaching, school culture and class climate. State and school-level policies, school organization and demographics have the least influence on the learning process. This analysis combined with evidence collected from other sources, shows that class and school climate definitely influence the learning process and constitute measurable and modifiable factors in the learning process.

Furthermore, a positive, healthy atmosphere also supports the norms and expectations of teachers and makes it easier to teach well. By conveying positive expectations towards the learning process, pupils and teachers alike are mutually reinforced (Mortimore et al., 1988 and Scheens, 1992). A positive class climate effects pupils’ learning by impacting teachers’ commitment and behavior, students’ motivation and a trusting cooperative relationship between pupils and teacher

Thus, class climate is a self-energizing process which drives all concerned to achieve more, and to enjoy the learning process while doing so. Creation of a positive class climate is, then, a goal in itself. Kyriacou (1997) sums up the interactions underlying a healthy school climate as a “workplace” for happy teaching-learning experiences.

A key consideration is the extent to which the teacher is able to foster favourable perception towards learning among his pupils, most notably by establishing the pupils’ self-respect and self-esteem as learners. (p. 111)
Thus we see the connection between a healthy school and class climate and pupils’ self-esteem: Positive self-esteem of pupils is an indirect reflection of a healthy class/school climate.

Another aspect of climate is the effect that school and class climates have on pupils’ satisfaction with their studies, a factor which is found to lead to higher rates of success. Samdal et al. (1998) examine the relevant literature on satisfaction and success in school and noted that few studies examined the determinants and importance of the students’ satisfaction with school as a variable which explains learning outcomes. The claimed that, in general, few studies examined how students’ perceptions of their environment at school influences their academic achievements. Their study explores the connection between pupils’ perceptions of their school climate and their degree of satisfaction with school in general. They found that the strongest predictor of students’ satisfaction are their feelings that they are being treated fairly, their sense of safety and their feeling that their teachers are supportive.

In the Israeli context, several researchers found that class climate has an appreciable effect on pupils’ outcomes (e.g., Calderon, 1993; Lazarowitz et al., 1994; Sarusi, 1993). Lazarowitz et al. (1994) also found that a positive class climate has a positive effect on pupils’ self-esteem. Several researchers found evidence that an improvement in the school climate has a definite impact on the satisfaction of pupils and teachers alike (e.g., Bodanro, 1994; Calderon, 1993; Shahar, 1997; Sarusi, 1993).

2.7 Class Relationships

The relationships which develop between teachers and their pupils, comprised of the cumulative reflection of the one-on-one relationships the teacher develops with each pupil as well as the general relationship a teacher has with the class as a whole, is a significant reflection and determinant of classroom climate.

Classroom climate is also fundamentally affected by the relationships among the pupils themselves. Researchers concur that classroom climate has a considerable effect on learners’ motivation and achievements.
“Bagrut 2000” has shuffled the rules governing the classroom and the lessons conducted within it, in the sense that pupils are expected to take more initiative at the expense of frontal lectures. This change can be expected to

2.7.1 Teacher-Pupils Relationships

The classroom brings together two worlds: that of the young people and that of the adults – represented by the teacher. It also is a meeting-point between the world of those lacking in knowledge and the world of those who, according to educational conventions, wish to bring the young people the knowledge they lack, and intervene in the process of their mental growth.

This intervention stems from the educational goals of the school and from the cast of characters that take part in the process. The teacher is perceived as to some extent coercive. The teacher strives to teach, to control. The pupils strive to limit his/her intrusion and to avoid the tasks he/she wishes to impose, as far as possible. The process is independent of this school or that; it derives from the nature of the process itself.

Holt (1964) describes how teachers ruin children’s amazing capacity for learning and intellectual growth “...by making them afraid: afraid that they might not do what we want, afraid of not being liked, afraid of making mistakes, afraid of failure.” (p. 68). Rogers (1983) concurs with Holt. He describes learners as naturally curious, creative, eager and self-motivated to learn. According to Rogers, distortions in the school system are the sole cause of the rapid loss of this positive attitude. Rogers says that as long as schools fail to create an atmosphere of respect for all, in which children feel autonomous, fail to build a teacher-student relationship based on empathy and acceptance, the children’s chance of discovering what they are capable of will be impeded or, at worst, destroyed. Rogers adds:

In my opinion, we have ample knowledge about the conditions vital for the learning process and the first and foremost is the quality of inter-personal relationships between the teacher and the learner. (p. 130)
Hopkins et al. (1996) also note that “the notion that the relationship between pupil and teacher is at the center of the learning process is by no means new” (p. 38). Poster (1999), on the other hand, stresses the great significance of inter-personal relationships to the success of the school.

School is remembered by many as a plethora of rather arbitrary rules and regulations, in place to ensure the power, control and convenience of the teaching staff. Today, attitudes are quite different. The importance of establishing firm but caring relationships with a genuine commitment towards pupils and their personal growth has become more explicit. At the same time, the teacher’s role has become more important and complex. Hayes (1993), in a study which identified the aspects of child-teacher relationships which are significant to children, clarified how the behavior of teachers had a significant effect on children and their experiences at school. Much research, including research conducted in Israel, shows a positive correlation between the attitude of students towards their teachers, their inter-personal relationships with their peers and students’ attitudes towards their studies. A study by Cohen (1997) showed a rise in academic achievement when teachers improved their relationship with their students.

Kyriacou (1997) describes the quality of class relations as composed of mutual respect and rapport and then links effective teaching to class climate and ‘pastoral care’. He notes that the relationship between teacher and pupils is of fundamental importance to effective teaching. He argues that a good relationship between teacher and pupils is based on two qualities, one of which is the acceptance of the teacher’s authority. This concerns exerting control over both the management of learning activities and the management of pupils’ behavior. The second quality required is the successful classroom is mutual respect and rapport between the teacher and the pupils. This means that teachers and pupils must recognize each other as individuals. This is the basis of productive teacher-pupil relationships.

Marx, Grieve and Rossner (1988) recommend a cooperative model as the basis for teacher-pupil relations:

Teaching methods must require that students be active, that they talk and work
together...they must provide resources and help for others just as much as they use resources and help provided by others, and they need to work in co-operative environments just as much as they need to work in competitive environments. (p. viii.).

Collaboration in the classroom includes notions such as accepting responsibility for students' own learning, active participation in the classroom and positive relationships with their teachers (Coleman, 1998). In other words, collaboration in the classroom, which is proposed as a basis for positive teacher-pupil relations, is based on similar concepts to autonomous learning. Indeed, Johnson, Johnson and Holubec (1990) and Slavin (1991) found that in cooperative learning classes, competition is minimized and task orientation is maximized.

Hopkins et al. (1996) found that what is defined as “authentic relationships”, which reflect “the quality, openness and congruence of relationships in the classroom” (p. 37), is one of the central and essential factors which enables sustainable school improvement. Good teacher-pupil relationship effects the satisfaction of both the pupils and the teachers.

2.7.2 Peer Group Relations

The term “peer” is used to refer to individuals of equal status, or, in the educational context, to children of the same age. The study of peer relations in the field of education and psychology has recently experienced a rebirth, reflecting the shift in interest from the cognitive aspects of children’s behavior to the social aspects. Many researchers have noted that the need for acceptance by and forming relations with one’s peers is extremely important for children and adolescents (e.g., Berndt and Das, 1987; Townsend, McCracken and Wilton, 1988).

Students themselves place a high importance on peer relationships. Townsend and Hicks (1997) propose that this fact “…suggests that perception of competence and success in the social domain may influence academic task perceptions” (p. 2). Indeed, Wold et al (1999) examined the links between school environments and students' academic achievements in Eastern and Western Europe and found that one of the most important psychosocial predictors of students' perceptions of their own academic achievement is that they have good relationships with their fellow students.
Blatchford and Pellegrini (2000) deal with the importance of peer relationships within the class and note that, despite differences of opinion on this issue, friendships appear to play an important role in the social development of children. Obviously, teachers, by their very presence will affect relationships between the children in their classes. Teachers cannot avoid affecting children's friendships, in that their style of teaching and class management, and indeed the climate they establish for the classroom, provides the context for relationships between pupils.

Townsend and Hicks (1997) discuss the teacher's role in connection with peer-group relationships. They expect social satisfaction to be higher in classrooms where teachers employ methods of collaborative learning, provide opportunities for involvement and collaboration with others.

Recognizing the importance of class and school climate on motivation and achievements, one of the main questions addressed in the present study is whether participation in the “Bagrut 2000” project had a positive effect on school and class climate, as reflected in teacher-pupil and pupil-pupil relationships. In other words, we expect that the adoption of a program of autonomous learning will also be reflected in the general school atmosphere and in the specific classroom climates in which teaching and learning take place.

2.8 Matriculation Examinations and Learning Outcomes.

The present study aims to assess the “Bagrut 2000” Project in light of its declared aims. These aims, formulated by the Ben Peretz Committee, summarized several decades of criticism and debates on the general concept of matriculation exams and the specific implementation of the concept in the Israeli educational system. Numerous researchers have studies the effects of the matriculation exams on a broad range of learning outcomes. A review of the advocates and objections of the former system forms a background for understanding the recommendations presented by the Ben Peretz Committee.
2.8.1 Bagrut examinations – previous research

Levi (1994) and Birenbaum (1997) note that the most common form of testing in the Israeli educational system, from elementary school, through middle school, high school and to the final Matriculation Examinations, is the summative test. This kind of test is conducted at the conclusion of the learning process. The results of these tests determine the final grade the pupil receives, often to the exclusion of any other element of assessment. This grade is a central factor in determining the pupil’s eligibility for further studies and in assessments passed to outside bodies.

Birenbaum (1997) defines the matriculation examinations as “tests for the purpose of graduation” (p. 32). At the end of studies, decisions are arrived at with regard to graduation. These decisions demand that the learner demonstrate at least the minimum level of skills and knowledge required for graduation. The criteria for success or failure must be uniform for all the pupils tested. Tests of these kinds, such as matriculation examinations, as well as qualifying examinations, which allow students to qualify for higher studies in medicine, law, etc., often incite public controversy because of their decisive effect on pupils’ destinies.

The Committee on Evaluating Standards of the Matriculation and Graduation Exams, under the auspices of the Ministry of Education, reported that these examination have three primary aims: 1) to summarize secondary school studies; 2) to establish a national standard which expresses common values yet allows for specific teaching programs which are appropriate for Israel’s pluralistic society; and 3) to enable qualification for further studies.

Ben Perez (1997) also discussed the aims of external examinations such as matriculation exams. She noted that such exams are perceived as a conventional tool for the comparative evaluation of pupils’ achievements.

However, the Ben Perez Committee, which presented its report in 1994, claimed that, from a pedagogical perspective, external matriculation examinations in Israel hinder meaningful education and impose unreasonable pressure on both teachers and pupils. “Summation testing of pupils by one-time examinations cannot evaluate fairly the knowledge or abilities of pupils” (Ben Perez, 1994, p. 54).
Aharoni (1992) examined the implications of matriculation examinations and their effect on teachers, specifically how teachers use and direct pupils to use reference material as part of the learning process. He found that to the more teachers are exam-oriented, the less they are inclined to let pupils work independently in the library or direct pupils to reference materials which are not directly connected with the exam. If we interpret independent learning with reference materials and academic sources, the findings of this study imply that an orientation to matriculation exams undermines teachers’ support of pupil’s independent and autonomous learning.

Ben Perez (1997) noted that the fact that only 38% of all high school graduates in Israel qualify for matriculation certificates undermines the declared intention of education which is to provide the entire population with a democratic secondary education. She noted that a large gap still exists between the achievements of pupils from African-Asian origin and those pupils whose parents were born in Europe, the Americas or Israel. Significant differences were also evident between the achievements of Jewish and non-Jewish pupils. Suan (1998) pointed to the absence of equality in Israeli education, comparing the central region to the outlying regions, which is reflected in the proportions of pupils qualifying for matriculation certificates. For example, Mazawi (1998) noted that the percentage of matriculating pupils in the Arab sector is directly affected by the socio-economic status of the pupil’s family and their place of residence. Svirski and Ezekiel (1999) present findings which confirm the differences in percentages of pupils qualifying for matriculation certificates in Arab and Jewish settlements, in favor of Jewish pupils.

It appears then that, rather than their personal attributes, pupils’ addresses have the most effect on their future socio-economic and educational success. The result is that individuals from certain backgrounds are restricted from further education or entry into specific professions and occupations. Suan (1998) notes that in Israel, education is the best predictor of social status in adulthood and therefore, matriculation examinations are central to social mobility. Ayalon and Yogeve (1994) also direct attention to the injustice of this process of categorization and its indirect effects. They also express doubts on the validity of matriculation examinations to predict future success in academic studies.
The Center for Social Policy Research in Israel (1994) found that changes in matriculation examinations were necessary in light of their social function and the fact that they determine, to a large degree, the socio-economic future of individuals. According to this report, a change in the nature of matriculation examinations will influence the social mobility of high school graduates. Levi (1994) also recommended reforms in matriculation examinations, with the aim, *inter alia*, of improving social mobility.

Criticism of matriculation examinations is not limited to Israel alone. Salant (1995) notes that widespread educational reforms were initiated in France in 1994. These reforms reflected a decentralization of school curricula, changes in baccalaureate exams and the establishment of a system of continuous assessment as an alternative to external one-time testing. The new system used various evaluation categories in addition to the external examinations themselves. These criteria included an annual evaluation of the school’s work in instruction and teaching, an evaluation of the teaching abilities of the staff, the progress of pupils as they advance from grade to grade and, finally, the school climate.

Friedman and Ben Galim (1998) conducted a comparative survey of matriculation examinations and school-finishing examination in 24 different countries. Reflecting reforms in thinking on matriculation examination, their findings pointed to global changes in compulsory subjects for examinations and indicate a trend towards the development of new, alternative methods for assessing achievements.

As a result of the growing movement calling for a reform in matriculation examinations, the Ben Perez Committee was established in order to examine and report on the entire system of matriculation and school-leaving examinations. The Committee defined the following educational, social, professional and administrative aims which a proposed reform should rectify in order to adapt the examinations to changing and developing educational needs:

- Improve teaching and learning processes in secondary schools
• Increase the percentage of high school pupils eligible for matriculation certificates without lowering academic standards and lower the differences between the various educational sectors and between high schools and vocation schools, without relinquishing the unique character of each.

• Increase teachers’ professional autonomy and emphasize the significance of school assessment; to increase the pedagogical autonomy of schools in developing, implementing and assessing learning programs and, in general, to increase school autonomy.

• Diversify methods of assessments

• Reduce pressure imposed on pupils resulting from a concentration of national matriculation examinations in a short period.

• Reorganize the administration of the exams and increase efficiency of the process.

The proposed changes focused on five major areas:

• the subjects examined
• the goals of the exams and the matriculation exams
• the criteria for eligibility for the matriculation certificate
• the approaches and methods used to assess the achievements
• the diminished influence of external factors on the matriculation exams.

Recommendations of the Ben Perez committee were based on the central assumption that teaching and assessment methods are strongly linked, so that to the extent that teaching methods undergo change, assessment methods must be modified accordingly, by allowing individual schools to assume responsibility for the assessment of the scholastic achievements of their pupils. To increase pupils’ motivation to excel, assessment was to be adapted to individual pupil needs and personal views. The aim was to provide teaching to each pupil in a manner which allows him/her to maximize his/her full potential.

2.8.2 Existing research on “Bagrut 2000”

Rosenwasser et al. (1997) explored the changes and reforms in the matriculation exams in Israel following the findings and recommendations of the Ben Perez
Committee (1994). Their study also reviewed teachers’ attitudes to the far-reaching changes in the educational system initiated by the Ben Perez Committee. The teachers were involved in the process on two levels. On one level, they had adopted teaching and assessment methods which were radically different than what they commonly practiced over the course of their entire careers. In a short time, teachers were forced to change from class autocrats to team workers. On the second level, teachers had to transform their pupils from passive to active learners and ensure that pupils become partners in their own assessment rather than passive subjects of assessments by their teachers.

Based on input of both pupils and teachers, the findings of this study indicate a significant improvement in all the dependent variables defined: motivation, learning climate, pupils’ involvement and accountability. Moreover, a spill-over effect was noted, in that measures also improved for learning groups which did not take part in the process. Clear differences were evident between schools that participated in the project and schools in the control group. No significant differences were noted between the participating schools themselves.

Rosner (1998) conducted a study on three of the 22 participating schools in the project (representing three educational sectors: Druze, urban and rural), with the aim of examining whether the project brought about the anticipated changes in methods of teaching, assessment and learning, and in pupil’s motivation to learn and teacher’s motivation to teach. The study also examined other changes which the teaching staff experienced, the degree in which pupil’s involvement and responsibility changed and the effect on school and class climate. Two control groups were used – one comprised of pupils and teachers who did not participate in the project although their schools did participate. The second control group was comprised of pupils and teachers from schools which did not participate in the project. Comparison between the two control groups made it possible to ascertain the extent to which the project impacted other subjects (outside the scope of the project) in the participating schools. Research subjects were 10th grade pupils (in the 1995-1996 school year).

Pupils’ outcomes – motivation, perceived learning climate and responsibility – showed a significant improvement as a result of the application of alternative assessment
methods, although the pattern of improvements was not uniform across schools. Moreover, the effects of the project were evident in classes in the same schools which did not participate in the project. Results indicated a differential effect on liberal arts and science-oriented subjects.

Rosner (1998) found differences which indicated an advantage to the study group over both control groups, regarding two of the study’s main variables – teachers’ team work and the diversification of teaching/assessment methods. Based on reports of three project coordinators, one national coordinator and three school librarians, the consensus was that all the dependent variable examined were positively influenced by the project, in spite of the extra work involved. Rosner concluded that ongoing school assessment was inherently superior to traditional matriculation examinations.

Dvir (1998) conducted a qualitative study on teaching the subject of history and teachers’ attitudes. Dvir found that teachers felt that the “Bagrut 2000” Project not only encouraged but also required teamwork. However, teamwork had the dual effect of both encouraging teacher’s autonomy and limiting it at the same time. Based on teachers’ report, they became extremely versatile in researching and setting class goals, but, on the other hand, as members of a team, they found their personal responsibility was reduced.

Dvir (1998) found that the teachers’ increased personal autonomy made it possible for them to undertake important pedagogical tasks formerly beyond their reach – they found themselves drafting their own study programs and adapting them to their own teaching methods and the special needs of their pupils. They also devised alternative assessment methods and adapted them to the overall objectives of the project. Dvir believed that teachers’ increased autonomy would help them work towards achieving the aims of the “Bagrut 2000” Project. Therefore, Dvir recommended that teachers’ personal autonomy should be further reinforced by additional allocations of ‘teamwork hours’ and additional responsibilities in pupils’ assessment in the framework of the project.

Dori, Barnea and Kaberman (1999) studies Project 2000 and found that the project encouraged the adoption of diverse teaching and assessment methods which
contributed to a more intensive dialogue between teachers and their pupils. Their study found that learning climate improved, pupil motivation increase and all pupils showed improvement in writing, self-expression and researching skills. Assessment methods improved markedly in terms of validity and reliability.

When learning skills were analyzed, it became clear that project participants had a clear lead in questions demanding a combination of creativity and knowledge. Pupils stated their preference for the new methods. Pupils reported that classroom climates improved and would be pleased if the new system was implemented in additional subjects despite the extra work involved. Teachers were also aware of advances made during this period. They noted that changes in their workload were necessary in order to allow them to maintain the changes without “collapsing” under the extra work necessitated by the new system.

2.9 Conclusions

Sir Isaac Newton once proclaimed, when asked about his new insights into the secrets of nature that “If I was able to see further, it was merely because I was standing on the shoulders of giants.” The implication made is, that by relying on previous research, it is possible for a researcher to start his work from the point where his or her predecessors left off. In modern day academia, it also enables the researcher to verify and scrutinize existing conventional knowledge.

This chapter reviewed the academic literature that will be necessary to analyze the impact of the “Bagrat 2000” project. This section focused first on factors relevant to pupils, in terms of independent learning, motivation, satisfaction and self-esteem. Then factors relevant for teachers, were covered, particularly motivation and satisfaction. Lastly, factors that relate to the interaction between students and teachers were covered, including interpersonal relationships and the atmosphere in the class and the school.

An additional focus was directed to the existing literature covering the “Bagrut 2000” project. It is notable that the preparatory stages and the pilot of the program were
conducted in cooperation with academia, and so several detailed reports describing the theoretical considerations behind the program are available.

The literature review in this chapter is designed to review issues of interest with regard to the “Bagrut 2000” program and verify which of them have been researched, and by which methods. The next chapter, methodology, is attempts to construct a research program that will fill gaps in existing knowledge, while offering a new vintage point which may reveal new insights about previously researched areas.
3. Methodology

3.1 Introduction

This study was aimed to evaluate the 'soft' outcomes (e.g. motivation, satisfaction, autonomy, and self-image) among pupils and teachers involved in the "Bagrut 2000" project. This chapter will present the research questions and various methodological aspects of the research, and explain how the research population and the sampling were determined.

In addition to examining these variables, this chapter will also deal with the validity, reliability and triangulation of the tools developed for this research. Each sub-chapter will be based on references to the appropriate methodological literature.

3.2 Research Paradigms

It has long been held that two general methodologies are available for the social science research. Johnson (1994) states that:

Those who favour quantitative studies and those who value qualitative work. Quantitative research is interested in aggregating data, most of which are assigned numerical values. It relies on certain accepted categorisations, which enable the making of general statements....

Qualitative research, on the other hand, is interested in the complexities of human decision-making and behaviour, and may, for example, seek to discover what sets of circumstances lead particular families to use the independent sector for their children's education. (pp. 6-7)

Johnson (1994) also explains that:

...quantitative (or 'positivist') research followed the scientific mode, aiming at objectivity, standard procedures and replicability. Qualitative (or 'relativist') research, on the other hand, took the view that all human life is experienced and indeed constructed from a subjective point of view, and that social research should seek to elicit the 'meaning' of events and phenomena from the point of view of the participants (p. 7).
Ben-Yehoshua (1995) states that in quantitative research, the researcher aims at explaining phenomena by formulating generalizations and general rules, whereas in qualitative research, the researcher aims at understanding phenomena. In her words:

Qualitative research usually does not answer the needs of scientific research as such, which aims at finding explanations and clear knowledge, at finding correlation, formulating rules and confirming theories, as is demanded by the natural sciences. However, when the aims of research are the discovery and understanding of personal experience, thus enriching the findings, the drawbacks of this approach become great advantages (p.16).

Verma and Mallick (1999) state that the researcher should make use of several tools at the same time.

Where the object of a questionnaire survey is to produce quantitative data, interviews are normally used to obtain qualitative data. It is common for the two tools to be used in the same study: The questionnaire provide what are often called the 'hard data', and the interviews make it possible to explore in greater detail and in depth some particularly important aspects covered by the questionnaire (supplementary) or related topics which do not lend themselves to the questionnaire approach (complementary) (p.122).

Since it was stated (at some length) that each paradigm has both advantages and drawbacks, this research used both quantitative and qualitative research.

The aim was to give objective answers to the research questions by means of quantitative analysis of the answers given by the respondents, both verbally and by means of questionnaires. The result was achieving valid conclusions which enabled an analysis of the program's performance and was the basis for recommendations with regard to the future of the “Bagrut 2000” project and similar projects in the future.

In order to achieve a deeper understanding of this project and its ramifications, qualitative research methods were used as well, because of the built-in openness of this kind of research. This helped to derive further information from the results of interviews and document analysis, the better to answer the research questions. Qualitative research allows the researcher to not only analyze the results of quantitative research, but to understand them.
3.3 Research Approach

In light of the limitations that the timing of the survey imposed, it was not possible to evaluate the attitudes of the research subjects before the project started. Because of this, it was not possible to follow the development of changes in the attitudes of pupils and teachers during the school year; nor their experiences of alternative teaching and assessment methods.

Hence the research had to be carried out in a retrospective mode, ex post facto (the summative research approach - i.e., students' attitudes are not examined before they take part in the project).

In the context of social and educational research the phrase means 'out of the fact' or 'retrospectively' and refers to those studies which investigate possible cause-and-effect relationships by observing an existing condition or state of affairs and searching back in time for plausible causal factors. In effect, researchers ask themselves what factors seem to be associated with certain occurrences, or conditions, or aspects of behaviour. *Ex post facto* research, then, is a method of teasing out possible antecedents of events that have happened and cannot, therefore, be engineered or manipulated by the investigator. (Cohen and Manion, 1994, p.146).

The research was conducted on the basis of a ‘cross-sectional design’ method in two age groups: the eleventh and twelfth grades.

During the research into the “Bagrut 2000” project, data was collected after the presumed cause or causes have occurred. This is a research method known as *Ex-Post Facto*, which when translated literally, means 'from what was done before'. Afterwards, the following dependent variables were examined and data collected retrospectively in order to determine their causes, their associations and their meanings (Cohen and Manion, 1994).

The dependent variables in this research are:

1. The pupil's autonomy
2. The pupil's motivation
3. The teacher's motivation
4. The pupil's satisfaction
5. The teacher's satisfaction
6. The pupil's self-esteem
7. School and class climates
8. Teacher-pupil and pupil-pupil relations.

3.4 Research Tools

The following section presents the tools used to measure the research variables, and ultimately to answer the research questions. In the field research two main tools were used: pen-and-paper questionnaires were employed to derive quantitative measurement of the research variables from a relatively large sampled populations. Semi-structured interviews were used to gain deeper insight into those same variables, and subsequently to analyze and understand the quantitative results.

Beyond these tools, further data was derived from documents provided by the schools, particularly samples of assessment materials, and correspondence with the Open University and the Ministry of Education.

3.4.1 Questionnaires

Gathering information from tens and hundreds of teachers, administrators and pupils cannot be managed without a survey mode of research. Paper-and-pencil tools have considerable economical and practical advantages. Johnson (1994) describes the distinctive features of questionnaires:

The essence of a questionnaire as a research tool is that it is in the hands of the respondent, and is completed by him or her. This is the fundamental difference from an interview schedule, which may be similar in format, but remains in the hands of the interviewer, who completes it on the basis of information supplied by the person interviewed.

A questionnaire empowers the respondents, who may read all the questions before completing any, may complete and return the questionnaire at a time convenient to themselves, or fail to complete the questionnaire at all (p. 37).

A majority of the questions in the survey questionnaires were adapted from Rosner (1998). The remaining questions were drafted with the assistance of a team of educators and teachers, most of whom were members of the
Educational Assessment Team in the school where I am employed. We conducted a pilot test on these questions which were distributed to a group of pupils for completion. The questions were then amended as necessary and incorporated into the present study.

While preparing questionnaires, every effort was made to make the questions clear and unambiguous (Evans, 1984).

As Johnson (1994) says, questionnaires are a research tool that, perhaps more than any other, demands a pilot run. Therefore, the questionnaires were tested during a pilot study.

Since this is a study which was carried out with a specific research population, and in order to maximize participation, questionnaires were handed out personally to the respondents according to a schedule and a site agreed upon by the respondents or their supervisors and by the researcher, and were collected there when completed.

In order to ensure the respondents' privacy, respondents were given the possibility of placing the completed questionnaires in a post-box. In any case, the questionnaires were collected by the researcher or his assistant - not by a school representative.

### 3.4.2 Semi-structured interviews

In addition to the quantitative tools, such comprehensive study entails the use of qualitative tools, such as interviews. Johnson (1994) deals with the distinctive features of interviews.

Any interview is a social encounter between two people, but any social encounter is not an interview. Interviews have a particular focus and purpose. They are initiated by the interviewer, with a view to gathering certain information from the person interviewed (p.43)

Verma and Mallick (1999) differentiate between three categories of interviews. There is the 'structured' interview in which the interviewers have a list of prepared questions from which they cannot deviate. At the other extreme, there is the 'unstructured' or 'open-ended' interview in which the researcher has some broadly defined objectives but allows the interviewee a great deal of freedom in his or her responses. Indeed, the researcher positively encourages him or her to explore at depth issues within those broad research objectives that are of interest to the interviewee....Between
these two extremes lies the 'semi-structured' interview. Since there is a continuum between the two extremes, the extent to which a semi-structured interview is structured varies from case to case. The thing that gives such an interview a structure is normally called the interview schedule and the process of its construction resembles in many ways that of the questionnaire (p. 123).

In this study, individual semi-structured interviews were used. Since individual interviews, by their very nature, require more time than questionnaires, a smaller yet representative sample was selected from among the project participants, to take part in these interviews.

During the preparation of the questions for these interviews, every effort was made to make the questions simple, clear and unambiguous (as defined by Evans, 1984). The time and place of the interviews were set in consultation with the interviewed persons and representatives of the school staff. The interview results were examined only by the researcher and were not made available to any third party.

### 3.4.3 Analysis of Documents

In order to explore some formal aspects of the project (e.g. budget allocation, formal plans, statements of missions, achievements and grades), it was necessary to collect and analyze several types of documents. Johnson, (1994) deals with the use of documents as research tools:

The essence of a document or record is that it already exists in a definitive form. Unlike a questionnaire or interview schedule, it cannot be individually designed to suit a particular research purpose, but must be drawn on as a source of data in the form in which it stands. Existing records, whether public or personal, may of course be examined, collated or combined to meet a particular research need, but the work is done on data which already exist in written or other form. (pp. 58-59).

In the schools participating in the “Bagrut 2000” project, there are many documents that relate to the project. These documents contain much data as to the rationale for the project, the preparation for the project, and additional quantitative data which were collected by the school. Some of the schools have results collected by means of open or closed internal questionnaires on the subject of satisfaction; these results provided valuable relevant information.
Authenticity and credibility

Scott, (1990) explains that before deciding on the use of specific documents, they must be checked as to authenticity, credibility, representativeness and meaning. Scott also states that in checking authenticity and credibility, one must ascertain that evidence presented be genuine and of unquestionable origin. If the evidence is in the form of a photocopied document there may be problems with illegibility caused by poor technique, leading to loss of words or whole sentences. Typewritten copies present obvious dangers; errors may well have been introduced during the copying process. Printed transcripts of verbal proceedings tend to edit the original, often missing the speaker's intent (p.206n).

Johnson (1994) adds, on the last subject, that "...it could be of considerable relevance ... to know who compiled the minutes, and who had the opportunity to amend them before circulation to [their recipients]. Minutes may appear personal, but they always bear the stamp of the particular minute-writer, as is very apparent if one meeting in a series of meeting is minuted by a different individual" (p. 60).

Representativeness and meaning

One must be aware of the possibility that a particular piece of evidence may be unrepresentative of the wider body of relevant evidence. This must be taken into consideration on the background of the survivability and availability of like documents. If a full and contemporary list of the documents does not exist, some documents may have been removed accidentally - or on purpose. Some may have degraded into illegibility and been thrown away. In short, if there is no evidence that the evidential document is, indeed, representative of the whole set, then the 'facts' revealed by the document may be contaminated by the bias inherent in their chance selective survival and availability (Hoinville and Jowell, 1978, part II, p.135).

Several sources and some kinds of documents were drawn upon in this study. The project's management supplied selected letters, primary results of the program, job assignments and allocation of resources. In addition, a several schools' principals gave specific curriculum, teaching materials, and pupils' assignments.
Platt (1981), warns that "A single reference to a phenomenon may indicate the start of a trend, or the existence of a pattern, but it may be just historically idiosyncratic" (p.35). Hoinville and Jowell (1978) warn against bias which can be introduced to a document’s interpretation.

Scott (1990, pp. 28-30) warns that evidence presented must be not only representative and legible but clear and comprehensible; attention must be paid to the difficulties inherent in deciphering the script itself. This problem is of course especially acute in old documents.

Quantitative techniques may have to be applied to assess the significance of particular items within a text. The importance of an idea to the author may be assessed by checking the number of times it appears in a given text, or by the number of contexts in which it appears, for example the use of certain ideas, considered important at the time, in school brochures. This is explored by Scott (1990, pp.32-32) and by Curran (1977). On the other hand, qualitative analysis may help us to interpret the meaning of documents, such as a report, by relating to the intended content of a document and comparing it with its received content - how it is actually understood by the readers, often at a different time and place.

Before any documents can be examined, the researcher must obtain permission from the management of the schools in question, that of the Project Supervisor, that of the teachers, and in certain cases, such as analysis of personal material, that of pupils as well.

### 3.4.4 Population and Sampling

This research focuses on pupils, teachers and administrators taking part in the “Bagrut 2000” Project. The purpose of the research is to examine the attitudes of pupils and teachers who took part in the project, before the start of the project and while it was going on. The attitudes of project supervisors and principals were elicited to provide an additional vantage point and allow triangulation of the observations of pupils and teachers.
Due to cost factors, time and accessibility considerations, it was not possible to examine the total population of pupils and teachers taking part in the project. Hence it was necessary “to collect information from a smaller group or subset of the population in such a way that the knowledge gained is representative of the total population under study. This smaller group or subset is a ‘sample’” (Cohen and Manion, 1994, p.87).

The data was collected in three phases. The first phase was a pilot study conducted in one school to test the methodology. The second phase involved quantitative research by means of questionnaires handed out in 11 schools. The third phase was qualitative research by means of semi-structured interviews conducted in three schools.

In phase one, a pilot-study was conducted on the population of an agricultural boarding school taking part in the project. This phase was carried out by means of questionnaires which was distributed to all students of the two classes (eleventh and twelfth grades), the two class teachers, the project manager and the principal, as well as by semi-structured interviews with the project supervisor, the principal, the two teachers and six students - three from each class. The students were chosen from the list of names in the class register; one from the beginning, one from the middle and one from the end.

The pilot allowed examination of the research tools and the way they are used, to allow changes, if necessary, in the research methodology which would have been applied to the full research population.

In phase two pupils, teachers, project supervisors and principals from all the 11 schools participating in the project were sampled as follows: The first school in each category (High schools, vocational schools, religious schools, etc.), in proportion to the number of schools taking part from each category. The questionnaires were distributed to 30 pupils from two grades in each school, all the principals, the project supervisors and 22 teachers, two from each school - one from each grade - in order to assess their attitudes towards the project. In all, 374 questionnaires were distributed to pupils, teachers, project supervisors and principals. In each grade of each school one class was chosen at random.
The random selection was performed as follows: the researcher received the registers from the three participating schools in advance. In the first school, the first class was selected, in the second school the middle class, and in the third school the last class. This process of selection was repeated in the next three schools, and so on, till one class has been selected from each of the eleven schools participating in the project.

From the list of students in each class register, every other boy and every other girl were chosen. 50% of the participants were boys and 50% girls. The class teachers of the classes participating were also requested to fill out questionnaires.

In this phase, participants were asked about their satisfaction and attitude before the project and while it was taking place. The decision to check the attitude of two grades is designed to reveal significant differences between them, and whether the length of pupils' participation is also a factor in their degree of satisfaction (i.e., one year or two years).

In phase three, out of eleven schools participating in the research, three schools with different school characteristics were chosen: an agricultural school, a vocational school and a religious school. One of the considerations for choosing the specific schools was their geographical location. The schools were chosen from different academic levels and from regions in the North, the Center and the South.

At this stage, the research population for the semi-structured interviews included 12 pupils (4 from each school and from the two grades), 6 teachers (2 from each school and each grade), three Project supervisors and the three principals. In all, 24 interviews were conducted.

Phase three was carried out in order to compare the quantitative results of the research - carried out by means of questionnaires in phase two - with the results of the qualitative research. This was done to enhance the validity of the research and of its conclusions.
3.5 Quantitative Analysis

Even in our post-modern world, one cannot simply administer research tools to a group of innocent bystanders and then analyze the responses and call the resulting information ‘scientific knowledge’. Research tools and the procedures for their use must be carefully qualified to ensure that their outcomes can be used to understand the researched phenomena. The following section explains how the research tools presented above were scrutinized before their use.

Initially this section examines the attempts made to maximize the reliability and validity of the research tools. It then describes how the various research tools (interviews, questionnaires and written documents) were used to scrutinize and triangulate one another. Lastly, the ethical aspects of the research are discussed, and the efforts made to ensure that no harm was caused to the groups and individuals who took part in the research.

3.5.1 Reliability

The use of new measures such as questionnaires entails the examination of its reliability. “A scale or test is reliable to the extent that repeated measurements made by it under constant conditions will give the same result” (Moser and Kalton, 1989, p. 353). It also maybe defined as “the level of internal consistency or stability of the measuring device over time” (Borg and Gall, 1983, p. 281).

Fraenkel and Wallen (1991) also point out that in many social studies research papers, authors failed to check the reliability of scores. Even when such checks were made, the authors paid no attention to stability data, which is often more important than internal consistency. While it is not always possible to check stability, internal consistency must be checked - and the necessary data are typically available. Many researchers seem to think that if a high reliability coefficient is attained once, their instruments can be relied on to yield high reliability coefficients at all times. An instrument may yield different results with different populations. The writers point out that the failure to obtain important treatment outcome differences or correlations in social studies research may well be due to the use of instruments that produce scores.
of low reliability. They emphasize that it is especially important to check on the reliability of scores and to report one's results.

Several measures were used to secure the reliability of the quantitative tools.

- Formulating clear and simple questions.
- Ensuring the physical comfort of the questionnaires' respondents and of the persons interviewed.
- Careful planning coordination with school staffs as to the optimal time and place for handing out the questionnaires and conducting the interviews in order to minimize the effects of moods or discomfort (for example, research was not be carried out when the pupils have a lot of examinations, on memorial days or during holidays).
- Making every effort to create a warm, informal atmosphere during all stages of the research, wherever it is carried out.
- Preserving reliability of interviews by avoiding the regression effect of the instrument. For example, the interviewer avoid any repetitions of questions in such a way as to convey to the interviewee the impression that he or she has answered 'too negatively' or 'too positively', which may cause the interviewee to change his or her response in tune with the interviewer's perceived reactions.
- Comparing answers given to like questions.
- Computing a factor analysis to identify the actual sub-scales being developed within the questionnaire (see below).
- Computing reliability coefficients to measure the consistency of the identified sub-scales (see below).

**Factor analysis and reliability coefficients**

Factor analysis was performed on the 46 items in the questionnaire both for pre-project and post-project attitudes. Factor analysis identified 8 factors for both pre- and post-project results. Factor analysis results are shown in table 1 below.
Table 3: Factor Analysis of Questionnaire Scores

<table>
<thead>
<tr>
<th>Factor8</th>
<th>Factor7</th>
<th>Factor 6</th>
<th>Factor 5</th>
<th>Factor 4</th>
<th>Factor3</th>
<th>Factor 2</th>
<th>Factor 1</th>
<th>Question</th>
</tr>
</thead>
<tbody>
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<td>0.267</td>
<td>-0.001</td>
<td>0.33</td>
<td>-0.371</td>
<td>-0.316</td>
<td>-0.144</td>
<td>0.613</td>
<td>Q1</td>
</tr>
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<td>-0.188</td>
<td>0.002</td>
<td>0.195</td>
<td>0.825</td>
<td>0.002</td>
<td>0.008</td>
<td>0.365</td>
<td>-0.006</td>
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</tr>
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<td>0.006</td>
<td>0.191</td>
<td>0.797</td>
<td>0.006</td>
<td>0.008</td>
<td>-0.007</td>
<td>-0.408</td>
<td>0.002</td>
<td>Q3</td>
</tr>
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<td>0.813</td>
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<td>0.215</td>
<td>-0.005</td>
<td>0.197</td>
<td>Q4</td>
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<td>0.009</td>
<td>0.008</td>
<td>Q5</td>
</tr>
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<td>0.009</td>
<td>0.141</td>
<td>-0.002</td>
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<td>-0.302</td>
<td>-0.009</td>
<td>0.524</td>
<td>Q7</td>
</tr>
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<td>0.001</td>
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<td>0.234</td>
<td>0.751</td>
<td>0.428</td>
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<td>0.146</td>
<td>-0.281</td>
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</tr>
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<td>-0.001</td>
<td>0.118</td>
<td>0.927</td>
<td>0.009</td>
<td>0.003</td>
<td>0.008</td>
<td>Q9</td>
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<td>0.101</td>
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<td>0.002</td>
<td>-0.114</td>
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</tr>
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<td>0.007</td>
<td>-0.121</td>
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<td>-0.003</td>
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<td>0.877</td>
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<td>0.004</td>
<td>0.444</td>
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<td>-0.007</td>
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<td>-0.32</td>
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<td>-0.005</td>
<td>-0.154</td>
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<td>0.652</td>
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</tr>
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<td>0.212</td>
<td>0.005</td>
<td>0.371</td>
<td>-0.102</td>
<td>Q24</td>
</tr>
<tr>
<td>0.11</td>
<td>0.003</td>
<td>0.384</td>
<td>-0.005</td>
<td>0.726</td>
<td>0.235</td>
<td>0.142</td>
<td>-0.32</td>
<td>Q25</td>
</tr>
<tr>
<td>0.107</td>
<td>0.127</td>
<td>-0.002</td>
<td>0.26</td>
<td>0.187</td>
<td>-0.005</td>
<td>0.872</td>
<td>-0.005</td>
<td>Q26</td>
</tr>
<tr>
<td>0.008</td>
<td>-0.105</td>
<td>0.357</td>
<td>-0.007</td>
<td>0.147</td>
<td>0.433</td>
<td>0.003</td>
<td>-0.449</td>
<td>Q27</td>
</tr>
<tr>
<td>0.008</td>
<td>-0.001</td>
<td>0.833</td>
<td>0.18</td>
<td>0.008</td>
<td>0.256</td>
<td>0.007</td>
<td>-0.104</td>
<td>Q28</td>
</tr>
<tr>
<td>-0.113</td>
<td>0.005</td>
<td>0.13</td>
<td>0.164</td>
<td>-0.005</td>
<td>0.57</td>
<td>0.606</td>
<td>0.001</td>
<td>Q29</td>
</tr>
<tr>
<td>0.009</td>
<td>-0.224</td>
<td>0.006</td>
<td>0.314</td>
<td>-0.634</td>
<td>0.2</td>
<td>-0.542</td>
<td>0.003</td>
<td>Q30</td>
</tr>
</tbody>
</table>
The analysis identified 8 factors, as listed below:

- **Factor 1** represents teachers’ perception of class environment. This factor contains items 1, 11, 13, 15, 21, 27, 44, 46. Reliability analysis (Cronbach’s alpha) shows unity among items. Alpha coefficient scores for both pre- and post-project attitudes was 0.85.

- **Factor 2** represents teachers’ perception of school environment. This factor contains items 6, 14, 19, 23, 26, 29. Reliability analysis (Cronbach’s alpha) shows unity among items. Alpha coefficient scores for both pre- and post-project attitudes was 0.87.

- **Factor 3** represents teachers’ perception of students’ autonomous learning. This factor contains items 18, 20, 22, 27, 36, 37, 38. Reliability analysis (Cronbach’s alpha) shows unity among items. Alpha coefficient scores for both pre- and post-project attitudes was 0.89.

- **Factor 4** represents teachers’ perception of students’ motivation. This factor contains items 8, 9, 10, 12, 16, 30. Reliability analysis (Cronbach’s alpha) shows unity among items. Alpha coefficient scores for both pre- and post-project attitudes was 0.83.

- **Factor 5** represents teachers’ motivation. This factor contains items 2, 4, 7. Reliability analysis (Cronbach’s alpha) shows unity among items. Alpha coefficient scores for both pre- and post-project attitudes was 0.71.
• Factor 6 represents teachers' satisfaction. This factor contains items 3, 5, 24, 28, 31. Reliability analysis (Cronbach’s alpha) shows unity among items. Alpha coefficient scores for both pre- and post-project attitudes was 0.82.

• Factor 7 represents teachers’ perception of students’ self esteem. This factor contains items 39, 40, 41, 42, 43. Reliability analysis (Cronbach’s alpha) shows unity among items. Alpha coefficient scores for both pre- and post-project attitudes was 0.83.

• Factor 8 represents teachers’ perception of student-teacher relationship. This factor contains item 33. Reliability analysis (Cronbach’s alpha) was not performed on one item only.

Reliability analysis (Cronbach’s alpha) shows the same unity among all items in the questionnaire. Alpha coefficient scores for both pre- and post-project attitudes was found to be 0.85.

All items in each factor were computed into one variable. Therefore, this study contains eight pre-project variables and eight post-project variables. Pearson correlation was computed between the seven factors for both pre- and post-project attitudes.

3.5.2 Validity

Careful thought was given to the validity of the gathered information. In the field of educational measurement, validity refers to the degree to which a test, tool or technique measures what it is supposed to measure.

No technique, tool or test possesses universal validity - it may be valid for use in one situation but invalid in another. Validity has different connotations for various kinds of tests and, accordingly, different kinds of validity (e.g. content, concurrent, predictive, construct) are appropriate for each. (Verma and Mallick, 1999, p. 205).

According to Cohen and Manion (1994):

Internal validity is concerned with the question, do the experimental treatments, and in fact make a difference in the specific experiments under scrutiny. Meanwhile, external validity, on the other hand, asks the questions, given these demonstrable effects, to what populations or settings can they be generalised? (p170).
Cohen and Manion (1994) point out that internal validity must take into account various possible distortions. For example, external events may have occurred during the experimental time frame, which produce effects then mistakenly linked to the research. Such effects can simply be caused by maturation - by the passing of time; this will be especially acute in protracted educational studies. Statistical regression also skews results - unavoidably. This results from the tendency of test results to regress to the mean; on average, good pre-test results will tend to be slightly worse post-test, and the opposite will happen to those who had poor pre-test results. Educational researchers may mistakenly attribute post-test gains and losses to high scoring and low scoring alone.

Other distortions may be caused when subjects are marginally aware of the purpose of the test. Instruments are fallible; human researchers more so; different levels of skill and of concentration during the experiment tend to cause variations that may be misread.

The selection of subjects for comparison groups is inherently prone to bias, and it is extremely difficult to assure random selection, especially when whole classes take part in educational research projects. Moreover, not all subjects stay the course - giving rise to "experimental mortality". This may confound the effects of the experimental variables, for even if the original group was unbiased, the residue of the group present different statistical characteristics (pp. 170-171).

Cohen and Manion (1994) also deal with the problems facing external validity.

Threats to external validity are likely to limit the degree to which generalisations can be made from the particular experimental conditions to other populations or settings (p. 171)

Campbell and Stanley (1963), Bracht and Glass (1968) state that failure to describe independent variables explicitly will prevent the experimental conditions from ever being adequately reproduced. Another problem is that the research population, while being available, is not always representative of the population to which the experimenters wish to generalize their findings. Yet another problem arises from the fact that the research subjects are aware of being "guinea pigs" and this must skew
their answers and reactions, such as telling an interviewer what they think he wants to hear. Furthermore, the dependent variables, which the experimenter includes in the study, may often lack validity in the non-experimental real world. External validity, like internal validity, is at risk when pre-testing causes changes in the subjects' sensitivity to the experimental variables. This may affect the true effects of the experiment. Of course, interaction effects between any of the above influences tend to blur the results of any experiment, despite the researcher's best efforts at scientific objectivity.

Pilliner (1973) explains that an experiment can be said to be internally valid to the extent that, within its own confines, its results are credible. But if its results are to be useful as well, they must also be externally valid. Pilliner (1973) points out that the relationship between internal and external validity is non-reversible; internal validity is a necessary precondition for external validity, but the former will not ensure the latter.

In order to increase the study's validity and avoiding subjective bias, experienced educators reviewed the research tools. Their comments and suggestions assisted to improve the clarity and relevance of the questions. At the end of the pilot study several additional modifications were incorporated.

3.5.3 Triangulation

Probably one of the best methodologies to improve the study's validity is to triangulate the sources of information. This process of corroborating judgments by drawing on evidence from more interviews, questionnaires and observations (Verma and Mallick, 1999). Schutt (1999) maintains that triangulation is the ability to apply diverse techniques to address different aspects of a complex research problem and is one mark of a sophisticated social researcher (p.396).

Leading a comprehensive exploratory study to examine the outcomes of a pioneering national-scale project calls for the use of ample sources. These sources are divided here according to respondents' level of hierarchical bureaucratic ladder (e.g. pupils, teachers, principals, high-ranking governmental officials). Another dimension relates to the quantitative and qualitative sources (e.g. observations, documents). The triangulation data collected by these various methods further enhanced the reliability of the research and its conclusions.
3.5.4 Ethics and Access

Ethics are the rules or standards of proper conduct (House, 1997), for example for doing research in morally responsible way. There are three broad areas of ethical concern in scientific research (Singleton et al. 1993, p. 475): first, the ethics of data collection and analysis, which deals with issues such as biased presentation of results and dishonesty in research. Second the ethics of responsibility to society, which touches upon aspects of ideology and values in research, cultural relativity, the participation of minorities, destructive use of scientific discoveries (e.g. the nuclear bomb) and the like. The last aspect concerns the ethical treatment of human subjects.

Basic ethical principles accepted in our cultural and legal tradition demand that research participants be treated with respect and protected from harm. Historically, however, these principles sometimes have clashed with scientific practice, generating a great deal of controversy. (Singleton et al. 1993, p. 475)

Four problem areas have been identified most often regarding the treatment of human subjects: potential harm, lack of informed consent, deception, and privacy invasion (Diener and Crandall, 1978). Following many authors who have emphasized these moral aspects, this section elaborates upon the moral and practical implications.

Securing informed consent in social science research is one of the most fundamental of ethical principles. That principle arises from the right to freedom and self-determination (Cohen and Manion, 2000, p. 51). In order that subjects understand and agree to participate, that consent must be based on four elements (Diener and Crandall, 1978): competence, voluntarism, full information, and comprehension. The adults involved in this study satisfied three conditions: they were competent; they could easily grasp the research requirements and participated voluntarily. The principals received full information. Before filing the questionnaires and at the interviews, they were informed about the research topic, its rationale, and the university under which that doctoral study was handled.

During that period, the respondents were given detailed answers to any question they raised, and in fact, discussion resembled a debriefing session (Burns, 2000; Kralhwohl, 1998). As with regard to the students, these principles were similarly maintained. Some consideration was given to the option of requesting parental consent for their
offspring participation. However the final conclusion was to refrain from doing so due to three main reasons: technically it would have required extensive cooperation (e.g. sending the forms to the schools, distributing to the students, collecting them back, and verifying the signatures, which the schools were not enthusiastic to provide). Psychologically, the research concerns administrative policies which are not of a sensitive nature, and therefore unlikely to have a disturbing effect. Lastly, as many of the pupils were at or over 18 years of age they could have been considered adults.

The study’s procedure protected the privacy of the teachers and students, who remain anonymous. The schools identities were obviously known to the researcher but were kept confidential by several methods during the data collection and the publication of the results, including (Cohen and Manion, 1994, p. 368):
1. Deletion of identifiers (e.g. names of schools, location).
2. Using crude report categories and submitting general information rather than specific (e.g. age in broad interval rather than exact years).
3. Micro aggregation - the construction of the average teacher from data of individuals and the release of these data, rather than data on individuals.
4. Error inoculation – deliberately introducing errors into the presentation of individuals, while leaving the aggregate data unchanged.

To sum up this section, researchers must consider the cost/benefit ratio (Frankfort-Nachmias and Nachmias, 1992), namely to weigh the likely social benefits of the study vis-à-vis the personal costs to the individuals taking part. With regard to the benefits, the subject of inquiry – the impact of Bagrut 2000 carries some theoretical and practically meaningful new implications in the field of teaching and learning methods, which could be of benefit to principals, teachers and students. For example several suggestions are given to the Ministry of Education and high schools’ staff members on how to improve the preparation for matriculation examinations.

Throughout the study’s stages several precautions were taken to maintain respondents’ anonymity and confidentiality. From the outset of the planning and through the final stages of the study, the participants considered the subject to be important and volunteered to participate. A surprisingly low number refused while the rate of teachers and students who volunteered to answer the questionnaires was very
high. The sincere cooperation proved the procedure was professional, and handled properly from an ethical standpoint. Frankfort-Nachmias and Nachmias (1992) count some possible personal costs to the participants: affronts to dignity, embarrassment, loss of trust in social relations, loss of autonomy and self-determination, and lowered self-esteem. The efforts used to avoid these costs seemed to prove to be effective.

The researcher strictly followed the directives of the Ministry of Education by asking permission in advance. After the confirmation of the thesis proposal, and an examination of the research tools, this research was approved. This approval and the grant to carry out the research paved the way for a full cooperation of the principals, project supervisors, teachers and pupils.

### 3.6 Field Research

Having described in the previous sections how the research methodology was developed and scrutinized, the following section describes its execution in 11 schools across Israel. This execution had two phases: In the first ‘pilot’ phase, the tools were employed in a single school to ensure that all the criterion for their use (e.g. accessibility, sampling, reliability and validity) conformed to expectations. The second phase involved interviewing and surveying the remaining 10 schools.

#### 3.6.1 The Pilot Study

From its outset, it was clear that such a broad sampled study using several types of methodologies, a pilot phase to calibrate the tools is necessary. Johnson (1994) addresses this question:

> Questionnaires are a research tool which, perhaps more than any other, need a pilot run. It is not until you have some completed questionnaires available for analysis that you can be sure your research needs are going to be met by the information you asked for. (p.39).

The pilot was carried out in one of the schools taking part in the “Bagrut 2000” Project, and included questionnaires and semi-structured interviews. This was done in order to become familiar with the research field and clarify its characteristics,
dimensions and categories, that would form the focus of the research and would also serve to check the research tools and make it possible to adapt them where necessary.

In the pilot study, the respondents were also asked to comment on the perceived strengths and weaknesses of the questionnaires themselves. In the semi-structured interviews in the pilot study, the persons interviewed were asked to comment on the interview questions in the same way. The questionnaires and the interviews provided a last chance to check, *inter alia*, whether additional questions should be added to the list.

In summary, this ‘mini-research’ was used as a general rehearsal of the research program itself. Most of the research procedures of the pilot study are those which were used in the final research program. The pilot study pointed out defects in the various stages of the research and helped making a cost-estimate of the entire program and provide first impressions as to its possible results.

After analyzing the pilot study, the questions were statistically analyzed and found satisfactory. As a result, the research tools were not modified after the pilot, and therefore, the results obtained during the pilot became part of the findings of the main research.

### 3.6.2 The main field research

After the pilot stage, which took place in the school where the researcher is employed, and where naturally cooperation was full, came the time to expand the research to the entire sample of schools. In each of the 11 sampled schools where questionnaires were passed was personally visited by the researcher (having coordinated the visit with the principal) for an entire school day. In the 3 schools where interviews were conducted, a further full day visit was coordinated.

School principals played an important part in facilitating the field research. None of the first 11 principals who were approached with regard to this research declined to participate, and all of them provided the researcher access to their pupils and staff. Their cooperation was enthusiastic and at no time seemed grudging or even
with controlling the environment in which the respondents work. Triangulation of the responses between the various groups was used to double-check the responses. Lastly, ethical considerations were incorporated in the research program, to assure that the benefits of this study do not come at the expense of others.

In the next section, the results derived from the field research will be presented and their meaning analyzed.
4. Findings

4.1 Introduction

Exploring a multi-faceted project like “Bagrut 2000” entails the use of both quantitative and qualitative approaches (Cohen and Manion, 1994). These methodologies were found to be highly effective in generating solid data, as well as acquiring impressions on long-run outcomes. The following findings are presented under three sections, from the micro to the macro level:

- The project’s impact on individual pupils: about their motivation, satisfaction, self-esteem, and ability to learn independently.
- The project’s impact on individual teachers: how their motivation and satisfaction changed.
- The project’s influence within the classroom level: changes in the relationship within the classroom, and the interaction between the pupils and the teachers.

4.2 Changes within the Individual Pupil

Bagrut 2000 was aimed not only to increase the rate of high school students who successfully complete their matriculation examinations but also to improve the learning process and minimize negative sentiments toward school and learning, shared by many pupils. The program’s impact at the individual level is pivotal for assessing the success of the entire process. The individual level is ‘the foundation’ on which inter-personal and system-wide changes are built and evaluated. The following pages will first present the main quantifiable findings and continue to describe in more detail the various aspects of intra-subjective (within the person) results of the students who participated in the program.

Overall, the research demonstrated a marked improvement in the various “soft” aspects of the pupil’s learning. Table 4.3 summarizes the results of the surveys, in which the pupils compared their experience prior to joining the “Bagrut 2000” project with their attitude after participating in the project. Table 4.4 summarizes the surveys that inquired about the teacher’s observations about their pupil’s behavior.
Table 4 Pupils' Pre- and Post- Project Attitude Change

<table>
<thead>
<tr>
<th>Sign.</th>
<th>F</th>
<th>Differ.</th>
<th>Post-project</th>
<th>Pre-project</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>P&lt;.01</td>
<td>69.4</td>
<td>0.66</td>
<td>1.26</td>
<td>3.19</td>
<td>School and class atmosphere</td>
</tr>
<tr>
<td>P&lt;.01</td>
<td>62.98</td>
<td>0.65</td>
<td>1.25</td>
<td>3.82</td>
<td>Student's autonomous learning</td>
</tr>
<tr>
<td>P&lt;.01</td>
<td>11.66</td>
<td>0.46</td>
<td>2.16</td>
<td>4.18</td>
<td>Students' motivation</td>
</tr>
<tr>
<td>P&lt;.01</td>
<td>13.83</td>
<td>0.43</td>
<td>1.85</td>
<td>3.5</td>
<td>Students' satisfaction</td>
</tr>
<tr>
<td>P&lt;.05</td>
<td>4.56</td>
<td>0.21</td>
<td>0.99</td>
<td>3.66</td>
<td>Self esteem</td>
</tr>
</tbody>
</table>

Of all the personal aspects seen in tables 4.3 and 4.4, students' autonomous learning presents the most significant change, according to both teachers and students. On a scale from 1 (very little) to 5 (very much), students' own perception of their independent learning habits grew from 3.17 to 3.82. The teachers appeared to have been even more impressed (Table 4.2), evaluating the students' initial stage as that of a passive learner (1.88) who became very active and involved (4.24). The students also reported becoming more motivated and having their satisfaction increased (teachers did not rank this last factor). Finally, students self esteem was found to be the least affected by the program, even though the teachers saw things differently, noting a much higher improvement in their pupil's self esteem.
As with regard to the students, Repeated Measures MANOVA show a significant change in attitudes between pre- and post-project scores for all factors combined for both grade-levels ($F(7,302)=18.23$, $P<.01$). Grade level and timing (pre/post) interaction was not significant ($F(7,302)=1.42$, N.S). This implies that an overall change in attitudes occurred in both grades (11th and 12th grades).

Repeated Measures MANOVA also showed a significant change in attitudes between pre- and post-project scores for six out of the seven factors examined. Time and class interaction showed significant differences only in respect of school and class atmosphere ($F(1,308)=6.24$, $P<.05$) and students’ autonomous learning ($F(1,308)=5.06$, $P<.05$).

### 4.2.1 Autonomous learning

Autonomous learning, i.e. being active, seeking more sources of information, and critically evaluating and analyzing it into a cognitive schemes, is the main skill that “Bagrut 2000” set out to develop among students (e.g., Bruner, 1996; Skager, 1984). It is thus distinct from the other ‘self’ factors (e.g. emotional and personality traits) that contribute to the pupil’s effective learning. Probably the most significant finding was the increased inclination to become an independent learner. As an agricultural high school student (somewhat confusedly) expressed that sentiment:
We took part in a debate about the best and most efficient way to learn. ...They involved us in planning our evaluation, the method of evaluation and its timing, the construction of the menu of evaluation. We chose something that fits us best, and that we are more attached to, and that enabled us to love studying more. Pupils also had to present the class with various subjects.

Teaching methods were generally aimed to help students acquire new learning strategies and adopt new attitudes towards studies. The semi-structured interviews conducted with pupils and faculty demonstrated that the schools used many tools to achieve these goals. New learning techniques were meant to compliment rote learning with higher order skills as reading comprehension and articulating ideas from several sources. Different evaluation methods were meant to supplement traditional written tests as evaluation methods. Two students reflecting on their experience noted that:

In the past, I was totally dependent on the teacher. I had to listen to every word, and if I didn’t understand something, it was only the teacher who could have explained it. Today it is different. I can get information from other sources – books, other pupils and class discussion. Together we can find information and share it.

I am always seeking ways to improve my work. I do work beyond the teacher’s request. I have started asking, taking interest, watching documentary films, searching the Internet and asking my friends’ help.

Independent learning requires decreasing the dependence on the teacher. Such behavioral change must be followed by an increase in emotional independence. The pupil must shift from an attitude of ‘the teacher knows best’ to ‘there are several explanations and I have to decide which is best’. This requirement for critical thinking entails a dramatic change in Israeli high schools, where it is still common for a teacher to dictate material for an entire class period, as one vocational pupil remarked:

The project had an enormous effect on my independence. I learned to work alone until I completely understood and felt in full control. Also, the teacher no longer dictated to us, but made me write for myself, to investigate and to find things out alone.

Active learning is aimed to teach the student how to learn by promoting activities that engage pupils and require active involvement. It entails inquisitive intellectual thinking but also mental energy and the student’s motivation. Other psychological manifestations, such as motivation, self-esteem, happiness and satisfaction, are also necessary.
The teachers reported an even sharper improvement in pupils' ability to study independently. According to the questionnaires, the pupils improved from 1.88 to 4.24, and this rise (2.36) was the highest reported by the teachers. When allowed to expand on this evaluation during the semi-structured interviews, the teachers provided several reasons for the change. All the teachers agreed that decreasing the portion of class time dedicated to lectures and dictation weaned the pupils from their dependence on the teachers. As one vocational school teacher said in reply to the question about changes in teaching methods:

Looking back, It amazes me that I used to dictate material in class. I think I have spoon-fed them. Now they have to hunt for their own knowledge, and as a result they actually care about it- they are disappointed if they found 'junk', and they're proud when they found something I didn’t know. The thing is, that it seems like a natural way of doing things now, whereas once I couldn’t ask them to look-up “photosynthesis” in the encyclopaedia without howls of protest.

4.2.2 Motivation

Metaphorically, motivation is like an enzyme for a biochemical process. As an inner psychological ‘substrate’ it accelerates and assists the learning process. Motivation is not an end by itself, such as grades or even self-esteem but its absence may diminish any chance for effective learning (Haasen, 1997; Moon and Mayes, 1995). One of the notable findings in my study is the significant increase in students’ motivation as observed by both the students and their teachers. Students’ initial motivational level was reported to be high (3.72), and the net increase was found to be quite modest (4.18). The interviews with the pupils gave an image of a much stronger improvement. Two quotes from a 12th grade religious pupil and an 11th grade vocational pupil (respectively) reflect the magnitude of the reported increase:

Once I used to study only during the lessons. Today I am always looking for material that might help me. I am looking in databases, I get to speak about it in class, so I am more participating and interested in learning more.

My motivation increased but only in the classes of the program [Bagrut 2000]. I am more ready to invest in every project because I at the end of the previous I feel I learned and so I can do better this time.
An interesting related result is the increased diversity of pupils’ responses to the merits of the program. The relatively homogenous standard deviation (SD 1.02) before the program more than doubled after it (SD 2.16). It appears that participating in “Bagrut 2000” polarized the pupils into those who welcomed the new curriculum versus those who favored the old fashioned style.

Pupils in the traditional learning regime are ‘conditioned’ for many years in their elementary and junior-high schools to accept the ‘rules of the game’. The “Bagrut 2000” is a new experience for the pupils, who are also largely aware of its experimental nature. There was therefore greater legitimacy for the pupils to establish independent opinions, thus increasing the variance. On one hand, the students who felt traditional learning too limiting became involved and committed far more than they would have otherwise. On the other hand, pupils who preferred the traditional teaching style felt discontent.

My motivation went down because my project doesn’t come out well. It is very difficult for me, and the teacher is always busy. I also chose a topic that nobody cares about, and I’m doing it only because I have to, in order to get matriculation.

Meanwhile, teachers who were asked about the pupils’ motivation saw a similar, but stronger picture. In the quantitative survey they saw a more dramatic increase, more in line with the pupils’ interviews then the pupils’ surveys. The teachers tended to perceive their pupils as having been moderately motivated (3.08) and undergoing a marked change while participating in the program (3.8).

When interviewed, the teachers elaborated on this increased motivation. They based their observation of increased motivation on changes in attitude and in actual initiative. The change in attitude includes less hostility to school work, as one project leader described as “no more moaning and groaning every time I give out an assignment”. It was also based on increased classroom participation in that pupils were more interested, more willing to express their opinions. The change in initiative and workload meant that pupils have made independent efforts to increase their achievements. About half of the teachers said that pupils were enthusiastic about voluntary assignments which offer bonus points (no teacher made a contrasting
report), and two teachers said that handed assignments were no longer completed at the minimum number of pages requested.

Can this difference between the pupils and the teachers be reconciled? In my view, two methodological and psychological artifacts are involved. First, self-report tools tend to preserve and justify the respondents’ positive impressions. Therefore the students considered themselves more motivated from the start, and being close to the ceiling leaves little room for additional rise. At the same time, having invested so much in the program may have lead the teachers to report a significant increase in order to avoid cognitive dissonance.

### 4.2.3 Students’ satisfaction

In general, pupils reported increased satisfaction due to several reasons which they attributed to the effects the “Bagrut 2000” Project. These causes included closer relations which developed among peers, improved relations with teachers, a sense of success, the opportunity to play a more active role in their own educational process. Satisfaction also stemmed from the learning process itself, primarily the opportunity pupils received to enjoy the learning process, explore subjects independently, work on topics that interest them, all in a more friendly and supportive atmosphere (e.g., Darom, 1989; Neill, 1983).

The results demonstrated an increase in pupils’ reported satisfaction, from 3.07 to 3.50. This was the lowest rise among individual self-factors, yet it was still significant \((p<0.01)\). The improvement is mainly attributed to educational aspects and sociological aspects. Educationally, satisfaction is derived from the fulfillment of curiosity, from increased autonomy, from reduction in exam pressures, and from a sense of creation derived by producing a portfolio of essays reports etc. Sociologically, the pupils’ attributed increased satisfaction to a greater sense of control over their education, but more to improved relations with teachers, improved classroom atmosphere and to a smaller degree- improved peer relations.

However, while the general level of satisfaction increased, so did the heterogeneity of the results, indicated by a significant increase in standard deviation from 1.14 to 1.85.
This rise in variance also appeared in the interviews with some pupils reporting a decline in self-satisfaction. This decline was attributed to diametrically opposed reasons, with some pupils complaining on shallowness while others on excessive difficulty:

No, I felt traditional learning easier.

My satisfaction declined because I had to put so much effort. I gave up in despair.

No. I was disappointed because I was expecting more. I found shallowness in the curriculum. Other than the research which was challenging and deep, everything else was superficial and did not use the full potential of the pupils.

Peering into the causes of the improved satisfaction reveals an intriguing picture of multiple causes leading to the same end result. When interviewed about their rate of satisfaction, all but two of the pupils said it was higher, but each gave a different reason. The reasons included: improved social relations, more interesting classes less exam pressure, better grades, better relations with teachers, feeling prepared for university, interest in the subject, feeling more active, gradually improving standards, having an opportunity to present information in class. The fact that different pupils cited different causes, indicates, in my view, that the program gave latitude to pupils to focus on their strengths. One pupil expressed a particularly overarching reply saying:

Satisfaction rose because I deal with things I like. The atmosphere is positive, learning is pleasant, relations with the teacher are friendlier, we work at what’s interests us, we have an opportunity to present knowledge and evaluate myself. All this contributed to my rising satisfaction. I also know that the whole process improved my matriculation grades which certainly doesn’t hurt. I honestly don’t see any reason to be dissatisfied.

Teachers were aware of their pupils’ heightened satisfaction, which they attributed to their elevated rate of success as well as the significant learning process which evolved. Teachers specifically noted that their pupils’ were satisfied by the fact that the project offered multiple opportunities for success: the method allowed them to submit drafts and correct their own before submitting it for a final assessment.

In contrast, all school principals were skeptical regarding increased pupil satisfaction as a result of the project. Principals noted that although pupils voiced their satisfaction with the project, this satisfaction was generally accompanied by dissatisfaction at the
heavy workload and personal efforts in learning that participation in the project entailed. Principals were also able to distinguish pupils’ expressions of satisfaction, which they ascribed to a fit between the final examination method and between the pupils’ individual abilities. In this regard, principals noted that high achievers preferred the traditional Bagrut method, which required less sustained efforts over the three-year period of high school, compared to the efforts they were required to invest to succeed in the final Bagrut exams. For low-achievers, however, the Project constituted an assessment method which was less taxing than the traditional Bagrut examinations.

4.2.4 Student Self-esteem

The research hypothesis was that the student’s self-esteem would grow as a result of the project. The mastering of new academic techniques, the increased independence and trust conferred by the teachers and the sense of belonging to an “elite team” should have caused pupils to feel better about themselves (e.g., Decker, 1999; Lawrence, 1996; Merry, 1998). The empiric quantitative results, however, failed to support this hypothesis. The pupils’ evaluation of their self-esteem has increased from 3.65 to 3.86, which was the smallest gain among the self-factors. It also had the lowest Fisher value at 4.56 and its significance was p<0.05, which is still significant, but the lowest of all the results.

The semi-structured interviews provided a more positive reaction. Only two of the interviewees claimed to have lower self-esteem as a result of the program, and another one to have been unaffected. Those three cite failures and inability to cope with the workload as reasons for reduced self-esteem. All the other interviewed pupils were positively affected, and cited a variety of positive affects on their self-esteem, such as:

Today I have higher appreciation for my ability. I can stand in front of a full class and explain, which I really feared to do before. In the past I thought only the teachers know but today my self-esteem is higher, I am more independent and less fearful.

The teachers’ results tell a very different story: a rise from 3.41 to 4.35 is the second highest recorded. Significance was high at p<0.01 and the Z value is also high at 4.01. The difference between the pupils and the teachers probably stems from a semantic interpretation: The Hebrew word for esteem (ha’aracha) also means evaluation, and
some of the teachers thought they were being asked about how the pupils' introspective observation improved.

The pupils' assessment of their work improved significantly because it was done repeatedly and constantly throughout the school year. The use of reflection literally forced them to evaluate themselves and their work.

The results could not have been used to measure teachers' perception of pupils' improved self observation, because not all the teachers made that mistake, and it was not possible to distinguish which questionnaire used which meaning.

4.2.5 Conclusions

Overall, the program has positively affected the majority of the pupils in all the aspects that were measured. Pupils' ability to learn independently, motivation, satisfaction, and probably their self-esteem all increased significantly according to both pupils and teachers.

However, on closer inspection, pupils were not unanimous, and their attitudes can be categorized into three groups according to their achievement level. Those with low achievements (according to themselves or their teachers) were relatively dissatisfied with the system. In interviews they cited excessive workload, possibly because they felt they were putting much more work relative to the outcomes than they would have achieved in traditional classes.

Conversely, the high-flyers (again, according to themselves or their teachers), who were used to getting high marks with little effort, felt that the hard work demanded of them was unfair. However, the bulk of the student body overwhelmingly approved the program. They felt they acquired new skills on both academic and emotional levels. They felt a much heavier workload, but were surprised that they didn’t mind working hard when they chose what to do.

4.3 The teachers' attitudes

Of the various teaching styles, ranging from the command style to the self-teaching style (Mosston and Ashworth, 1994), it appears that the “Bagrut 2000” teachers
mainly selected the *guided discovery* and *learner initiated* styles. Guided discovery is used when the teacher plans the pupil’s learning and guides the pupils to find answers, for example pupils had to observe a natural habitat and report the species and their interaction with the environment. Learner initiated style is where the pupil actively initiates the learning experience, for example pupils selected a historic figure and wrote a research paper about it. As in Barnes et al (1987), the teachers preferred the range between *negotiated style* to the *framed*, to say nothing of the *closed style*.

The program’s main challenge for teachers was to improve learning habits and matriculations achievements. Leading such a pronounced change clearly affected the teachers (see Table 6).

**Table 6 Teachers’ motivation and satisfaction compared**

<table>
<thead>
<tr>
<th>Sig.</th>
<th>Z</th>
<th>Post-project</th>
<th>Pre-project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>P&lt;01</td>
<td>-3.74</td>
<td>0.98 (0.417)</td>
<td>3.7 (0.716)</td>
</tr>
<tr>
<td>P&lt;01</td>
<td>-3.59</td>
<td>0.89 (0.378)</td>
<td>4.74 (0.792)</td>
</tr>
</tbody>
</table>

The questionnaires’ results show significant increase in both parameters of teachers’ satisfaction and motivation. On a scale from 1 (not at all) to 5 (always) the satisfaction rose from 2.72 to 3.70, and Teachers’ motivation also increased from 3.85 to 4.74. The responses became more homogeneous (lower standard deviation), whereas the students responses became more varied (S.D. increased) and polarized. This assessment was validated by the semi-structured interviews in which none of the teachers expressed disapproval or reported thinking the program is a failure, whereas a minority of the pupils did express disapproval.
Some caution is in order when analyzing these differences, because teachers and pupils became involved in the project in different ways. The groups of teachers who teach subjects under the “Bagrut 2000” project are there because they have volunteered to. Even the most enthusiastic principals first consulted their staff before committing their school to the program. Furthermore, the program administration scrutinized the schools to verify that only competent and motivated teaching teams would participate.

As a result, the interviewed teachers were more motivated a-priori, or else they wouldn’t have been there to begin with (Sever, 99). Beyond that, because those teachers have opted in voluntarily, and because they also invested great effort in the program, reporting a failure of the project would have amounted to admitting to a personal failure.

The pupils, by comparison, had a limited choice in opting in or out of the program. In schools where “Bagrut 2000” subjects were electives (e.g. Biology, Psychology etc.) the pupils could have elected other subjects, although that is clearly a constraint for some. In many schools “Bagrut 2000” subjects were compulsory (e.g. History, Bible studies)

4.3.1 Teachers' own motivation

Teachers' report on their own motivation post-project is rated remarkably high at 4.74, the highest value the teachers gave to any factor. Correspondingly, the interviewed teachers described feelings of “excitement and reinvigoration.” It is important to note that motivation rose despite an increase in workload and pressures from superiors and pupils. Two teachers explain the increased motivation as stemming from internal incentives, such as an increased sense of responsibility, satisfaction and peer support:

The project awoke new powers within me, new directions of teaching. It gave me motivation to do things differently. The evaluation is performed in school and not by the ministry of education. It led me and other teachers to build new systems for evaluation and new ways for teaching. This enabled me to work creatively and not work to fulfil the curriculum. All these aspects improved my motivation.

My motivation increased because of the pupils who were suddenly interested in the subject. For once what I said mattered even I didn’t say “it’s going to be on your test”.

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The staff meetings also gave me energy, because I felt we were all doing something different that will change the school.

Considering that teachers' were more motivated to begin with, it is important to find evidence for increased motivation that is independent from the teachers' own reporting. In this study there are several sources of such evidence to triangulate the teachers' introspective reports: The teachers' replies to other questions, the evidence of the pupils, and the evidence of the superiors. Those reports seem to tell a similar story of an increase in motivation to levels not commonly seen in Israeli high schools.

Looking into the teachers' responses in the interviews about other questions supports the conclusion that the program increased motivation. For example, when asked “What do you think is the importance of the project [Bagrut 2000]?”, quite a few teachers mentioned its positive impact on their motivation. For example an agricultural teacher said:

The program improved teaching and evaluation methods and diversifies them. It increases motivation and interest in pupils but also in the teachers. We become learners ourselves and not just a source of material.

In response to another question, about whether they would have preferred to revert back to the old teaching style, all the interviewed teachers said they would not. To establish the importance of this finding, it must be noted that most of the teachers also complained about heavy workload and insufficient compensation. Therefore their enthusiasm for the project cannot be explained by a change in the workload or remuneration. The change must be sought in intrinsic changes, a conclusion supported by the statements such as:

Once you go through the process of qualification, your attitudes to teaching change. It is difficult to go back to teach the old way. I don’t even think you can mix the two methods.

The pupils also observed this increased motivation in their teachers. Although they were not asked about it specifically, their answers repeatedly mention teachers' increased efforts to help them. Their teachers worked after school hours (rather uncommon in Israeli schools), met them anytime, and made themselves continuously
available for helping impressed the pupils. Answering a question about their trust in
the school and teachers, two pupils responded with the following statements:

My teacher stayed two extra hours just for me, and so did other teachers and even the
librarian. You get more help and support.

I saw a different side of the teachers. They come after school hours, sit with us and
give a feeling that they are on our side and that they are available. They work harder
and adopt the project as if it was their own. Project teachers definitely want us to
succeed more than other teachers, so they are enthusiastic and try harder.

Teachers’ increased motivation was also observed by their superiors, the principals
and the project leaders. All the superiors interviewed, except one principal, claimed
that teacher’s motivation rose significantly. It was exemplified by their willingness to
volunteer extra hours and extra effort to prepare material and support the pupils. The
 principals and project leaders also described a number of reasons for the improvement,
such as increased autonomy and authority, more varied work, a sense that the system
trusts them, as one principal said:

Teachers’ motivation increased. The program enabled them to prove their
professionalism. We observed mobilisation of teachers beyond school hours. Sub­
teams worked many hours in the afternoon. The mobilisation to perform duties and
presents issues... You could see the spark in the eyes. Within four years there, was a
meteoric rise in motivation and excitement, and later a bit of a decline until it settled.
The project affected teacher’s work, which became more professional, and that
certainly impacts motivation.

It is important to remember, though, that the project’s most important positive
outcome - the sweeping enthusiasm of the teachers - reflects its most inherent
methodological weakness: the selection of the participants. As it is easy to teach
motivated students, so it is easier to motivate teachers who believe in the values and
the methods of the new system. Only a full-scale program would verify the extent to
which such pedagogic methods have a positive impact on teachers.

4.3.2 Teachers’ satisfaction

Along with the increased motivation, the quantitative surveys found an even sharper
increase in the job-satisfaction of the teachers. Whereas motivation increased by 0.89,
satisfaction rose by 0.98 (from 2.72 to 3.70), a very significant increase (p<0.01).
Analyzing the qualitative findings reveals several clues for the causes of the increase and its consequences.

Teachers themselves voiced a sense of “liberation from the burden of Bagrut exams”. At the same time, teachers (often the same ones) ascribed their increased satisfaction to their new experiences, which drove them to be more creative. One teacher, who used the phrase “good riddance” about the examinations in response to a question about the importance of the project, described the causes for changes in her motivation as follows:

All of us [the teachers] and pupils were exposed to many diverse sources of information. I frequently changed the order of the curriculum and created new and diverse activities. We learned about new topics and tracked their pupils’ areas of interest. We were simply doing things. A lot of things.

This is interesting, because the teachers attributed their increased satisfaction to reduced load of the final examinations, while at the same time attributed the same increase in satisfaction to an increase in workload. It must therefore be concluded, in my view, that the actual workload was not the determining factor but rather the nature of that workload. Under closer scrutiny, it is noticeable that the teachers’ satisfaction increased is due to having to do less of the things they hated, and more of the things they enjoyed.

The project leaders noted an increase in satisfaction of the teachers participating in the project, despite the fact that these teachers did not avoid expressing their dissatisfaction from the educational system in general, as well as the reward system on which their compensation was based. Although teachers understand the rationale underlying the project, most complain of a heavy workload and great pressure which is imposed on them over the course of the project. As one project leader privately told the researcher:

We called them [project teachers] “the bees”, and to their face, we said it’s because they are hardworking. But amongst ourselves [herself, the other project leader and the principal] we thought it was because of the constant buzzing of ‘can we do this’, ‘can we do that’, ‘why aren’t we paid more’ and ‘why do we work so hard’. Every time one of them got into my office, I knew they’d tell me one of these sentences.
This report is interesting when triangulated with the teachers’ own testimonials. It appears that the teachers did indeed derive satisfaction from their new work, but it also appears that they enjoyed complaining about it. This might be because it was a way of getting attention to their work and drawing compliments. It could also have been a ploy to get a pay raise (none was forthcoming, as we now retrospectively know).

Several project leaders attributed teachers’ increased satisfaction to their teamwork, and reported that one of the positive effects of increased satisfaction was reduced burnout. This report has not been objectively confirmed, and so may or may not be accurate. It is worth noting, however, that anecdotal evidence suggests a surprising trend of promotion of project teachers to managerial positions and academia. Some claimed that pupils’ motivation and satisfaction generated teachers’ motivation as well.

School principals reported a general increase in teachers’ satisfaction, stemming primarily from their pupils’ special grades and achievements, their pupils’ expressions of creativity, their improvement in writing skills. Satisfaction of achievements of their weaker pupils, some of who would have failed in the absence of the project, created a general climate of satisfaction.

This report is curious, as we now know that the level of achievements did not actually rise, at least not significantly (Sever, 1999). Assuming that the increased satisfaction is indeed real, the principals’ report can be explained in one of two alternative ways: Either the principals misunderstood (or misrepresented) their teachers’ attitudes, or the teachers themselves were ignorant of the stagnation in grades. In my view, while the first alternative cannot be ruled out, there are several quotes of teachers referring to improved achievements which support the plausibility of the second explanation.

### 4.4 Interpersonal aspects

As a project that is heavily based on group discussion and collective learning, it was hypothesized that the program would improve interpersonal relations between student and teachers. Three such measured were derived (see table 4.7):

- Student-teacher relations
School's social atmosphere

Student-student relations

Table 7 Pre and Post Comparison of Social Relations

<table>
<thead>
<tr>
<th>Factor</th>
<th>Pre-project</th>
<th>Post-project</th>
<th>Differ.</th>
<th>F / Z</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td></td>
</tr>
<tr>
<td>Student teacher relationship</td>
<td>3.42</td>
<td>1.29</td>
<td>3.66</td>
<td>1.02</td>
<td>0.44</td>
</tr>
<tr>
<td>Student-student relations</td>
<td>3.79</td>
<td>1.26</td>
<td>3.64</td>
<td>1.23</td>
<td>-0.15</td>
</tr>
<tr>
<td>School and class atmosphere</td>
<td>2.53</td>
<td>1.04</td>
<td>3.19</td>
<td>1.26</td>
<td>0.66</td>
</tr>
<tr>
<td>Student-teacher relationship</td>
<td>3.9</td>
<td>0.436</td>
<td>4.47</td>
<td>0.511</td>
<td>0.57</td>
</tr>
<tr>
<td>Class atmosphere</td>
<td>3.1</td>
<td>0.564</td>
<td>3.77</td>
<td>0.392</td>
<td>0.67</td>
</tr>
<tr>
<td>School atmosphere</td>
<td>3.66</td>
<td>0.788</td>
<td>4.06</td>
<td>0.454</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Spending more time together, conferring on intellectual tasks, developing material and assignments, and getting prepared for external evaluations certainly had an impact on the participants' relations. School and class atmosphere significantly improved according to all sources. On a scale of 1 to 5, the teachers reported an improvement of classroom atmosphere from 3.10 to 3.77 and of school's environment from 3.66 to 4.06.

Interestingly, the students described the school's atmosphere as being much less positive than the teachers, yet they too maintain that it has significantly improved (from 2.52 to 3.10). It is worth noting that the initial evaluation of school atmosphere was very low. Meanwhile the students' initial attitude towards the teacher-student relation was certainly more positive. It seems that the students were more tuned to didactic relations with their teachers than to the global perception of school's environment.
The teachers also evaluated their relations with the student in a very positive light. The program has benefited the mutual relations (from 3.90 to 4.47). As for student-student relationship, only the students were asked to about. That measure was found to lack satisfactory reliability and a statistical rigor. The results were found to insignificant although a slight decrease was recorded (from 3.77 to 3.64).

4.4.1 Student - Teacher relations

The questionnaires' results demonstrated a significant improvement in the mutual relations between students and the faculty. Being further investigated in semi-structured interviews, the respondents confirmed this trend and offered several explanations for it.

According to the pupils, one explanation was the intensive cooperation between teachers and students, which reduced the level of mistrust common between the sides and increased cooperation. For example, a religious 12th grade girl emphasized the emotional aspect, while a vocational 11th grade boy was more succinct:

It is not a regular relationship between pupil and teacher. This relationship has more sharing of emotions and personal problems. We had a lot of that in literature studies and also when I studied biology last year we had a warm and personal relationship. All that effects the courses too, it made schoolwork interesting and made me like those subjects more.

The relations with teachers definitely improved. My “Bagrut 2000” teacher is different because she speaks at my eye’s height [Hebrew idiom for ‘not talking down at me’], involves us more. We discuss schoolwork extensively, and sometimes we talk about more general things. The entire structure of relationship between us (the pupils) and the teacher is changed.

The interviewed pupils were asked how the project changed their relationship with the teachers, and the two quotations above certainly answer that question. However, the answers of some pupils gave interesting insights not only to the causes of the improvement in relations, but also to their effects. An agricultural school’s 12th grader’s statement describes a complicated web of causes:

Thanks to the project I have closer and more personal relations with a [any] teacher
who assists and consults. My motivation increased and my grades have improved and that further improved my relations with the teachers because I made more efforts.

In effect, this pupil (and a few others) presents several factors that affect each other, and their interaction makes it difficult to delineate cause from effect. The improved personal relations were caused by the project, but they set in motion a process which, through increased motivation, increased effort (and indirectly, through increased cooperation) improved achievements. This improvement (which was reported by many pupils and teachers but was not proven independently) improved the teachers’ attitude towards the pupil, and through reciprocity (Breznitz, 1970), improved the pupil’s attitude to his/her teachers. The circle’s end result is thus pupils feeling better about their teachers, which is also its beginning.

On a note of caution, it should be remembered that two of the 12 interviewed pupils (17%) said that there was no improvement in relations as a result of the project. This finding concurs with a standard deviation of 1.02 ‘post-project’. Those two pupils’ replies were very short: “The relationship is the same and if anything’s changed it is for the worse” said a pupil from a vocational school, and a religious pupil said “I’ve not seen any change, the teacher helps us when she has time for it”. My best judgment is that the increased intensity of the relationship had a stronger effect on pupils who had personal problem with their teacher. Prior to the project those pupils have only seen the teacher in class for 45 minutes and there was little personal interaction. Now they had to interact with the teacher more closely and often be in contact after class. Therefore it can be assumed those pupils who suffered from their relationship with their teacher suffered more under Bagrut 2000.

The interviewed teachers also observed the improved relationship found in the questionnaires, and they too recognized that the improved feeling was mutual. They reported open communication lines to their pupils, and a better and more respectful attitude. To an extent this improvement may have been caused by special workshops conducted by Open University instructors for program teachers about improving their interaction with pupils. However, teachers’ did not attribute this improvement to the program administration’s efforts but to their own and their pupils’ efforts. Two statements by teachers explore the changes:
There was a fundamental change in relationship to the program’s staff. The relationship acquired a social face and not just academic one. The bond created enabled pupils to reach a higher level of openness with the teacher, and to find in him a closer man in the social and personal field.

We became more attentive and responsive to our students, and more willing to assist them even after conventional teaching hours.

4.4.2 Trust between teachers and pupils

The question about trust between pupils and teachers was not a part of the quantitative questionnaires, and was designed as a tool to improve the insight into the social dynamics that “Bagrut 2000” set in motion, and to triangulate the change in teacher-pupil relations through a different angle.

Analyzing the results show that all the staff members agreed that trust between faculty and pupils improved. Most pupils also reported improved trust, except for two pupils who reported feeling “left out to contend with the material by myself’. The rest of the pupils reported visible improvement in their mutual trust with teachers. Using statements like:

Trust is when I said to the teacher that I did not prepare for the exam because I didn’t have time, even though I could have made-up a different answer that would have convinced her.

Interestingly, their responses relate to the increase in trust with a general increase in interaction with the teachers, and in particular the increased effort of the teachers. Clearly, the improvement owes much to the way in which the increased cooperation took place. But one question that this study cannot answer is whether simply increasing the amount of joint effort can improve trust by itself.

In addition to the amount of time spent by the teachers on their work, the quality of their assistance also mattered. Based on their responses, the teachers appeared to share their plans and intentions with the students and make joint decisions. In a regular setting, a pupil writes an exam or a paper and receives a grade. That traditional method results in an opaque outcome, which the pupil cannot understand, and even if he/she learned something from the evaluation he/she cannot implement it (because the test is over). In contrast, students in “Bagrut 2000” receive back their assignments with
comments and are then expected to amend and hand in again. This process is repeated until the paper is satisfactory. This increased transparency probably alleviated the students' concerns and increased their motivation. A religious boy explained:

My trust level in [the] teachers and school rose. They explained to me how to improve my work, and helped me spot errors. This took much work for me, but also for them. No other teacher in school makes such an effort.

As for the way in which teachers and pupils improved their trust, the students felt an alignment of interests with the teachers: "my trust [in the teachers] increased because the teachers want to help us and not to fail us", said a vocational school pupil. Needless to say that the teachers' increased motivation and assistance have strengthened the students confidence in their ability to help them master the material.

I suddenly [began to] trust the teachers. I now believe they want to help and act on my behalf. I see it through their work and mine: I see that the project’s teachers really do work harder than other teachers do. They make compromise when I need and they care more.

Interestingly, the teachers did not reflect in general terms about their increased trust in pupils, they mainly emphasized how the pupils trust them more. The teachers attribute the increased trust to the changed roles of pupils and teachers. The teachers now see themselves and their pupils as partners, not opponents in the learning process. It appears that emotional intimacy played significant role on both sides:

The project led to a dialogue between my pupils and me. The dialogue led to more confidence, because the pupil sees himself and his friends as equally responsible to the learning process. This is a trust between equals.

In particular, teachers emphasized the role played by the 'reflection process'. Both teachers and pupils had to continuously evaluate themselves, and those evaluations were shown to the pupils, teachers and program leaders. This remarkable transparency had the effect of giving both sides the feeling that their partners in the process were being candid, and hiding nothing.

The surprising fact, in my opinion, is that while the teachers reported the reflection as a major contributor to improved trust, only one pupil even mentioned it. It is possible that the teachers, who reportedly had a very difficult time of it complying with the
requirement of reflection as they felt they might lose authority, have attributed more importance to reflection because of its greater significance to them.

The reporting of the managerial level of the school seems to agree with seeing a positive change in the trust between pupils and teachers. The principals and the program directors have offered explanations that are broadly in agreement with those of the pupils and the teachers. One principal reported that:

The nature of work and teaching in the frame of the project demanded new behavioural pattern. The group work of the pupils and the teamwork of the teachers required increased intimacy which led to more openness and trust between the teachers and the pupils, and within each group.

While a project coordinator said:

The fact that pupils were a part of constructing their own grading, and that they were given a clear reasoning for every criterion on which they were examined, made the pupils witness for themselves that they are adjudicated by the teacher fairly and trustworthily.

The principals all made a clear distinction, however, that the increased trust did not spread to the relation between those same teachers and other pupils, or between those same pupils and their other teachers.

4.4.3 Pupil to pupil relations

Relations between the pupils were expected to have improved moderately. The reasons are an emphasis on teamwork, the sense of belonging to a unique group, and the improved relations with the teachers. However, the quantitative results were not found to be significant, but if anything, they suggested a slight deterioration in the relationship between the pupils, declining from 3.79 to 3.64.

The qualitative findings, however, present contradictory, and to a certain degree, a confusing trend. The pupils' replies to the questionnaires were almost unanimously positive, and the observations of the teachers and principals were also about improved cooperation and better teamwork. Since the reliability of that construct – pupil to pupil – was close to zero (-0.06) and we may conclude that on this particular aspect, the methodology proved to be unsatisfactory and more careful study is needed.
A possible explanation for the fault can be found by comparing the undertones of the pupils’ responses with those to other questions. Pupils’ replies to other questions were often (though not always) upbeat, and mixed improved factual outcomes with better feelings about them. When responding to questions about their relations with their peers, the pupils focus entirely on factual, technical reports of improvement, and omitted cheery remarks about their emotions. Contrast for example the replies of a single pupil from a religious school to the previous question (relations with teachers) with his answer about pupil-pupil relations:

This is not a regular relationship with teachers. Here we share emotions and personal problems. We did it a lot in Literature and also in Biology we had a warm and personal bond. All that affected academics. It made schoolwork more interesting and made me love the subject.

As opposed to:

We found ourselves helping each other more. Opening books together, sharing subjects between two or three pupils. Those who chose the same topics work together and progress together.

Although both statements report positive improvement, there was no emotional involvement in the latter. This detachment can explain the positive reports of teachers and principals, which have reported seeing significant improvements. If the pupils did work together more, the adults would have only seen this trend and deduce improved relations. They apparently did not and could not observe the underlying emotions.

4.4.4 Classroom atmosphere

Classroom atmosphere has been for years a very intriguing issue (Yariv, 1999). Early studies consisted primarily of observation and dealt with the teacher’s leadership style. However, researchers gradually learned that the most reliable information source for the trends, events and relations in the class were the teachers and pupils involved. Subsequently, most of the recent studies in the field are based on self-reporting (“perceived climate”), rather than observations by outsiders.

Despite the vast amount of research on classroom climate, findings have brought no conclusive outcome. A particularly interesting finding (or rather, lack thereof) is that
no significant relationship has been established between class atmosphere and academic achievements (Friedman, 1995). However, the fact that traditional teaching was not affected by classroom atmosphere is not a reason to exclude classroom atmosphere from this research. This is because the research is explicitly focused on the "soft" effects of Bagrut 2000, and because the very subject matter- the "Bagrut 2000" project- was intended to improve education in a broader sense than just how much subject matter was studied.

The research hypothesis is that classroom climate in classes involved in the project would moderately improve. That is because some of the more stressful elements present in class are removed: the pressure of the matriculation exam is eliminated, the teachers can no longer fail to keep the class interested because they are not lecturing, etc. In my view, the reason why the improvement is moderate is a 'dilution' of the classroom atmosphere. Since there are less activities involving the class as a group and more activities performed individually or in smaller groups, there is a smaller portion of time in which the pupils are organized as a traditional class.

Both the quantitative and the qualitative results support the research hypothesis, and point to marked improvements in the perceived classroom atmosphere, along with strong indications that this improvement is more than a mere subjective perception. Quantitatively, as seen in table 4.7, pupils reported an improvement in class environment from 2.53 to 3.19. This is a significant increase (p<0.01) with an F value of a very high 69.40. The standard deviation made a surprisingly small rise, because there are some reasons to expect an increase in the heterogeneity of pupils' response - in traditional teaching, the entire class sits together, listens to the same teacher and thus shares identical experience, and we can therefore expect similar impressions. In the Bagrut 2000, however, the class often breaks up into groups, each with its own unique atmosphere. In addition, pupils' presentation of their work to the whole class is experienced differently by every individual. Therefore, because of fragmentation and the need to speak to the class, the atmosphere experienced by different individuals in the same class varies. It is therefore surprising that the difference is not larger.

Teachers reported an increase from 3.10 to 3.77, similar to the increase reported by pupils. This rise is significant (p<0.01) and its z value is 3.26. In the interviews, the
teachers reported that the classroom atmosphere became more “studious”, reflecting increased interest in the subject matter, and increased commitment by the pupils to their own learning. A representative quote by a vocational teacher:

Classroom climate was pleasant. The project improved the mutual feeling and improved communications in the class. The atmosphere became learning oriented in a way that on the agenda there were only program issues and no distracting social problems.

The principals did not witness classroom atmosphere first hand, but they too described an improved atmosphere in “Bagrut 2000” classrooms such as “The [Bagrut 2000 pupils] felt like an elite team and behaved accordingly.”

Project leaders, who also teach classes, provided more useful explanations for the improved atmosphere, which they claimed was caused by the program’s inherent mechanisms, such as autonomous learning and an emphasis on personal responsibility. Two project leaders noted:

Classroom atmosphere improved because there are many opportunities to start things over, so very few pupils remained detached. The mutual trust between pupils and teachers cleared the air in the class from the regular rivalry between the sides.

There are far fewer truancies and day to day running became smoother. It was made clear to the pupil that he is evaluated also according to his presence and participation. Classroom involvement became part of the evaluation criteria.

This last quote is of additional significance, because it touches upon an issue that has been surprisingly absent from the interviews of both pupils and faculty: discipline. Israeli classrooms are notoriously undisciplined, with pupils regularly disrupting lessons, skipping classes, or otherwise misbehaving. Given that this issue features so prominently in Israeli educational discourse (Yariv, 1999), it would have only been expected to appear in these interviews. It is fair to assume that had discipline levels deteriorated, pupils would not have reported having worked so hard. Even more reliably, the teachers would not have reported increased effort on part of the pupils. It can thus be safely assumed that discipline level improved, but other than this last quote, there is no hard evidence for that.
4.4.5 School climate

In the quantitative questionnaires, the teachers (as opposed to the pupils) were also asked about the school’s environment. They reported a rise in school atmosphere, from 3.66 to 4.06 which was smaller than the rise of classroom atmosphere, and with a lower significance (p<0.05) and lower Z value (2.25). Although not predicted in the hypotheses, this difference makes sense, as the impact of the project on the entire school is diluted by the simple fact that most subjects and teachers were not involved in Bagrut 2000.

Teachers were satisfied with the improvement in the classroom climate — they witnessed increased interest in the subject material and a sense of a joint purpose for the entire class. Teachers also attributed the improvement in classroom climate to the reduced sense of pressure which typically characterizes the final years of high school when pupils work towards their Bagrut exams.

Principals and project leaders were also requested to comment on their perceptions of the climate in the schools participating in the project, and whether participation in the project had a radiating effect on the school climate in general. Project leaders found it difficult to generalize about an improvement in the school climate. One half of the project leaders claimed that improvement in the school climate developed primarily as a result of the adoption of alternative assessment methods.

All school principals reported a significant improvement in the learning climate of classes involved in the project, and two principals even reported improvements in the climate of those classes when studying subjects. However, different schools experienced different effects on the remainder of the student body. While some reported only curiosity towards the project, others reported enthusiasm bordering with jealousy on the part of the pupils who did not take part in the program. Some even claimed that the positive atmosphere had an effect on learning in other subjects. The engagement in learning and investigation, learning for its own sake rather than for the Bagrut exams, generated a different climate. In one of these schools, the principal said:

The school enjoyed what I would call ‘a halo effect’ – workshops for program teachers
were envied by others, and the teams [of teachers teaching] in other subjects wanted to join. Methodologies were copied and used elsewhere.

4.5 Statistical analysis

All the correlations among the seven factors were found to be positive and rather low. Due to the large sample, about half were statistically significant. No specific initial hypothesis was formulated other than expecting the correlations to be broadly positive. One would expect that an improvement in one factor (e.g. autonomous learning) would enhance other individual and interpersonal realms (e.g. self esteem). Before presenting the main findings, caution is warranted regarding the interpretations.

As with the general premises on which the program was based, and contrary to the common wisdom, a positive correlation was found between autonomous learning style and student-teacher relations. That finding was found stable before (0.262) and after (0.250) the program, meaning the more students were independent and self-directed, and asked teachers' assistance on a more mature level, the more enhanced were the mutual relations. It is possible that this correlation stems from the fact that pupils' independent ideas were no longer frowned upon, and their desire to express themselves was encouraged. A ministry official quoted a pupil she once heard saying, "If they made us join them, how could we fight them?"

In addition, in accordance with the project's ideas, positive correlations were found between the three interpersonal measures: student-teacher and school's atmosphere (0.33); student-teacher and student-student (0.26); student-student and school atmosphere (0.28).
### Table 8 Correlations among factors

<table>
<thead>
<tr>
<th></th>
<th>Self esteem</th>
<th>Students' satisfaction</th>
<th>School and class atmosphere</th>
<th>Students' autonomous learning</th>
<th>Students' motivation</th>
<th>Student-Student relations</th>
<th>N=323</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student teacher</td>
<td>0.224**</td>
<td>0.249**</td>
<td>0.317**</td>
<td>0.262**</td>
<td>0.205**</td>
<td>0.122*</td>
<td>Pre</td>
</tr>
<tr>
<td>relationship</td>
<td>0.287**</td>
<td>0.212**</td>
<td>0.330**</td>
<td>0.250**</td>
<td>0.021</td>
<td>0.260**</td>
<td>Post</td>
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<tr>
<td></td>
<td>0.232**</td>
<td>0.144*</td>
<td>0.200**</td>
<td>0.177**</td>
<td>-0.063</td>
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<td></td>
<td>0.099</td>
<td>0.253**</td>
<td>0.099</td>
<td>0.004</td>
<td>0.09</td>
<td></td>
<td>Post</td>
</tr>
<tr>
<td>Pre</td>
<td>0.256**</td>
<td>0.302**</td>
<td>0.220**</td>
<td>-0.028</td>
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</tr>
<tr>
<td></td>
<td>0.204**</td>
<td>0.139*</td>
<td>0.119*</td>
<td>0.104</td>
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<td></td>
<td>Post</td>
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<tr>
<td>Students' satisfaction</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>School and class</td>
<td>0.353**</td>
<td>0.122*</td>
<td>-0.089</td>
<td>Pre</td>
<td></td>
<td></td>
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<tr>
<td>atmosphere</td>
<td>0.201**</td>
<td>0.132*</td>
<td>0.281*</td>
<td>Post</td>
<td></td>
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<tr>
<td>Students' autonomous</td>
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<tr>
<td>learning</td>
<td>0.244**</td>
<td>-0.019</td>
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<td>Pre</td>
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<td></td>
<td>0.043</td>
<td>0.154*</td>
<td></td>
<td>Post</td>
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<tr>
<td>Students' motivation</td>
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<td></td>
<td>0.004</td>
<td>0.38</td>
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</table>

* P<.05 **P<.01

Probably the most interesting finding is that students' self-esteem is mainly correlated to social inter-relations more than to academic capabilities and achievements. On both time frame measurements, student-teacher relations correlated positively with self-esteem (pre 0.22 and post 0.29). Such is also the case with regard to school and class atmosphere (0.15 and 0.26 respectively). These finding may be explained by the sociometer theory (Leary et al, 1995), which hypothesizes that people have a fundamental need to belong and that self-esteem plays a role as a 'relation detector', a social monitoring mechanism. This 'sociometer' is designed to help us avoid rejection and promote affiliation and is sensitive to indications that social status is in jeopardy. It operates constantly with or without the individual's awareness, so that threats to the social status are detected, no matter what else the person is doing; It automatically makes the individual feel uncomfortable when it spots such cues. People with high self-esteem feel more assured and less in need to continuously evaluate whether they
are liked. In contrast, people with low self esteem feel less assured, believing that others will reject them if they fail (Baldwin and Sinclair, 1996).

In the case of Bagrut 2000, the high level of correlation indicates that the pupils did value their teacher’s opinion about them, and that the program increased the significance attributed to that opinion.

4.6 Conclusions

Chapter 4 presented the findings of the field research planned in chapter 3. This chapter has reviewed the data focusing on the changes generated by “Bagrut 2000” project to the pupils, then to the teachers, and then to their mutual relationship.

At the personal level, all research hypothesis were confirmed. There was a significant increase in pupils’ propensity for autonomous learning and an improvement in their motivation and satisfaction, though not their self-esteem. Teacher’s motivation and satisfaction have also increased along with the involvement and effort taken together by all the teachers and most of the pupils. Despite the increased workload, the teachers’ attitude reflected a unanimous approval of the new teaching methods embodied in increased motivation, improved satisfaction, and new teaching methods.

The conclusion from both the pupils and the teachers is, to paraphrase Abraham Lincoln, that you cannot satisfy all the people all the time. “Bagrut 2000” satisfied some people all the time, and as long as it remains voluntary for both pupils and teachers, it has the potential to improve the school experience provided by the Israeli educational system to both its clients (pupils) and employees (teachers).

At the inter-personal level, the study found that the teachers and students of “Bagrut 2000” get along much better than they used to, and feel better about each other. On the other hand, contradicting results between the questionnaires and the interviews regarding relations amongst the pupils were found, and further study will be necessary on this point.
After reviewing and interpreting the empirical data about “Bagrut 2000” in this chapter, the following chapter discusses the underlying meaning of the findings. This analysis is structured from pupils to teachers, to the mutual interaction between the two groups.

5. Discussion

5.1 Introduction

The findings of this research revealed significant and interesting changes brought about by the “Bagrut 2000” program which deserve closer inspection and analysis. Mainly, the schools involved in the program have demonstrated significant increases in their pupils’ motivation, ability for autonomous learning and satisfaction, and to a lesser extent, pupils’ self esteem. The teachers also reported increased motivation and satisfaction. In addition, the relations between the pupils and their teachers improved in line with a general improvement in classroom atmosphere and school-wide atmosphere, although both teachers and pupils complained of a much heavier workload. Altogether, it was found that teachers and pupils treated each other with a more personal and respectful attitude. These findings broadly confirm the predictions of the program’s developers and are in line with findings of existing research.

The following discussion will be divided into three sections, with increasing breadth of focus: First we discuss the program’s impact on the individual students and their relations with the school. The focus is on how – and why – pupils are more willing to work harder than they had to, learn for themselves, and share these goals and experiences with the faculty. The second section relates to the influence of the program on the teachers and their teaching. This section points to the manner in which the empowerment of teachers transformed “Bagrut 2000” into a breeding ground for future principals, and analyzes how the new teaching methods influenced and were influenced by the new assessment methods. The third section looks at the mutual effects that the changes in the pupils effected in the teachers and vice versa. In particular, it deals with the changed atmosphere in the classroom, and the reduction of disciplinary problems. Subsequently it deals with the improved communications
between pupils and teachers. Finally, it discusses the striking similarities between the trends undergone by pupils and those undergone by their teachers.

5.2 Learning in a different method

The “Bagrut 2000” program set out to make a fundamental change in the way pupils learn. By substituting constructivist learning, in which pupils mould new knowledge from an amalgam of different sources, the program marginalised the traditional frontal teaching that Israeli pupils have come to see as synonymous with high-school learning. This and other changes, such as the elimination of matriculation examinations and their accompanying stress, or the reciprocal changes undergone by teachers, positively affected the pupils in all the areas investigated (with the exception of self-esteem).

This section analyzes the changes that have been uncovered in the questionnaires and interviews, in three major areas. First it will look at the way in which pupils have been made to “learn to learn” and will compare these changes with other countries.

Second, this section analyzes the improved motivation in the pupils, and seeks to find the contributing elements and their relative importance, relying on Kyriacou’s model. Third, it looks at the causes from which improved satisfaction stemmed, and the effects of this improvement.

5.2.1 Learning to learn

When the “Bagrut 2000” project was conceived, the Ben-Peretz committee (1994) attributed the promotion of “higher order and independent learning” to a prominent place in its priorities. The project’s methods were intended to enable teachers to assist their pupils, not only in learning subject matter, but in learning how to acquire this knowledge independently, and to acquire skills that would help them acquire new knowledge when necessary.

5.2.1.1 Methods of promoting independent learning

There is a debate about how independent study skills can best be conveyed to pupils. One option, detailed by Mayer (1988), is to set up separate courses (i.e. courses
outside the context of the regular subjects) to teach learning strategies, such as learnable techniques for selecting information, searching on-line databases and so forth. However, the effectiveness of such courses has been seriously questioned. Some studies concluded that these courses are efficient (Biggs and Rihn, 1984), while others indicated that they are not (Ramsden et al., 1986). Some doubts exist about the potential for transfer of the skills to regular courses. Many students perceive and experience these courses as isolated from regular study, and they fail to connect what they learn in the course to their regular methods of studying in other courses (Simons, 1987).

Currently, there is an increasing consensus that the proposition "learning to learn" cannot be taught in a separate course, but must be embedded in regular courses. Apparently, one major reason for the improved effectiveness of the embedded approach was the more immediate connection between theory and practice, because learning the skills was the only way to study and be assessed in the subject matter itself. When a dedicated course teaches a skill, but no subject-matter course requires its implementation, the pupil's interests in it depreciates, and when such eventualities recur, the pupils' interest diminishes. Conversely, when a subject matter teacher teaches the skill and subsequently employs it in teaching and assessment, its relevance becomes self-evident. Repeated use of the skill by that teacher helps the pupils assimilate it, and its use by other teachers will compel pupils to transfer and assimilate the skills by applying it to a more general context (Waeytens, Lens and Vandenberghe, 2002).

An MOE official has indirectly supported this conclusion when reporting her observation from the first year of the project:

We compiled a list of teaching methods, and in 1998, the schools scrambled on it like starved people, wanting to adapt every single one. In the following years they realized they have bitten more than they could swallow, and that some of the methods were simply not allocated enough time to 'sink in' with the pupils. In the next year they were much more sensible, and I think the pupils learnt better too.

Therefore, it is now recommended that teachers in all courses require that their pupils acquire some degree of independent learning, and include independent learning skills in their instruction. Thus, acquisition of independent study capacity is inseparable
from subject matter, and the skills provide immediate and tangible benefits (Ramsden et al, 1986, Weinstein, 1994).

With specific reference to "Bagrut 2000," it has certainly adopted the modern theories of teaching independent study skills. These skills were inextricably interwoven into the curriculum, and became an organic part of everything the teachers and pupils did. The current findings support earlier studies (Immanuel, 1998; Silberstein and Geva, 1992; Yadid, 1993; Steter, 1998), which found that the majority of pupils who participated in active learning programs expressed satisfaction, and found the program to be interesting and challenging.

5.2.1.2 A comparative analysis

Given the special nature of independent learning which is still the subject of some controversy, especially compared with notions such as motivation or self-esteem, it is worthwhile to evaluate "Bagrut 2000" in a more global context. The following section compares the Israeli application of independent learning to other projects overseas.

Based on Vand den Houte's (1992) terminology, it seems that the teachers in the project fulfilled the three functions of teaching to learn: supportive, remedial and developmental. First, the supportive function, in which they improved the means used by pupils to achieve success within the standard educational environment. The remedial function, in which they made pupils familiar with information processing or problem solving strategies. Students were now better equipped to solve new problems and process new information. They helped their students enjoy learning and be intrinsically interested in what they are studying. The teachers also seemed to ascribe to the developmental function, in which they became guides, facilitators or coaches of the students learning process.

In comparison, Hounsel's study (1979) found that most teachers have a narrow sense of independent learning. In the opinion of those teachers, "learning to learn" is limited to giving tips and general advise, mostly to younger and less able students. A minority of teachers had a broader vision of 'learning to learn.' Hargraves (1994) found that 15 years later, society imposed many changes, but the underlying structure of schools and
education has not changed. The task of teachers has expanded, but the old tasks and goals are still predominant.

Compared with the results of Waeytens et al. (2002), who found that the majority of teachers have a narrow sense of learning to learn, and whose teachers were found to believe that learning to learn is limited to giving tips and general advice, the findings of this study are quite different. The Israeli teachers in interviewed in 2000 and 2001 reported intense interest in promoting independent learning, coupled with extensive efforts to achieve the goal. They seemed to have an exceptionally wide interpretation of what independent learning is, which academic skills which could feasibly be crammed into the school year – from group discussion and critical thinking to online databases, group discussions and reflection. The principals reported that the pupils were encouraged to do as much work on their own, including the selection of what to learn, selecting sources, setting goals and deadlines, and the drawing the conclusions from their own successes and failures.

Ostensibly, therefore, Israeli teachers are either much more open to independent learning and constructivism then their colleagues abroad, or they have developed significantly since 1994. The first hypothesis can be supported by the more informal and egalitarian nature of Israeli schools and society. This approach, based on the intimacy of Israeli pupils and teachers, and demonstrated by the tendency of Israeli pupils to address their teachers by their first name or to challenge their authority regularly, can lead to a more natural transition in the teacher’s role from a lecturer and instructor to a coach and facilitator. This notion is reinforced when noting that pupils from countries (such as Japan) sporting a rigid disciplinary regime have had difficulty (Usuki, 2001) adapting to a more independent learning regime. Israeli pupils and teachers have been found to react in a similarly favorable way to the introduction of autonomous learning, so it can be concluded that a neutral or negative reaction by pupils is mirrored by a similar reaction of teachers.

The second hypothesis can be supported by assuming that the temporal difference between this study and others has allowed the dissemination and incubation of such concepts, and their wider adoption. In addition, changes to the general society, such as
the proliferation of the internet, the advent of globalization and the mainstreaming of post modernism have lent added weight to this process.

On the other hand, an explanation for this research’s results can be made that does not accept the face value adoption of independent learning. Here a focus can be made on the selection process of the participating teachers and principals. While the program was not voluntary to the teachers, it was voluntary for the principals, and an argument can be made that only principals who knew they would have their staff with them have committed their schools to the program. Thus, the teachers who were sampled in the paper may have over-represented the group supportive of independent study compared with the general population of teachers in Israel.

5.2.1.3 Conclusions

In analyzing which of these factors is the real cause, my view is that this overwhelming approval of independent learning is actually a combination of all of these factors. None of them is mutually exclusive to the others, and neither of them can be ruled out entirely as irrelevant and invalid. Therefore, Israeli high-school teachers are probably more inclined for the stronger form of independent learning than in other countries, but less than would have appeared from the “Bagrut 2000” teachers’ responses.

5.2.2 Changes in Motivation

The findings of this study included a significant increase in the pupil’s motivation, as reported by the pupils and triangulated by concurring reports from their teachers and their principals. These findings are supported by the studies of Sever (1999) and Teicher and Berger (1997), who also agree that this increased motivation was unencumbered by (apparently justified) complaints about increased workload, has been prevalent across geographic regions, SES strata, administrative affiliation (religious, Arabic, agricultural) and grades. It must be an inherent quality of the “Bagrut 2000” program to motivate pupils, and Kyriacou’s model (1997) helps understand why.
5.2.2.1 Analyzing motivation

In his model, Kyriacou identifies 4 factors that influence pupils' motivation

1. Pupil's home atmosphere
2. Level of anxiety
3. Teachers’ performance and relationships with the pupil
4. Peer attitude towards school and learning

The following analysis looks at the factors in order of increased relevance as explanations in the context of the “Bagrut 2000” program.

Anxiety level: Anxiety is a contributing factor that reflects the level of concerns and alertness of the student. It has long been known that achievements are attained when anxiety levels are neither too high nor too low. Although the questionnaires and the interviews did not include a specific question about anxiety, there is a prevailing feeling from the respondents that anxiety, if anything, has declined. The students (and the staff) reported improved relations between pupils and teachers, increased trust in school staff, and improved classroom atmosphere. They also reported improved self-image and increased satisfaction with themselves and their academic work, suggesting that the levels of stress, fear and anxiety did not rise and probably decreased.

Although process of reflection was initially reported to have been emotionally difficult and caused stress to pupils and teachers, its impact probably was smaller in the long term perspective. There are several studies (Davis and Linn, 2000) that suggest that although reflection is a challenging endeavor, once it is completed, tension falls and a sense of catharsis reduces anxiety.

Home Atmosphere: Parents’ involvement in their offspring’s studies is yet another important contributory factor to motivation. The attitudes and atmosphere at the pupils’ home towards schooling were not targeted at all by the planners and implementers of “Bagrut 2000.” Anecdotal information cited by principals and MOE officials in their semi-structured interviews points to mixed feelings among parents, some of whom were concerned about their children’s prospects if the program fails or...
is aborted prematurely. Some parents objected to the seemingly diminished respect towards the teachers, while others still remained indifferent and uninvolved with their children's schooling. On the other hand, many parents were very enthusiastic about the program and involved in its implementation.

Nevertheless, there is no evidence that the increased motivation generated by “Bagrut 2000” came about through the pupils' home atmosphere or parental involvement. It is thus reasonable to deduce that parents' contribution to their children's motivation remained broadly unchanged. This is largely consistent with the findings of Pinchas (1989), Harpaz (2000) and others who found home atmosphere and personal background to be influential yet static ingredients in motivation—affecting it, but not being effected by school policies.

**Peer Attitudes:** The third factor, peer attitudes, seems to have played a larger role in increasing the motivation of the pupils compared with home-attitudes and anxiety level. It must first be acknowledged that applying this observation of Kyriacou is somewhat circular—in effect it claims that when some pupils are more motivated then some pupils are more motivated, which is almost a truism. A revised formulation of this argument is that an increase in motivation in some pupils, generated by external factors, will be self re-enforcing, as the ‘enlightened’ pupils contribute to the group atmosphere tilting towards studying.

Applying this analysis to “Bagrut 2000” implies that the increased motivation brought about through other sources has resonated throughout the student body, thus re-enforcing the momentum. This explanation, however, is flawed because it leaves open the question of what originally caused the change.

**Teachers’ Performance:** Having ruled out 3 of Kyriacou’s 4 motivating factors as potential sources for “Bagrut 2000”’s increased pupil motivation, implies, as the famous educational psychologist Sherlock Holmes said, the last factor is the relevant one: teachers’ performance and relations with the pupils.
5.2.2.2 Teachers' contribution to pupils' motivation

Kyriacou classified teacher's performance into a number of elements:

1. Increasing pupils' self confidence
2. Giving pupils increased control over their school work
3. Increasing pupils interest in their scholastic commitments
4. Pupils' identification with their teachers, and thus improved role-modeling will increase pupils' motivation.

In the following section, these elements will be analyzed against the findings in "Bagrut 2000" as they appear in the interviews, questionnaires and the literature.

**Increased confidence:** Assessing whether or not pupils' self-confidence increased from the findings is based on the following logical sequence: It has been found that the pupils' reported self esteem increased significantly and that the increase was caused by the program. The teachers' evaluation of pupils' self esteem could not have been used to validate this conclusion because of methodological error.

According to Good and Brophy (1995), self-confidence is composed of self-esteem, success and achievement. What they mean is that the individual's level of self-esteem depends on success and achievements to sustain it, and when these are lacking, a growing level of dissonance builds up. Looked at in reverse, this same analysis implies that changes in the level of success and achievements impacts the level of self-confidence.

Superficially, this should have led to reduced self-confidence in "Bagrut 2000" pupils because their academic achievements were left broadly unchanged according Ministry of Education reports (MOE 1998, 1999). However, the perception of success is a subjective one, and this study points to two compelling arguments for concluding that pupils perceived their experience in "Bagrut 2000" as successful:

First, they met the traditional standard despite heavier scholastic workload. Second, they were challenged by new and demanding requirements such as oral presentation, group collaboration, searching independently for data. Therefore, pupils' reports of
improved confidence can be attributed to an objective assessment, and can be empirically supported by the pupils' improved self-satisfaction (seen in chapter 4 to have significantly increased from 3.07 to 3.5). The account of a vocational pupil exemplifies that point:

Before [the program] I only wanted to achieve minimum matriculation qualification, now I feel better about my abilities so I am aiming higher and working to get high grades.

One girl from a religious school illustrates the results of a process of enhanced pupils' self-esteem and confidence by making them appreciate the skills they acquired:

Today I value myself more. After doing it once, I learned that I can explain myself [to the teacher] and then even [explain] to the whole class, which I was once scared of doing. Once I thought only the teacher knows, but after I learned to criticise her and to criticise myself, my self-esteem is higher, so I am more independent and less fearful.

Indeed, pupils' confidence was actually strengthened by the process of reflection, in which they had to assess their work in terms of results but also in terms of the process. Although it initially scared the pupils (and the teachers, in fact), reflection ultimately made them feel better about their work, either through a catharsis mechanism, or by making them feel they know themselves better (Davis and Linn, 2000). Reflection forced the pupils to confront their own choices and assess how good or bad they were. As a vocational 12th grader said:

...And it helps us understand what mistakes we made—misunderstanding, being too excited, not paying attention. These are actually tools for learning better next time.

**Increased control:** Kyriacou recommends increasing pupils' sense of controlling their schoolwork. This approach relies on McGregor's Y theory, postulating that if pupils make decisions about their studying, they will “the owners” of their schooling and thus be more involved and intrinsically motivated (Mcgregor, 1968).

“Bagrut 2000” placed a great deal of authority in the pupils’ hand, making them highly involved in their learning. The ‘portfolio’ that pupils labored on through the year and handed in by year’s end was on a topic largely of their own choosing. Subjects for oral presentations were also individually selected, and in group assignments, pupils were encouraged to divide the work between themselves according to individual preferences. The goal was not only to motivate, but also to promote independent
learning. The result was that pupils had much the final word over what they studied. As a religious school-girl said:

Now the work is all mine so I work hard to make sure it is good. I can't blame anyone anymore.

And a vocational schoolboy said:

Motivation rose because learning became an experience. Once I didn't put such an effort, but now when I do the work for my self I invest more because it is my creation.

There are reasons to believe that the implementation of reflection increased pupils' sense of control. Although their actual ability to steer policy was limited, they gained insight into how decisions that concerned them (e.g. grades, placement to majors) were made. Further, the fact that reflection was an ongoing process, and that subsequent assignments were also reflected upon, made teachers' efforts to follow up on reflection easily observable. This meant that although pupils could not affect decisions before they were executed, they did have a say in evaluating their results and changing subsequent decisions. As one project leader in a religious school said:

Initially, it was difficult for pupils to give constructive criticism: it was all either moaning and complaining, or flattery. Once they internalised that they will not be punished nor have their grades raised, they started offering suggestions. When the first suggestion was implemented, I made a point of thanking the girl who offered it. I was amused to see how in the next reflection the form we gave them was too small- they all wanted to give more suggestions.

**Increased interest:** The increased control students received gave them latitude to choose what to learn, and they naturally selected topics they found more interesting. In their interviews, pupils explained that learning thorough the innovative methods of "Bagrut 2000" made them more interested in their learning. This result can stem from three sources: The first is the novelty effect: The pupils interviewed have been sitting for lectures or being dictated material for more than a decade, and the new methods such as classroom discussions, independent research, etc. were new and therefore more exciting. The second explanation is variation: if the two learning methods were replaced by another pair of methods, perhaps the interest might not have risen so much. Instead, they were not replaced but complemented one another, and in fact a large number of new methods were used (too many to be cost effective, according to ministry officials,). As a result pupils found themselves doing different things every
class, and so boredom was eliminated. The third possible explanation is that the methods of independent learning incorporated into “Bagrut 2000” were inherently more interesting. This explanation is based on the program’s use of techniques which encourage the pupils to discover for themselves. As Silberstein and Geba (1992) found, techniques such as independent research, or assigning pupils to a particular topic such as a “personal report,” or an oral presentation (with or without a following group discussion) in which they defend their opinions, increased pupils’ interest and subsequently their motivation.

Guetzkow, Kelly and McKeachie (1954) exemplify these inherent qualities of independent learning in a classic study. They divided a 1st year course into three groups, taught with formal lecture and test, discussions, and tutorials. The year-end results showed the formal group outperforming the others in the (joint and formal) final examination, thus appearing to represent the superiority of lecturing and testing as teaching methods. An intriguing finding at the time was that the other groups reported significantly higher interest in psychology (the subject studied).

To assess this finding, the students were monitored over the remainder of their college studies. Three years later, none of the lecture group majored in psychology, compared with quite a few (14) of the other groups who did. Thus, on a longer-term perspective, the discussion method had stronger motivational effects, and led to significantly increased learning.

**Teacher’s role modeling:** The last aspect cited by Kyriacou as a tool for improving pupils’ motivation was improved performance on part of the teachers. Pupils’ identification with their teachers, Kyriacou contends, means that this improvement of the teachers will ‘rub in’ on their pupils.

“Bagrut 2000” offers several examples of impressive improvements in teachers’ performance, and the interviews conducted in this research clearly show that the pupils were aware of and appreciative of these improvements. For example, when asked about their overall rate of satisfaction, which was measured quantitatively to have increased from 3.07 to 3.5, pupils often cited increased efforts and skills by teachers as a cause. One pupil said “It is more rewarding to get a good grade from a teacher who’s
a pro than from the regular ones”. Those improvements included increased effort, a more assisting and caring attitude towards the pupils, encouragement of free thought and expression, and improved professionalism in terms of computer literacy, teaching methodologies and interpersonal skills.

The teachers reported a significant improvement in their teaching skills, due to intensive effort they invested in preparing for the program and then in achieving accreditation. They had to develop teaching materials and thus became more intimately familiar with the different schools of thought regarding curricula and teaching aides. They employed new and advanced techniques (many of the teachers didn’t know to operate a computer before the program). The process of reflection, in which the teachers were compelled to conduct routine soul-searching, and in which they became subjected to constructive criticism from their pupils, also ‘forced’ them to improve their performance.

The last source of evidence, which has not been scientifically proven, but may turn out to be most persuasive, is the disproportionately high number of project teachers who were promoted. Although there are several reasons to explain this phenomenon (see p.166), they all revolve around improved teacher performance through more work and better skills.

A different explanation is that reflection has also helped in aligning the teachers’ requirements with the pupils’ abilities. This has led to the fact that although a small minority reported decreased satisfaction and an overburden, the vast majority felt they were being given a challenge they can meet with success. According to Bente et al (1999), this is important because feeling of failure and not being able to meet expectations strongly undermines motivation.

Teachers have not only become more professional, but have radiated more motivation. It has been found that teachers in the program systematically worked extra hours beyond what they were being paid, including coming to school after work hours, counseling pupils on the phone, and even inviting groups of pupils to discuss their work over dinner (anecdotal evidence shows that the program’s teachers’ superior
motivation and performance continued even after the program was scaled down and its budget reduced). One agricultural pupil reports:

I have seen a different side of my teachers. They come after school hours, sit with us and make us feel that they are with us and that they are available. They make an effort and take the project personally. Program teachers want us to succeed more than other teachers, and they are excited and encouraging. ... If I will call they will help me anytime and if I’ll ask the teacher to sit with me after the lesson she will be glad to help.

5.2.3 Pupils' satisfaction

Pupil's satisfaction reflects a subjective variable, which can only be recorded from the pupils' perspective and was not quantitatively triangulated by the teachers' questionnaires (although the interviews provided anecdotal evidence in support of the quantitative findings). The results were positive, rising from 3.07 to 3.5, and this significant (p<0.05) increase indicates that most pupils felt better about themselves, although a relatively high variance suggests pupils were not unanimous about that.

Improved satisfaction has important consequences. According to Pasternak and Peres (1993), improving pupils' satisfaction is both a tool for improving learning, and a goal in its own right, which may be one of the most important contributions a school can make for the pupil's development as an individual.

It is a tool because it plays a role in improving motivation (see page 153 above, and also Good and Brophy, 1995), and can therefore improve academic achievements. In this study we certainly found an increase in motivation rising from 3.72 to 4.18, but limited information from the MOE is generally patchy and incomplete and does not indicate improvement in achievements.

Another reason to conceptualize increased satisfaction as a tool is that it can lead to a reduction in disciplinary problems. This comes about because the increased sense of well-being, imbedded in satisfaction, reduces feelings of alienation which are usually (Yariv, 1996) a pre-cursor of disciplinary problems. Kounin (1971) found that pupils were less likely to disturb classes in which they felt good about their achievements and relations with the teacher. This research did not focus on, or measure disciplinary factors, but it is worth noting that of the 90 odd individuals interviewed, only one
actually referred to disciplinary problems, and said that the problem had improved. Compared with the rise in discipline problems across Israeli high schools, there is at least a reason to suspect connection.

The pupils themselves have apparently been aware of this relationship between motivation and satisfaction, but have seen a reversed causal link. In their replies to the question about satisfaction, eight of the interviewees relate to more motivation, but most of them believe that motivation preceded satisfaction, for example, a vocational schoolgirl and two agricultural schoolboys demonstrate this trend:

I prefer handing a paper that is spread over time than a one-off test. It is more work, but I feel better this way.

Yes. My satisfaction increased because I felt more active, curious and interested in knowing more and understanding better.

I am satisfied of the entire process, particularly of the fact that my work are slowly getting better, and that I put more effort into my work.

Peres and Pasternak’s second claim (1993) is that improved satisfaction is a goal worth pursuing in its own right. That is because they say that self-satisfaction leads to “creating the conditions for a happy and fulfilled childhood” (p.89). It is practically tautological that pupils prefer to be more satisfied, and with the exception of truly misanthropic teachers (‘Professor Snape’ at J.K. Rowling’s Harry Potter, perhaps), faculty wouldn’t have objected either. Are there additional benefits for improved satisfaction than improved satisfaction? Analyzing this conclusion seems more appropriate to the realms of philosophical-epistemological research than one concerned with educational-management.

Although it is never explicitly stated in their research, Peres and Pasternak’s analysis (1993) of satisfaction’s double meaning can easily be extended to self-esteem, as being both a mean and an end. A mean, because pupils who are not confident about themselves will be hard pressed to express themselves in group discussions and oral presentations. It is also an obstacle for constructive critical thinking, as it makes the pupil either rule out what is said by others, or to accept everything uncritically. It is an end, because self-esteem is a central element of an adolescent’s development of
identity. Unfortunately, the empirical findings of this research cannot provide conclusive evidence for further research.

5.3 Changed teaching and changed teachers

The Jewish tradition has a lot to say about education. For example, a 16th century (AD) rabbi said “Who is a wise learner? He who learns from all men”, which implies that a truly motivated pupil will not be set back by deficient teaching. Another rabbi said that “There is no such thing as a weak pupil, there is only a poor teacher,” meaning that substandard teaching prevents pupils from realizing their potential. Clearly, those two rabbis were wise and knew a thing or two about education, but clearly too their insights must be reconciled so that their wisdom can be of any value.

This research sees a simple middle ground: A motivated pupil can make significant improvements by working hard and learning independently, as the previous chapter has shown. But improved learning comes vis-a-vis improved teaching. And this chapter will look at the changes to the teaching process that “Bagrut 2000” embarked, and how they affected the teachers and the pupils involved.

There are three phenomena that this section attempts to investigate: The first phenomenon that begs for analysis is the surprising number of “Bagrut 2000” teachers who were promoted during and after the program. Judged against the background of rigidity and immobility that characterizes Israeli high schools, this is rather surprising. Secondly, because “Bagrut 2000” has thoroughly reformed the assessment model, understanding this change is as important as understanding the change to the teaching or the learning processes. In addition, this analysis lays the foundation for the discussion in chapter 6 about the [lack of] changes in the grades.

5.3.1 A Change in the assessment model

The starting point of the Ben-Peretz committee’s work and the “Bagrut 2000” program was reforming the matriculation examinations in Israel. This issue’s relative importance declined as the project progressed (and other, more serious dysfunctions of the educational system emerged), and when the pupils were asked what the program is about, only half of them mentioned the elimination of a final exam.
Nevertheless the program has made a fundamental reform to assessment methods used in Israeli high schools and made important breakthroughs that deserve close evaluation. The following section analyzes the theoretical concepts behind the reform and the way that they reflect in the empirical findings of this research.

Theoretically, an analysis is made of the goals of the program’s objectives in modifying the assessment models. Practically, the implications of the changes in assessment methods have been found to be extensive, and have been analyzed using Thorace’s (2000) model of reviewing each level separately—that of the pupil, the classroom and its teacher, and society at large. This model is expanded to better fit “Bagrut 2000” by the differentiation of an additional layer, that of the school, between the classroom-level and the societal level, as suggested by Birenbaum (1997). It then becomes apparent that changing assessment methods affects all the different levels, but the specific impact is different for each layer. Overall the evidence seems to point to the new system being beneficial to the pupil, the teacher and the school, but to being neutral or even detrimental to society (at least in the short term).

5.3.1.1 The assessment reforms of “Bagrut 2000”

Assessment serves many different and often conflicting goals in educational systems, and can often produce unintended consequences. It affects individual pupils, with respect to progression and placement within the system, and eventual certification of achievements. It affects teachers and schools, with respect to the overall evaluation of their performance. It affects the social system as a whole, through the development and certification of knowledge, skills and attitudes.

Assessment in “Bagrut 2000,” as it appears from this research’s findings, was as carefully thought through as the teaching process it was designed to evaluate. Based on the Ministry of Education’s (1998) objectives, the program fulfilled its assessment mission:

1. **Integration**- the assessment process will be integrated into any and all teaching activities.

2. **Multi-dimensionality** - The assessment will evaluate all the different aspects of the pupil’s performance, not just the final level of knowledge.
3. **Multi-method** – Assessment will be done using a variety of tools.

4. **Continuity** – the assessment will not measure achievements in a single point in time, but will continue throughout the school year.

5. **Involvement** – The pupils will be actively involved in the appraisal process, thus strengthening his/her responsibility for his/her study.

6. **Double-layered** – Assessment will be made of subject matter achievements and knowledgability, and to learning skills including information processing, creativity, independence etc.

7. **Enforcing internal motivation** – through encouraging curiosity and rewarding efforts and deepening of knowledge.

8. **Reliability and Validity** – constant monitoring of the assessment’s validity and reliability, and its compatibility with national standards.

These assessment goals were closely monitored using the Open University as a contractor (see p.192). The OU’s evaluation of the assessment material – yet another example of a parallel process – verified that the materials composed by the participating schools and their teachers met the required standards in all the aspects discussed above.

When analyzing the success of the program, we must note the limitations under which this discussion takes place. It is too early to evaluate the program’s outcomes in general and its assessment method in particular on the pupils, their teachers, their schools and fabric of society, as the academic and vocational careers of “Bagrut 2000” pupils are still ahead of them. A follow up of the study would enable the evaluation of the extent to which this revolutionary program has left its mark.

The current findings are based on a too narrow a sample; hence more systematic research is needed to clarify whether the conservative methods are less effective than the current one.

**5.3.1.2 The effect of assessment reforms**

**Pupils**

For individual pupils, assessment provided an incentive and source of motivation for individual pupils and for groups, as well as important feedback on progress to aid...
learning. The addition of extensive means of qualitative assessment, in addition to the traditional numerical grade, helped pupils better understand their strengths and weaknesses. Assessment is designed to provide a source of evidence for certification and qualification, which aid social mobility. Unfortunately pupils graduating from “Bagrut 2000” received a standard matriculation grade, which did not acknowledge their presumed superior command of independent study skills.

A serious weaknesses of traditional assessment and grading (Torrance, 2000), which too crudely categorizes success and failures, can also generate anxiety and inhibit learning, leading to the self-fulfilling prophecy of early labeling, educational failure and social exclusion. To counter this risk, the “Bagrut 2000” implemented the reflection tool, which required pupils and teachers to evaluate each other and provide constructive criticism.

At the opposite extreme is an “everyone passes” evaluation model, (often associated with grade inflation, see Kolevzon, 1981, and p. 199) in which the attempt to pass all students may lead to reduced standards and lower achievements. “Bagrut 2000” attempted to avoid this pitfall by allowing pupils to submit works for grading repeatedly until they are satisfied with their grade. This method reduced failures without sacrificing academic standards.

Teachers
Assessment procedures and methods in the program provided an important source of syllabus guidance- focusing teacher attention (particularly novice or inadequately trained teachers) on what curriculum planners believe to be the most important goals of an education program. The assessment also provided evidence for the teacher’s own informal curriculum evaluation – indicating what pupils have and have not learned and understood. Also, the motivating affect on pupils brought benefits to teachers in terms of discipline management- there is no denying that for a large number of relatively uninterested adolescents, assessment provides teachers with a very effective ‘carrot and stick’. Interestingly, “Bagrut 2000” teachers seemed to use assessment more as a carrot than a stick, using it to encourage their pupils.
Narrow approaches to assessment can lead, according to Torrance (2000), to narrow and instrumental approaches to teaching: methods of how to pass the tests and how to raise scores, rather than how to educate pupils. Similarly, assessment can impose pressures on teachers regarding curriculum 'coverage' - always having to move on to the next examinable topic - and restrict innovative approaches to subject matter and teaching methods. Likewise, too much pressure on pupils can undermine motivation and caring, especially (though not exclusively) if the pressure is associated with failure. All these possible negative outcomes were found to be minimal in "Bagrut 2000," not affecting teachers and pupils who participated in the program. That is probably due to a combination of factors such as the elimination of matriculation exams, the emphasis on pupils' involvement in their education and emphasis on 'learning to learn'. This last factor converged the attitudes of teachers and pupils into learning, rather than grading.

School culture

Birenbaum (1997) elaborates on the specific differences between traditional assessment and assessment consistent with autonomous learning. She contrasts between the concepts of "a testing culture" and "an assessing culture" and summarizes the differences as follows:

In the assessing culture, the emphasis is on assessment during teaching, rather than detached tests which have no connection to the teaching process in a specific classroom; these are tests which guide the teaching process in each class (p. 189).

Corresponding to pupils' active roles in autonomous learning, pupils in an assessing culture adopt an equally active role in determining assessment criteria and also in the process by which their progress is evaluated. "Pupils are expected to reflect on their own learning processes" (p. 189) and maintain an ongoing dialogue with their teacher on the assessment of their own work and the work of their classmates.

In "Bagrut 2000", school culture has been transformed to involve the pupils by making them evaluate their own results and the process they achieved. Even more revolutionarily, they evaluated the process of evaluation and assessed how representative it was of their work. This multi-layered introspective evaluation and reflection was very difficult to implement since it required a new paradigm for the school culture: a paradigm in which pupils are no longer passive recipients and
teachers are subjected to rigorous scrutiny by their pupils. In the school culture that emerged, students were more skeptical and cognizant about their own and their teachers' quality of work.

Society
Moving on to the level of the social system, that which is assessed in school crystallizes and expresses the essential core of legitimate values, knowledge, skills and attitudes that a society wishes to instill in the next generation. The results of some assessment tools can provide important data for monitoring the effectiveness of the system and guiding decisions on how to improve it, especially in light of increasing global competition. Assessment also serves to identify competent individuals for positions of social and economic importance. Improperly implemented, assessment can stifle creativity, inhibit social change, and lead to wastage of human resources. Assessment systems and procedures are also very expensive to design, administer and monitor.

At the societal level, the project's performance is weaker. Its emphasis on qualitative evaluation is not readily appreciated by employers and universities who find it easier to work with a simpler numeric grade. It will take a sustained effort to 'educate' the market about the benefits of using the program's more finely tuned evaluations. In addition, the program's pupils have to master a wider array of skills than their peers and this increased effort, all else being equal, means that their subject-matter knowledge and their grades will be lower. It would be a good idea (see p.212) to add to the matriculation certificate a reporting of the skills acquired and the pupil's proficiency in them, but that too would only benefit pupils after employers and universities appreciate the importance of this certification.

5.3.1.3 Conclusions
The need for easily administered and cost effective assessment matriculations in Israel, which invariably meant paper-and-pencil testing of large number of students, is said to have led to a focus on assessing (and subsequently teaching) that which is most easily tested through such procedures. Recall of knowledge has thus gained prominence rather than practical or intellectual skills or more general personal and social development.
The “Bagrut 2000” program has reformed this method and 7 years later its evaluation is mostly positive. It appears that the new assessment methods, which were derived from a coherent assessment philosophy, have been beneficial to the pupils, the teachers and the schools, but are not likely to contribute to society at large in the short or medium term.

5.3.2 Teacher's promotion and advancement

Another unexpected phenomenon that emerged from this research is the empowerment of the teachers who took part in the program, and the subsequent promotion of a surprisingly large number of them. This information was found in interviews conducted with ministry officials and school principals in 2003. Almost 2 years after the original interviews with the teachers, and 7 years after the commencing of the program – the following picture emerged: 4 teachers have been promoted to the position of principal, 9 teachers became tertiary education instructors, one became a pedagogic coordinator and one became a department head in the MOE.

Such a rate of promotion is considered rare in Israeli educational system, where teaching is often referred to as a dead-end profession. Most principals serve very long terms, normally until retirement, and thus the statistical chances of a teacher becoming a principal are low. Therefore this high rate of promotion of “Bagrut 2000” teachers was surprising, and one principal described them as “the Project-22 Mafia”. Promotion of teachers to positions in universities and colleges is also rather rare. Academic institutions in Israel usually recruit only candidates holding graduate-level degree (preferably a doctorate), whereas most “Bagrut 2000” teachers who became college or university teachers held no more than a Bachelor degree and only some had a Masters degree.

This section will attempt to understand the causes of this empowerment and its consequences. The three main causes are: A. The improved educational and interpersonal skills acquired by the teachers through their participation in the program. B. The harder work they put into their teaching work which deserved a reward by the education establishment. C. The better relation those teachers had with their respective principals. The consequences of this finding on the operational level concern the
elimination of the ‘dead-end job’ mentality of Israeli teachers. On the organizational level, this concerns the unfortunate fact that it is impossible to replicate this success because it is impossible to promote every talented and hard-working teacher to a position of principal, as there are simply not enough of those.

5.3.2.1 Possible causes

Several explanations may account for this unexpected outcome: First, project teachers received extensive training, whether theoretical, at the hands of Open University professors; practical, through preparation of material and its execution; or evaluative, through the process of reflection from pupils, and through team work. This means that the teaching skills of staff members who participated in the program were developed above and beyond ‘regular’ teachers, putting them at an advantage on the track for promotion, and giving them unique qualifications when applying for positions in higher education.

Second, those teachers worked much harder than other teachers. This was due in part to larger salary, but the pupils and principals reported that program teachers worked above and beyond the paid hours, and continued to invest extra effort even after the project’s funding dried out. This increased work and motivation probably impressed principals, but it also implied that those teachers who worked harder and achieved more goals had better impression of their own skills and abilities. It is therefore possible that it served to increase their self-esteem and made them perceive superior positions as within reach. They also felt that they ‘deserved’ reward and were more willing to step forward and ask for it.

A third explanation would note the increased exposure those teachers had to their superiors. Since principals were enthusiastic about the program (which was the foundation for volunteered their school to the project) and many of them reported to having been actively involved in it, program teachers had more “quality time” (a term coined by an agricultural school’s project leader) with those principals. This ‘quality time’ means that the teachers not only worked more with the principal, but did so in the favorable setting of preparing material and promoting the principal’s pet project. It can therefore be suggested that those teachers simply had more opportunities to impress the principal, and were therefore in better position to be promoted.
These findings warrant closer inspection, since the evidence cited above is of anecdotal nature, and was not systematically collected, and it is thus possible that the true extent of this empowerment may even be greater.

5.3.2.2 Practical implications and conclusions

The implications of the high level of promotion of program teachers can be divided into the operational and the organizational levels. Operationally, participation in the program improved the skills and qualifications of teachers compared with their colleagues going working in traditional teaching. These improved skills gave them a comparative advantage while applying to superior positions, but they probably made them better teachers too. Therefore, it is conceivable that expanding the constructivist, decentralized and autonomous-learning teaching methods of the “Bagrut 2000” program to the rest of the educational system will improve the quality of teaching.

Unfortunately, on the organizational level, this discovery cannot be scaled up to the entire system. That is because the number of available positions as principal is limited, and if the program produced thousands of qualified ambitious teachers, the demand for promotions would outstrip supply, thus blocking the path for promotion.

5.4 The Interaction between pupils and teachers

The first two sections of this chapter have made a brave attempt to discuss pupils separately from teachers, and then teachers separately from pupils. Anyone who has ever been to the real world knows that such an analysis is worthwhile only when placed into the actual context in which pupils and teachers live, that is, in close interaction with one another. This analysis wishes to highlight three main areas.

The first analyzes the changes in interaction between teachers and pupils as reflected in classroom climate. In particular it focuses on the unexpected finding of diminished disciplinary problems. The second deals with the feedback mechanisms which facilitated improved communication between the pupils and the teachers. The second area is the surprising, often amusing, similarity between the changes that the pupils
experienced as described above, and the changes that have been observed in the teachers. The third area is the modifications to the assessment model used by the schools.

5.4.1 Classroom Atmosphere and Discipline

The findings of this study show that “Bagrut 2000” led to a significant improvement in classroom atmosphere and school atmosphere, according to reports of both pupils and teachers. The pupils reported that they were more committed to their educational processes, and the teachers reported increased interest in scholastic activities. In this sense, the findings support most of the theories of Haertal et al (1997), Kyriacou (1997) and Goleman (1995).

As anticipated, the relations among students improved, although to a lesser degree in other studies. For example, Immanuel (1998) tested changes in behavior and personal attitudes of both pupils and their teachers towards self-guided, autonomous learning. Autonomous learning affected pupil’s beliefs regarding the attribution of their success or failure. Pupils-teacher relations also improved, with everyone working together to achieve common learning goals, exchange ideas and improve feedback. This study also reported a significant increase in pupil’s satisfaction with their studies and the school.

Screening through the interviews and the questionnaires reveal that only a single respondent – one project leader - complained about disciplinary problems. This may be more easily expected from pupils, who may not be aware of their own misbehavior, but teachers and principals should have had more to say about this issue. This is an unexpected finding, which contradicts personal impressions as well as some solid findings about undisciplined conduct within Israeli schools.

The marginal level of discipline in Israeli schools is also recognized by the public media, where Israeli newspapers publish almost daily reports of vandalism and violence. Ha’aretz daily newspaper reported in a special section (6/11/2003) that:

Over the past decade, rising violence and diminished levels of discipline compromise teachers’ ability to teach and pupils’ ability to learn. This trend has been pervasive
across the educational system from the remotest Arab village to the wealthiest Tel-
Aviv neighborhood.

The Ministry of Education conducts annual surveys, which provides quantitative data
which supports these observations. For example, the department for evaluation (2000)
found that on average 43% of the students have “serious academic or behavior
problems.” According to the teachers’ reports, the numbers are approximately equal
for both elementary and high school level, although middle schools (grades 6-9)
reported slightly worse results.

In his book, Arieli (1995) describes the bitter experiences of high teachers who need to
face daily hassles, such as incompliance, neglecting homework, disrupting the lesson
and talking during class.

Already at recess my stomach pinched...not that class again...I have this group in the
back seats like those two spectators in the Muppet Shaw...always complaining or
mocking.... They don’t necessarily disrupt but they would always yawn when I am
excited...I don’t say a word but the whole class know and it eats me from within (p.
28)

5.4.1.1 Analyzing discipline problems

Misconduct and unruly behavior are complicated phenomena, which involve several
key factors (Charles, 1996). Yariv (1999) offers a model, which consists three main
aspect: The first is personality: the pupil’s family background; intelligence and other
individual factors. Those individual variables also concern the teacher - personal
backgrounds, skills, professional experience and teaching images (Fox, 1997). The
second is the environmental aspect: These relate to the physical and the social
environment, as well as the norms and the classroom group’s dynamics. Yariv (1999)
argues that teaching practices and pedagogic methods play a crucial role in the
development of every counter-disciplinary event. The third is the situation aspect: the
actual circumstances which led to a particular misbehavior.

Analyzing “Bagrut 2000” using this scheme, it becomes apparent what were the
reasons that the program managed to reduce misbehavior and interruptions.

Idleness for example, is both a norm and a situation that promotes disciplinary
problems. When pupils are deeply occupied they cannot devote time or attention to
disruptive behavior. “BAGRUT 2000” has been very useful in reducing idleness by increasing personal involvement. In fact, when asked what they would like to change in the program, all but two of the pupils (and every single teacher) cited lower workload as a priority. An agricultural schoolboy went as far as saying:

There were some points when we [project pupils] had to fight off the stigma of ‘nerds’ because we were always in the library or computer lab studying.

By reducing the number of frontal lectures, there was less of a chance for pupils to get bored, or for teachers to be boring. Instead, individual work directed towards areas of interest for pupils have encouraged pupils to work harder and to be more interested. The individual projects and the ‘portfolio’ were performed by pupils at their own pace, and were thus less likely to fall behind or be slowed by the group.

The emphasis on independent work put the onus of learning on the pupil himself, and therefore fooling around was more tolerable, as it was the pupil’s own problem. It was also less exciting, because the pupil was not disturbing anyone but himself, and therefore, disruptions appeared to be perceived as the pupils’ inability to rise to the increased responsibility given to him. Classroom norms changed so that other pupils could often be seen telling off a comrade who disrupted their work.

Alienation towards school and the teachers leads to disciplinary problems by making pupils indifferent to the damages they inflict, whether to property, or to other humans such as teachers or fellow pupils. Alienation is caused (Good and Brophy, 1995) when pupils feel they are not treated as individuals, and that the ‘system’ is indifferent to their problems. Its common manifestation is the description of school as an industrial ‘factory for grades’, where pupils are ‘processed’, and the teachers are remote and emotionally detached.

“BAGRUT 2000” reduced this alienation through several mechanisms. Fewer frontal lectures reduced the length of time in which pupils anonymously blend into an ‘audience.’ Students’ independent study projects, guided by a teacher, made the teacher a partner and counselor involved in the pupil’s work. Group projects also made the pupils feel they belong to the learning community. The teachers’ contribution to reduced alienation was not only increased personal attention, but also their displayed
weakness. The teachers had to learn new methods almost in parallel to teaching them, and were therefore as inexperienced as their pupils. Instead of concealing this weakness, the teachers have made a point of showing the pupils that they were also learning new skills. This projected vulnerability made the teachers appear ‘human’, and the pupils found it easier to identify with them. As one project leader explained:

The teachers disliked the idea of showing that they don’t know, but although they managed to hide it in most areas, it was the computers that ‘forced them out of the closet’. They simply could not compete with some pupils in knowing the Internet, and had no choice but to ask for advice from pupils. Once this happened, they realized the demon is not so frightening, and realized they have much to gain from learning new skills along with the pupils.

The “Bagrut 2000” administration was also very effective in communicating the goals and philosophy of the program all the way down to teachers and pupils. “Bagrut 2000” pupils were very involved in the program and many felt that they were an inherent part of the experiment. When asked about the program in interviews, pupils described it in great detail and explained how the new methods were designed to help them (“enrich” was a commonly used phrase). For example, an agricultural 11th grader answer to the question “what do you know about the project” sounds like a quote from a school’s brochure:

It is a MOE project taking place in 22 schools and is intended to reduce exam pressure on pupils: instead of doing one matriculation exam, we study through 2-3 years, write reports and conduct projects. ...There is no single test, and the teachers are paid more to be of assistance to the pupils. The program is based on acquiring and knowledge and skills throughout the year through participation rather than a single examination.

The use of reflection informed pupils and teachers of problems that would otherwise be brewing beneath the surface. Instead, the teachers had to confront problems directly. The teachers’ reflecting showed pupils that their teachers were thinking about them. By observing their teachers’ errors, pupils also gained an appreciation of their teachers’ ‘humanness.’ Educationally, teachers’ confessions of errors encouraged pupils’ critical thinking, because the teachers demonstrated that they were not infallible. One principal gave a relevant example:

We had a group of ‘computer freaks’ who were serious headache. When their teachers started asking for their help, their egos were stroked, but they were surprisingly eager to help. In fact, some of them have transformed into something of teachers’ pets.
5.4.1.2 Effective disciplinary tools

A problem commonly stated by teachers to explain increasing disciplinary problems and weaker learning atmosphere in the classroom is the lack of disciplinary tools and effective punishments. The “Bagrut 2000” provided three such mechanisms: continuous assessment, group work and oral presentations.

Continuous assessment provided a direct and immediate connection between learning tasks and their reward. This solved a common problem, which is that once the test is over, missing out on learning through truancy or inattention does not impair grades until the next test, often weeks away. Instead, project work was constantly assessed, and thus the pressure did not relent.

Classroom management in “Bagrut 2000” also succeeded by utilizing one of the forces commonly sited as the source of problems- peer pressure – through group work and through oral presentations. For example, one project leader reported that tardiness was virtually non-existent in the project, saying “They couldn’t skip classes and study before the test, because there was no test”.

Work groups were used extensively in the program, and groups of varying sizes had to study or to complete assignments together. While group work gives ample opportunities for diversions and disruptions, it becomes the interest of the group members not to let the diversions get out of control. A student who failed to contribute to the group’s work risked losing popularity with group members, and the repeated use of groups meant that misbehaving pupils risked exclusion from ‘popular’ groups. One agricultural schoolgirl, asked about relations between pupils explained:

There are now two ‘classes’- those who help and those who are being helped. Those who get help are nicer, because they need [us], and we were always good pupils anyway.

The oral presentations provided teachers with another powerful means of disciplinary control. Research has shown (Breznitz, 1970) that oral tests and presentation are a powerful pressuring factor, and the reason is people’s fear of exposing ignorance in front of peer pupils. Therefore, a pupil who has to make an oral presentation is pressured by the grade and by the risk of humiliation, and would therefore have to
work and study harder. Additionally, when all pupils have to stand up and show that they have studied diligently, classroom atmosphere and peer pressure glamorise learning.

5.4.1.3 Conclusion

The implementation of “Bagrut 2000” apparently had a significant impact on the pupils. They have become, in the words of one principal “better citizens of our school society”, in the sense that they felt better about themselves and about their work – measured as increased satisfaction and increased motivation, respectively. This improved citizenry has also manifested through improved behavior and reduced disciplinary problems. These changes can be expected to have improved the academic results, but on this front there are mixed results, analyzed in the following sections.

5.4.2 Feedback and Transparency

A particularly interesting aspect of the “Bagrut 2000” which may have contributed to the increased satisfaction of both pupils and teachers (see ch. 4 and also p. 158 above) is the improved feedback mechanism embedded in the program. As indicated in the findings, there are numerous possible causes for the increase in satisfaction (e.g. increased control, better teacher-pupil relations, etc.), as well as causes to expect a decline in satisfaction (e.g. increased burden of work, need to make decisions and take responsibility, etc.). The program’s ability to make pupils overwhelmingly approve the change can be attributed, according to Thomson (1997) to superior the feedback mechanism. He points out that quality monitoring processes are the key for formulating appropriate policies and changing them to adapt to changed circumstances. Horne and Browne (1997) and MacGilchrist et al (1997) are in agreement with Thomson’s general concept, but they develop it in a diametrically opposed direction - The former recommends providing the pupils with better feedback, while the latter recommends making better effort to assess pupils’ work and attitudes.

Improved information exchange is an effective tool of improving performance in education. Stone (1997) argues that in order to achieve satisfaction of pupils, it is important to ascertain their attitudes and opinions:

The use of client surveys to establish the levels of student or employer satisfaction or
gather information on a range of other issues is now well established. In some colleges, surveys of internal customers are undertaken as recognition of the need to provide services of an acceptable standard to avoid breaking any link in the 'quality chain'. A wide range of models is available and increasingly colleges are developing their own approaches as they focus in on particular areas, in line with the overall development of their quality strategy (p. 115).

In practical terms, this means obtaining regular feedback to ensure that service delivery complies to requirements, for example that teaching materials are appropriate, teaching strategies are relevant and assessment reports provide significant data. This implies regular monitoring and evaluation at each stage of the provision of a product or service. Horne and Browne (1997) point out that providing good feedback for pupils is crucial in helping them to know how they are doing and can be a major contributor to individual and cohort improvement. It takes time and energy to do well, but this is a worthwhile investment in terms of learning benefits.

5.4.2.1 Information from Pupils to Teachers

The program introduced two instruments that improved the information flow between the pupils and the teachers: reflection, and continuous assessment. As stated by Friedman and Ben-Galim (1998) in their report for the ministry of education:

In recent years there is an inclination around the world to prefer methods of continuous assessment … mainly the will to ‘select pupils inclusively not exclusively’, prevent dropping out incorporate the pupils to all learning and evaluation activities, and develop reflective processes.

Continuous assessment, (discussed further in p. 160) improves communications in the sense that it gives the teacher constant updates about their pupils. This means that problems are spotted much earlier and can therefore be rectified. In contrast, standard Israeli high school teachers only receive information about their pupils from a test, when it is too late to improve things. This means that “Bagrut 2000” teachers help their pupils avoid and overcome problems in a timely manner, while regular teachers admonish them for their failures. Constant assessment also enables teachers to discern trends and act upon them in real time, whereas standard teachers who rely on tests receive a much more general picture.
The reflection process provides teachers with a rigorous evaluation of their teaching performance as evaluated by their pupils. Although the teachers and principals interviewed reported that it was initially very difficult for pupils to shed the layers of deference towards their teachers, which they acquired during their years in school, they eventually were able to provide objective critique and constructive recommendations for their teachers. The teachers also had difficulties coming to terms with the criticism offered in the reflection forms. However the principals and project leaders have apparently done a good job in using the reflection to improve performance rather than to reprimand or punish teachers. As a result, teachers were able to evaluate their stronger and weaker points and make appropriate changes. They were also better able to understand why certain activities succeeded while others failed.

In a different part of the reflection, pupils reflected on their own work, and evaluated it. The pupils had to reflect upon the stronger and weaker points in the work they performed, and also to describe their emotional state, in terms of motivation, satisfaction and interest. This report, which was read by the teachers, enabled them to better understand their pupils and how pupils felt about themselves and their work. There is strong evidence that program teachers were more attentive to their pupils, and that they have been able to better cooperate with the pupils as a result.

5.4.2.2 Feedback from teachers to pupils

Formal and informal feedback is an essential component in any learning process. The “Bagrut 2000” provided the pupils with on-going detailed feedback about their performance. As a result, pupils had a better understanding of their work, and when their grades were lower than they wanted, they knew exactly why. Also, the legitimacy to amend and hand in again every assignment implied that the decision (the grade) was in the hands of the pupil: He or she could repeatedly re-do the work until satisfaction was achieved. This means that the pupil had to prioritize his/her work between projects that were already marked and those that were due, according to the grades he had. Therefore it was the pupil who ultimately decided his/her grades, according to the point in which his/her satisfaction was in line with the required workload.
The reflection process also meant that teachers had to reflect on how they (the teachers) and the pupils performed. This meant that the teachers had to write a report for every pupil about his (or her) performance, his strengths and weaknesses and the reasons why a grade was given. This information, which is not customarily provided to Israeli high school students, enabled them to see the rationale behind the grading process and countered the feeling that teachers decide grades ‘arbitrarily.’ It also provided the pupil with a clear cognitive map to help improve his/her performance.

In addition, teachers wrote a reflection of their own performance, similar to the one the pupil wrote—their strengths and their weaknesses, their overall evaluation of the quality of their work, their motivation etc. The pupils had access to this report, and were therefore given a view, which they are normally denied, of how their teachers think and work. This had the psychological effect of seeing their teacher as a real person, rather than a stereotype or an agent of the school. It provided the students with a sense that their actions have an impact on their teachers’ feelings.

5.4.2.3 Conclusions

This section provides a deeper explanation for the improved interpersonal relations described previously in this chapter, and in chapter four, attributing some of the improvement to better flow of information between pupils and teachers. This contributed to better understanding and empathy between the two parties. The two main causes identified for the improvement are continuous assessment and the reflection process.

Continuous assessment reduced the antagonism between teacher and pupil that is inherent in the action of grading. Grading ceased to be an action performed by the teacher to the pupil, and became a process which the two sides conducted in tandem. The pupil was constantly graded, and so mismatches in expectations could not develop, and whatever ‘nasty surprises’ were in store, they were always small because every graded action was small. Not only were pupils (and parents) always up to date about his learning, but the teacher also had continuous monitoring, which reduced the chances of pupils ‘falling between the cracks’.
The reflection process was contributory because it forced both pupils and teachers to apportion blame differently than they were used to. They had to begin with introspectively evaluating their mistakes, and only then make recommendations to others. In addition, they had to explain every recommendation fully, and could expect to be questioned about it for further clarification. This made them better understand their strengths and weaknesses, but also those of their counterparts.

5.4.3 Parallel change – How teachers and pupils changed in tandem

This research has found significant improvements in teachers' motivation and satisfaction. The quantitative research also found improvements in adjacent aspects, such as classroom atmosphere or teacher-student relations. Qualitatively, the teachers expressed very positive attitudes towards their work in general and the program in particular, and attributed the improvements to the new philosophy and policies of “Bagrut 2000.” These findings support previous findings such as those of Teicher and Berger (1997) and Sever (1999).

It is hardly controversial that these changes are for the better, and that they bring forth improvements in academic aspects such as pupils' achievement, retention and satisfaction, as well as organizational benefits such as reduced attrition of teachers. A more difficult question is what caused these changes, and how they can be replicated in the future. In the interviews with the teachers as well as with the pupils, principals and ministry officials several possible explanations were offered, including the increased autonomy, the teamwork, the encouragement from superiors and others. These factors, it may be argued, show surprising resemblance to the changes that have been observed in the pupils. In effect, the teachers mirrored their pupils (or vice versa).

Scrutinizing this question begins with a review of the existing theoretical understanding of parallel changes. Then the empirical evidence, gathered in this research, and presented in chapter 4, are re-analyzed to understand how the observed changes relate to the models. Finally, the elements of “Bagrut 2000” are investigated to see which contributed to the parallel change.
5.4.3.1 Theoretical framework

A parallel process, also known as collateral structure, is an organizational structure which allows mutual influences between the various levels within the organization. Shani (1991) recognizes that the similarity of the changes makes them reinforce one another. The main reason for the reinforcement is that it provides a positive feedback mechanism, where each side sees reward for its efforts from the change in the other.

Zand (1981) looks at the underlying structures of the parallel change, and describes these structures as having the following characteristics:

- All information channels are open so that managers and others can communicate directly, without being restricted to formal communication channels. Thus, exchange of relevant information is rapid and unconstrained.
- A major norm is that individuals operating within the collateral structure can get problem-solving assistance from anyone in the formal organization.
- Since both organizations remain intact, the input to the formal organization consists of the outputs from the parallel organization. The final decisions are made within the formal structure.

Looking at the informality, openness, and universal assistance on one hand, and the retainment of formal structures on the other, Zand's (1981) concepts resemble several of the trends that were found in schools implementing "Bagrut 2000."

5.4.3.2 Empirical evidence

Looking into the findings, it is possible to discern several symmetries in the educational methods employed by the teachers and the pupils. The evidence is divided into three categories: quantitative, organizational, and qualitative.

Looking at the quantitative results of the questionnaires as explained in the findings (see table 4.3), the teachers' answers to the questionnaires point to marked change in their attitudes and behaviors. These improvements were closely linked to one another, for example correlation between the teachers' motivation and their satisfaction was a very high 0.81, suggesting that these changes stem from a common cause or rely on the same mental construct.
What the tables fail to show is the pouring out of enthusiasm in their voices and faces when they described the achievements of their pupils (they often used the phrase "my kids", which in Hebrew also refers to biological children) or their newly developed teaching methods. Quantitatively, this is supported by the fact that the teachers reported satisfaction with their job correlated strongly with the pupils' improved independent learning (0.569), or students self esteem (0.697).

Looking now into the organizational evidence for the parallel change, we recall that independent learning methods taught to pupils were mirrored by teachers' increased independence from MOE formulated materials and methods. The teachers were required to develop new teaching plans and create complementary teaching collateral (see p.201). Continuous assessment of the pupils by the teachers was juxtaposed by continuous assessment of the teachers by Open-University supervisors. The reflection process, in which pupils and teachers alike reflected on their work, in front of themselves and of one another, was reported by both sides to have been extremely difficult to implement in the early stages, but later brought both teachers and pupils benefits in terms of insights into the causes of failures and successes.

The changes that have been observed in the teachers closely resemble the changes observed in pupils. Both the teachers and the pupils reported increased motivation and satisfaction. Teachers and pupils alike expressed very strong interest in their (respective) schoolwork, and a sense of commitment. Both sides expressed a sense of creativity and pioneering, reporting that they never did anything similar, or heard of anybody else who did. One boy quoted (in English) from the "Star Trek" TV series that his/her class and its teachers has "Boldly gone where no man has gone before", and implied that the pupils and teachers were in the project together "for better or for worse."

In addition to these agreements on a broad range of issues, an analysis of the qualitative interviews exposes a different set of similarities on more focused points. For example, both pupils and teachers reported relief at not having to work towards the matriculation. The pupils and the teachers felt they were given more leeway to pursue what they found more interesting, and were able to study the parts of the curriculum which they wanted to focus on more thoroughly, than if they had to 'finish the
material. Amusingly, both sides feel that they were under very heavy workload but neither of them reported resentment, alienation or reduced motivation as a result.

All these changes cumulatively point towards an interesting phenomenon. The pupils and the teachers in the program experienced surprisingly similar changes, and these similar changes not only mirrored one another, but reinforced the reciprocal trend (Shani, 1991). The question then is, which of the many trends set into motion by the Ben-Peretz committee has had this congruent impact on both pupils and teachers.

5.4.3.3 Causes of Parallel Change

Increased Autonomy and Control

It has been argued above that one of the main reasons for increased motivation and satisfaction in pupils was the increased control they had over the content and methods of their scholastic activity. This increased sovereignty led, according to Kyriacou (1997), McGregor (1968) and others, to increased motivation and subsequent satisfaction.

This conclusion can be applied verbatim to the process which the teachers underwent. They were given more freedom to choose what to teach and how to teach it. In both questions they were offered a wide range of alternatives from which to choose. This meant that when they used a teaching method, they did so because they preferred it, and were thus more enthusiastic about it. It also meant that if it failed, they could not blame MOE bureaucrats. In other words, the organizational change increased their authority vis-à-vis their responsibility, and thus served to increase their motivation. But the change did something more. The teachers felt that they ‘owned’ the program in their class: there was a feeling of identification with the goals and methods of the program.

These changes echoed the changes that the pupils experienced. The pupils were given latitude to choose subjects for their research, and projects for their ‘portfolio’, they were also responsible for their own progress and their own learning, and their ability to blame others for failure was reduced. Consequently they saw their responsibility and autonomy increase hand in hand, comparable to their teachers’ increased autonomy.
and responsibility. In other words, we see a change that occurred in both parties at the same time and for the same reasons.

**Team work**

Teaching can be a very lonely profession. Teachers using traditional schooling methods have to confront scores of children, who are often apathetic and sometimes hostile, on their own. Their sources of support are occasional pep-talks from the principal, non-committed advice and sympathy from peers, and a paycheck at the end of the month. "Bagrut 2000" teachers reported to live in a different environment. They did not confront the pupils, because they pupils were rarely lectured, and often came to the teacher asking for assistance. In addition they worked much more intensively with their colleagues in creating teaching plans, discussing plans for group work, assessing and reflecting on successes and failures. Thus problems were aired and occasionally solved, while unsolved problems became the entire group’s problem, easing the burden of failure on the individual. This combination made the teachers happier and more motivated.

Simultaneously, pupils experienced a similar change. Classwork was no longer a battle against the teacher, but an effort (alone or in-group) in which the teacher lent a helping hand. Pupils have been repeatedly quoted saying that their "Bagrut 2000" teachers were on their side trying to help, and thus different from their other teachers. Additionally, pupils had increased share of their schoolwork performed in-groups, rather than alone. This way, pressures were shared with others, and thus became more psychologically manageable.

**5.4.3.4 What (or who) caused the parallel change**

The plans and methods of "Bagrut 2000" are impressively detailed and transparent (in contrast to the results, admittedly). Pointedly, they do not include a plan, or even an expectation, for using the changes they lay out for one group to affect the other. This was probably not an intentional omission, because in the interviews with MOE officials, this phenomenon was not mentioned, and it is apparently first pointed out in this paper. This disregard to something that appears so self evident from reading the testimonies in the interviews, deserves closer inspection.
One (admittedly insufficient) explanation is bureaucratic ‘Chinese walls’. The people who developed the curriculum and the educational philosophy were apparently in a different department and separated from the people who developed the administrative program and the organization change management. Therefore, it was a happy coincidence, or rather a testimony to the unanimity of opinion (not to say lack of intellectual diversity) in the MOE.

A different explanation deals with paradigmal blindness. Since many MOE officials, along with many of the external consultants, had personal experience in the teaching profession, they could not see how their peer teachers are amenable to manipulation in the same way that younger teenagers are. This explanation implies that the people who planned the program unconsciously planned both changes, but were not able to see the similarity.

5.4.3.5 Conclusion

Judging from the evidence above, parallel change was not a pre-meditated feature of the “Bagrut 2000” program. The planners of the program apparently devised the curriculum for the program in complete separation from the teachers’ training and management program. Nevertheless, the reinforcing feedback between the pupils and their teachers worked surprisingly well. Apparently, the promotion of autonomy, responsibility and teamwork, in both teachers and pupils, was mutually reinforcing, where everything the teachers asked of their pupils, they also experienced.

6. Progress Report

Research projects in the social sciences face an inherent risk, that during the time it takes to complete the research, the subject changes in ways that render the findings less relevant. It is therefore important to report and discuss the differences between the state of affairs in the beginning of the project, compared with the time of writing. In the case of this research, the difference is relatively small, mainly because the program has been scaled down over the past years. Nevertheless, certain aspects have changed in ways that deserve close attention, and this chapter will look at three of them: Initially the reader will be updated about the current state of affairs, as the program stands in spring 2004. Then, the chronology of the project’s budget which underlies
this state of affairs is explained, followed by an account of the political developments that caused the budgetary changes. These developments are then analyzed to understand how politicians affect programs developed by bureaucrats.

The second section offers analysis of the outcomes of the project. This analysis is divided into two parts: First, the methodologies used by the project administrators to evaluate the pupils. An attempt is made to understand what the actual results of the projects were, in terms of grades and achievements by pupils. The second part analyzes the apparent lack of improvement in achievements, and attempts to evaluate its reliability and assess its meaning.

The third section of this chapter discusses the way in which teachers (alone and in teams) created their own teaching materials. This sharp deviation from standard Israeli practice of ‘top-down’ development of materials is analyzed for its relative merits from the norm.

6.1 Analyzing the Project’s History

Bagrut 2000 was launched in September 1996, in 22 schools throughout Israel, amid much expectations and excitement. This “second phase” of the program (following the Ben-Perez committee which was the “preparation phase”) was planned to be the experimental stage at which effort would be made to train teachers and to follow up on the educational, organizational and psychological processes that the project generate, in order to mould the most effective procedures. It was planned as a precursor for a “third phase” in which the program would be implemented throughout the national school system. This planned national implementation, were it to take place, would make the findings and recommendations of this research relevant not only to 22 schools, but to the entire national high school system.

The first year was characterized by over-enthusiasm. According to project leaders and Ministry of Education (MOE) officials, in which much financial resources, training activities and teachers’ personal involvement were evident (Teicher and Berger, 1997). The next year the program settled down, and teachers became more selective in their
choice of teaching methods. The program appeared to be operating as planned (Sever, 1999).

However, when the time for the third phase to begin arrived in 1999, the experiment was not extended. Instead of adding new schools as was initially planned, even existing schools were not allowed to enter their freshmen year into the program. Over the next 3 years, until the last of the participating students graduated the program in June 2000, budgets were reduced until the program ended.

The termination of the program could not have been attributed to academic or administrative problems, because all the research (including this one) found the program to be successful (Sever, 1999 and Teicher 1997). Meanwhile, project termination was very disappointing for all the principals and teachers. They felt that the officials at the MOE were unappreciative of all the efforts the teachers made and the achievements they reached. Interestingly, many of the teachers and project leaders who took part in the project sought new challenges, and a surprising number (discussed above and below) were promoted, either to the position of principal or accepted university teaching positions.

The latest available information, as of March 2004, indicates that the project will be revived by the Ministry of Education in an attempt to operate the project on a more cost-effective basis. According to Ms. Dalyah Shimony, the program’s outgoing administrator (interviewed by the researcher), fifteen schools will experimentally teach one subject (Bible studies), relying on a more standardized curriculum. According to the head of the program’s administration, since the material was prepared for a single rather than for two dozen disciplines, the costs of developing, assessing, teaching and evaluating the project should be lower. Unfortunately, even this new version of the project is only budgeted for a single year.

6.1.1 Budgeting

According to initial plan (Ben Perez, 1994), each school was funded according to the number of taught subjects in which students earned matriculation. The Open University provided numerous workshops to the staff at the expense of the project.
SPECIAL NOTE

This item is tightly bound and while every effort has been made to reproduce the centres force would result in damage.
administration. However, the budget for additional hours was continuously reduced until it was completely cancelled in 2000 (see table 4.1). Since then, the schools have received no more than the standard high school budget with no additional funds for the "Bagrut 2000" program, and are not even refunded the costs of the matriculation exams that are saved. The diminishing resources meant that the accreditation of new schools has been completely blocked. Individual teachers can still be accredited in participating schools, but the government does not fund their training or qualification anymore and so this must be done in their own spare time. As a result, replacing teachers who have retired or taken sabbatical or maternity leave became an obstacle, and caused several schools to drop one or more of the subjects from the program they operated.

At present, only nine of the original 22 schools still participate in the program. Those schools have been funding the project from other sources available to the principals such as general workshops or enrichment programs.

Table 9 Actual budgeting (In New Israeli Shekels) of the program

<table>
<thead>
<tr>
<th>Year</th>
<th>Teaching Budget</th>
<th>Administrative Budget</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>4.12M NIS</td>
<td>0.24 M NIS</td>
<td>4.36 M NIS</td>
</tr>
<tr>
<td>2000</td>
<td>2.47 M NIS</td>
<td>0.16 M NIS</td>
<td>2.63 M NIS</td>
</tr>
<tr>
<td>2001</td>
<td>1.23 M NIS</td>
<td>0.16 M NIS</td>
<td>1.39 M NIS</td>
</tr>
</tbody>
</table>

(source: MOE, 2000)

6.1.2 Political changes during the program’s life cycle

The reader is reminded that the project evolved within times of political turbulence. Since the assassination of PM Rabin a decade ago, six national elections have taken place, with four Prime Ministers who replaced one another. Needless to say that such rapid changes and the personal and political identity of the new ministers of education left their prints on the educational system.

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The Ben-Peretz committee that originated the project was set-up by Ms. Shulamit Aloni, then a leader of the left wing “Meretz” party, who served as minister from 1992-1993. The committee’s recommendations were approved by Aloni’s successor, Prof. Amnon Rubinstein (1993-1996). As a left-wing liberal leader (Meretz Party) who supported the project whole-heatedly, Prof. Rubinstein budgeted the project generously, two years in advance. In 1996, the right-wing Likud government came to power, and awarded the MOE to its coalition partner, the National Religious Party, who appointed Yitzhak Levi as minister. Levi’s policy was to gradually reduce the program’s funding, and to fund no classes beyond the original two (1997 and 1998) which were allowed to graduate. In June 1999, Ehud Barak of the Labor party defeated PM Netanyahu. Mr. Levy was replaced by Yossi Sarid (Meretz Party). This new left-wing minister supported the project and requested that it be made compulsory for every high school. His short service as a minister never enabled him to allocate even one subject in the “Bagrut 2000” format to each school. Barak’s government failed to pass a new budget for 2001 before it was replaced in the beginning of 2001 by the Likud party.

The new Prime Minister, Ariel Sharon appointed Ms. Limor Livnat for minister, and both of them still serve as of June 2004. Livnat resisted pressure from MOE officials to renew the project until it was allowed to have another experimental run on 15 schools teaching one subject (Bible) for a single school year (2003-2004).

The rapid political changes (see table 6.1) have had profound effects on the development of the “Bagrut 2000” project. Over the decade since its inception, 5 ministers have served in the Ministry of Education. This rapid rate of replacement was detrimental to long-term developmental programs such as “Bagrut 2000.” The understandable desire of politicians to leave a mark made projects devised by the previous administration vulnerable to budget cuts and marginalization. Even worse, the ministers reduced interest in long term planning, because every program with a maturity horizon of over 24 months might only benefit their successor. Lastly, the various ministers had no prior acquaintance with the ministry, and therefore underwent a period of learning the material and developing priorities, in which non-urgent tasks (usually, developmental tasks) often went unattended.
This set of events has been detrimental to many long-term projects in the ministry, and “Bagrut 2000” was one of them. Ministers approved the budget on an annual basis instead of designating funds for numerous years, with the single exception of Amnon Rubinstein who funded school years 96, 97 and 98.

<table>
<thead>
<tr>
<th>Year</th>
<th>Government</th>
<th>Minister</th>
<th>Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>'93</td>
<td>Rabin, Labor</td>
<td>Aloni, Meretz</td>
<td>Consulting &amp; researching matriculation alternatives</td>
</tr>
<tr>
<td>'94</td>
<td>Rabin, Labor</td>
<td>Rubinstein, Meretz</td>
<td>Ben-Perez committee</td>
</tr>
<tr>
<td>'95</td>
<td>Peres, Labor</td>
<td>Rubinstein, Meretz</td>
<td>Ben-Perez recommendations approved. Program developed</td>
</tr>
<tr>
<td>'96</td>
<td>Netanyahu, Likud</td>
<td>Levy, National religious party</td>
<td>Schools chosen, program leaders selected, program finalized</td>
</tr>
<tr>
<td>'97</td>
<td>Netanyahu, Likud</td>
<td>Levy, National religious party</td>
<td>Program begins in 22 schools.</td>
</tr>
<tr>
<td>'98</td>
<td>Netanyahu, Likud</td>
<td>Levy, National religious party</td>
<td>Program runs, a new class is not approved</td>
</tr>
<tr>
<td>'99</td>
<td>Barak, Labor</td>
<td>Sarid, Meretz</td>
<td>Program runs, a new class is not approved</td>
</tr>
<tr>
<td>'00</td>
<td>Barak, Labor</td>
<td>Sarid, Meretz</td>
<td>1st class graduates.</td>
</tr>
<tr>
<td>'01</td>
<td>Sharon, Likud</td>
<td>Livnat, Likud</td>
<td>Last class graduates</td>
</tr>
<tr>
<td>02-03</td>
<td>Sharon, Likud</td>
<td>Livnat, Likud</td>
<td></td>
</tr>
<tr>
<td>'04</td>
<td>?</td>
<td>?</td>
<td>A new 15 schools experiment</td>
</tr>
</tbody>
</table>

### 6.2 Effects of political changes on professional programs

Some of the factors that shaped the destiny of national educational projects like “Bagrut 2000” are identified outside the classrooms. Higher organizational levels within the ministry, as well as developments within the political system appeared to have a significant role. For example, analyzing the project development vis-à-vis the political affiliation of the ministers of education point to some interesting trends.

#### 6.2.1 The implications of political involvement

The policy changes politicians made when they replace one another often bear little resemblance to the recommendations of professionals, as Scott (1999) observes:

In an age when electoral politics... more dominant than ever, it is naive to expect that high-profile policies mandated from the center will always be founded on a thorough review of all the evidence, or subject to independently evaluated pilots.
Politicians and public sector officials make decisions differently, reflecting that each is subject to a different set of incentives and constraints, and that they often come from different background and prejudices. Analyzing these differences can help understand the decision-making process regarding “Bagrut 2000”.

Promotional Horizons
Comparing the mode of action of the politicians and the civil servants’ who were involved in the “Bagrut 2000” reveal several interesting findings. Generally, politicians have a short and limited term in office, which is never guaranteed by reelection. Meanwhile, civil servants enjoy a long-term track, which is not subject to abrupt changes. Since their short time in office, politicians feel the need to present high profile significant results. Within the Israeli context, frequent electoral defeats for incumbents had effectively cut a minister’s tenure to an average of less than three years, whereas a 40 years old civil servant may expect to serve up to 25 more years. Needless to say that with such shortsighted mode of leadership, politicians leave the long-term planning to the ministry’s officials.

Decision-makers’ career and the criteria for professional success are yet another issue. A civil servant enters the educational system as a career choice, frequently through teaching positions, and is subsequently promoted within the bureaucracy and the profession ladder. Assuming a role of a minister of education, on the other hand, is the end result of a tough process of political bargaining. The new cabinet-member often has no prior educational experience in education (other than his or her own experience of being a student). This means that the minister’s decision is disproportionately likely to be influenced by non-professional considerations, for the simple reason that they fail to appreciate professional concerns, or other considerations have a higher priority, in their balance of interest. Politicians will thus often simplistically ignore complex issues preferring ideological certainties. In the case of “Bagrut 2000”, its complex nature, compared with the simplicity of a single national exam, meant that ministers had limited opportunity to comprehend its risks and benefits. As a result, reliance on scientific evidence was the exception rather than the norm (Levacic and Glatter, 2001).

Additional, any future political promotion is carried out within the political domain, probably by assuming a more prestigious governmental position in a different public
Public Scrutiny

Public scrutiny also differs for politicians and professional bureaucrats. A politician’s success is measured by public opinion, which is largely formed by the mass media. Several supporting articles were publishing in the daily newspapers in the early stages of the project. The mass media has a short attention span, and is thus usually unencumbered with the need to follow up on projects which may run for many years. Since project termination was a gradual process, with no sharp break, it attracted no further attention in the media. Meanwhile, scrutiny within the professional domain appeared to be different. Colleagues’ and experts, whose opinions are formulated by internal reports and professional journals, evaluated the ongoing outcomes. Several such carefully documented internal reports were published in the last three years of the project (MOE 1997, 1998, 2000).

Wolf and Hader (2001) compared the difference between journalistic and scientific modes of research. While newspaper articles are meant to shed light on individual, emotionally loaded personal events, scientific articles are meant to describe phenomena or social trends. While journalistic writing is based on very few samples, described in colorful expressions to draw more easily the reader attention, scientific writing is detailed, ‘dry’ and somewhat boring. The media aims to reach maximum public exposure while scientific and bureaucratic reviews aim to reach the professional milieu only. Unlike the media tendency to describe a delinquent, the researchers focus their attention on delinquency. Based on Wolf and Hader’s (2001) analysis, it appears that the reason d’âtre and the organizational culture of the ‘politically-educationalist’ are almost diametrically opposed to the professional educationalists.

Having established the differences between the two media types, it is necessary to analyze their impact on politicians and bureaucrats: the media as a source of information, and the media as a tool for personal promotion and public scrutiny. A decision-maker who relies on information and seeks positive coverage from the public
media, will be relying on far less rigorous and though information. That decisionmaker would therefore need more “sexy” proposals and put more emphasis on their grand initiations than on their day-to-day administration. Further, we can expect reduced interest in long-term programs.

In contrast, public servants would be less responsive to public preferences. They are under lower pressure, due to complete employment security (they cannot be fired for failing to fulfill the public’s interest) and partial media insulation (they are more influenced by professional journals, and less by mass media).

6.2.2 Political Implications of “Bagrut 2000”

The organizational operation of such a national project can be described along a hierarchical continuum that begins with the professional levels and ends with political levels, the minister and his or her chief officers.

Not many governmental projects cross the entire chain of command, from the minister’s office and the director general bureau through the administration, the schools to the individual teachers. “Bagrut 2000” is unique in the sense that it was executed by professionals, but its ultimate fate lied (and still lies) in the hands of the politicians. This difference can be observed in the patterns of budgeting described above. The ministers have changed the plans and budgeting nearly every year, because they are more attentive to reactions of the mass media, and thus respond to short term pressures. In addition, the quick rotation at the top, particularly nascent in Israel but typical of political systems, contributed to the repeated changes. Hillage and his colleagues observed decision making of this kind, in which [some] “Policy makers introduce initiatives which are not allowed to fail” irrespective of the observed results (Hillage et al 1998), while for the opposite political wing, those same initiatives are not allowed to succeed.

In particular, while one government (Rabin’s ministers- Aloni and Rubinstein) lavishly funded the project and allowed costs to spiral, another government (Netanyahu’s Yitzhak Levi and Sharon’s Livnat) adopted the opposite extreme, tightening purse strings, and nearly pulling the plug on the project.
6.2.3 Conclusion

"Bagrut 2000" was designed by its planners to solve some of the 'middle-age illness' of the Israeli matriculation system. Prof. Ben Perez and her committee believed that adopting an active learning approach would serve that goal, as actually happened. Not so often such marked changes take place with the increased motivation, time and effort investment and the impressive results. Due to the short timescale, it is not clear yet whether the lack of pronounced increase in grade average reflects the difficulties of the project's early stages.

What becomes clearly evident, however, is that due to the gap between the project goals and its 'public life-span', politicians could not adopt the professional long-term approach required to develop such projects. The frequent political change has zigzagged the program and nearly terminated it altogether. Such premature end eliminated any chance to explore the project's full development and merits.

6.3 Evaluating the results and the evaluation of the results

6.3.1 Evaluation and documentation

The project administration conducted rigorous scrutiny of the schools before granting 22 of them qualification to start teaching with a "Bagrut 2000" curriculum. In the years since, the administration has maintained a close watch on the materials used and methods employed in both teaching and student assessment. This evaluation was based on careful documentation, as a project leader explained:

At the end of every school year we sent all the tools used for assessment. For, example, a copy of each test with statistical two-dimensional map of the results and a transcript of staff discussion of the test. We also sent three actual pupils’ tests at three levels- low, intermediate and high. We also sent essays, the portfolios, etc. All in all 10-14 documented assignments had to be sent for evaluation.

The project administration employed researchers from the Open University to monitor achievements and development. This institute (www.openu.ac.il), like its namesake in Britain and in other countries, is a research university dedicated to distance learning. The Open University was awarded the tender partly because it has facilities and staff spread throughout the country. Open University professors also conducted workshops
for schools and teachers, thus gaining additional knowledge of the state of affairs in
the project.

The evaluation of every school was performed by several Open University's experts who processed the documentation of the schoolwork. A subject matter expert evaluated the academic level, and an expert of pedagogic assessment evaluated the reliability and validity of the grades. Schools had to pass a certain threshold in order to retain their accreditation, which was a requirement by the heads of the universities, so as to verify that grades are not handed out too generously. The results were fed back as both evaluation and recommendations.

Interestingly, the accreditation (and revocation of accreditation) was performed on a school-wide level, rather than per student. This raised a moral problem, because if the school failed, the ministry did not revoke the matriculation certificate of the pupils who had been tested, but only prevented the school from awarding a matriculation grade in the next year. That means that pupils who had been tested in a sub-standard manner, retained their unfairly gained credentials. This policy was decided to instill a sense of confidence in pupils and parents and resolve fears that they might be jeopardizing their future at the hands of seemingly inexperienced administration. Another consideration was to avoid legal challenges from disgruntled pupils and parents. The justification towards the universities was different: Even in existing matriculation there were occasional mistakes and errors, and those are always treated to benefit the pupil. Therefore, it would only be fair to do the same in “Bagrut 2000,” especially that the possible errors were on a much smaller scale- one school at a time rather than the entire national student body.

6.3.2 Achievements

The Ministry of Education’s reports of “Bagrut 2000” (MOE 1998, 2000) and those of contracted researchers (Teicher 1997, Sever 1999) do not provide the results for any school year other than 1997-98, which was the first year in which project pupils graduated. This lack of disclosure about the results stands in contrast to the transparency with which the MOE handled the planning and implementation of the program.
Those available results, presented in Figures 4.1, 4.2 and 4.3, do not indicate a significant change, although, with just a single year of the project sampled, it is hardly representative. It is to be expected that the first year of a project is different from subsequent ones because errors will be made that are later corrected, or because the effort of implementation is more demanding than proceeding with an established program. Conversely, it could be that as the novelty of the experiment wears off, motivation falls. Caution should therefore be exercised in assessing those results.

Table 11 Academic achievements of pupils in Bagrut 2000

<table>
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<tr>
<th>Figure</th>
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<tr>
<td>Figure 4.1: Final grade average</td>
<td>4.1 presents the final matriculation grade of all pupils in the m, compared with the grades achieved in those subjects in rs before. While the 1998 grades are the highest, the icence is not significant, particularly given the variance in the efore, it is not certain that Bagrut 2000 is the cause of the ed grades.</td>
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<tr>
<td>Figure 4.2: Number tested for matriculation</td>
<td>4.2 presents the number of pupils eligible by schools to be lation tested in the subject which participated in Bagrut 1998 number of applicants is the highest, but it seems to be in g the existing improvement trend, thus be argued that the improvement is owed to other</td>
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Looking at Figure 4.2, it appears that the project made no definitive impact in its first year. However, what can be said about subsequent results without governmental disclosure? Information gathered in this research sheds some additional light on the matter. Interviews with principals, who had access to complete and updated grade information of their own school (which may not be representative), suggest that for most pupils grades have indeed remained broadly unchanged, but the rate of failures declined substantially. According to the principals, the new system made failure harder, because there were many assignments, most of them allowing for repeating improvements. Thus a pupil could always amend and improve. A vocational school’s project leader said:

The project bends over backwards to help the pupils. They only fail if they give in, otherwise even the weakest students can scrape a passing grade.

Another vocational school’s principal sheds more light on the causes of the change at the lower end of the grading scale:

The pupils are given a practically limitless opportunity to improve their work and submit it to evaluation. Therefore, they can avoid failure by working harder and submitting a work over again, whereas in the past they had a test, and then a grade and that was it. The new method involves more work, so some of the better pupils don’t bother, but for those on the verge of failing it does give a lifeline.
6.4 Why were achievements unaffected: Success or failure?

Although the MOE has not released a full annual account of the program's academic results, some information is available. Based on these reports (presented in p. 194), there was no significant increase in the achievements among those schools and within each subject before and after implementing the program. These findings, if true, are surprising and disappointing, given the intensive efforts and resources invested, the thorough planning, let alone the remarkable positive outcomes described here earlier. Given the positive and statistically significant correlation between academic success and such factors as motivation, classroom atmosphere, one would expect a mutual corresponding rise in achievements.

The questions, therefore, are whether indeed achievements remained unchanged, and if so, why. Answering the first question is not easy in light of the limited availability of reliable data from the Ministry of Education or alternative sources. Furthermore, there are serious doubts about the validity of such data were it to become available in the future, stemming from the very change in assessment methods described above. An answer to the second question, about the causes of the stagnation of achievements, is presented in two layers: The first looks at the reduced emphasis on grades and subject-matter knowledge that were the result of increased focus on intrinsic motivation and acquiring skills respectively. The second looks at the fears that abolishing the national standardized test and allowing teachers to grade their own pupils would reduce the reliability and validity of the matriculation grades, or worse, lead to grade inflation.

6.4.1 Analyzing the findings' reliability

Several factors cast doubt as to what extent the ministry's reports are valid. First and foremost is the lack of complete reports about pupils' grades for the four years of the program. The ministry's report (Sever, 1999) reported achievements only until the school year of 1998. Those results are reported above and show that performance of the pupils in the project was broadly in line with existing trends. This study's findings show some discrepancy: While the interviewees (pupils, teachers, project leaders, principals and ministry officials) were broadly in agreement that the achievements per se did not rise, some of them did report a decreasing failure rate. It would be fair to
assume that the program’s outcomes were mixed (hence leaving the ministry’s officials with no incentive to share the news with the public). Much more research and/or greater MOE transparency is needed to determine what actually the results were.

Furthermore, even if concrete results were to become available, their validity may be irreparably flawed, because the methods used to evaluate pupils in the program (e.g. reports, ‘portfolio’, oral reports, group works) are inherently different from those measuring the pupils outside the program (e.g. national, standardized, formal written tests). In general, scientific work in general and achievement assessment methodology in particular holds as many parameters as possible constant while using the same evaluation tool in order to measure the changes in a certain domain. In this case, however, not only has the pupils’ environment changed, but the tools used to evaluate their performance within the environment also underwent modification. A proper scientific method to evaluate that change would have been to subject its pupils to the same matriculation exams as all other pupils, and compare the difference.

However, the project also changed the methods of assessment, eliminating standardized national examinations and replacing it with a multitude of other methods (e.g. portfolio, oral presentations, written research papers). This change renders a comparison between the grades of the two methods meaningless. Consequently, even if the observation that the grades did not change is reliable, the flawed measurement methodology makes it highly invalid.

6.4.2 Plausible explanations for lack of change

6.4.2.1 Reduced emphasis on grades

When the “Bagrut 2000” project was planned, and the Ben-Peretz Committee declared its goals for the program, “improving grades” was not one of them. The objectives of the program were about the actual learning of knowledge and skills, or about improving actual relations between the pupils and their teachers, peer, books etc. not about improving the subject-matter knowledge, let alone about improving the reflection of the subject-matter knowledge in report cards.
In reality, as was captured in this research, the respondents repeatedly stressed throughout their interviews that they acquired new learning skills, and that their attitude towards their scholastic activities improved. The most common complaint among pupils was that teachers gave them a lot of independent work, while teachers complained that the process of reflection (reflecting on the strengths and failures of the teaching and learning processes) was emotionally demanding. Deliberate planning and monitoring of the administration pushed these efforts. It would be reasonable to conclude therefore that the program has concentrated on goals that could be measured by various measures other than grades, and that these efforts came at the expense of improving “standard” achievements.

The emphasis on the acquisition of new skills at the expense of rote learning made the standard achievements appear less important. Additionally, the teachers substituted their role from a lecturer to a facilitator who assists the pupil in finding various sources of information and assessing them (Birenbaum, 1997). From now on, the teacher’s evaluation would not only include summative ‘dry’ numbers (grades) of the final outcomes, but also formative evaluations about the learning process itself. In his classic book ‘How Children Fail’ John Holt (1964) argues that the conservative ‘tell them and test them’ method, not only teaches students that knowledge as such is unimportant, but that intelligent and curious students who honestly insist on learning are something between “suckers” and nuisances.

This pupil who does not settle for knowing the ‘correct answer’ or the recipe for its inception will suffer in the school since his teachers know nothing other than facts and recopies. They are impatient and often angry with pupils who want to really know not only ‘what’ but also the ‘why’. That is because they rarely know the answer themselves and it is less often that they have time for that. After all they have to ‘cover’ material (p. 140)

“Bagrut 2000” provided an alternative evaluation yardstick, measured by oral presentations, receiving feedback from peers, class discussion and autonomous self-evaluation. Instead of maintaining the learning process external to the student (e.g. being manifested in ‘grades’), the “Bagrut 2000” made it a personal endeavor. The teachers made their best to improve the pupil’s self-appreciation and ability for self-
evaluation. Instead of dealing with students as a 'black box' that needs to produce 'answers', teachers in the program dealt with the students in a more humane fashion, as human beings. Interestingly, when asked about pupils' self-esteem, many teachers who were confused by the synonymy of the words in Hebrew, enthusiastically described the pupils' self-evaluation skills. Furthermore, by shifting the focus away from "learning for the sake of the exam" the program has made an ideological statement, that the learning process is no less important than its outcomes.

6.4.2.2 Fears of 'grade inflation'

The term 'grade inflation' typically refers to an increase in the average grades attained by students with a given level of proficiency in the material grades are supposed to represent (Koretz and Berends, 2001). Such process has been documented in the educational system of many developed countries (The Economist, April 12, 2001). Grade inflation distorts the educational process because it provides a false sense of success and achievement, when actually nothing has changed. In education, unlike in economics, grade inflation has an upper limit. It may therefore be better described as grade "compression"- fitting a decreasing range of achievements into marks. The risk here is that if everyone gets an 'A', this narrow range of grades cannot help differentiate between the good work from less good one.

The risk of grade inflation has been an issue with "Bagrut 2000," particularly due to its implementation contractor, The Open University. In Israel, matriculation accreditation rates have been rising over the years, increasing from 60.4 in 1987 to 68.2 in 2002 (Central Bureau of Statistics, 2003), and it was suggested that some of this percentage could be attributed to grade inflation. This tide has affected universities' admission policy, which was once based exclusively on matriculation grades. Israeli academic institutions are predominantly state-sponsored, and their admission policy prefers candidates with the highest likelihood of graduating successfully. The matriculation diploma has long served as the sole entrance key to academic institutions. Due to gradual erosion of the quality of the matriculation and the pressure on the universities to select more carefully proper candidates it was decided to add the psychometric test (similar to American SAT). The universities have a large stake at policies and reforms of the matriculation system, and they have been closely involved in the "Bagrut 2000" project. An interviewed MOE official said:
They [heads of universities] were queasy about dropping the format of a single national standard test in favor of letting every school mark its pupils. They voiced concern that some schools would be more generous than others would, thus giving their pupils an unfair advantage, and diminishing the reliability of the grades as an indicator for admission.

The universities’ position placed a burden on the “Bagrut 2000” administration to prove that the grades awarded by the schools in the program would be at least as reliable an indicators of quality as the standardized tests. This burden has left the implementing contractor at a testing point: The Open University [OU] is one of the 7 ‘research universities’ in Israel, but as a distance learning institute it has a universal admission policy. This means that the OU does not rely on matriculation grades to screen prospective students, and thus does not share its colleague’s consternations to maintain their quality in terms of reliability and validity. The OU had many inherent advantages in implementing the program compared to other institutes (it is geographically dispersed, it is independent-study oriented etc.) but it was placed in a delicate political situation.

As a result, the OU had to be “holier than the Pope” (as described by one principal), in terms of assuring that the grades awarded were compatible to those awarded by standardized MOE exams. The schools had to submit (as reported in Ch. 4) samples of tests, reports, ‘portfolios’ and all other non-verbal assessment materials to the OU. Those samples were returned with evaluations on their level in terms of the subject-matter standards, reliability and validity. The samples were graded on a scale of 1 to 5, and schools were required to maintain an average grade of at least 4 to retain their certification for the program.

Ultimately, however, the program administration and the Open University had to be very careful about grading. MOE officials were concerned that if the grades of “Bagrut 2000” pupils were to jump too high, they would be suspicious, irrespective of the scrutiny they were subject to. If things really got out of hand, the universities might simply decline to admit the program’s graduates, leading to mayhem. Therefore, there was an incentive to prevent grades from showing an improvement, and every high grade had to be justified.
6.4.3 Conclusions

In all, there are three question marks hanging over the status of the “Bagrut 2000” program as in terms of change in achievements, which this study was unable to dispel.

The first is the impact on pupils’ grades. As updated and relevant information was not disclosed, it appears grades have remained broadly unchanged. There is anecdotal evidence that questions this observation, but in the absence of full disclosure there is no way to resolve this question.

The second is the impact on the actual performance and achievements underlying those undisclosed grades. Even if numerical grades did not change, the method in which they were measured was transformed, and thus those same grades could represent better, equal or worse performance. Here this research is more conductive, as it provides evidence that the pupils were indeed better educated. At the very least, they felt more challenged and believed they acquired skills they wouldn’t have otherwise. It is not possible to measure the difference in subject matter knowledge. In all, therefore, it appears that teachers and pupils in the program put more efforts into acquiring skills and less emphasis on ‘regular’ learning.

The last question is about reconciling the two. If the methodologies were overhauled but the end result was stagnant, there must have been a neutralizing force pushing grades towards its initial equilibrium. The best analysis of this study attributes this role to the Open University supervisors, and to the systemic fear of being accused of grade inflation.

6.5 Centralized vs. distributed program development

“Bagrut 2000” was designed to delegate the responsibility for the process of creating the teaching materials to the individual schools and individual teachers. As part of the accreditation process, all the teachers who teach the subject in a school had to decide together what methods would be used for the teaching and evaluations, and then jointly prepare them under the management of the program leader. The materials included everything from handouts and assignments to outlines of lessons. In contrast, in traditional matriculation curriculum, the teachers are provided with a number of
alternative textbooks with supplementary material, and then more or less present them to the class "as is".

The section below analyzes the benefits and risks of this decentralization of creating teaching plan and materials. There are three main focal points this analysis: First is a look at the pros and cons of tapping a wider pool of talents. Second, is an analysis of the 'customization' of the teaching materials, which can result in better fit between the program and the teachers who execute it. Third, the increased involvement of the teachers in navigating and controlling their work can be a powerful motivating factor. In all, it was found that decentralization had a positive affect on the teaching process.

6.5.1 A larger number of contributors

Tapping a wider pool of talents occurs when many teachers contribute her work and ideas, and the system draws on the collective experience and talents of hundreds of individuals for every subject. Naturally, some teachers are more qualified than others, but because "Bagrut 2000" stressed the importance of teamwork, teachers were able to assist each other, and thus reached higher levels of work. Empirically, none of the pupils interviewed complained (or indulged) about poor quality materials. Also, none of the teachers expressed dissatisfaction with the teaching materials. Only one project leader complained that she routinely had to re-write worksheets compiled by another teacher.

Another concern might be that similar work is performed multiple times when each school independently tries to 'reinvent the wheel.' This means that in effect, every school draws on a small pool of talents, and the entire system is thus the average rather than the sum of all its components.

The program’s administration made an effort to overcome this risk using two methods: program sharing by participating schools, and supervision of the Open University. The first method meant that the schools participating in the program were required (as a condition for maintaining accreditation) to share all the materials they composed with all other schools. That meant that the exposure to other schools monitored materials, so that successful ideas were adopted and disseminated, whereas bad ideas were
observed and then filtered out. Concurrently, the administration contracted Open University researchers to train schools and evaluate and accredit the materials. This double role meant that OU staff was exposed to all the mistakes made and successes achieved, and were thus in a position to provide external, expert evaluations and insights on materials. Therefore the two methods worked together so that teaching methods were constructed and distributed in a way which took advantage of the work of individual schools for the benefit of the entire system. This process requires time to achieve its full effects, where the best ideas are distributed and then adapted to the needs of individual schools and improved upon.

My recommendations for the future include opening (or rather, reinforcing) additional informal channels for information exchange. The idea is to adopt the model of academic conferences, and encourage teachers to participate in such events. There, they would also have the opportunity of informal discussions with other teachers about their methods and hear first hand about successes and failures. An alternative route could be, in my view, disseminating the information through the internet, so that the administration creates discussion groups, in which teachers can debate methods and consult with each other, leading to the adoption of the most effective methods throughout the system.

6.5.2 'Customized' teaching materials

There are educational scholars who believe that the notion of 'one size fits all' as it is often practiced in schools is ineffective and morally wrong. In the past, lesson plans and teaching materials were uniform throughout the educational system to the degree that legend has a French education minister saying that in any hour of any day he knows exactly what is taught in every class across France.

Decentralized development improved effectiveness through a better fit between the teaching resources and the teachers using those resources. The rationale is that a ministry official, or a private firm developing teaching materials, sees a wide variety of teachers for whom the materials are intended. They will thus aim for the greatest common denominator to achieve maximum use (for an official) or market reach (for a private firm). In contrast, material developed by a team of teachers for their own use
will be 'tailored' to their individual preferences. Thus, demanding teachers can set higher standards, or teachers who are new immigrants can refrain from incorporated difficult words. It also implies that the material will be better matched with the pupils' characteristics. For example, a lesson about WWII in an affluent suburb can assume that at least some of pupils have been to Europe, whereas a bible lesson in a secular kibbutz must assume lower familiarity with Jewish tradition than elsewhere.

One of the disturbing elements in such program is adhering to its goals and assessing its outcomes in accordance with its purpose. In a high-achieving oriented climate as Israel, it is not easy for teachers to prioritize 'less respected' aspects of their educational task-list, such as teaching how to learn.

Hounsell (1979) described two interpretations of independent learning. The narrow interpretation focuses on study skills, strategies and techniques, and a broad interpretation would be to promote higher order cognitive skills such as problem solving or critical analysis. It seems that “Bagrut 2000” teachers have tried to capture both. It remains to be explored whether learning has become an end in and of its own, rather than a mean to an extrinsic goal (e.g. good grades), and whether students turned into ‘lifelong learners’.

6.5.3 Increased involvement and motivation

As presented above, this study has found a dramatic rise in the motivation of teachers, which was observed by the pupils, principals, and ministry officials. But it was even more pronounced in the teachers’ own introspective reports. There were many reasons for the teachers’ increased motivation, but at least some of the increase has been attributed to the process of producing the teaching program and accompanying materials. Explaining the relationship between the two is presented on three main issues: control, accomplishment and teamwork.

Assuming Control

As discussed above (p. 181), motivation can be improved by granting a sense of control. Teachers who were used to having to cope with a new set of guidelines and materials every year were troubled by the change, but even more by the arbitrary nature of its imposition. When teachers develop their program on their own, and
update it from one year to the next, they understand the underlying reasons for the changes, and know the explanation for diverting from previously held beliefs. However, when the same changes are imposed upon them with little or no consultation, those changes are seen as breaks in consistency, and in trust. The teachers felt they were not considered important enough to be consulted or at least receive an explanation. Therefore the new program transforms teachers into decision makers, and thus they feel more important and more informed.

Accomplishment

Teachers who never participated in anything similar were uncertain about their own chances of success. However, the project turned out to be very successful (at least in the eyes of the teachers). This unexpected outcome, compared to their low initial expectations clearly increased the teachers’ sense of accomplishment.

Team Work

Teachers spend most of their time standing alone in front of a classroom, with no immediate assistance. Usually, their relationship with other teachers is more social than professional and is based on sharing the experiences each of them goes through independently.

“Bagrut 2000” changed this aspect of the profession (p.182), by both lowering the portion of time devoted to standing up in front of the class, and by increasing the amount of work done in groups. In “Bagrut 2000,” the teachers developed teaching materials as a group. This task forced the teachers to co-operate, and gave them a sense of belonging. It also gave them an ongoing framework to discuss and resolve problems and solutions.

Therefore, the need to update the teaching materials forced teachers to disclose problems and then find ways to amend them through the curriculum, or learn how to avoid them from teachers who succeeded.

6.5.4 Conclusion

By eliminating the nationally standardized matriculation examinations and replacing it with a multitude of alternative assessment models, the “Bagrut 2000” program was
always designed to bear a strong decentralizing character. In this section one aspect of this character was surveyed: the delegation of the creation of teaching plan from the Ministry of Education in Jerusalem to schools across the country.

Relinquishing the control of such an important aspect of educational work from the experienced bureaucrats who have done it for years, down to teachers who had no previous experience, was a challenging and politically risky step. Fortunately, it seems that, with assistance and supervision of Open University instructors, the faculty of schools that participated in the program handled the task successfully. So much so, that although the pupils routinely complained about the quantity of assignments and learning workload, they never complained about their quality.

Several reasons for this success are discussed above: A larger number of contributors were utilized as hundreds of teachers contributed their share. Quality was assured through joint workshops for teachers of various professions in the school, or of teachers of the same discipline from different schools, and also through guidance and scrutiny of OU professors. In addition, even had the new materials been of lower quality compared with centrally crafted ones, they were better adapted to the special needs of the specific teacher and pupils who used them. This enabled teachers to allocate their resources of time, patience and written materials to the place where they would be of most value. Lastly, the work of creating the materials improved the teachers themselves, made them more motivated and committed to their work. This occurred through several characteristics of the work process such as teamwork, increased autonomy and a greater pride in their accomplishments.

6.6 Conclusions

Since its implementation, the “Bagrut 2000” project has been through several ups and downs, in which its goals and budgets have undergone significant changes. Budget reductions have had the double effect of reducing the resources available for the project, along with creating a climate of uncertainty which makes motivating pupils, staff and principals is difficult. The changes in priorities and their accompanying changes in budgeting have been largely followed the political swings in which decision-makers were replaced in quick succession.
Looking at the implementation of “Bagrut 2000” from an educational management perspective presents a more complicated picture. The reports commissioned by the MOE have found that the program was largely successful in the goals it set itself in terms of changing the learning and assessment patterns. At the same time, the achievements reached by the program’s pupils were at best slightly better and probably unchanged compared to the past. Considering the vast sums invested in the program, this outcome is not easy to justify (although there are reasons to doubt this conclusions, discussed further in page 196), and may have played a part in the reduced budgeting.
7. Practical and Theoretical Conclusions

The final chapter requires the interlacing of the research questions, major findings and both practical and theoretical conclusions into a coherent thread. It opens with the practical implications of the research, with some advice as to what steps teachers, managers and officials in the Ministry of Education can take to maintain and improve the outcomes of “Bagrut 2000” in particular and the results of the matriculation examinations in general. The second section discusses the current findings in the light of the main theoretical frameworks used here: active versus passive and rote learning. Some suggestions are offered for additional research. The final section summarizes the main contributions of this study.

7.1 Practical Implications

It is important to remember that this research was not commissioned by a state organ to make binding (or otherwise) recommendations, and was thus more concerned with evaluation and analysis than with molding concrete recommendations. Nevertheless, it is true that even a theoretical research can contribute to policy making. The American National Research Council explains the importance of scrutiny by multiple theoretical researches:

It is seldom the case that a specific social problem is solved by a decision to use the results of a research study... Knowledge use is more likely to be a process of ‘enlightenment’ that is gradual, indirect and interactive, characterised by incremental changes that aggregate over time to become significant structural and substantive changes. (National Research Council, 1999:44)

Based on the positive findings about the effectiveness of the constructivist tools employed in the project, several conclusions are presented. The author has tried to avoid raising suggestions which are obvious, or an impractical inclusive list of commands. These recommendations will be discussed mainly from the principal’s point of view. Suggestions for the teachers and the national educational system are also noted.
7.1.1 Training teachers with constructivist methods

The positive results of “Bagrut 2000” should not be restricted the high school level. In order to move the students and teachers from a grade-oriented learning style to active learning methods, it is essential that such methods should be used much earlier, within the middle and elementary school level. The forthcoming recommendation will address several aspects: a. changing teacher-training methods in colleges; b. schoolteacher in-house training in active learning; c. training principals and inspectors.

Changing teacher-training methods in colleges

Teacher training has long been carried out in designated seminars and colleges. Two decades ago, universities were granted permission to offer teaching diploma after a year and a half of intensive course. Due to other radical changes in the structure of higher education in Israel, the teacher-training colleges are now competing with the universities to recruit higher quality students. Unfortunately, instead of using advanced teaching methods, college-teachers began using a more conservative, lecture-typed style, such as that taught in the universities. Actually, the teaching methods used within the colleges do not much differ from any high school in the country. The first place to initiate a change should begin within the teachers’ training, at the teachers’ colleges. In order to train student teachers to adopt progressive techniques, it is necessary for the lecturers in over twenty colleges to adopt active learning methods. This is neither simple nor short process, yet it is essential that the Ministry of Education and the colleges’ management allocate a portion of the budget to re-train the lecturers.

On-the-job training of student-teachers

Once a student teacher enters the workplace, his/her schooling does not end, but merely takes a different approach. Encouraging the exchange of information has been shown here to be beneficial to the development of materials and teaching methods, and it can also aid novice teachers entering the educational system.

It is important however, to assimilate novice teachers in the study of new methods that will help them, because they are often exposed to less than the best teaching methods when they start practicing their profession. It is recommended to use the internet discussion forums established for “Bagrut 2000”, in which teachers already share and
discuss teaching materials. In order to improve the quality of materials shared, it is recommended to reward schools and teachers who produce materials which are adopted by other schools. Through 'a market mechanism', schools may be allowed to sell directly and gain income or 'credit' for materials purchased and used by other schools.

**Schools' in-house training in active learning**

Since it takes several years for a student teacher to finish his/her studies and assume a job, and since the school can effectively force novice teachers to work as 'we have done it here for many years', it would be over-presumptuous to expect novice teachers to initiate a revolution. In order to change long established teaching methods, it is also necessary to train teachers who are currently employed. It would be too expensive and probably impossible to bring 120,000 teachers in Israel to adopt a new teaching method simultaneously. It is recommended therefore to select several tens of elementary and middle schools each year and train their teachers.

**Training principals and Inspectors**

In addition to training teachers, the Ministry of Education must train its inspectors and school principals to become acquainted with the new methods and help their teachers use them. Those administrators who were promoted for their successful application of the old methods are not expected to adopt the new ones easily. Their opposite would certainly prevent any change from occurring.

7.1.2 Practical methods of teaching

This study has found that delegating authority and responsibility have been beneficial factors in improving the performance of pupils. At the same time, delegating authority and responsibility has had a similar impact on the teachers and project leaders. The next logical step would be to go beyond limiting pupils' involvement to the execution of their scholastic activities, or choosing between several alternatives. Rather, they should be given a larger role in planning their curriculum in advance, to increase their commitment and allow them to acquire long-term planning skills at the same time.

The first step in adopting such a far-reaching policy is to adopt Silberman's dictum that "we should affirm the right of students to negotiate our purposes and demands so
that the activities we undertake with them have greatest possible meaning to all” (Silberman, 1971, p. 364). Such a policy entails allocating teaching hours at the beginning of school years to enable thorough discussions with the students on the learning goals, the required knowledge and the specific plans to achieve them. It also entails that follow up discussions as how things have been going at the end of each semester.

Incorporating pupils’ input, perhaps only after they have had some experience with the program and with independent learning, would make teaching more effective. Firstly, it would enlarge even further the pool of talents on which the development of teaching plans can draw by adding the collective talents of all the pupils whose opinions are sought. In addition, effective teaching must relate to the pupil’s entire world. Analyzing traditional teaching, Rudduck et al (1996) noted that pupils’ delicate emotional state undergoing the transition from childhood to adulthood burdens them with additional problems. Those problems are better solved by giving them a sense of control, and of not being dictated to. They are also better solved if the pupils’ actions are aimed at solving the problems rather than struggling against them.

While teachers are for the most part supportive, stimulating and selfless in the hours they put in to help young people, the conditions of learning that are common across secondary schools do not adequately take account of the social maturity of young people, nor of the tensions and pressures they feel as they struggle to reconcile the demands of their social and personal lives with the development of their identity as learners (Rudduck et al, 1996, p. 1)

In all, the practical conclusions from the findings are that the empowerment of pupils and teachers has been positive in its own right, and amplified by a parallel change in other parties to the educational process. Expanding this empowerment should have extended those benefits further.

7.1.3 Administrative recommendations

While this research did not systematically study the administrative performance of the program, two issues have surfaced that seem to have decreased the benefit of the program. The first is that the new knowledge acquired by the program’s students in terms of skills and abilities (as opposed to subject-matter knowledge) goes completely unaccredited in the matriculation report issued by the MOE. The second is the damage
caused by the budgetary zigzagging that resulted from the rapid replacement of political leadership, and the lack of protection to support long term decision making and resource allocation from short term personnel change.

Certification of Achievements

As noted in this research and in previous studies by Sever (1999) and Teicher and Berger (1997), program students have labored extensively to acquire new skills. While the majority of them have apparently enjoyed the experience, it is hardly a sustainable educational policy that pupils work hard only for the sake of their personal enjoyment. Pupils deserve formal recognition of their work and an objective assessment of their success (or failure) in mastering the skills they were supposed to acquire.

In addition to being morally appropriate, in the sense that work well done deserves recognition, there are two additional, practical reasons. The first is equity: the effort that pupils invested in acquiring the skills has come, at least in part, at the expense of subject matter learning. This implies that they are at an unfair disadvantage compared with their peers who could focus exclusively on learning the material. Since it was noted that, for all their hard work, project participants did not earn higher grades, it can only be assumed that the formal, grades-measured playing field was tilted against them. Formally crediting them with their added work would level the field.

The second reason is an improved filtering mechanism for employers and universities. High school grades play a major role in the recruitment policy of academia and employers (Thorace, 2000), and thus the matriculation certificate is used (see p. 165) to delineate qualified candidates from unqualified. At present, pupils from “Bagrut 2000” schools have skills that may or may not be of help to the organizations to which they will some day applying. Denying those organizations the information about an individual’s ability to independently learn, think critically or work in group, means that their decisions would not be fully informed, and thus risk misallocation of society’s most scarce resource- human resources.

Accreditation should ideally be granted by adding a section that details the graduate’s ability in the skills that were taught in school, to the matriculation certificate. Thus the matriculation certificate should have one section that accredits knowledge (e.g.}
history, literature, biology, etc.) and another that accredits competencies and skills (communication, analysis, inter-personal skills etc.). It is possible that mathematics and written composition, two matriculation subjects that are compulsory today, should be included in the second section, as they do indeed measure abilities more than knowledge.

**A long term approach to planning and budgeting**

One of the more disturbing aspects of the program was perpetual uncertainty about its future scope or even future existence. The program's projects and goals were modified on an almost annual basis. This is detrimental for a process that requires 3 years before any initial results are manifest, and a decade for its full impact to be judged, especially since the decisions have been made, by their very nature, on the basis of intuition and superficial observation rather than rigorous scientific scrutiny.

Taking in account the initial immense efforts put by the Ben Peretz committee and the careful planning, its implementation suffered from lack of political support and uncertainty. Using such a shortsighted perspective it is difficult to make educational program flourish. That lesson is directed foremost at the political level, which approves and finances the project.

Within the Israeli political milieu, only a very powerful establishment, such as the defense forces, has ever managed to schedule long-run development and purchase program for five and even ten years periods. No other ministries within the governments have ever succeeded to guarantee continuous budgeting unless it is enforced by legislation. This is exactly the course recommended for long-term educational programs such as the Bagrut 2000: That the Ministry of Education, with the approval of the government and the Knesset (probably via legislation) should make a more rigid commitment of financing for several years in advance.

An alternative option for sustaining programs for longer terms is to acquire external support from outside the ministry. Two possible sources are the media and the parents. Media coverage for the program was abundant and relatively positive in its initial stages, but the interest waned in ensuing years as the novelty of the program decreased. This pattern of rapidly vanishing support is exactly the problem sighted
above, and thus, in my view, rules the media out as a reliable source of support for long-term policies.

Parental involvement is of benefit in its own right. As Kyriacou (1997) pointed out, parents' interest in their offspring's studies not only serves as a motivational leverage but also guarantees the salience in the eyes of the students, teachers as well as the local and national political establishment. There is no simple way to involve the parents, and it is recommended to develop several methods within the project management, and subsequently test them to determine which is the most promising.

7.2 Recommendations for follow-up research

The recommendations for further research stem from two main sources: The first is to suggest a more rigorous examination of findings that produced inconclusive results and require closer scrutiny. In particular, special attention should be dedicated to unexpected phenomena that were found and deserve their own, pre-meditated research. The second is the use of different research methodologies to compliment the knowledge acquired in this research. Here future researchers should use the more distant perspective offered by the passage of time.

7.2.1 Scrutinizing inconclusive results

Overall, this research has been relatively fortunate in having most of its findings provide relatively clear-cut and significant results. The few unsettled issues were about pupils' self esteem, and more importantly, the achievements of the program in terms of 'hard' findings about grades and success rates. This last point will probably require applying more sustained pressure on the MOE, possibly thorough the legal system, to publish the information in its possession.

On the side of unexpected findings, on the other hand, there have been two surprising findings that require greater attention: The rapid promotion of faculty members who participated in the program, and the parallel change that has engulfed pupils and teachers in tandem.
The surprising rate of promotion of “Bagrut 2000” staff was first reported in this research, and has not been examined before. Such a development holds far-reaching practical and theoretical implications. For example, identifying the specific ingredients that encouraged those leaders to assume managerial posts: Were these related to empowerment, a self-fulfilling prophecy, or an increased autonomy, to mention just a few options as possible catalysts for promotion?

Once these factors are identified they may be implemented in other organizational settings in order to facilitate the selection of the best leaders. A careful examination would enable to identify the selection process, the induction, training and other HMR practices that took place. Studies on the selection of females into principalship (Good and Brophy, 1995) show that women tend to be less ambitious and more often respond to encouragement directed to them from significant others. It would of interest to identify those people and the mutual influence which paved their way.

Another surprising finding, and of great potential significance, was the parallel change in which pupils and teachers became more motivated, more satisfied and better at their work for similar and mutually reinforcing reasons. This phenomenon too was not observed in the past, either in “Bagrut 2000” or in similar projects, and would thus require closer analysis. This research focused on each group separately, and thus comparing the trends in the pupils with those of the teachers could be improved by employing direct comparisons of the trends.

The importance of this finding is that it can revolutionize the way in which educational reforms are made. The apparent process, by which teachers were motivated, professionalised and scrutinized by their pupils, represents a new administrative tool for improving teachers’ performance. At the same time, it is important to determine whether this parallel change contributed to or frustrated the reforms.

7.2.2 Using different methodologies

The methodologies used in every research, including this one, reflect the constraints encountered in its development and execution. There are explicit constraints, enforced by limits of funding, time, or authority, and there are implicit constraints representing
the preferences of the researchers. Of the three main methodological recommendations, there are two that address explicit constraints, and suggest a longitudinal research, and a review of the achievements of the program’s pupils after their graduation. A third recommendation addresses an implicit preference and suggests using the observation tool to verify the results provided by pupils and teachers to the questionnaires and interviews in this research.

The first recommendation is that implementing a national long-term project such “Bagrut 2000” must include a longitudinal follow-up study. Such a research design would enable create an ongoing mechanism to monitor and improve the project. Since it takes at least five to seven years before a solid data is accumulated, funds must be allocated in advance, as an integral part of the whole project. Unfortunately longitudinal design is used less often in comparison with cross-sectional studies. Thomas (1998) argues that sometimes a data collection approach that is well suited to the research aim is rejected because the cost would be excessive (p. 70). That was certainly the case with regard to “Bagrut 2000.” Resources invested in the initial stages to develop the project and gain the endorsement of the Open University researchers to accompany the principals and the teachers, were not continued. The Ministry of Education has put in efforts to measure the programs’ outcomes. When the investments in the project were so immense, the planners must allocate a certain budget to guarantee a careful empirical follow-up, as an integral part of the project. No practical reasons such as cost, political pressures or the urge to complete and submit results, should have prevented documentation and follow-up.

The second recommendation is to have a new look at the graduates of Bagrut 2000, several years now after their graduation, and compare their achievements to their peers who did not participate in the program. While concluding this work I am certainly aware that the subjects of this study still continue to lead their lives on other pathways. By the time these words are being written, all of them have completed their high school studies and probably have completed their mandatory service in the Israel Defense Forces or in the National Service corpus. Many of them will hopefully continue their academic studies within the next few years.
In such a case, the experience they accumulated in the “Bagrut 2000” project may serve them at their college or university studies. Hence, a follow-up study would reveal several aspects that may shed light on the program’s long-term outcomes. For example, have the students acquired and more often used active learning procedures in comparison with other students? Do they more often actively discuss the taught material with other students? Based on the classic study of Guetzkow, Kelly and McKeachie (1954), are the students more interested in subjects studied in the program, selecting them as course in the University?

A last recommendation would be to use observation methodology to verify and triangulate the responses received using interviews and questionnaires. Doing this research at the tender age of 50, with a family of 4 to care for, and a demanding career, have led me to opt for methodologies which consume less rather than more time. Perhaps a researcher who has more abundant time, or maybe a legion of research assistants at his or her disposal, could attempt to observe the improved motivation, satisfaction, autonomous learning and other phenomena first hand.

This should be important because despite all the precautions used, and the emergence of an occasional dissenter, most of the responses were surprisingly upbeat and at times even sounded like an advertisement. There is no reason to think that any of the pupils has had an interest to lie, and the pupils’ responses were consistent with staff members, so there is no reason to doubt their sincerity either. However, it would still be a good idea to sit in the class and see group discussion as it occurs, or to watch oral presentations made and reflections written.
7.3 End note

Concluding a thesis entails addressing its theoretical importance and relevance. The current study served as a follow-up study of a national project, which adopted a constructivist mode of teaching and learning. Such mode of teaching is handled more often in elementary schools settings. The selection of high school level is therefore of special interest. West Burnham (1992) argued that the more mature the students, the less direct guidance is needed for their studies. The current findings prove that for 11th and 12th grade students, the constructivist approach enable to develop their own creativity and involvement.

The findings strengthen the case for the effectiveness of an active learning approach as suggested by Vygotsky. When learning became an interactive process, the pupils apparently not only succeeded in improving their independent learning skills, but also enjoyed implementing them. This resulted in increased satisfaction, better interpersonal relations between the pupils and between them and their teachers.

At the same time, the school and its teachers have been changed in unforeseen ways. Communication channels between the different participants of the scholastic activity have opened up, and feedback flowed in both directions: Teachers were speaking to, rather than at, their pupils, and the pupils learned to rely on their teachers for assistance and support. It was found that these improved communications were both caused by and contributed to the improvements in motivation, independence and satisfaction of pupils and of teachers. In effect, the program created a virtuous cycle.

The current study examined the mutual influence of the program on both learners and teachers. Israeli high school students are highly motivated to pass the matriculation examinations. At the same time, however, they do not seem ready for autonomous learning, since they are 'spoon-fed' by their teachers. Their past learning has tended to be teacher-oriented and rote learning controlled. It was felt that high motivation does not automatically imply that learners are prepared to learn and work autonomously. “Bagrut 2000” has heightened the students’ awareness to their learning habits, trained them to use more active through textbook reading, journal writing and individual
consultation. As it was found elsewhere (e.g. Usuki, 2001), not only have students habits changed significantly, but teachers became participants in the learning process itself, rather than mere facilitators of learning. The nature of change in pupils has been remarkably similar to the change in the teachers. Both pupils and teachers felt more listened to, more in control of their work, more intellectually appreciated. The program's administration has clearly caused this parallel change, although there is no finding to support an assumption that it has done so intentionally. Being more involved and leading an independent work have probably brought unexpected finding: the remarkable number staff that was promoted in the following years. The numbers are probably too small to be considered valid, but they certainly point to an interesting phenomenon.

Changing teaching methods was followed also with a change in the evaluation procedures. The new assessment model abolished the traditional examination, initiating relatively revolutionary means such as individual presentations, written essays and the like. The new methods were found to have had a positive impact on the pupils, the teachers and the schools, but need adjustments in order to realize their contribution to society.

Several implications emerge within the organizational and political domain. First, increased financial investment does not guarantee increased achievements. Despite hefty investments in budgets, effort and counseling, actual average grades did not increase, although grades data was lacking and represented only the first year of the program's existence. Further, the reliability of those findings was questioned due to the change in assessment tools used in the program compared with other parts of the educational system. Two possible explanations are offered: that pupils and teachers who were troubled with learning skills paid less effort to grades, or that Open University inspectors were under pressure to refrain from increasing grades.

Another administrative issue was contrasting the traditional top-method of designing teaching programs at the MOE, with the de-centralized method of "Bagrut 2000." Explanations to the apparently superior results of the reformed method come from organizational and psychological sources: Organizationally, the program took advantage of the skills and efforts of all the program's teachers, rather than a small
group of experts, and the program was planned by the same group of teachers that employed them and was thus better suited for their needs. Psychologically, giving teachers more control of their work motivated them and improved their teamwork.

The last part of this section is a discussion of the political climate in which “Bagrut 2000” was conceived and then executed. The past decade has been (not unlike the decades before it) a time of political turmoil in Israel, during which five Prime Ministers were elected, and five ministers of education were appointed, each with a differing set of priorities. As a result, the funding and priority accorded to the “Bagrut 2000” program varied significantly from year to year, damaging long term planning, and preventing the application of lessons learned. There appears to be a strong case for funding long-term projects like this on a 3-year or even 5-year basis, controlled by civil service bureaucrats.

The last section of the discussion attempted to draw the lessons from this research forward. Practically, there is room for advancing teachers’ training in constructivist methods through their teachers’-colleges and on the job, and also further empower pupils by giving them a bigger share of making the decisions that involve them. The matriculation certificate should be amended to reflect the skills with which pupils, particularly “Bagrut 2000” pupils, graduate.

Theoretically, it is important to further investigate the unexpected findings of this research, particularly the parallel process between pupils and teachers, and the rapid advancement of program teachers up the education ladder.

In summary, this discussion has pointed that the findings support current research as to the effects of implementing constructivist curriculum, but they have also raised several unexpected results, particularly about how this reform changes the teachers.
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## Appendix 1: List of all schools taking part in the “Bagrut 2000” project

<table>
<thead>
<tr>
<th>Area</th>
<th>School Name</th>
<th>School Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tel-Aviv</td>
<td>“Tichon Hadash”, Tel-Aviv</td>
<td>540070</td>
</tr>
<tr>
<td>Tel-Aviv</td>
<td>“Harishonim”, Herzelia</td>
<td>540328</td>
</tr>
<tr>
<td>Tel-Aviv</td>
<td>“Tichon Hadash” Ramat-Gan</td>
<td>541268</td>
</tr>
<tr>
<td>Center</td>
<td>“Achad Ha’am”, Petach-Tikva</td>
<td>440107</td>
</tr>
<tr>
<td>Center</td>
<td>Ariel Comprehensive</td>
<td>440925</td>
</tr>
<tr>
<td>Center</td>
<td>“Wizo Vocational”, Rehovot</td>
<td>470021</td>
</tr>
<tr>
<td>Center</td>
<td>“Ginzburg School”, Yavneh</td>
<td>470963</td>
</tr>
<tr>
<td>Haifa</td>
<td>“Ort”, Kiriat Motzkin</td>
<td>340034</td>
</tr>
<tr>
<td>Settlements</td>
<td>Hadassim Comprehensive</td>
<td>440180</td>
</tr>
<tr>
<td>Settlements</td>
<td>“Hadassah,” Neurim</td>
<td>470146</td>
</tr>
<tr>
<td>Settlements</td>
<td>“Herzog”, Beit Hashmonai</td>
<td>441089</td>
</tr>
<tr>
<td>South</td>
<td>“Amal Neuman”, Beer-Sheva</td>
<td>670042</td>
</tr>
<tr>
<td>North</td>
<td>“Sharett” Upper Nazareth</td>
<td>240077</td>
</tr>
<tr>
<td>Jerusalem</td>
<td>“Ulpanat Tzvia”</td>
<td>140491</td>
</tr>
<tr>
<td>Jerusalem</td>
<td>“Furst”, Beit Shemesh</td>
<td>140202</td>
</tr>
<tr>
<td>South</td>
<td>“Rogozin”, Ashkelon</td>
<td>640078</td>
</tr>
<tr>
<td>South</td>
<td>“Ohel Shlomo” Beer-Sheva</td>
<td>670177</td>
</tr>
<tr>
<td>Tel-Aviv</td>
<td>“Rogozin”, Or-Yehuda</td>
<td>570267</td>
</tr>
<tr>
<td>Haifa</td>
<td>High School, Kara</td>
<td>378018</td>
</tr>
<tr>
<td>North</td>
<td>High School, Daburia</td>
<td>800128</td>
</tr>
<tr>
<td>North</td>
<td>High School, Majar</td>
<td>800136</td>
</tr>
<tr>
<td>Settlements</td>
<td>“Hakfar Hayarok”, comprehensive</td>
<td>580019</td>
</tr>
</tbody>
</table>
Appendix 2: Questionnaire No. 1 for Pupils

(Adapted partly from Rosner, 1998)

Dear Pupil:

This questionnaire deals with your school studies. It is composed of two parts:

**Part One** asks you for your reactions to the period before the project started;

**Part Two** asks you for your reactions to the period of the "Bagrut 2000" project...

The questionnaire is anonymous (nobody will know who wrote what), it is for research purposes only, and nobody else will see it.

Please read each statement and mark "X" in the place that you feel is most true about your class.

Thank you for giving us your time and attention!

**Part One: What you feel was true before the Project started:**

<table>
<thead>
<tr>
<th></th>
<th>Completely True</th>
<th>Untrue</th>
<th>Doubtful</th>
<th>True</th>
<th>Very True</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I enjoyed doing my homework</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>The teacher taught in an interesting way</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I enjoyed taking part in the lesson</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I was bored in class</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Lessons in this school were very interesting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I was never late for class</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>I did my best to get ahead in my studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>I was absent very rarely</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>I really wanted to succeed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Pupils were ready to undertake extra study tasks to get ahead in their studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Pupils turned to teachers for help in getting ahead</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>I used the study library at school for help in my studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>I used computer databases for help in my studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Special study projects were offered to pupils</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Pupils used computer databases and brought the material they found to class</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>The teacher was our only source of information</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Many pupils added to their knowledge with the help of the library</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Teachers listened carefully to what we had to say</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Teachers and pupils understood each other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>We had a good learning atmosphere</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>The head teacher and the teachers used to ask the pupils which teaching method seemed most appropriate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Part Two: What you feel is true today, during the Project:

<table>
<thead>
<tr>
<th></th>
<th>Completely Untrue</th>
<th>Untrue</th>
<th>Doubtful</th>
<th>True</th>
<th>Very true</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I like doing my homework</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I like the way we are taught</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I like taking part in the lesson</td>
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245
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<th>Doubtful</th>
<th>True</th>
<th>Very true</th>
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<td>4</td>
<td>I get bored during the lesson</td>
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<td>5</td>
<td>Our lessons are very interesting</td>
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<td>6</td>
<td>I am never late for class</td>
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<td>7</td>
<td>I try to succeed in my studies</td>
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<td>I hardly ever miss a lesson</td>
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<td>9</td>
<td>I really want to succeed</td>
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<td>10</td>
<td>Pupils are prepared to undertake extra study tasks to get ahead in their studies</td>
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<td>11</td>
<td>Pupils turn to teachers for help in getting ahead</td>
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<td>12</td>
<td>I use the study library at school for help in my studies</td>
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<td>I use computer databases for help in my studies</td>
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<td>14</td>
<td>Special study projects are offered to pupils</td>
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<td>15</td>
<td>Pupils use computer databases and bring the material they find to class</td>
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<td>The teacher is our only source of information</td>
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<td>17</td>
<td>Many pupils add to their knowledge with the help of the library</td>
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<td>18</td>
<td>Teachers listen carefully to what we have to say</td>
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<td>19</td>
<td>Teachers and pupils understand each other</td>
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<td>We have a good learning atmosphere</td>
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<td>21</td>
<td>The head teacher and the teachers ask the pupils which teaching method seems most appropriate</td>
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<td>22</td>
<td>Pupils are asked to give their opinion of the teacher's methods</td>
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<td>Mixed teacher - pupil teams help fix the curriculum</td>
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<td>24</td>
<td>Pupils give their own ideas about what should be taught.</td>
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<td>25</td>
<td>Pupils are allowed to choose subjects for study papers.</td>
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<td>26</td>
<td>Lots of pupils take part in class discussions</td>
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<td>Pupils can suggest subjects for further study</td>
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<td>Pupils can decide how their work will be graded</td>
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<td>29</td>
<td>Pupils suggest changes in learning / teaching methods</td>
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<td>30</td>
<td>Other pupils' answers in class help me</td>
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<td>I have good relations with the other pupils</td>
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<td>32</td>
<td>We have a good competitive atmosphere and this helps me to get ahead</td>
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<td>During studies, pupils help each other</td>
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<td>I often stay to talk with the teacher</td>
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<td>I like the teacher's attitude</td>
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<td>36</td>
<td>Teachers and pupils stay after class to do some extra work</td>
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<td>37</td>
<td>The way teachers behave towards us makes me like them</td>
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<td>38</td>
<td>I believe the teachers want to help us in our studies</td>
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<td>39</td>
<td>The teachers care whether we succeed in our studies</td>
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<td>I believe in the teachers</td>
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<td>41</td>
<td>I succeed in my studies</td>
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<td>I believe I can succeed in my studies</td>
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<td>43</td>
<td>I feel good about myself</td>
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<td>44</td>
<td>I can help other pupils with their studies</td>
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<td>45</td>
<td>I think I am good at my studies</td>
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<tr>
<td>46</td>
<td>Lots of pupils ask for my help in their studies</td>
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<td>47</td>
<td>I am sure of myself in class</td>
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</table>
Appendix 3: Questionnaire for teachers.

(Adapted partly from Rosner, 1998)

Dear Teacher:

I wish to carry out research into the "Bagrut 2000" project, as part of my Ph.D. studies at Leicester University in England. The purpose of the research is to ascertain whether pupils, teachers and project supervisors believe their attitudes towards teaching and learning processes have changed, in comparison to the period immediately preceding the project.

This is a two-part questionnaire, Part One deals with your attitudes before the project started, while Part Two deals with the same attitudes during the period of the project.

The questionnaire is totally anonymous, will be used for research purposes only, and will not be passed on to anyone else.

Please mark "X" in the place that best expresses your reaction to each statement, as it reflects the situation in your class.

Thank you for giving me your time and attention.

Part One: What you feel was true before the Project started:

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<tr>
<th></th>
<th>Completely Untrue</th>
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<tr>
<td>5</td>
<td>I used to come to school even when I wasn't feeling well.</td>
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<td>6</td>
<td>I felt that teaching had worn me down</td>
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<td>My professional motivation was high.</td>
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<td>8</td>
<td>Pupils' motivation was high.</td>
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<td>9</td>
<td>Pupils were interested in the subjects taught</td>
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<td>12</td>
<td>Pupils were satisfied with their studies</td>
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<td>13</td>
<td>There was a positive class climate</td>
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<td>14</td>
<td>Many pupils disrupted classes and were late for class</td>
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<td>15</td>
<td>The class learning climate was good</td>
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<td>16</td>
<td>Pupils showed initiative as to lesson subjects.</td>
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<td>17</td>
<td>Pupils were allowed to choose lesson subjects</td>
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<td></td>
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<td>18</td>
<td>Pupils were allowed to choose subjects for work papers</td>
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<td>19</td>
<td>Many pupils took part in class discussions.</td>
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<td>20</td>
<td>Pupils could suggest subjects for in-depth teaching</td>
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<td>21</td>
<td>Pupils could choose class assessment methods</td>
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<td>22</td>
<td>Pupils showed initiative as to teaching-learning processes</td>
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<td>23</td>
<td>School climate was positive</td>
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<td>24</td>
<td>The head teacher participated in deciding on lesson material</td>
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<td>25</td>
<td>The head teacher encouraged teachers to advance professionally</td>
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<tr>
<td>26</td>
<td>The school had a positive learning atmosphere</td>
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<td>27</td>
<td>The head teacher and the teachers asked pupils to choose teaching methods</td>
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<td>28</td>
<td>Feedback was elicited from pupils as to class teaching methods</td>
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<td>29</td>
<td>Mixed teacher-pupil committees helped to determine curricula</td>
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<td>30</td>
<td>Teachers and pupils met for study sessions outside school hours</td>
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<td>31</td>
<td>Pupils believed teachers wanted to help them academically</td>
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<td>32</td>
<td>Pupils believed the teachers wished to see them succeed</td>
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<td>33</td>
<td>Pupils believed in the teachers</td>
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<td>34</td>
<td>Pupils were satisfied with peer-group relations in class</td>
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<td>35</td>
<td>During their study periods, pupils helped each other</td>
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<td>36</td>
<td>Pupils found material in databases and brought it to class</td>
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<td>37</td>
<td>The teacher was the sole class source of information</td>
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<td>Pupils believed in their ability to succeed in their studies</td>
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<td>41</td>
<td>Pupils' self-esteem was high</td>
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<td>42</td>
<td>Many pupils were able to help classmates in their studies</td>
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<td>43</td>
<td>Many pupils believed they were capable of academic success</td>
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<td>44</td>
<td>Many pupils turned to classmates for help in their studies</td>
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<td>45</td>
<td>With regard to their studies, pupils' self confidence was high</td>
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<td>46</td>
<td>In my teaching, I was largely autonomous</td>
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**Part Two: What you feel is true today, during the Project:**

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<td>20</td>
<td>Pupils can suggest subjects for in-depth teaching</td>
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<tr>
<td>21</td>
<td>Pupils can choose class assessment methods</td>
<td></td>
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<tr>
<td>22</td>
<td>Pupils show initiative as to teaching-learning processes</td>
<td></td>
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<tr>
<td>23</td>
<td>School climate is positive</td>
<td></td>
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<tr>
<td>24</td>
<td>The head teacher participates in deciding on lesson material</td>
<td></td>
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<tr>
<td>25</td>
<td>The head teacher encourages teachers to advance professionally</td>
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<tr>
<td>26</td>
<td>The school has a positive learning atmosphere</td>
<td></td>
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<tr>
<td>27</td>
<td>The head teacher and the teachers ask pupils to choose teaching methods</td>
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<tr>
<td>28</td>
<td>Feedback is elicited from pupils as to class teaching methods</td>
<td></td>
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<tr>
<td>29</td>
<td>Mixed teacher-pupil committees help to determine curricula</td>
<td></td>
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<tr>
<td>30</td>
<td>Teachers and pupils meet for study sessions outside school hours</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Completely Untrue</td>
<td>Utrue</td>
<td>Doubtful</td>
<td>True</td>
<td>Very true</td>
</tr>
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<tr>
<td>31</td>
<td>Pupils believe teachers want to help them academically.</td>
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<tr>
<td>32</td>
<td>Pupils believe the teachers wish to see them succeed.</td>
<td></td>
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<tr>
<td>33</td>
<td>Pupils believe in the teachers</td>
<td></td>
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<tr>
<td>34</td>
<td>Pupils are satisfied with peer-group relations in class</td>
<td></td>
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<tr>
<td>35</td>
<td>During their study periods, pupils help each other.</td>
<td></td>
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<tr>
<td>36</td>
<td>Pupils find material in databases and bring it to class</td>
<td></td>
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<tr>
<td>37</td>
<td>The teacher is the sole class source of information</td>
<td></td>
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<tr>
<td>38</td>
<td>Many pupils use the library for enrichment</td>
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<tr>
<td>39</td>
<td>Pupils succeed in their studies</td>
<td></td>
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<tr>
<td>40</td>
<td>Pupils believe in their ability to succeed in their studies</td>
<td></td>
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<tr>
<td>41</td>
<td>Pupils' self-esteem is high</td>
<td></td>
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<tr>
<td>42</td>
<td>Many pupils are able to help classmates in their studies</td>
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<tr>
<td>43</td>
<td>Many pupils believe they are capable of academic success</td>
<td></td>
<td></td>
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<tr>
<td>44</td>
<td>Many pupils turn to classmates for help in their studies</td>
<td></td>
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<tr>
<td>45</td>
<td>With regard to their studies, pupils' self confidence is high</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>In my teaching, I am largely autonomous</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Appendix 4 - Semi-structured interview with a pupil

(Adapted partly from Rosner, 1998)

It is assured that the information you provide in this interview is completely confidential. This interview is strictly for research purposes and will not be forwarded to any other person. During the analysis of the data, the anonymity of the interviewee will be guaranteed, and measures will be taken to prevent any form of identification — whether direct or indirect.

The subject learned in the project: ________________________
Grade: ______________________
School: ______________________
Date: ______________________

1. What do you know about the “22 Project”?

__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________

2. What is the importance of the project in your view?

__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________

3. How did the project influence your learning methods?

__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________

4. How did the project influence your learning autonomy? Specify and give examples.

__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
5. How did the project influence your self-esteem?
Specify and give examples


6. How did the project affect your level of trust in teachers and the school?
Specify and give examples


7. How did the project affect your relationship with the teachers?
Specify and give examples


8. How did the project affect your relationship with other pupils?
Specify and give examples


9. Has the project change your motivation for learning?
Specify and give examples


10. Are the pupils more involved in the teaching and learning processes? Specify
and give examples
16. Would you have wanted all subjects taught in the new way?  
   Explain


17. Do you have anything more to add?
11. Has the project changed your level of satisfaction? Specify and give examples

12. What would you have liked added and/or increased in the project? Explain

13. What would you have liked cancelled and/or reduced in the project? Explain

14. Would you prefer to return to learning the previous way? Explain

15. Would you have wanted to have additional subjects taught in the new way? Explain
Appendix 5 – Semi-structured interview with a teacher
(Adapted partly from Rosner, 1998)

It is assured that the information you provide in this interview is completely confidential. It is strictly for research purposes and will not be forwarded to any other person. During the analysis of the data, the anonymity of the interviewee will be guaranteed, and measures will be taken to prevent any form of identification – whether direct or indirect.

1. What is the importance of the project in your view?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. How did the project influence your teaching methods?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

3. How did the project influence the pupils’ learning autonomy?
   Specify and give examples.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

4. How did the project influence the pupils’ self esteem?
   Specify and give examples.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
5. How did the project affect the pupils’ level of trust in teachers and the school? Specify and give examples


6. How did the project affect the pupils’ relationship with the teachers? Specify and give examples


7. How did the project affect the pupils’ relationship with each other? Specify and give examples


8. How did the project affect the climate in class and in school? Specify and give examples


9. Has the project change your motivation for teaching? Specify and give examples


10. Are the pupils more involved in the teaching and learning processes? Specify and give examples

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11. Has the project changed your level of satisfaction?
   Specify and give examples

12. Has the project changed the pupils' level of satisfaction?
   Specify and give examples

13. What would you have liked added and/or increased in the project?
   Explain

14. What would you have liked cancelled and/or reduced in the project?
   Explain

15. Would you prefer to return to teaching the previous way?
   Explain
16. Would you have wanted to have additional subjects taught in the new way? Explain

17. Would you have wanted all subjects taught in the new way? Explain

18. Do you have anything more to add?
Appendix 6 – Questionnaire for the schools’ principals
(Adapted from Rosner, 1998)

My research project tries to find out the opinion of the various components of the “Bagrut 2000” project.

As a principal, your opinion about the experiment is very important and interesting.

I would like to receive your observations about the progress of the project in your school during the present school year (please compare this year with the years in which the project was not active). Please answer the all of following questions which focus on the various aspects of the research.

Thank you for your help and for your cooperation in answering this questionnaire.

1. **Pupils’ motivation for learning**– Has the learning motivation of pupils improved following the project? What is the evidence for the improvement during classes, relationship with teachers, and the use of additional learning materials such as databases etc.

2. **Teachers’ motivation** – Has the teachers’ motivation improved following the project?
   
   What form did this improvement take, and has it affected other subjects outside the project?
3. **Self Esteem** - Has the pupils' self esteem improved as a result of the project? Please explain and give examples.

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

4. **Trust** – has the pupils’ trust in the teachers and in the school increased? Please explain and give examples.

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

5. **Pupils-teachers relationship** – have the relationship improved following the project? Please explain and give examples.

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________
6. **Pupils-pupils relationship** – have the relationship improved following the project?  
Please explain and give examples

7. **Class climate and School climate** - Have the climate in the classroom and in the school improved following the project?  
Please explain and give examples

8. **Learning atmosphere** – Has the learning atmosphere improved in project disciplines, and has it affected other disciplines?  
Please explain and give examples
9. **Pupils’ involvement in teaching and learning processes** – Was there a change in the level of involvement of pupils in the teaching and learning processes following the project? Please explain and give examples.

10. **Pupils’ satisfaction** – Has the level of satisfaction of the pupils improved following the project? Please explain and give examples.
11. **Teachers’ satisfaction** – Has the level of satisfaction of the teachers improved following the project? Please explain and give examples.
Appendix 7 - Questionnaire for the schools' project coordinators

(Adapted partly from Rosner, 1998)

My research project tries to find out the opinion of the various components of the “Bagrut 2000” project.

As a project coordinator, your opinion about the experiment is very important and interesting.

I would like to receive your observations about the progress of the project in your school during the present school year (please compare this year with the years in which the project was not active). Please answer the all of following questions which focus on the various aspects of the research.

Thank you for your help and for your cooperation in answering this questionnaire.

1. **Pupils' motivation for learning** - Has the learning motivation of pupils improved following the project? What is the evidence for the improvement during classes, relationship with teachers, the use of additional learning materials such as databases etc.

2. **Teachers' motivation** - Has the teachers' motivation improved following the project? What form did this improvement take, and has it affected other subjects outside the project?
3. **Self Esteem** - Has the pupils' self esteem improved as a result of the project? Please explain and give examples.

4. **Trust** – has the pupils' trust in the teachers and in the school increased? Please explain and give examples.

5. **Pupils-teachers relationship** – have the relationship improved following the project? Please explain and give examples.
6. **Pupils-pupils relationship** – have the relationship improved following the project? Please explain and give examples.

7. **Class climate and School climate** - Have the climate in the classroom and in the school improved following the project? Please explain and give examples.
8. **Learning atmosphere** – Has the learning atmosphere improved in project disciplines, and has it affected other disciplines? Please explain and give examples


9. **Pupils' involvement in teaching and learning processes** – Was there a change in the level of involvement of pupils in the teaching and learning processes following the project? Please explain and give examples


10. **Pupils' satisfaction** – Has the level of satisfaction of the pupils improved following the project? Please explain and give examples


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11. **Teachers' satisfaction** – Has the level of satisfaction of the teachers improved following the project? Please explain and give examples.