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## **Self-regulation of Learning in Secondary School Students with Special Educational Needs and other Students of Vocational and Technical Schools**

### **Abstract**

Our study examined the differences between students with special educational needs (SEN) and other students in vocational and technical schools in different areas of self-regulation: learning motivation, cognitive and metacognitive strategies and emotional regulation in learning. The sample consisted of 140 students, of whom 20 were students with SEN. Differences between students were most often expressed in the area of lower perceptions of self-efficacy. With respect to the regulation of time and study environment, the students with SEN had greater problems with following the study schedule than other students; in the area of taking responsibility for learning, the students with SEN gave up faster and did not persevere in studying the more difficult subject matter.

The students with SEN also expressed less positive beliefs about themselves and their abilities; they sought study support later or not at all compared to other students and gave up on studying more difficult course material. In inclusive classes with the students with SEN, the teachers should dedicate more time to develop self-regulated learning skills and strategies and thus increase students' feeling of control over the learning process.

**Keywords:** *self-regulation, learning, students with special educational needs, other students, vocational and technical schools*

Slovene legislation (Vocational and Technical Education Act, 1996; The Placement of Children with Special Needs Act, 2007) ensures secondary school students

with special educational needs (SEN) the right to attend vocational and technical schools. After primary school, some students with SEN are included in secondary schools under the auspices of centers for people with SEN; however, more and more enroll in secondary school programs together with other students. With the support of multidisciplinary teams, students with SEN capable of achieving the minimum educational standards in school are directed into educational programs with adapted implementation and additional professional support (APS). APS most frequently takes place as out-of-class support for individuals or groups. In Slovenia, APS is implemented by subject teachers who most often lack relevant knowledge and skills for work with secondary school students with SEN. Students with officially recognized SEN have an individualized program that helps them achieve the objectives of a given general education program. Such individualized programs define the adaptations to the educational process in the classroom for students with SEN. Besides providing learning support and learning strategies for impairment management, the objective of APS should be to help students develop a positive self-concept, empowerment and self-advocacy; however, practical experience shows that the emphasis is most frequently on classical teaching of the subject matter. The situation regarding the education of secondary school students with SEN is not encouraging. It reveals poor academic results, in particular on the standard-based achievement tests, as well as on the national-level Mathematics and Slovene tests, with the results of SEN students deviating from those of their peers (Opara et al., 2010).

The number of students with SEN in schools has grown considerably in recent years. The most numerous group of students with SEN in vocational and technical schools in Slovenia comprises students with learning difficulties (LD). With lower cognitive abilities and problems with adaptive behavior, memory, communication and other issues, these students often fail at tasks that require planning and task implementation strategies. When they are left with no response from the outside, or receive no encouragement, or when they are not up to the task, they give up on trying to solve it. Research on the study habits of students with learning difficulties (LD) in general supports the metacognitive perspective and points out that these students are cognitively and/or motivationally insufficiently involved in the assignments (Torgesen, 1980). The reasons that further impede the engagement of students with LD in the educational process also include Attention Deficit Hyperactivity Disorder (ADHD). Bender (2008) points out that many students with LD show signs such as impulsiveness and attention deficit, which are both characteristic of ADHD and can result in risky behavior. Because adolescence is characterized by numerous socio-emotional challenges and changes, these students

can also develop emotional malaise, including low self-concept, anxiety and a low level of the decision-making ability (Kauffman, 2001). Midgley and Urda (1992) have noticed that, upon enrolment in secondary school, students with LD are particularly prone to experience unpleasant feelings related to learning ability, lower grades, motivation and many social concerns. This is why it is even more important for students with SEN to develop self-regulation and decision-making skills, to be able to set objectives and achieve them, to be aware of as well as to understand themselves and their own problems (Wehmeyer, 1999), all of which contributes to the development of the learning-to-learn competence as early as at primary school.

The learning-to-learn competence factors are complex and include motivation, self-concept, knowledge of learning strategies, persistence, the ability to effectively organize one's own opinion, independently or collectively assess one's own work and seek advice and support if necessary. The essential component of the learning-to-learn competence is a positive attitude reflected in the orientation towards the goal and towards problem-solving and overcoming obstacles. A positive experience with learning and education in childhood and adolescence is the vital encouragement for lifelong acquisition and upgrading of knowledge and skills.

Learning at school is typically intertwined with emotions such as fear, anger and anxiety, as well as those of pride, joy, enthusiasm and satisfaction. Less successful students lacking self-confidence, who live in constant fear of knowledge assessment and grading, are in the most difficult situation. The role of school is to help the student form a realistic view of himself and his abilities and develop basic self-confidence for confronting assignments. Development of self-regulation for learning is an important goal of education because it is vital both for guiding the individual through formal education as well as for (self-)education after its completion. It has an important impact on the learning outcome (Bakracevic Vukman and Licardo, 2010, Boekaerts, 1997). A well-self-regulated individual is goal-oriented, aware of his efficiency, prepared for practice and completion of assignments, can manage time well and can employ cognitive strategies and metacognitive awareness efficiently.

## **Aim of the study**

In the empirical part of the study, we sought to establish whether there were differences between students with SEN and other students in vocational and technical schools with respect to various aspects of self-regulation of learning: motivation for learning, cognitive and metacognitive strategies and emotion control in learning.

## Methodology

### Sample

The study was based on a non-random, *ad hoc* sample of students from various vocational and technical secondary school programs. The sample comprised 140 students, 15.7% of whom were in the Metal Molder, Machine Mechanic and Mechatronic Operator programs; 40.7% in the Car Mechanic program and 12.1% in the Dressmaker-Tailor program. The majority of the students, 87.1%, were male, and only 12.9% were female. 14.3% were students officially diagnosed with special needs. These were students with a mild intellectual disability and borderline intellectual abilities and who had been recognized by the multidisciplinary teams as students with learning difficulties. This entitled them to additional professional support and an adapted educational process at school. All the students with special needs in our sample had individualized programs.

**Table 1.** Distribution of students with special educational needs (SEN) and other students with respect to the educational program

Educational program	Other students	Students with SEN	Total
Metal Molder	16	6	22
Machine Mechanic	22	0	22
Car Mechanic	48	9	57
Mechatronic Operator	20	2	22
Dressmaker-Tailor	14	3	17
Total	120	20	140

### Instruments

A Metacognitive, Cognitive and Motivational Self-Regulation of Learning Questionnaire comprised the Motivated Strategies for Learning Questionnaire – the MSLQ – (Pintrich, Smith, Garcia, 1991), which consists of a scale of 81 items that measure learning motivation and the use of cognitive and metacognitive strategies in learning. The instrument has 8 subscales that measure intrinsic and extrinsic motivation, self-efficacy, anxiety, cognitive and metacognitive strategies, regulation of time and study environment, seeking additional professional support and acceptance of responsibility for learning. The Emotional Regulation Questionnaire (Taksic, 2001) comprises 20 statements with a 5-point scale. The validity of the assessment scale clusters was verified with the use of factor analysis. The data were processed at the level of descriptive and inferential statistics.

## Procedure

Owing to the students' expressed LD in the areas of attention, reading and writing, we adapted the survey implementation. We ensured a better understanding of the content by reading the questions out loud. In addition, surveying took place with the help of a teacher and a counselor, who offered the students additional explanation and allowed them more time to complete the questionnaire, and more breaks, as well as regularly checking whether the students understood the questions.

## Results and interpretation

As is evident from Table 2, statistically significant differences occurred between the students with SEN and other students in the perception of self-efficacy.

**Table 2.** The Mann-Whitney test of differences in the perception of self-efficacy with respect to individual items between students with SEN and other students

Perceived self-efficacy items	Students	N	R	U	P
2. I believe I will receive an excellent grade in this class.	Other students	120	74.10	768.50	0.01
	Students with SEN	20	48.92		
7. If I try hard enough I will understand the course material.	Other students	120	72.84	919.50	0.08
	Students with SEN	20	56.48		
8. I'm confident I can do an excellent job on the assignments and tests in this course.	Other students	120	73.24	804.00	0.02
	Students with SEN	20	50.70		
10. I'm certain I can master the skills being taught in this class.	Other students	120	73.15	882.00	0.05
	Students with SEN	20	54.60		

Note: In the table there are only items where statistically significant differences between the two groups occurred.

The feeling of self-efficacy in students with SEN is statistically significantly lower. These students display a weaker self-concept and perceive themselves as less able and successful compared to other students. In a third of the items measuring the students' self-efficacy, the differences are statistically significant or indicate a tendency towards difference; in all the items, mean values are lower for the students with SEN. Bender's (2008) research also shows that adolescent students with LD are more aware of differences in learning abilities compared to their peers, which is a consequence of the cumulative effect of having LD.

We can conclude that a student who has a mirror placed before him by his teachers, classmates and parents sees a reflection of himself as a failure; this, in turn, makes his expectations about his own abilities develop in line with this unenviable image. The picture of an unsuccessful, incompetent and unappreciated person also manifests itself in the form of a person who expects and even accepts failure.

**Table 3.** Results of the Mann-Whitney test of differences in individual items with respect to regulation of time and study environment between students with SN and other students

Regulation of time and study environment items	Students	N	R	U	P
3. I find it hard to stick to a study schedule.	Other students	120	67.52	895.00	0.07
	Students with SEN	20	84.75		

Note: In the table there are only items where statistically significant differences between the two groups occurred.

In terms of time and study environment regulation (Table 3), a tendency towards difference appears only in the study schedule item. Students with SEN struggle more than other students to follow a schedule. The result shows that the students with SEN also differ from other students in the area of metacognitive abilities, time and work planning, attention focusing, systematic ways of studying as well as monitoring and verifying their own work and results, as has been pointed out by other studies (Lerner, 1997, Torgesen, 1982).

**Table 4.** Results of the Mann-Whitney test of differences with respect to the cognitive and metacognitive strategies: responsibility acceptance among students with SEN and other students

Acceptance of responsibility items	Students	N	R	U	P
8. When course work is difficult, I give up or only study the easy parts.	Other students	120	67.88	885.00	0.05
	Students with SEN	20	86.25		

Note: In the table there are only items where statistically significant differences between the two groups occurred.

The difference between the students with SEN and other students appears with respect to perseverance in studying difficult course material (Table 4). The students with SEN give up more easily and sooner on difficult course work or study only the easy parts. Since students with lower intellectual potential have

problems understanding the course material, in particular the abstract parts and more demanding concepts, solving complex problems and understanding longer instructions, this result is not surprising. Compared to their peers, students with SEN are typically more socially dependent in the educational process and therefore rely on external encouragement and control by their teachers and other adults (Levin, 1992). A history of failure can make them start avoiding it by clinging to the familiar, avoiding risk or claiming that they do not care about success; they even become used to failure and take it for granted (Covington, 1992; Woolfolk, 2002). They are paralyzed by fear of failure and unable to engage in new activities, which on the outside appears as student laziness and resignation in the following sense: “Why try at all if I always fail?” (Calarusso, O’Rourke, 1999).

McNamara et al. (2008) and Cosden (2001) have observed that in adolescents with LD, the frustration and damaged self-respect, consequent on those problems, become so evident that they gradually lose motivation for studying, skip classes and show forms of risky behavior.

**Table 5.** Results of the Mann-Whitney test of differences in terms of emotion regulation between students with SEN and other students

Emotional regulation items	Students	N	R	U	P
1. I can well remember situations in which I was angry.	Other students	116	71.22	884.50	0.04
	Students with SEN	20	52.72		

Note: In the table there are only items where statistically significant differences between the two groups occurred.

In the area of emotional regulation, a statistically significant difference between students with SEN and other students appears with respect to only one item. Other students think that they remember the situations in which they were angry better than students with SEN. The result most likely reflects the internalized helplessness of students with SEN and their greater resignation. In two items, a tendency towards difference appears: students with SEN claim more frequently that their disposition has a strong influence on their way of thinking; and when they are in a bad mood, even small problems seem beyond their control. Emotional regulation is linked to success at school because it is known that negative feelings can impede cognitive functioning. Fear, for example, has a negative effect on the higher cognitive functions, the ability to connect wider knowledge and solve problems. Students seek superficial solutions and give or write down the first answer that comes to mind. We can assume that problems with emotional regulation in students with

SEN are preconditioned by weak inner control, impulsiveness and unrest, all of which are characteristics typical of ADHD and often connected with LD.

## **Conclusion**

Our empirical study examined the differences between students with SEN and other students in vocational and technical schools in the areas of learning motivation, cognitive and metacognitive strategies and emotional control in learning. The differences between students are most often expressed in the area of lower perceptions of self-efficacy (achieving good grades, conviction about successfully completed assignments and tests and conviction about mastering skills). With respect to the regulation of time and study environment, students with SEN have greater problems than other students in following the study schedule; in the area of taking responsibility for learning, students with SEN give up faster and do not persevere in studying the more difficult subject matter.

The students with SEN who participated in the survey expressed a less positive belief about themselves and their abilities; they sought study support later or not at all compared to other students and gave up on studying more difficult course material. In inclusive classes containing students officially recognized as having LD (many of them have intensive impairments), the teachers should dedicate more time to teaching learning-to-learn strategies and thus increase students' feeling of control over the learning process. The student who knows how to study and knows various strategies can use them to achieve better results, which will encourage him to engage actively in the learning process and allow him to develop the notion of responsibility for his work. In order for students with LD to be more efficient and successful in the educational process, the additional support ought to be implemented on an individual basis and help students to get organized, reflect their learning and function strategically. It is a fact that students with SEN, in particular students with LD, require systematic and explicit teaching of specific cognitive strategies (e.g., visualization, verbal retrieval, paraphrasing, summary and grading/evaluation) instead of classical teaching, for which they need prior developmental preparation (Montague and Warger, 1997, Agran et al., 2000). Students also need to be reminded and encouraged to use the strategies flexibly and adapt them with respect to various study environments. Besides being taught appropriate skills and strategies by teachers, students with SEN should be allowed to set and evaluate their own objectives in the areas of self-direction and self-regulation (Schmidt and Čreslovník, 2010).



Since the results of our survey have shown a low perception of self-efficacy among the students with SEN, we wonder how successful the education system is in the implementation of one of the fundamental tasks of early education: i.e., appropriate development of the learning-to-learn competence. It is necessary to develop motivation and a positive self-concept in all participants for the next stages of education; however, students with SEN deserve even more attention in this area. When including students with SEN in schools, it is necessary that they are provided with more than just physical inclusion and the formally required adaptations and support. Teachers who teach students with SEN in secondary schools need to have appropriate qualifications for work with a heterogeneous population of adolescents with SEN. In order for teachers to be able to effectively teach students with SEN in secondary schools in the future, systematic training on inclusion and the characteristics of students with LD and SEN, strategies centered on the student, the development and learning evaluation methods should be offered. The teacher must try to establish an inclusive climate in the classroom as well as recognize and allow for the diversity of each individual, i.e. achieve social-emotional integration (Forlin et al., 1996, Loreman, 1999, Schmidt and Čagran, 2006).

The task of vocational and technical education is to ensure professional and general competences that will allow the individual to follow developments in their profession, participate in such developments and upgrade or change vocation if necessary. In addition, students should be familiarized with various cognitive and metacognitive strategies and systematically trained to reflect on and evaluate their own study process. By making them reflect on their own learning process, we allow weaker students to become successful and to experience success as a consequence of their own activity, while experiencing themselves as subjects with an impact on their learning and learning outcomes. We believe that teachers and other professionals in schools should be aware that by learning, teaching and developing the skill of self-regulation, self-directing and self-efficacy and by using these in various situations (in school and beyond), we can prevent social exclusion and interruption of schooling for students with different learning problems.

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