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STUDENTS' SELF-ESTEEM OF ENVIRONMENTAL KNOWLEDGE

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ABSTRACT

The article presents a diagnostic investigation of classroom self-assessment of 174 students in 8th grade of elementary school (92 from Bulgaria and 82 from Turkey). A method of assessment and self-assessment on 40 environmental terms was used. The skill of students to make right decisions about their environmental knowledge was studied. The influence of the differential effect of social status and academic achievement level upon self-assessment was revealed. Comparative analysis of the results from Bulgaria and Turkey showed that most of the students did not reflect critically upon their knowledge and did not evaluate it against school achievement standards.

Keywords: academic achievement level, gender, self-assessment, self-esteem, social status

Introduction

Self-assessment, self-evaluation and self-esteem are very closely and hierarchically interconnected and very often used interchangeably. Self-assessment "is the process of critically reviewing the quality of ones own performance and provision" (14).

Student self-evaluation is both a process and a product, a form of narrative writing in which students describe their learning in a particular course of study and make qualitative judgments about it¹.

Self-esteem reflects a person's overall evaluation or appraisal of her or his own worth², "a pride in oneself, self-respect"³, "a confidence and satisfaction a person has in him/herself"⁴, "due respect for oneself, one's character, and one's conduct"⁵. All of the three depend a lot on assessment and evaluation, carried out by the teacher (internal evaluation) or by other institutions (external evaluation)⁶.

The development of skills in the area of assessment is at the heart of a successful teaching and learning process (1, 2, 4, 6). Its aspects are studied by many researchers: meaning (1, 2, 20), principles (2, 3, 5), external and internal⁷, formative (5, 11), difficulties and shortcomings (17), importance for raising standards (3, 6), interrelations with teaching and research (7, 21), importance for formative and

summative purposes (20, 21), dependence on professional learning (12, 13), requirements for efficacy (6, 9, 12), participation of students in the assessment process (10), learner-centered (9), performance in the classroom (3, 4, 6, 21), role in motivation (16, 23), comparison of peer- and self-assessment (8) self-assessment as a tool for personal learning and achieving academic excellence (23), student cooperation in learning and performance (12), teaching to and assessing with performance tasks result in understanding as a valuable contribution to assessment (18, 22), development of practical materials for teachers (1, 2, 18), etc. Research is also directed to peer assessment that can be "usefully and meaningfully employed to factor individual contributions into the grades awarded to students engaged in collaborative group work" (8) and to the use of self-, peer and co-assessment (10).

The review of literature suggests that the use of a combination of different new assessment forms encourages students to become more responsible and reflective. Comparisons of the results of teacher and self-evaluation combined with critical and constructive discussion can help students to develop understanding and skills for self-regulated learning in pursuit for excellence.

Materials and methods

Participants in the investigation were 174 8th grade students in four groups: two groups (T1 – 36 students and T2 – 46 students) from two Turkish schools in Bursa and two groups (B1 – 40 students and B2 – 52 students) from two Bulgarian

schools in Sofia. T1 is representative of students with low social status, whilst T2 represents students of higher social status, studying in private elite school. The two Bulgarian groups were also different: students in group B1 had no specialized interest in biology whilst those in group B2 had a special interest in biology and had passed an entrance biology exam, choosing this area for future professional orientation. Our aim was to compare samples T1 and T2 with respect to the social status of the students and B1 and B2 regarding the students' interest in biology. And although the two groups from Turkey and Bulgaria were not identical they include students of the same age who study subjects with comparable contents.

Data collecting was done using self-assessment sheet written in child friendly language to aid children's understanding. The sheet contained 40 terms, chosen after careful analysis of the textbooks for sixth, seventh and eighth grades in Bulgaria and Turkey. The method has already been used and validated in a number of previous studies (15).

The validity of our survey instrument was 0.86, and the reliability was 0.77. The instrument was created in Bulgarian and adequately translated into Turkish language by E. Atasoy, a Bulgarian-Turkish bilingual.

The self-assessment sheet contained instruction and three tasks, formulated as follows: 1. Put a mark "K" (know), "H" (heard of) or "NH" (never heard of) for each concept, which best describes your opinion; 2. Choose 5 concepts that you know best and explain them. 3. Grade your knowledge and understanding (tick one) or using more precise mark from 1 to 5:

<input type="checkbox"/> excellent	<input type="checkbox"/> very good	<input type="checkbox"/> good	<input type="checkbox"/> poor	<input type="checkbox"/> very poor
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The self-assessment sheet was administered to the students for one school period of 45 minutes. The dependant variable of this study is the precision of self-assessment, i.e. the degree of approximation of students' self-assessment to the teachers' assessment and evaluation and the influence of social status, interest to biology and gender upon the precision of self-evaluation. The work sheets were collected and analyzed, using evaluation criteria, agreed upon prior to the test. Students were acquainted with the criteria for self-assessment. Statistical analysis was applied to the results.

Results and Discussion

The results were compared using statistical values (Table 1). The mean (X), mode (Mo) and median (Me) are different ways of finding the central value of the data in order to

compare them. The results (Table 1) show that in all experimental groups with the exception of B2 group, in which the students had past an entrance exam in biology, the difference between evaluation and self-evaluation is significant. That means that preparation for and success at the entrance exam had been useful for development of understanding and skills for critical and precise self-assessment and self-evaluation. Academic self-esteem of these students was in correspondence with their achievement goals and learning standards. Students had special interests in biology and in the process of studying they competed between themselves, each trying to acquire higher professional knowledge and better marks. The rate of progress of individuals in B2 was high. They also learned from better qualified teachers, often lecturers from the university (12). Biological education in this school is set on higher standards, which are nearer to the entrance exams for the universities, than the standards for the ordinary secondary schools. The results are reflection of pupils' attainment. Students had a real interest in their qualification as it opened doors for them to the next stage of their learning (20). Self-evaluation is an empowering process developing skills and reflective learning.

Variance (S^2) and standard deviation (S) are measures of variability. Standard deviation is the most commonly used measure of spread. In B1 variance and standard deviation for evaluation are higher than for self-evaluation, which shows that evaluation marks are more variable. This can be explained with the higher precision of teachers and the use of pre-developed criteria. Students relied predominantly on their intuition and self-esteem. In the other three groups the SD (S) for the distribution of the evaluation marks is either smaller or equal to SD of the self-evaluation marks, which shows that they are clustered more closely to the mean. The coefficient of variation (V) is a measure of dispersion of a probability distribution. Except in B2 group in the other groups V is higher for evaluation than for self evaluation, which confirms the explanation about the higher precision of teacher evaluation. S_x (SEM), the standard error of the mean, provides simple measure of uncertainty in a value and quantifies the accuracy of the true mean of the evaluation and self-evaluation marks.

TABLE 1

Comparative statistical analysis of evaluation and self-evaluation of the variables

Variables	X	Mo	Me	S2	S	V	Sx	t
B1 Evaluation	3.38	3.4	3.4	0.55	0.74	0.22	0.12	4.82/ 1.98*
B1 Self-evaluation	4.14	4	4	0.44	0.66	0.16	0.10	
B2 Evaluation	3.89	4	4	0.42	0.65	0.17	0.09	1.22/ 1.98*
B2 Self-evaluation	4.05	4	4	0.48	0.69	0.17	0.10	
T1 Evaluation	2.55	3	2.6	0.37	0.61	0.24	0.10	8.26/ 1.98*
T1 Self-evaluation	3.72	4	4	0.37	0.61	0.17	0.10	
T2 Evaluation	2.82	2.6	2.6	0.48	0.69	0.24	0.11	4.51/ 1.98*
T2 Self-evaluation	3.48	4	4	0.52	0.72	0.21	0.12	

$p < 0.05$

Student t distribution for the comparison of the results from evaluation and self-evaluation in B2 is less than 1.98, which is the standard value at $p < 0.05$ and $f = 52 + 52 - 2$. But in all other groups it is higher and proves that the difference between evaluation and self-evaluation is significant. This could be the result both of lack of knowledge and lack of skills for critical self-assessment.

Social status of student has an indirect effect on self-assessment and self-evaluation. Having better financial resources, students in T2 group were able to afford better education than students in T1 group. But their higher attainments were also the result of greater efforts in studying and more critical approach to self-evaluation. Academically successful students (B2 and T2) showed a more critical view of themselves and students with more modest academic abilities (B1 and T1) compensated for their academic underachievement by elevating their general self-esteem and using self-protective enhancement (19).

Nevertheless objective evaluation in B2 and T2 was higher, which could be due to school climate favouring learning, academic achievement and self-responsibility for success. It is proved by the values of S, V and SEM (Table 1). Overestimation and underestimation by one point predominated. Self-regulation and expert performance in B2 and T2 was higher due to reflection and deliberate practice (12, 23). Self-monitoring requires more time and effort (23), but the students in B1 and T1 were not taught to give it. Educational assessments and self-assessments are very essential for feedback and feedforward to raise levels of attainment and empowering lifelong learning (18, 19). Excellent academic achievements raise students' self-esteem (19).

Conclusions

The social status and the entrance exams to school are both

very essential in developing skills for correct self-evaluation. Obviously school environment and school practices favored self-evaluation for learning, not only of learning. Students in B2 and T2 had better understanding of their attainment goals, which helped them in self-evaluation.

Self-evaluation was not regarded as a process where both teachers and student analyze their work and acquire self-assessment as a result. Self-evaluation skills are the condition and result of education, the condition of self-regulated life-long education as they develop personality and regulate behavior (7). The use of self-evaluation techniques allows teachers and students to reflect on practice and improve effectiveness. Effective self-evaluation provides a great sense of ownership of the evaluation process and should experience a greater consideration in school practice (5).

Students need understanding and practice in self-assessment and self-evaluation in order to develop their objectivity and self-regulated learning and to acquire proper self-esteem skills and attitudes. Self-assessment should be incorporated systematically into teaching strategies and practices at all levels and only in this way it can provide informed feedback to pupils, develop and sustain skills for objective self-evaluation, i.e. corresponding to teachers' and external assessment and to school and personal goals. The purpose of assessment is to improve standards, not merely to measure them and that should be the case for all schools not only for special schools.

Assessment and self-assessment for learning should be the leading strategy in teaching in order to help students understand their achievements and shortcomings and to give them guiding principles to build on them their successful learning. Peer and co-assessment have not found yet their ways to school practice in the assessed schools, but they can help students understand their responsibility for their own achievements (18) and motivate them (16). That of course

needs competent teachers and specific experiences as well as school climate and evaluation tools (2, 5, 6, 8, 9, 17). Objective evaluation and self-evaluation is needed to prepare students for competition in Europe and should make their ways to school planned practices (7, 13, 19, 20).

Notes:

¹. Student self-evaluation <http://www.evergreen.edu/washcenter/resources/acl/iii2.html>

². Self-esteem: <http://en.wikipedia.org/wiki/Self-esteem>

³. Self-esteem: <http://wordnetweb.princeton.edu/perl/webwn?s=self-esteem>

⁴. Self-esteem: Available from <http://www.go2calgary.com/glossary>,

⁵. *The American Heritage Dictionary of the English Language*: Fourth Edition, 2000. Online at <http://www.bartleby.com/61/23/S0242300.html>, retrieved 2007-11-15

⁶. Community Evaluation Northern Ireland (CENI). Self-Evaluation FAQ (Frequently Asked Questions). Available at: <http://communityconnections.wikidot.com/self-evaluation-faq>

⁷. EQUIPE Project, 2004, Case Study, Lithuania, by Daiva Dumciuvienė of Kaunas University of Technology. Site update accessed, October, 2004 <http://equipe.up.pt/Casestudies/sg2kaunas.pdf>

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