Academic skills: The key to meaningful learning in the higher education system- An Action research conducted at Tel-Hai Academic College

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"If knowledge is power, then literacy is the "key to the kingdom"(Jacobs, 2008)

Abstract

The 21st century is characterized as a dynamic era of incessant changes in all fields of life. The amount of knowledge in all areas of study that is increasingly growing is enormous. New knowledge is not only accumulating continuously, but often replaces previous knowledge. Knowledge is thus becoming obsolete at an ever faster pace. No one today is able to embrace in his/her mind all the existing knowledge, even in a single content area. In light of this, the traditional approach, according to which the main role of education is to equip learners with information that they might need in the future, is no longer valid. There is hardly any prospect of encompassing all (or even most) of the knowledge learners will need in the future. Also, it can be assumed that, in many subjects, the details learned by students today will no longer be relevant within a few years.

A historical view of the arguments for the strong specialist and for the strong generalist positions suggests that each camp, in its own way, has oversimplified the interaction between general strategic knowledge and specialized domain knowledge. Jacobs (2008) suggests a synthesis: General and specialized knowledge function in close partnership. Hence, the role of the education system in higher education is to focus on both approaches: Imparting to the students the skills they require in order to be able to cope independently with new knowledge, along with the relevant knowledge of the subject, in an effort to shape an autonomous student who is capable of learning through self-direction.

Keywords: literacy, academic skills, cognitive processes, learning process, problem-solving.

The characteristics of learning in the 21st century

In a society that is characterized by a plethora of information, by a rapid pace of renewal and by a high level of accessibility, learning requires different skills and abilities from the students in order to keep up with the intense information revolution. The kind of literacy that guides the student's self-direction is about using texts as vehicles for learning, engaging with complex ideas and information through interaction with written documents, critiquing, and extrapolating from extant knowledge, weighing its merits, and utilizing the information in order to understand the texts.

The Constructivist approach challenges the traditional philosophical debate concerning the essence of knowledge. According to this approach, the learners take an active part in constructing knowledge (Perkins 1985, 1986). Learning is thus defined as a process by which the learners construct their own knowledge through learning skills, exploration, feedback evaluation and reflection, based on previous knowledge. The Constructivist approach has influenced the design of a new literacy for students (Salomon 1994, 1997, 2000).

Learning strategies are a succession of cognitive processes, influencing information processing and aimed at imparting to learners tools that will help them to learn, solve problems and complete tasks independently (Bulgren, Deshler & Schumaker, 1997; Deshler, 1996). Thus, learning strategies form the basis on which academic literacy is constructed as an integral part of the learning process in the higher education system. Their great importance is expressed in the cognitive processes taking place during the learning process (Good & Brophy, 1990). One of the goals of teaching is to impart to the student the ability to apply knowledge in more than one learning environment (Lidor, 1996).

It was found that good learning strategies have a positive influence on the academic achievements of students (Schwarts, 1986). In a study by Meltzer et al. (1988), a

significant relation was found between the students' report on using learning strategies and high academic performance. A considerable number of studies support the finding that students who learned how to apply learning strategies have reached higher achievements than those who did not acquire any such strategy (Melitz and Melitz, 1993; Weinstein & Mayer, 1986).

Wise implementation of learning strategies was found in many studies to be the differentiating factor between skilled students with high achievements and students who experience difficulties. Hence, intensive and direct teaching of learning strategies in higher education institutions, including practice and training in the use of those tools, could help the students to succeed in their studies in the higher education system.

The transference of learning from the classroom to new situations and/or contexts (for the learner) does not occur spontaneously. In most cases, deliberate teaching interventions are needed in order to increase the probability of such a transference occurring (e.g., Perkins & Salomon, 1998). At present, there are very few study programs in higher education that deal with this transference.

The present study is an attempt to develop another approach that will equip the student with concrete cognitive skills and objectives, in order to train our students better for the many challenges that the future holds in store for them. These goals are drafted in the present study in the form of thinking and learning skills.

The theoretical framework of my study is based on the Constructivist approach, as well as on the cognitive approach of knowledge construction and its application in the learning environments of the higher education system (e.g., Piaget 1954, Papert 1980, 1993, Glazer 1984, Perkins 1985, 1986, Cunningham & Fitzerald 1996, Salomon 1994, 1997, 2000 Berieter & Scardamalia 1989, Bruner 1990, Jonnassen 2000).

The goal of the study is to examine how the teaching of academic skills influences the learning processes of the students at the Tel-Hai Academic College and their development as independent learners.

The present study is based on the examination of students' learning processes in order to examine their ability to choose the appropriate combination of information and skills and apply it to problem-solving in various situations. According to Pasig (2006), these will probably be the skills required of any person who wishes to function successfully in the 21st century. Agreement, connotation and simultaneity will be the behavioral terms and the key words used by the future generations. Contemporary theories of learning and teaching encourage the shift from the model "teacher at the center of teaching" to active learning that emphasizes the processes of knowledge construction according to the constructivist approach in the psychology of learning.

Thus, the design of the learning environment and the course assignments were based on the following principles:

- Providing necessary information;
- Emphasizing performance principles;
- Repeated training in different situations;
- Practice in real-life situations;
- Encouraging learning by doing; and
- Developing a reflective thinking style.

These educational principles form the academic infrastructure of the study.

Research Questions

1. How does the study of learning skills influence the learning and exploration processes of individual students and their application in practice during their studies at the College?
2. Are the skills transferred and used in other learning areas?
3. What will be the implications, in terms of redesign and planning the course of learning skills (teaching/learning plan) according to the study findings?

Study Method: Action Research

The study is conducted as an action research in several stages. Each stage will examine the following parameters:

- The contribution of the course on academic skills to the development of the students' learning and exploration skills.
- Transferring the skills and using them in other learning areas.
- The changes required in the course planning according to findings.
- Improving and upgrading the teaching methods in the course according to findings.

The study population

The study sample consisted of 88 students, 15 men and 65 women, studying for the second year at the school of education at Tel Hai College. The participants' age ranged between 22 and 45. The students participating in the present study took the course of academic skills which is delivered in the second year as a mandatory annual course at Tel Hai College. Out of the 88 students, three dropped out during the year due to personal and health reasons. As a result, the study population is N = 85.

Research tools

To evaluate the students mastery and development of academic skills, a detailed evaluation index was developed, which includes all the skills acquired by the students during the course. This index was developed according to the course program and is based on a pre-research, conducted at the Tel Hai College by Dr. Sara Arnon and other colleagues, which examined, using a closed attitude questionnaire, what the academic skills are that are required of a college graduate to meet the requirements of higher studies. This study was conducted among 26 lecturers and 64 students in their second year of study at Tel Hai College.

The index included four major areas:

1. The structure of academic papers: organizing the paper's chapters according to academic rules, drafting and writing at different levels, numeration of the paper's chapters and subchapters. Constructing a graded and logical table of contents according to the paper's chapters.
2. Academic literacy: eloquent academic writing, the ability to analyze academic text, the ability to synthesize different texts.
3. Research tools and scientific writing: drafting a broad and productive research question, presenting the findings of statistics data (in tables and graphs) and their verbal description, using the findings generated by different tools and cross-checking of the information obtained (combining quantitative and qualitative findings).
4. Proper usage of information sources: proper bibliographic list, written according to the APA rules. Introducing references into the paper according to the APA rules.

This index was used to examine the exercises during the year and to examine the final paper in the course and papers in other courses that the students took.

Focus group – two focus groups were held at the end of the second semester in which 35 students of those who took the academic skills course took part. In the focus groups, the students had to fill out a closed attitude questionnaire that consisted of twelve closed statements and two open ones. This questionnaire examined the contribution of the course to the students' development and their mastery of the academic skills learned during the year.

Research procedure

The course program was developed according to the requirements of the Council for Higher Education and a pre-study conducted at the Tel Hai College. This study focused on the contents and the subjects that should be emphasized in teaching the course as a basis for training students for academic tasks at the level of seminar work. In the second stage, an evaluation index was developed that included four major areas. This index was used to evaluate the students' exercises during the year: a pre-assignment, a mid-term assignment, and a final assignment. All the assignments and exercises in the course were evaluated by two assistants who worked with the researcher throughout the year at the Tel Hai College.

The evaluation index served also to evaluate the assignments of students who took the course of academic skills, in another course, in order to evaluate their application and implementation of the academic skills acquired in the course in the assignments they did in other courses. These assignments were evaluated twice: the first time, they were evaluated by the course lecturer according to his/her criteria, which included criteria at the content level and the assignment's compliance with the learned subject. The second time, the assignments were examined by the researcher, using the evaluation index to assess the implementation of the academic skills and their application to other areas of knowledge.

The course program was updated at the end of the first stage of the action research and before the current school year according to the insights and conclusions drawn from the study findings and the researcher's experience with the teaching process of the course.

The evaluation index was changed and adapted to the course structure in its new design and, similarly, the nature of the assignments was changed.

The study findings

This chapter presents the findings collected in the first stage of the action research in the school year of 2008. The findings will be presented according to the research questions.

1. How does the study of learning skills influence the learning and exploration processes of individual students and their application in practice during their studies at the College?

To analyze the course contribution to the development of the students' academic skills over the year, the students' scores were collected throughout the year at three time points: the scores of the pre-exercise done by the students in the first lesson, before they took the academic skills course; the scores of the mid-year exercise at the end of the first term and the scores of the final assignment at the end of the school year.

Table 1 presents the change in the students' score distribution over the three time points.

Academic skills	Pre Ex.	Midyear Ex.	End year Ex.
A general score for all the skills	M= 25	M= 65	M= 79
	S.D=12.6	S.D= 8.17	S.D= 11.52
The assignment structure	M= 14.78	M= 56.31	M= 74.85
	S.D= 11.072	S.D= 19.911	S.D= 12.785
Academic literacy – writing skills	M= 47	M= 76	M= 83
	S.D= 21.95	S.D= 17.83	S.D= 15.45
Research skills (developing research questions, understanding the findings and expressing them in words)	M= 22.09	The skill was not examined in this exercise	M= 75.16
	S.D= 2.459		S.D= 2.188

To examine the significance of the change in the students' development throughout the year in acquiring academic skills, a t-test was performed on paired findings.

The first stage results indicate that there was a significant improvement in the students' academic skills. To test the null hypothesis that there is no change in the scores between the three measurements, a t- test was done. It was found that the null hypothesis was refuted and the results of the first test (M=25, S.D=12.6) are significantly lower than the results of the second test (M=65, S.D=8.17) at the significance level of T= 25.82, $\alpha<0.001$, *df*=83. Also, the results of the second test (M=65, S.D=8.17) are significantly lower than the results of the third test (M=79, S.D=11.72) at the significance level T= 3.063, $\alpha<0.001$, *df*=83.

Writing skills were identified by the lecturers at the Tel-Hai Academic College as skills that the students must study in depth and practice. During the academic skills course, these skills were practiced in several study situations. In order to test the null hypothesis that there was no change between the scores of the writing pre-exercise, mid-year exercise and end of year exercise, a t-test was done. It was found that the null hypothesis was refuted in both cases: the scores at the mid-year test are significantly higher than the scores of the writing pre-test (T= 8.61, $\alpha<0.00$, *df*=83) and the scores of the end of year test are significantly higher than the scores of the mid-year test (T= 2.69, $\alpha<0.00$, *df*=83).

Similar results were obtained when the differences between research skills (var 1) and the proper use of bibliography sources (var 2) were examined at the three measurement times. In both cases, the results at the third test were significantly higher than in the pre- and mid-tests (var 1:T= 26.291, $\alpha<0.00$, *df*=83; var 2: T= 3.707, $\alpha<0.00$, *df*=83).

Qualitative support for the findings obtained from the statistics on the contribution of the course on academic skills to the development of the students' learning skills was obtained from a closed attitude questionnaire and from open feedback conducted by the research assistants with two focus groups of 35 students. Analysis of the open statements reveals that 83% of the participants in the focus groups and 78% of the total students who responded to the closed attitude questionnaires indicated that this course is very important for their development as learners in the college and that it is very important to teach this course in the first year in college, and not, as it is done today, in the second year. They feel that they could already have written much better papers in the first year if they had not lacked the skills taught in the course in the second year.

Eighty percent of the participants in the focus group (28/35) indicated that the course greatly improved their academic skills in the area of writing research papers and seminars. One of the students wrote in the open answers at the end of the attitude questionnaire that "*the course on academic skills provided me with tools to structure papers that include structured writing processes, based on clear principles. I learned to combine different information sources, to fuse them and create a uniform paragraph*."

In one of the focus groups, another student said "*the course was a nice surprise. It was interesting and it can be said that it gave me as many tools as possible to study in the college*." A student in the second focus group said "*the tools that I acquired for writing papers are very helpful. The process became easier, structured and ordered. I suddenly discovered that I'm able to master the writing process, which seemed once to be impossible*."

2. Are the skills transferred and used in other learning areas?

The rubric used to assess the "Academic skills course" (containing all the skills that were identified in a pre-research as meaningful for the students in their academic studies) was used to assess a high level assignment that was done by the students at the end of the second year in another course.

To test the null hypothesis, stating that there is no relation between scores in the academic skills course and scores in another course, a Pearson test was done. It was found that the null hypothesis was refuted and there is a medium positive relation between the scores in the two courses (P correlation= 0.538) so that the higher the scores in the academic skills course, the higher the scores in the other course {Significance level: $\alpha<0.05$, N=85}.

The ability to use and transfer the academic skills acquired during the course to other fields of knowledge is supported by statements collected through a questionnaire that was filled out by the students at the end of the course. Seventy three percent of the students replied that they certainly agree with the statement that they are using the skills acquired in the course in the other courses they study at the college. Another 22% said that they agree and only 5% indicated that they agree to a small degree. The open statements collected from the two focus groups, contain the following views: "*In total, I*

feel that the course was enriching. I acquired tools and I am more ready for next year, when I will be required to write seminar research papers." Another student noted in one of the focus groups "*I find that this course is very important to my continued studies in college and it imparted to me skills that I will have to use throughout my studies*"; "*the course gave me many tools to construct an academic paper through all its stages, beginning with the location of and search for materials, through the exploratory process and writing the paper. We implemented these tools during the course, in the exercises and the papers we wrote, and especially in the assignments I did in other courses*."

3. What will be the required changes, in terms of redesign and planning the course of learning skills (teaching/learning plan) according to the study findings?

The pilot study and the first stage of the action research guided me as the lecturer and the researcher to redesign the course format. The study hours were divided according to the emphasis given to the four domains of literacy. Skills that were identified as "skills that the students don't master", such as writing literacy will be taught this year and practiced in different study situations.
The course assignments were changed and adjusted to strengthen the main skills that were identified in the first stage of the study as meaningful to the student's further learning process.
In light of the conclusions drawn from the teaching and learning processes of the course in the school year of 2008, I decided to reduce the number of exercises during the course and to focus all of them on one central topic of exploration, to be selected by the students according to their academic specialization. This topic accompanies the student throughout the year and serves to construct a research assignment, in all its stages, beginning with the location of relevant information sources, developing research questions, writing the review of literature, collecting data through different tools, data analysis and writing the research report. In this process, the main focus of the learning process is on acquiring learning and exploration skills, which form the basis for the student's continued studies at the college.

Summary and discussion

In the 21st century, academic skills are the major learning tools used in the student's learning process. The present study sheds light on the need for these skills as a basis for meaningful learning by the students in the higher education system. The study findings lead to the conclusion that most of the students arriving at the college do not master these skills and need a regular, structured and in-depth study of this area, including practice and experience. Further, the study found that the course on academic skills contributes to and is very significant for the students, and they are using the acquired skills in their further studies at the college. The findings from the first stage of the pilot study led the researcher, to enlightening insights regarding the structure of the course and the basic skills on which teaching and practice should be based during the course. In the second stage of the action report, another two aspects will be examined: the transference of the learning skills acquired by the students and their implementation in writing a seminar paper in their third year at the college. The index as an evaluation tool of the course: Is it able to predict the student's success at college? This subject will be examined during the next two years by comparing the mean of the students' scores at their graduation with their scores in the course on academic skills. Through these findings, I would like to improve and validate the index not only as an evaluation tool of the course of academic skills but also as a tool for predicting the student's success in his/her academic studies at the college.

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