

The Kidumatica Math Club-for the Promotion of Equity and Excellence

Miriam Amit , Yosef Hafatz, Peter Samovol, Dorit Neria

Background and Rationale

Kidumatica was first established in 1998 to provide a framework for cultivation and promotion of youth with exceptional mathematical abilities. Kidumatica activities, for youth in ranging ages of 10 year-olds to 17, expose students to a variety of mathematical subjects, varying in content and strategies. These subjects provide enrichment and enable students to develop sophisticated and creative mathematical thinking.

Scientific literature differentiates between three types of excelling students: "good learners", "talented students", and "extremely talented students".

Kidumatica unites these three types of excelling students who stem from varied communities and promotes each student according to his own abilities. The Kidumatica math club also provides a social framework for students of varied socio-economic and ethnic backgrounds, who all share a basic interest in deepening their mathematical knowledge.

Psychologists agree that academic talent is comprised of a combination of high cognitive abilities, creativity and motivation. This combination is the main pedagogical guideline for the Kidumatica programs. Cognitive aspects include encouraging interest in solving complex problems and elegant solutions, and developing abstraction and generalization abilities. The creative aspects include developing flexible thinking and using a wide-range of mathematical strategies in non routine manners. The motivational aspects include developing determination in performing difficult tasks, developing ambition, strengthening concentration ability and encouraging willingness to face learning challenges.

Academic Activities

- A. Workshops are held in a form of twenty groups of approximately 20 students each, twice a week in the afternoon in the university campus, for four hours.
- B. Every fifth week there is a "special activity day" in which the groups are blended and activities include games, competitions, guest lectures, and Club Newspaper.
- C. Research projects are conducted with individual guidance.
- D. Field trips, museums, National Olympiads and competitions are integrated.

The main areas dealt with are: logic, algebraic laboratory, probabilistic thinking, number theory, optimization, geometry and visualization, quantitative thinking, problem solving strategies, data analysis and a mathematical kaleidoscope. Special materials have been developed; tailor made for the need of the student, and a pedagogy based on openness and support is implemented. Such "friendly" pedagogy is not on the expense of mathematical rigorous and accuracy.

The Kidumatica model has been proven to be successful , not only by winning the major math prizes in the state, but also its revolutionary influence on the way mathematics is perceived and taught in the whole region.

In the "forum of ideas" sessions we shall display in details the program, materials and products.