Encouraging Girls to Pursue STEM Studies

Evaluation Study – Interim Findings

March 2015

Background

The rate of girls participating in Rashi's science education programs is significantly lower than that of boys. In addition, the dropout rate of this population is relatively high and their grades are lower. Some of Rashi's programs made it a goal to increase the rate of girls

Purpose of the Study

The Evaluation Department was asked to assist in understanding the causes of the exclusion of women from science and technology programs in general, and the Magshimim Program in particular. The Department was also asked to assist in finding ways of attracting girls to the program and preventing dropouts.

Methodology

In order to answer the evaluation questions the research team employed various tools: literature review, focus groups, questionnaire for girls who participate in Rashi's programs and questionnaire for girl in 9th grade who are about to choose course of study in high school. The current report presents the finding based on the participants' questionnaire.

61 female students, representing about half of the girls in the Magshmim program, responded to a written questionnaire at the beginning of an Empowerment Day for women that was held by Magshimim. The Empowerment Day was held in the middle of the school year and was attended by students from most of the program's learning centers and from all three years. The questionnaire examined issues such as: the necessity for increasing the number of female students in the program, the impact that the low number of girls has on the studies and the atmosphere, potential actions necessary for increasing the number of girls in the program and preventing dropouts, the necessity for activities designated especially for girls, etc.

Main Findings

The need to increase the number of girls in the Magshimim Program

- First, the study sought to examine whether the female students in the program saw a need to increase the number of girl participants. The findings revealed that a majority of the female students do not see it as a necessity. For example, only about half of the female students claim that it is important for there to be more girls in the program and only slightly more than a third would have liked more girls in the Magshimim classroom. The

female students further claim that they would not have succeeded in the program any more, had there been more girls participating.
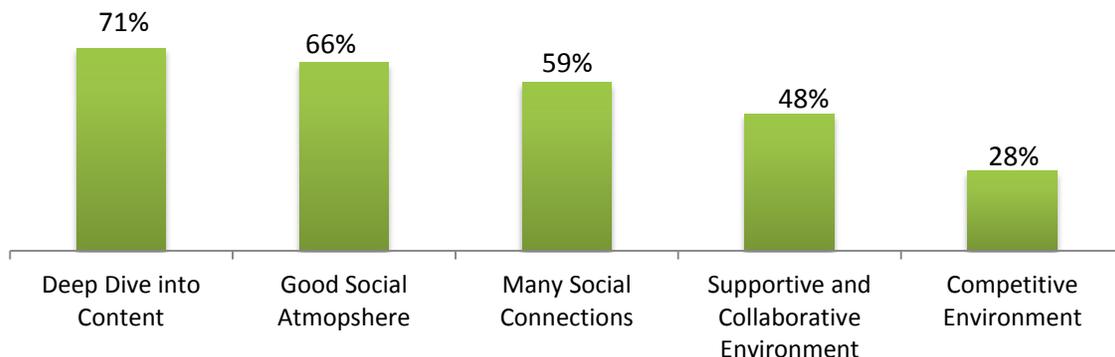
<u>The need for increasing the number of girls in the program</u>

Statement	Agree or strongly agree
"It's important that there be more girls in the program"	51%
"I would have liked there to be more girls in the Magshimim classroom"	36%
"It bothers me that there are not more girls in the program because there is no reason that girls would not get to the program and succeed"	35%
"It bothers me that there are not more girls in the program because it seems that if there were more girls, it would be more fun for me to attend"	15%
"I would have succeeded more in the Magshimim Program had there been more girls in the class"	2%

An environment that allows for the success of girls

- The research literature argues that a learning environment that allows for the success of girls (as opposed to boys) is one that encourages in-depth learning (as opposed to a more broad learning that includes memorizing many details with less emphasis on in-depth understanding), and a social atmosphere (as opposed to a competitive one). The study found that the program does indeed have such an environment. Most of the female students agreed that the program dives deep into the content, has a good social atmosphere and that they have many friends in the program. The female students also did not agree that the program has a competitive atmosphere. Along with these encouraging findings, it was found that less than half of the female students felt that the program has a supportive and collaborative atmosphere. It was also found that in classes with a higher rate of female students, there was also a better social atmosphere.

<u>Environments that allow for the success of girls*</u>

Deep Dive into Content	Good Social Atmopshere	Many Social Connections	Supportive and Collaborative Environment	Competitive Environment
71%	66%	59%	48%	28%

* Percentages: the rate of female students who agreed or strongly agreed with the statements

Increasing the number of girls in the program
- In order to attract more girls to the program, the female students recommended using the "exposure model", in which female graduates of the program present information about the program to female candidates. The girls recommend that in these exposure and marketing meetings it should be emphasized that anyone can succeed in the program if he or she tries. Another recommendation was to place emphasis on the possibility of future success in the hi-tech industry.
- The female students completely reject the possibility of affirmative action for girls in the screening tests, as they stated that there is no need to ease the admission requirements of girls into the program.

Possible actions for increasing the number of girls in the program

Possible Action	Agree or strongly agree
Bringing female program graduates to the exposure meetings	62%
To emphasize that anyone can succeed in the program	56%
Emphasizing the possibility of joining the hi-tech world in the future	54%
Emphasizing that at Magshimim you can make lifelong friends	41%
Emphasizing the possibility of joining the IDF's cyber division	41%
Emphasizing that Magshimim has a good social environment	33%
Conducting special exposure meetings for girls	31%
Emphasizing that at Magshimim, they learn subjects in-depth	30%
Emphasizing that at Magshimim, they are focused on achievement	25%
Easing the requirements for screening tests	3%

- In an open-ended question, more than half of the female students stated that, in their opinion, there are few girls in the program because "computers" is a field for males or that girls think (mistakenly) that it is not a field for females. Subsequently, many of the female students claimed that girls are not interested in computers for the most part. Another common answer that came up is that girls of this age have many things to do and that the program requires a lot of time.

Preventing girls from dropping out
- Past studies by the Evaluation Department found that the rate of girls who consider dropping out during the program is three times higher than that of boys. In order to prevent or reduce the dropout rate of girls, some of the female students recommend placing less emphasis on grades and more emphasis on in-depth learning of the material, as well as on diversifying teaching methods. Other recommendations that were presented to the female students and that were rated relatively high were to allow for the preparation of assignments in pairs, to reduce the amount of homework and to allocate more time to solving the questions during class time.
- The female students rejected the idea that in order to reduce the dropout rate for girls, the program should incorporate content that "speaks" more to the world of the girls. The girls

do not agree with the need to create a less competitive environment nor to add seminars and workshops for girls only.

- Furthermore, the females do not see a need to create girls-only activities. In fact, less than a third of the girls would want activities like that, and only 13% felt that it was important to conduct girls-only activities. Only 5% of the girls would have wanted tutoring for girls only.
- The girls do not see any benefit in a female instructor over a male instructor. They don't believe that a female instructor would advance the female population more than would a male instructor, and they don't think that the male instructors treat the female students differently from the female instructors.
- In response to an open-ended question, most of the female students claim that in order to prevent the dropping out of girls, it is necessary to encourage them and conduct motivational and persuasive discussions. A number of girls noted that more tutoring should be provided for those with difficulties. In this context, it should be noted that previous studies by the Evaluation Department have indeed found that the female students consistently show a greater need for tutoring than do the male students. It should also be noted that a large number of female students claimed that they did not see a difference in this regard between boys and girls, and that the same measures should be taken to prevent the dropping out of male and female students from the program.

Summary and Conclusions

Though the female students in the program are aware of the low number of girls in the program, it doesn't seem to especially bother them. Subsequently, the female students do not see the need for giving girls special treatment, compared to the males in the program. They completely reject the option of affirmative action for females and do not see a need for activities intended for girls only. However, the number of recommendations for increasing the number of girls in the program had risen. Some had recommended that exposure sessions be held by female graduates of the program who succeeded – for example, joined the hi-tech industry. Furthermore, they recommend placing emphasis on the message that everyone can succeed in the program, as well as the fact that the program opens doors to future integration into the cyber division of the army and the hi-tech industry. In order to reduce the dropout rate of girls, some of the female students recommend encouragement and motivational talks – but not activities for girls only.

Recommendations

- It appears that the female students do not see a problem with the low rate of girls in the program and do not want special attention. However, this issue requires special attention, especially in light of the desire to expand the program and in light of the advanced ideology it is based on.
- For the program exposure sessions it is recommended to incorporate female graduates who successfully completed the program and today are leaders in cyber in the IDF or in hi-tech (if there are such graduates).

- It is not recommended to ease the program admissions process for girls. The dropout rate among girls is already high and lowering the admissions bar may increase this rate. Additionally, the female students in the program completely reject this possibility.
- The atmosphere of the program is suitable for the success of its female students. However, greater emphasis can be placed on a supportive and collaborative atmosphere.
- It is recommended that action be taken to shatter the stereotypes that computers and programming are fields for males and that it is more difficult for females to succeed in them.
- Female students who are likely to drop out of the program should be identified ahead of time, and encouragement and motivational talks should be conducted with these girls.