

Description and Evaluation of an Innovative Course on Learning and Study Skills for the First Year Medical Students

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DURAK, H.İ., TÖRÜN, S.E., SAYINER, A. and KANDILOĞLU, G. *Description and Evaluation of an Innovative Course on Learning and Study Skills for the First Year Medical Students*. Tohoku J. Exp. Med., 2006, **210** (3), 231-237 — The purpose of this study is to share educational structure and evaluation results of an innovative course on effective learning and study skills for the first year medical students. In Turkey, undergraduate medical education takes six years and each year nearly 5,000 high school graduates start medical schools. However, many students experience frustration and failure because of their lack in the learning and studying strategies. At the Ege University Faculty of Medicine, preclinical curriculum consists of the body function systems-based teaching blocks. Year one has three blocks. We implemented an effective learning and study skills course at the first and third blocks of the 2003-2004 curriculum. We evaluated the course by students' feedbacks derived from block questionnaires and students' homework performance analysis. At the first block questionnaire, out of 297, 163 students (54.8%) clearly stated that the course positively influenced their learning process. Structured analysis of the first block's students' homework showed that an average of 206 students (69.3%) can sufficiently describe their learning and studying approach, while 218 (73.4%) can identify the strengths and weaknesses of the curriculum. The average student scores were 74 ± 10 and 68 ± 11 out of 100 for first and third blocks, respectively. We interpreted these results as students enjoyed the course and learned the content. In conclusion, a course on effective learning and study skills is likely to assist first year medical students in improving their learning and adaptation to the school. ——— metacognition; study skills; curriculum; medical education

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There is a growing body of literature that focuses on how students make the transition from high school to university (Birnie-Lefcovitch 2000; Doyle and Garland 2001). Upon reaching univer-

sity, many students quickly realize that they need to acquire new learning skills because of the increased demands of their courses. For some, the challenge is difficult and results in a decrease

Received July 4, 2006; revision accepted for publication September 20, 2006.

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in grades and many capable medical students experience frustration and failure in school life. Mostly, it is not because they lack the ability but because they are not aware of their learning styles or do not have effective learning strategies and study skills.

Students learn according to certain learning strategies and study skills resulting from social, psychological and organizational thinking and behavioral patterns. Preferred learning styles, strategies and study habits vary from student to student. They need to discover how they learn best, and regularly evaluate their own study system to find out what strategies fit their needs and practice. Knowing how to study and learn effectively fosters feelings of competence, develops positive attitudes, and helps students realize they can control how well they do in school and in professional life. When students achieve the ability to monitor their learning and to apply the appropriate cognitive and metacognitive strategies, they will have the self-regulatory ability and become active and effective learners (Flavell 1979). In a generic view, students need a rationale and a global picture of how learning strategies and study skills can help them. Use of effective learning strategies and study skills, and reflection will produce lasting effects. Students will have increased self-confidence, and skills to accomplish learning tasks, will be able to apply these generic skills in appropriate contexts and will generally be more able to achieve the academic goals they establish for themselves (Stewart and Landine 1995).

The faculty can teach students how to approach their academic responsibilities when they meet obstacles and become discouraged. For instance, learning how to identify just where they are having difficulty and acquisition of problem solving skills can lead to more adaptive, goal-directed solutions.

On the other hand as a branch of cognitive psychology, metacognition focuses on the active participation of the individual in his or her thinking process and it refers to the ability of learners to be aware of and monitor their learning processes (Baker and Brown 1984; Peters 2000). While

cognitive skills (reading, note-taking, reciting, time management, listening, etc) are those needed to perform a learning task, metacognitive skills are necessary to understand how it was performed (Schraw 1998).

Metacognitive skills are divided into two types: self-assessment (the ability to assess one's own cognition) and self-management (the ability to manage one's further cognitive development) (Rivers 2001). It is not an end in itself but a skill which allows students to help themselves to be successful in academic environments. So it has significant implications for teaching study skills; that is, such training approaches must go beyond the traditional focus on techniques, help students identify their learning characteristics and enable them to exercise effective control over the appropriate use of these techniques (Biggs 1988).

Although we are not aware of any study describing effective learning strategies and study skills combined course for medical students, an Internet search of medical schools' web pages showed us that the most common methods are either elective courses or a prescriptive approach. Such methods, however, only provide short-term results (Biggs 1985), and do not place emphasis on students' motives and ability for self-regulation. Thus, students are taught a number of techniques without the ability to know the conditions under which the techniques should be applied nor do they gain any awareness of their own learning characteristics (Armbruster and Anderson 1981). Based on the above arguments, we designed and implemented an effective learning and study skills course for the first year medical students in 2003-2004, which uses cognitive and metacognitive skills background. The primary goals of the course were: (1) to provide students with effective learning strategies in order to enhance their overall academic achievement; (2) to help students personalize learning techniques to their own particular learning styles and learning environments; and (3) to provide background knowledge concerning applied cognitive, metacognitive and affective learning strategies and study skills.

In this article, we aimed to share the conceptual framework, content, teaching format of the

course, and its evaluation results through students' feedback and students' achievement.

METHODS

This study has been approved by the Faculty Education Committee.

Setting

Ege University Faculty of Medicine has an integrated undergraduate curriculum. The curriculum consists of function and/or system-based blocks in the first three years (pre-clinical phase). It also includes small complementary courses of three longitudinal tracks; namely, "community medicine", "professional skills training" and "ethics and law". The fourth and fifth years comprise clinical rotations while the sixth is the internship. The final three years are called clinical years. The first year curriculum, in which this course was implemented, is composed of three function-based blocks.

Intervention

The course was used as a part of the professional skills training track. A conceptual framework which was developed through literature review, is shown in Fig. 1.

The learning outcomes were identified then converted to learning tasks and instructional activities. The course was composed of twelve two-hour sessions. The students ($n = 297$) were divided into six sub-groups. Each session was thus repeated six times (once for every sub-group). The main instructional activity was the large

group tutorial while "guided invention" was teaching strategy.

Instrument

Student assessment was done by analysis of students' homework and volunteered oral presentations. Students' homework performances were analyzed by a structured form which consisted of four questions. The instructors reviewed the assignments independently and rated all four questions. The inter-rater reliability was 97.8%. The rating scale used by the instructors for the homework analysis was as follows:

1- Poor: The student misunderstood the concepts and/or could not use the right concepts at relevant context and/or his/her reasoning was insufficient.

2- Fair: The student was not sure about the concepts and/or could not satisfactorily use the right concepts at relevant context and/or his/her reasoning was partly sufficient.

3- Good: The student understood the concepts well and/or could use the right concepts at relevant context and/or had sufficient reasoning.

Rating scores were then converted to a final score on a 100-point scale for pass and fail decisions.

Students' specific feedbacks regarding the course were derived from the block quality control questionnaire. The block questionnaire consisted of 60 Likert type rating items, regarding the educational context and content of the block and three open-ended questions to receive further comments. These open-ended questions

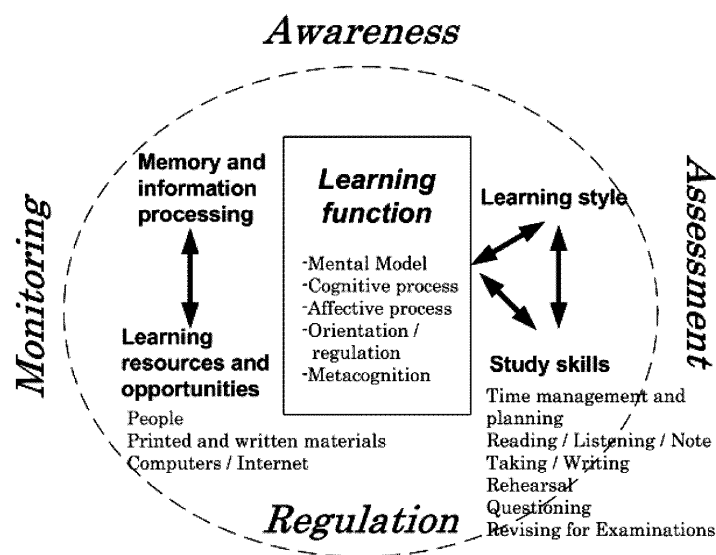


Fig. 1. The conceptual framework of the course.

were analyzed and specific comments on the effective learning course were noted.

Effective learning course in the block one

At first block, we divided the two types of metacognitive skills defined by Rivers (2001) into four concept categories. The first category was “awareness”. It included information about learning in general: (“organized material is easier to learn than disorganized materi-

al”, or “material with familiar concepts and language is easier to read than unfamiliar material”). We used short introductory presentations in order to make the students aware of the concepts and dimensions of the themes. The second category was “assessment”. We used learning and study skills inventories, case studies, small group work and group discussions as learning activities. Herewith, we aimed that students would assess their own learning processes and link them with the learning

TABLE 1. Course structure at block one.

Themes	Teaching and learning activities			
	Awareness	Assessment	Regulation	Monitoring
	-Introductory interactive lecture			
Memory and Information processing (1 hr)	-Homework and instructors' feedback			
	<i>Question 3. Tell us your best understood lecture within block one. Using information processing theory, give your arguments why did you understand it best?</i>			
Learning styles (1 hr)	-Large group discussion	-Individual application of Kolb's Learning style inventory		
Study skills: time management and planning, reading, listening, note taking (4 hrs)		-Individual application of study skills inventory -Small group work on identifying study skills needs -Large Group discussion on implications of the needs	-Homework and instructors' feedback	-Homework and instructors' feedback
Cognitive strategies for effective learning (knowledge organization, elaboration, rehearsal) & Concept mapping (2 hrs)			<i>Question 2. Based on your best learning experience tell us about your personal targets learning strategies and study skills for further blocks in the year. Indicate your reasoning.</i>	<i>Question 1. What did you learn best in block one? How you would explain this according to your learning strategies and study skills?</i>
Affective strategies for effective learning (motivation, regulation, self-efficacy) (2 hrs)	Opening presentation	-Case based small group discussion followed by large group discussion (Students' profiles as cases)		
Introduction to learning resources and opportunities (2 hrs)		-Case based small group work followed by large group discussion (Block One Curriculum and instructional activities as case)	-Homework and instructors' feedback	
			<i>Question 4. According to your learning experience in Block One, write your expectations from the next curriculum blocks, your teachers and learning environment. Using your knowledge in the learning domain, make arguments for your expectations</i>	

opportunities of the program. The third and fourth categories were the “regulation” and “monitoring”. Those categories involved self-management skills such as checking the outcome of an attempt to solve a problem, planning the next learning step, monitoring the effectiveness of a learning action, testing, revising and evaluating the strategies for learning. In our conceptual framework, “self-assessment” was represented by awareness and assessment of the learning process while “self-management” was representing the regulation and monitoring of the learning process. Next to awareness and self assessment, we expected that motivated students could regulate their own learning function as a result of their monitoring. This is the starting point of being independent learners. We used written homework assignments and feedback techniques to instruct the students. Moreover, we made a list of learning-related concepts and facts that should be noticed, assessed, regulated and monitored by the students. Starting from memory functions and information processing, components of learning function, learning styles, study skills and learning resources and opportunities were placed as the main themes on the list. For these themes, we set up links with metacognitive skills. Each link represented a learning objective for the students. Table 1 summarizes the course structure at Block One.

Effective learning course in the block three

At third block, there was only one theme: “Learning Resources and Opportunities”, divided into three sub-themes; library use, index systems and databases, computer use for searching information. In this block we used a skills-based teaching approach which consisted of demonstration and cognitive support, guided part-task practice and whole task practice of the skills. Table 2 summarizes the course structure at Block Three.

RESULTS

More than 80% of the students regularly attended the sessions. Specific positive written feedbacks for the course were received on the block questionnaires. Out of 297 students, 163 (54.8%) clearly stated that this course positively influenced their learning functions.

Structured analysis of the students’ homework for the first block showed that, an average of 206 students (69.3%) could sufficiently describe their learning approach and study skills (based on questions 1, 2, 3 of the homework), while 218 (73.4%) could identify the strengths and weaknesses of the curriculum and give relevant suggestions for the improvement of the pre-

TABLE 2. Course structure at block three.

Themes	Teaching and learning activities		
	Cognitive Support	Demonstration and Part-task Practice	Whole task practice
Library use (4 hrs)	Presentation of University Central and Faculty Libraries	Guided Visit to University’s Central Library	Homework <i>Question 1. Find a specific medical or paramedical question.</i> <i>Question 2. Search through library and/or electronic learning resources to answer your question.</i>
Index systems and databases (2 hrs)	Lecture	Guided practice at computer laboratory	<i>Question 3. List your findings and write one page summary (add literature section) to answer your own question.</i>
Computer use for searching information through electronic learning resources (2 hrs)			<i>Question 4. Prepare an electronic presentation with a maximum 5 slides and present to your friends (voluntary)</i>
Students’ Presentations and Course Evaluation (4 hrs)			

TABLE 3. Students' homework performance analysis at block one.

Homework Questions	Themes	Students Performance							
		Poor		Fair		Good		Total	
		<i>n</i>	(%)	<i>n</i>	(%)	<i>n</i>	(%)	<i>n</i>	(%)
<i>Question 1. What did you learn best in block one? How you would explain this according to your learning strategies and study skills?</i>		14	(4.7)	71	(23.9)	212	(71.4)	297	(100.0)
<i>Question 2. Based on your best learning experience tell us about your personal targets learning strategies and study skills for further blocks in the year. Indicate your reasoning.</i>	LEARNING APPROACH	18	(6.1)	78	(26.3)	201	(67.7)	297	(100.0)
<i>Question 3. Tell us your best understood lecture within block one. Using information processing theory, give your arguments why did you understand it best?</i>	Learning styles, study skills, cognitive and affective strategies	21	(7.1)	71	(23.9)	205	(69.0)	297	(100.0)
<i>Question 4. According to your learning experience in Block One, write your expectations from the next curriculum blocks, your teachers and learning environment. Using your knowledge in the learning domain, make arguments for your expectations</i>	CURRICULAR STRENGTH AND WEAK POINTS	11	(3.7)	68	(22.9)	218	(73.4)	297	(100.0)

clinical medical curriculum (question four). The average student score for the first block was 74 ± 10 and 68 ± 11 for third block. Table 3 gives detailed analysis results of the first block homework.

DISCUSSION

Dixon suggested that learning style and learning function information may be more effective if the learner becomes aware of and uses this information (Dixon 1985). The students who are self-directed or active learners no longer passively receive information but interact with the information in a meaningful way. We believe that most teachers are aware of the importance of self-directed and active learning in the academic environment. However, for most medical teachers,

teaching and learning literature is complex to understand while transfer to curriculum activities is difficult to achieve.

In our educational intervention, we designed a compulsory course which aimed to help students to learn more effectively. Students were asked to listen, brainstorm, discuss, reflect, plan, write, present and explain various concepts, opinions, cases, facts and figures around their learning functions. We thus designed a student interaction process around their individual learning functions, enabling them to use metacognitive skills.

In order to evaluate the impact of the course on students' knowledge, we analyzed their performance at homework and their feedbacks. They displayed a very good performance at homework and their feedbacks for the course were very

encouraging. These tools, however, have limited reliability in program evaluation, a problem frequently encountered in curriculum studies. Similarly, there is, as yet, no valid assessment method for metacognitive skills. However, the results of this study suggest that a course on effective learning and study skills is likely to assist first year medical students in improving their learning and adaptation to the school.

Based on our observations and experience, we suggest the following educational strategies;

1. Learning styles and study skills inventories are very useful to create personal learning profiles that will empower students to become active learners,

2. Case-based discussion is a useful tool for students' reflection to further regulative measures for their learning process,

3. Using their own experience at current curriculum and students learning profiles as cases, helps the students' double loop learning, collaboratively finding solutions to cope with curriculum's hindering aspects and planning future learning approach,

4. Presenting and demonstrating practical tools for study skills (such as note-taking, reading tips) and allowing students to practice these part-

task skills, increase usage and utility.

References

- Armbruster, B.B. & Anderson, T.H. (1981) Research synthesis on study skills. *Educational Leadership*, **39**, 154-156.
- Baker, L. & Brown, A.L. (1984) Metacognitive skills and reading. In: *Handbook of Reading Research*, edited by P.D. Pearson, R. Bart, M. Kamil & P. Mosenthal, NY, Longman, 742-775.
- Biggs, J.B. (1985) The role of meta learning in study processes. *B. J. Edu. Psychol.*, **55**, 185-212.
- Biggs, J.B. (1988) The role of metacognition in enhancing learning. *Australian Journal of Education*, **32**, 127-138.
- Birmie-Lefcovitch, S. (2000) Student perceptions of the transition from high school to university: Implications for preventative programming. *Journal of the First-Year Experience*, **12**, 61-68.
- Dixon, N.M. (1985) The implementation of learning style information. *Lifelong Learning*, **9**, 26-27.
- Doyle, M.S. & Garland, J.C. (2001) A course to teach cognitive and affective learning strategies to university students. *Guidance and Counseling*, **16**, 86-91.
- Flavell, J.H. (1979) Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American Psychologist*, **34**, 906-911.
- Peters, M. (2000) Does constructivist epistemology have a place in nurse education? *J. Nurs. Edu.*, **39**, 166-170.
- Rivers, W. (2001) Autonomy at all costs: an ethnography of metacognitive self-assessment and self-management among experienced language learners. *Modern Language Journal*, **85**, 279-290.
- Schraw, G. (1998) Promoting general metacognitive awareness. *Instructional Sciences*, **26**, 113-125.
- Stewart, J. & Landine, J. (1995) Study skills from a metacognitive perspective. *Guidance and Counseling*, **11**, 16-20.