Protecting the Environment by Acquintance and Learning

"Israeli Hope in Academia" is a program, designed by the president of the state of Israel, Reuven Rivlin. The program is based on the perception that Israeli society is changing, from having a clear majority and several minorities, to a society comprised of four principal sectors that are roughly similar in size: secular Jews, religious Jews, Haredi (ultra-orthodox) Jews, and Arabs. The program acts to encourage a more diverse and culturally competent higher education system that promotes partnership. One of the means to achieve that goal is to create meaningful educational interactions between people from academia, and the younger generation of these sectors. Over the past year, students from various faculties in the Holon Institute of Technology (HIT), took part in a course called "Green Ambassadors", which corresponds with the "Israeli Hope" program. This course was considered an action learning course, which is a course that combines academic learning and social involvement that has an impact on the community. In the course, the students studied environmental issues, and then passed that knowledge on to pupils in the religious elementary school "Yeshurun" in the city of Holon, through enjoyable educational activities. In order to illustrate the environmental topics, and to achieve high participation levels of the pupils, the students created a mobile laboratory containing experiments and demonstrations, in which the pupils took an active part. The final questionnaires, answered by the classes teachers, show high rates of pupil participation, understanding and enjoyment. Thus, the course managed to make a significant impact on the community, and achieve the goals set by the "Israeli Hope" program. This paper will present the "Israeli Hope" program, HIT and the "Green Ambassadors" course, as well as the methodology used to achieve the course's goals. Finally, this paper will discuss the success levels of the course.

Keywords: Environmental Education, Experimental Learning, Elementary School, Renewable Energy, Energy Efficiency.

Introduction

The population in Israel is incredibly diverse. On the surface, it is comprised of a Jewish majority and an Arab minority, with several subgroups such as Druze and Circassians. A deeper observation would reveal a reality that is much more complex. The Jewish population is divided into three major groups, each with its own education system: A group that consists of the people on the religious range between secular and "keeping tradition"; a group that consists of religiously observant Jews; and a group of Haredi Jews – strictly orthodox Jews, who can also be divided into many subsectors, but in general are all characterized as keeping

adherence to Jewish Law and avoiding modernity. The Arab society also has its own subsectors, with Muslim and Christian being a distinct division.

Distinguishing the majority and minorities was quite obvious in the 1990s, especially when looking at the population of children at schools. In 1995, 51% of elementary school pupils were secular Jews, 22% were Arab, 16% were religious Jews, and 11% were Haredi Jews. 28 years later, that clear distinction of majority and minorities became impossible. By 2018, the ratio of secular Jews in elementary school shrunk to 39%, the Arab and religious Jews maintained a similar ratio of 24% and 14% respectively, and the Haredi Jews ratio increased dramatically to 23% [1].

This new ratio of sectors makes the population appear less like a majority group with a few minorities, and more like four relatively equal sized societies in Israel. However, the difference in socio-economic status between these societies remains very clear. The secular and religious societies dominate the upper and middle classes of Israel, while the lower class is mostly comprised of Haredi Jews and Arabs. In 2017, the median income of an Arab household was 11,435NIS, while the median income of a Jewish household was 19,140NIS [2]. In the Jewish society, the average income of the Haredi household was 13.658NIS, with 3,191NIS of it coming from welfare, while the average income of the secular and religious households was over 21,000NIS with less than 2200NIS of it coming from welfare [3].

The relatively poor socio-economic state of the Haredi and Arab societies stems from different reasons. The Haredi society and its education system encourage its men to focus on Bible studies, and its women to work and support the family financially while raising the children. In 2016, only 42% of Haredi men aged 15 or more were employed, compared to 59% of Haredi women. In the Arab society, which is generally more traditional than the Jewish population in both religion and gender role division, there is a relatively low participation rate of Arab women in the workforce. In 2016, the employment rate of Arab women aged 15 or more was 25%, compared to 61% among Arab men, and 64% among Jewish women [3]. In addition, both Arab and Haredi societies are less likely to matriculate and advance to higher education. In 2016, 50% of 17-year-old Arabs received a matriculation certificate, compared to 61% of their Jewish counterparts, including Haredi Jews. In the same year, only 20% of Arab men and 29% of Arab women aged 25-34 had 16 years of education or more, compared to 41% of men and 48% of women of the same age group in the Jewish population [4]. In the Jewish society, only 33% of twelfth-grade pupils in Haredi schools took the matriculation exams in the 2014-2015 academic year, and only 11% of the pupils passed them. This is compared to 94% of pupils in secular and religious schools who took the exams, and 76% of them passing the exams [5]. The poor rates of high school matriculation and academic education lead both the Arab and Haredi societies to be limited in their work advancement opportunities, and their access to high ranking and high paying jobs.

These troubling socio-economic gaps between the four main sectors in the Israeli population led the president of Israel, Reuven Rivlin, to launch a flagship program, "Israeli Hope". The goal of the program is to establish the sense of partnership between sectors, to promote quality integration of every sector in the Israeli economy, and to create collaboration of sectors in key fields such as education, academia, employment, local municipality and sport. The program aims to strengthen the sense of togetherness in Israeli society, while respecting each unique group from which it is comprised. As such, "Israeli Hope" has several subprograms, each targeted at a different aspect of society. "Israeli Hope in Education" promotes joint activities of teachers and pupils from different sectors. "Israeli Hope in employment" promotes employment diversity, with emphasis on integration of the Haredi and Arab sectors in the Israeli workforce. "Israeli Hope in Regional Clusters" deals with developing and intensifying partnership between various communities in each region. "Israeli Hope in Sport" promotes tolerance and deals with violence and racism in Israeli sport. Finally, "Israeli Hope in Academia" promotes a diverse and culturally competent academic world [6].

The "Israeli Hope in Academia" subprogram set goals in different aspects of academic life. Among these goals is establishing an academic calendar suited for all sectors of society; creating meaningful encounters between people of different backgrounds; adjusting the content and phrasing of exams and tasks to fit the diverse composition of students; establishing communication lines between colleges and student organizations representing different sectors, and leveraging the presence of academic institutes in their surrounding community for meaningful educational experiences.

It is the last goal listed above, that was the trigger for creating the "Green Ambassadors" course at the Holon Institute of Technology (HIT). In this paper, HIT will be introduced, the "Green Ambassadors" course and its methodology will be presented, and the level of success in achieving the goals of "Israeli Hope in Academia" will be discussed.

Holon Institute of Technology

The Holon Institute of Technology, or HIT, was founded in 1969 as part of Tel Aviv University, and became an independent academic institution of higher education in 1999, certified by the Council of Higher Education of Israel. Its faculties range from the sciences, engineering and computer science, through to technology management, learning technologies and design. The institute emphasizes theoretical and practical multi-disciplinary research of innovative technologies, from a professional, scientific, economic and cultural perspective. It trains highly qualified students in the realms of science, engineering, management and design, and plays an important role in their integration upon graduation into key positions within a variety of industries. HIT aspires to achieve quality and excellence in teaching and innovative research, and strives to introduce novel and

unique cutting-edge teaching and research technologies. It also prides itself on its advanced academic achievements, application of innovative techniques and interdisciplinary professionalism that lead to creative teaching and new technologies. HIT aims to utilize the intellectual and professional potential of each and every student, so that they can fully integrate into the fast-paced technological world of today. Providing superior technological and scientific education enables HIT graduates to enter key leadership positions in both the private and public sectors.

The students at HIT come to study from all over the country, and are very diverse – men and women, secular and religious, Israeli born along with repatriating Jews from Russia, Ethiopia and other countries. By collaborating with the "Israeli Hope in Academia" program, HIT increased its accessibility and enabled Haredi, Arab, Druze and Circassian students to integrate into academic studies.

Faculty of Engineering

The faculty of engineering at HIT is the largest faculty in the institute, and one of the largest producers of electrical engineers in Israel. Its main goal is to train highly capable electrical engineers, who possess theoretical and practical knowledge that is required in the ever-changing industry. It provides the students with a rich and comprehensive study program, which is constantly updated and improved in accordance with the technological advancements of each field. One of the main fields taught in the faculty, is the field of Energy and Power Systems, and its department is aimed at training the students to meet the challenges of the world's energy crisis. The Department of Energy and Power Systems holds courses such as Energy Conversion, Electrical Motors, Electronic Power Systems and High Voltage Systems. The department also has a Renewable Energy and Smart Grid Excellence Center, which provides a home for students to enrich their knowledge of green energy and the future of the electrical grid. It serves as an information center for elementary school students and other groups in the community, who can come and learn about the field. The Renewable Energy and Smart Grid Excellence Center provided the theoretical material to the students who participated the in "Green Ambassadors" course [7].

Social Involvement Unit at the Dean of Students Office at HIT

The Social Involvement Unit at HIT aims to make a positive difference to the life and future of our region by making a significant contribution to the communities and society as a whole, through wide range of activities undertaken by the institutional staff and students. The purpose of the unit is to stimulate motivation for meaningful social action for the community, based on the perception that these activities will influence both the academic institution and the society and lead to a long-term and sustainable change. The Social Involvement

Unit is also taking part in the national "Israeli Hope in Academia" program, which promotes under-represented populations in the institution and in the society. The Unit encourages students to study and participate in action learning courses that combine academic learning with social activities. The active integration of the students in the communities, especially in those that represent national minorities, inspires social sensitivity and cultivates the values of giving, helping, promoting and respecting the different.

Action Learning Course

Part of the Social Involvement Unit's activities involve creating action learning courses, with the financial support of the Council for Higher Education in Israel. An action learning course is an academic course which involves academic learning and social activities. The course deals with social challenges, exposes the students to different ideologies, and develops critical thinking and pragmatic ideas. The students get a grade and credit points for taking part in the course. They perform activities to engage in the experimental learning process, and by doing so they create a cross-fertilization between what they learn in the classroom and what they experience in the real world [8]. Their learning experience includes being taught by social organizations, institutions and state authorities, and performing practical work with diverse populations. Through that experience, the students strengthen their academic skills, formulate ethical attitudes towards reality, develop professional and civil perspectives, and understand how they can make a difference in their community [9].

Methodology

The vision of "Israeli Hope" as it was given in 2015 by Israel's president, Reuven Rivlin, in a speech that was dubbed "The Tribes Speech", was adopted by the Holon Institute of Technology. The institute strives for cultural competence, and enables overcoming differences and gaps between the "tribes" in Israel – secular, religious, Haredi and Arab. In order to implement the program, a new action learning course was developed – "Green Ambassadors". The goals of the course were to expand elementary school pupils' knowledge on environmental issues, and to give the students a deep and informal acquaintance with the different societies in Israel.

In the 2016-2017 academic year, there was a pilot run of the "Green Ambassadors" course. The students of the course taught in "Revivim" elementary school in Holon, a school that belongs to the secular school system. In 2017-2018 there was a first attempt to fulfill the vision of "Israeli Hope in Academia", when the course took place in the Arab elementary school "Alomaria", in the city of Ramla. The students of HIT managed to get an informal acquaintance with the Arab society and teach the school children about environmental issues [10].

The third "Green Ambassadors" course took place in the first semester of the 2018-2019 academic year, which was between October 2018 and February 2019. There were 18 students in the course, and they worked with 120 pupils of the fifth and sixth grades from the "Yeshurun" religious school in the city of Holon.

Evaluation Methods

In order to assess the success levels of the course, several quantitative surveys were performed.

First, trivia quizzes were held at the beginning and at the end of each lesson, in order to evaluate how well the pupils understood the new information. Before the lesson began, the pupils were given five multiple choice questions, relevant to the topic of the lesson, and they either answered them using previous knowledge they had, or they simply guessed the answers. At the end of the lesson, the same questions were given, and the pupils used the freshly acquired knowledge to answer them with higher confidence. In order to make the questions more accessible to children, they were given in the form of a "Kahoot!" platform trivia game (Fig. 1).

Figure 1. Pupils answering the "Kahoot!" trivia questions

In addition, surveys were held among the school staff, to examine satisfaction levels. At the end of each lesson, the teachers were asked to give their assesment of the pupils' participation levels, their level of understanding, their enjoyment of the lesson, and the teachers' own level of satisfaction from the lesson. They were also asked to give constructive notes and comments for future improvement.

Lastly, the students were required to answer intensive questionnaires and generate reports, in which their own knowledge, perspective and sense of contribution were assessed. They described in detail the subject and the material of the lesson, elaborated on the activities they created in order to pass the knowledge

in an enjoyable way, and expressed their own impression on the interaction with the pupils.

Implementation – "Green Ambassadors" Course

Experimental Learning

The "Green Ambassadors" course was developed as an experimental learning course. Experimental learning is a type of learning in which meaning is produced out of experimentation and experience. This process happens through involvement, observation and analysis [11]. Experimental learning is a sub-section of experimental education, which is a stream in education philosophy. It refers to the individual process the pupil experiences, while experimental education deals with the whole range of relationships and approaches which facilitate the learning process [12]. The strength of experimental learning is that it occurs in a variety of learning methodologies, such as project-based learning, learning through games, learning through simulation, etc. [13].

Pupils learn best what they feel is relevant to their lives. Studies show that learning is most effective when it is active, goal driven and personally relevant [14]. Since the search for meaning is embedded in humankind [11], pupils mostly concentrate on the learning tasks they find meaningful. Those who seek to influence pupils learning, should try and create the best possible match between the goals of the institution and the goals of the learners. With learning by experience, pupils gain valuable knowledge and skills while researching important everyday problems, such as how to decrease the environmental pollution in the park close to their home. Meaning, pupils learn when they want to learn. Since acquiring knowledge and skills demands a great effort from the learner, as well as guided practice, and since the level of knowledge acquired is influenced by the will of the learner [14], it is important to create curiosity and interest in the classes.

Many researchers emphasized the role of experience in the learning process, which serves as a basis to the experimental learning model that was published in 1975 by David A. Kolb and Ron Fry. The model includes four elements: a new experience; analysis and insight development based on the personal experience; construction of a theory explaining the experience (either by using prior knowledge or knowledge acquired from the experience itself); and examination of the theory in new situations [15]. Kolb and Fry claimed that the learning process can start at either one of the four stages, and that one should consider them as an ongoing spiral, but in order for the learning to be meaningful, the learner must go through all of them [16].

The learning process includes two sub-processes: absorbing information and processing information. Therefore, the experimental learning theory requires from the learner to possess polar abilities and skills, and the learner needs to choose which ones should be used in each situation. Each one of the four stages of the

model requires choosing a different learning skill. The learner might excel in theoretical processes, but might fail assessing their value. The teacher must recognize, understand and analyze the methods in which the individuals receive and process information, and help each learner individually with their difficult spots in the process [17]. The teachers and learners should share their own teaching and learning method with each other. This sharing will make the learner understand why the subject was chosen to be passed in a certain way by the teacher. Meanwhile, the teacher will be able to identify the different learning methods among the learners, will develop empathy towards them, and will therefore be able to help them better [16].

A challenging and intriguing teaching involves a deep, active experimental learning which is connected to relevant issues that interest the learner. Performing a high-level research in each of the approaches, requires a use of several thinking strategies. Only when the learners master these strategies, can they perform a quality research. The research process is often performed in classes in a technical and superficial manner, as the learners go through all the stages of the research, but focus on its outer layers and do not go "deep". Therefore, the way to avoid having a superficial research is through guided work on thinking strategies development, and a gradual implementation of them with the learners [17].

Course Structure

Under the guidance and supervision of Dr. Hen Friman, the "Green Ambassadors" course was set up to teach environmentalism to a group of HIT students from all faculties, and then have them pass the knowledge on to "Yeshurun" school 5^{th} and 6^{th} graders using enjoyable activities. In the frontal part of the course, the students were introduced to the religious society and knowledge on environmental issues – renewable energy, energy efficiency, waste and recycling, and water pollution. The students learned how they can produce fun activities to deliver the principles of each subject, and then they were divided into work groups, each handling a single subject. In the practical part of the course, each group planned, purchased and built experiment workshops, which demonstrated the principles of the subjects. Then, the groups went to the school and taught the material using the workshops. Before each lesson the pupils were given a multiple-choice questionnaire, in order to estimate their initial level of knowledge. After the activity was done, the pupils were given the same questionnaire, this time in order to see the progress in knowledge achieved by the lesson, compared to the pupils' initial knowledge.

Renewable Energy. The Ministry of Energy and Water strives to develop and integrate renewable energy in Israel's electricity market. This is due to a government decision to increase resilience of the power production capabilities, as well as promote environmental aspects. The trend all around the world is to replace fossil fuel energy production with renewable energy production – an

energy production that originates from an everlasting source, such as wind, sun radiation, water flow, etc.

The group of students who built the "renewable energy" lesson divided the lesson into three parts. On the first part, the electrical generator was introduced, and so was the physical concept behind its work. As a demonstration for its operation, the pupils were given a toy generator which converted a handle rotation movement by hand into electricity, and powered up a light bulb. On the second part, alternative methods of rotating the generator were discussed, including the usage of water and air flow. As a demonstration, the students brought a self-built hydro-electric station and miniature wind turbines, and the pupils played with them and saw how they produce energy. On the last part, the photovoltaic effect was taught, and then the pupils were given solar-powered toy cars, and they conducted a race using light sources to move the cars.

Energy Efficiency. The state of Israel suffers from lack of electricity supply capabilities on peak hours. An important method to reduce peak consumption and save energy and money, is energy efficiency – using less electricity to get the same results.

The group of students who built the "energy efficiency" lesson created four experiments to demonstrate the principal. The first experiment dealt with water heating. The pupils were asked to fill up three identical electric kettles with enough water for two cups of tea (Fig. 2a). They chose three different portions of water, and were asked which kettle would make the water boil first and which one would consume the most energy. While the water was boiling, the students explained why a larger portion of water requires more time and energy to boil. They also showed that it is possible to get an exact amount of water needed, by pouring the water to the cups for measurement and then to the kettle for boiling.

The second experiment dealt with thermal insulation. The students poured the boiled water from the kettles into two vials, one with a wooden thermal coating and the other without it. The pupils took temperature measurements ten minutes later, and saw that the thermal insulated water was higher the non-insulated water by 10℃. Thus, the pupils witnessed and understood the importance of using thermal insulating materials for energy conservation.

The third experiment dealt with lighting efficiency. The students presented two types of lighting sources – a halogen lamp and a LED light. They connected each light to an identical power bank, in the form of charged capacitors. Turning on the lights, the pupils could see that while both lights reached the same luminosity levels, the halogen lamp drained all the power given to it within less than a minute, and the LED light continued to work for several minutes. By witnessing the difference in performance, the pupils understood how importance of replacing old and wasteful methods of lighting with new, cost-effective ones.

The fourth and final experiment of the lesson dealt with harnessing technology to increase energy efficiency. The students presented two image projectors, one turned on during the entire lesson, and the other connected to a

motion sensor that turned it on only when there was a movement in its proximity. Using the projectors, the students demonstrated how using existing technology can help reducing unnecessary power consumption in everyday tasks, such as home and garden lighting.

Waste and Recycling. The students of the "waste and recycling" group wanted to explain and show the difference between organic waste, which can be decomposed and return to nature, and non-organic waste, which contains a group of chemical substances of mineral origin and can be reused.

The first activity involved teaching the pupils about the different types of recyclable materials and their appropriate recycling bins. The pupils then went out of the class and had a "recycling race" in the hallway, in which they needed to beat their friends in sorting a pile of recyclables, and putting each recyclable in the correct bin. The second activity involved material separation. The students demonstrated how to separate plastic from sand, iron from sand and Styrofoam from sand.

At the end of the lesson, the pupils got a small personal compost jar, containing organic waste and two earthworms. The students explained how the worms decompose the waste and turn it into a rich fertilizer. The jars a had a label with instructions on how to take care of the worms, how to feed them and how to maintain the jar (Fig. 2b).

Figure 2. (a) Water heating experiment at the "energy efficiency" lesson. (b) Pupils are given a personal compost jar at the "waste and recycling" lesson.

(a) (b)

Water Pollution. Israel is located in an area which suffers from a lack of fresh water in nature. Due to this fact, Israel has developed a successful desalination industry, in order to supply high quality water to is citizens. However, the threat of water pollution still exists. The group of students in charge of that subject wanted to demonstrate how easily water can be contaminated, and how difficult it is to make contaminated water usable again.

The first activity of the lesson was a game of "confession" – sentences confessing of littering were projected on a screen, and the pupils who admitted committing the actions stepped forward. The confessing students read aloud a fact connecting the littering action to water pollution, and then threw plastic bags, chewing gums and food coloring into a water tank, linking their littering action in the past to the polluted water in front of them.

The second activity was a demonstration of purifying the polluted water. The pupils, with the assistance of the students, built a water filter. The filter was made by putting gravel, cotton wool and activated coal in a holed bottle. The students poured the polluted water into the bottle, and the pupils saw how the gravel and wool blocked the large contaminators, and the coal filtered the food color. Through the holes on the other side of the bottle came clean and clear water. However, it took longer than half an hour for the process to clean only a small amount of water from the tank, while contaminating the whole tank took a few seconds.

At the end of the lesson, the pupils built a miniatured version of the water filter, and connected it to a keychain they got as a gift (Fig. 3).

Figure 3. A miniature water filter on a keychain

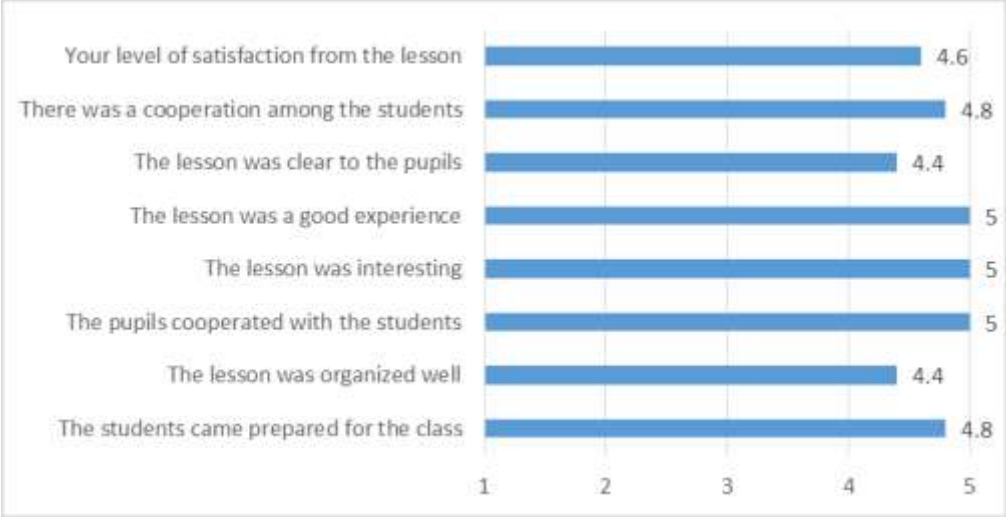
Results

In the 2018-2019 academic year, the "Green Ambassdors" activity took place in the "Yeshurun" religious school, with its 5th and 6th graders. These classes had 133 pupils. When examining the results of the trivia quizzes given to the pupils at the beginning and at the end of each lesson, the effect each lesson had on the pupils' knowledge becomes clear. While in the opening questionnaires there were

only 37% correct answers, in the final questionnaires there were 86% correct answers – a 49% increase.

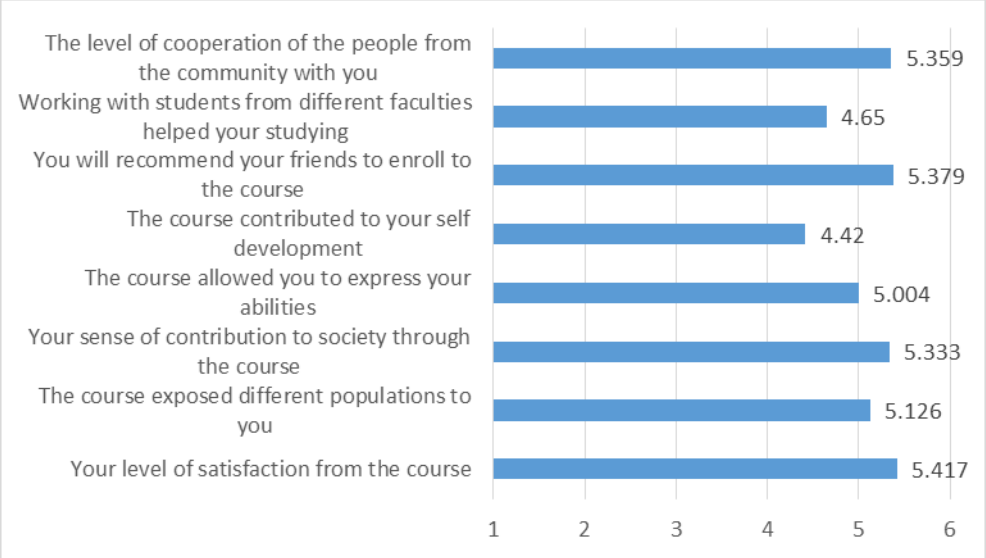
The teachers' feedback reports provided an even better tool of examining the whole learning process. As the pupils' direct authority and closest people in the school staff, they were able to observe and accurately analyze different aspects of the lessons. In the report, they wrote what were the key subjects taught in the lesson, and how the fact that academy students taught them contributed to the learning process. They gave constructive notes for improvement, as well as marked their estimation of the pupils' levels of interest, participation, understanding and enjoyment, in a 1-to-5 ranking scale (Fig. 4).

Figure 4. Lessons average marks, given by the school teachers



Finally, the students' feedback meeting and reports gave a fascinating insight on their experience studying the course. They sensed and appreciated the fact that it was an action-learning course, in which they were actively involved and could express their abilities for the benefit of the community. They gave constructive notes for improvement for future "Green Ambassadors" courses, and said they would recommend the course to their friends. The students marked the various aspects of the course in a 1-to-6 ranking scale (Fig. 5).

Figure 5. "Green Ambassadors" course average marks, given by the students



Conclusions

The "Green Ambassadors" course provided a great method for the Holon Institute of Technology and its students, to fulfil the vision of the "Israeli Hope in Academia" program. More specifically, it carried out the program's plan to strengthen ties between the institution and its surrounding community, and get the students to know different populations. Furthermore, as an experimental-learning course, "Green Ambassadors" taught the students how to turn environmental issues and information they learned, into educational activities for the pupils at school. These activities created a meaningful learning process for the pupils, as they took an active part in the lessons.

Examining the results of the knowledge tests that the pupils took at the beginning and at the end of each lesson, it is clear to see that the learning process was successful. The pupils absorbed the information through the activities of the lessons, and answered the questions of the final tests with a much higher success rate.

The teachers' feedback reports show that in addition to the meaningful learning process, the lessons were also characterized by a high participation levels, as well as high enjoyment levels. The notes for improvement that the teachers gave were taken under consideration by the staff in HIT, and modifications will be made accordingly for the next round of the course.

The students' feedback meeting and reports provided a vital assurance for the success of the course as well. The average marks of their reports show that they were very satisfied with the course, and that they sensed they were making a meaningful contribution to society. The only weak spot was a lack of sufficient distribution of students from different faculties across the groups. It was caused by

the different course schedules the students had in different faculties, which caused them to prefer working with students from the same faculty, for a more convenient synchronization of work meetings.

Overall, the "Green Ambassadors" course received high praises from all people involved, from the staff at HIT, through the students carrying out the lessons, to the teachers and pupils of the school. The final confirmation of its success was given at a graduation ceremony that was held at HIT, in which each pupil received a "Green Ambassador" diploma. The pupils were excited to meet the students again and show them that they still remember what they learned a few weeks before. There was no doubt that the pupils experienced a meaningful educational event, that they will carry with them into their future lives.

References

[1] Selected Data for 2018. Economy & Budgeting Administration, Ministry of Education. Israel. (Hebrew only) http://meyda.education.gov.il/files/MinhalCalcala/NetunimTashahh.pdf

[2] Shafir M. and Yagur-Carrol A. 2019. Indices of Quality of Life, Sustainability and National Resilience 2017. National Bureau of Statistics. Israel. (Hebrew only) https://www.cbs.gov.il/he/Statistical/statistikal-174.pdf

[3] Society in Israel – Religion and Self-Definition of Level of Religiosity, Report No. 10. National Bureau of Statistics. Israel. (Hebrew only) https://www.cbs.gov.il/he/publications/DocLib/2018/rep_10/h_print.pdf

[4] The Arab Population in Israel: Facts & Figures 2018. Myers-JDC-Brookdale. Israel. https://brookdale.jdc.org.il/wp-content/uploads/2018/03/MJB_Facts_and_Figures_on_the_Arab_Population_in_Israel_2018-English.pdf

[5] Cahaner L., Malach G. and Choshen M. 2018. Statistical Report on Ultra-Orthodox (Haredi) Society in 2017. The Israel Democracy Institute. Israel. https://en.idi.org.il/media/10441/statistical-report-on-ultra-orthodox-society-in-israel-2017.pdf

[6] "Israeli Hope" website. https://www.israeli-hope.gov.il/en

[7] Friman H., Matsliah N. and Beck Y. 2016. Renewable Energy Lab at the Faculty of Electrical Engineering. In *Proceedings of the 10th Annual Int'l Technology, Education and Development Conf.* (Valencia, Spain, 7-9 March 2016). 2311-2318.

[8] Arar K. 2012. Israeli education policy since 1948 and the state of Arab education in Israel. In *Ital. J. Sociol. Educ. 2012*, 4, 113–141.

[9] Reddan G. and Rauchle, M. 2012. Student perceptions of the value of career development learning to a work-integrated learning course in Exercise Science. In *Aust. J. Career Dev*., 21, 38–48.

[10] Friman H., Sitbon Y., Banner I., Shauli Y. and Einav Y. 2018. Renewable Energy, Ecology and Environment to Arabic Pupils Using a Creative "Hands On" Approach. In *Environments 2018*, 5, 66. DOI= https://doi.org/10.3390/environments5060066

[11] Caine R.N. and Caine G. 1997. Education on the edge of possibility. Association of Supervision and Curriculum Development. Alexandria, VA.

[12] Lewis L.H. and Williams, C.J. 1994. Experiential Learning: Past and Present. In *New directions for adult and continuing education*, no. 62.

[13] Itin C. M. 1999. Reasserting the Philosophy of Experiential Education as a Vehicle for Change in the 21st Century. In *The Journal of Experiential Education* 22(2), 91-98. http://www.hmc.edu/files/institutionalresearch/Experiential%20Learning/Itin_JEE_1999.pdf

[14] McDonough D. 2013. Similarities and Differences between Adult and Child Learners as Participants in the Natural Learning Process. In *Psychology*, 4, 345-348. DOI= 10.4236/psych.2013.43A050.

[15] Beard C. and Wilson J.P. (eds). 2006. The power of experiential learning: a handbook for trainers and educators. Kogan Page. London.

[16] Kolb D.A. 1984. Experiential learning: Experience as the source of learning and development. Englewood Cliffs, NJ: Prentice-Hall. Pp.26.

[17] Coffield F. 2004. Learning styles and pedagogy in post-16 learning: a systematic and critical review. LSRC reference. Learning & Skills Research Centre. London.