

THE DIGITAL TRANSFORMATION OF ESP LEARNING: DEVELOPING STUDENTS' SELF-REGULATED LEARNING SKILLS

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Abstract: The digital transformation of ESP (English for Specific Purposes) learning enhances students' self-regulated learning skills by utilizing structured tools and programs that foster socially shared regulation. This enables students to collaborate, set shared goals, and assess the success of their strategies in both individual and group settings. By using digital tools, students achieve greater proficiency in ESP, meeting academic expectations more effectively. Research aims to explore the impact of motivational strategies on academic success, focusing on their role in self-regulation and efficiency. Digitized ESP teaching is considered a significant factor, with evidence suggesting a statistically significant advantage in motivational strategies for students in digital ESP programs. These strategies contribute to improved academic performance by aiding in goal-setting, resource allocation, attention focus, and problem-solving. Weaknesses in motivational strategies were identified, such as presenting information diversely, structuring learning steps, and incorporating external feedback effectively. Addressing these gaps can enhance students' ability to regulate their learning and excel in ESP education, highlighting the critical role of digital transformation in shaping effective language learning environments.

Key words: benefits, digital transformation of ESP learning, ICT, self-regulated learning, structured learning

1. INTRODUCTION

Academic success is largely dependent on the level of development of students' self-regulation competencies. Self-regulation, defined as self-control, encompasses behaviors that align with goals, such as personal standards [2]. The processes of self-regulation also include affective, motivational, and conative components, which enable the individual to modify activities and goals to achieve desired results in response to changing circumstances. It is important to note that self-regulation is related to the issue of the proactive principle as an essential characteristic of this construct and highlights the same approach to learning by which people transform their own mental abilities into academic skills [5]. It is also significant to keep in mind that in the process of self-regulation, people participate in the learning process by initiating their own metacognitive processes and motivational resources and directing thoughts and feelings in the direction of achieving set goals [10, 11]. Independent goal setting, personal initiative, perseverance, progress monitoring, and adaptation skills are the basic elements of proactive activities [10]. In most models promoting self-regulated learning, it is crucial to intentionally implement specific strategies, processes, or responses aimed at specific academic goals while also monitoring the effectiveness of these strategies [10]. Researchers like Carver and Scheier [3] cite most models that incorporate loops and feedback during learning, a cyclical process where students assess the effectiveness of their learning strategies. Furthermore, the majority of authors underscore the significance of the motivational aspect of self-regulation in the learning process. This dimension explains how and why individuals self-regulate, i.e., why they choose certain strategies or ways. The research aims to investigate how motivational strategies impact academic success, focusing on their role in self-regulation and academic efficiency within digitized ESP (English for Specific Purposes) teaching. The main hypothesis suggests a significant difference in motivational strategies favoring students in digitized ESP classes, enhancing their academic performance. It states that there is a statistically significant difference in self-regulatory abilities and academic achievement between students engaged in digitalized learning and teaching and those who participate in traditional ESP (English for Specific Purposes) classes. Motivational and metacognitive strategies are more prominently developed among students engaged in digital learning environments, which contributes to enhanced self-regulation and distinct behavioral patterns related to coping with failure. The working hypotheses further propose that motivational strategies represent essential components of self-regulated learning in students involved in digitized education, and that students participating in digital learning exhibit stronger metacognitive strategies and goal orientation compared to those in traditional classes. These characteristics are reflected in specific patterns of coping behavior and self-regulation.

2. METHOD, RESEARCH RESULTS AND DISCUSSION

The sample was convenient, consisting of 114 students of the Universities of Novi Sad and Belgrade, including 22 (19.3%) students who attended digitized classes of ESP learning. One of the limitations of this study is that the

students who attended face-to-face and digitized classes are not statistically balanced in number. In the data observed here, motivational learning strategies were taken as a predictive variable, and academic success of students (average grade) as the criterion.

The findings of descriptive statistics indicate differences in mean values in favor of positive strategic components of self-regulation and a greater expression of meta-cognitive components and goal orientation, compared to those that create a depressive pattern of behavior and lead to defensive strategies. This points to the conclusion that, while many respondents demonstrate stable self-regulation, a significant number of them lack sufficient will power, and thus self-control, which is the basis of weak defense against temptation and giving up the direction that leads to the goal. We see this finding in other research [1, 6], which state that the essence of limitations is not only a lack of will, but also a lack of effort. Moreover, it points to broader aspects of self-regulation, such as struggling with frustration, dealing with failure, goal orientation rather than self-control, etc. [9].

Previous data indicate a difference in the expression of motivational components that were included in the composite that provides successful self-regulation, and the group that is at the other end of the scale continuum in terms of the expression of mean values consists of the components of self-regulation. The average values on the subscales are as follows: test anxiety ($M=2.87$), coping with failure ($M=2.85$), success attribution ($M=2.75$), goal attributions in learning ($M=2.64$), and failure attribution ($M=2.42$).

As can be seen from previous data, two composites were formed according to the expressiveness of the mean values, with slightly lower mean values of the composite that forms negative signs of self-regulation, resulting in academic failure. These data are an indicator of mutual differences in the components of self-regulation among the respondents.

Previous data indicate a significant presence of target attributions in learning, as well as attributions of success and failure, which may contribute to differences in achievement between gifted and other students. This question was tested through comparative analyses of aggregate values on the subscales of the observed components of self-regulation of learning (Table 1).

Table 1 – Descriptive statistics for summary values from subscales of learning self-regulation components

N=114; Min=1; Max= 5	Mean	SD	Skewness		Kurtosis	
Subscales			Stat.	SD	Stat.	SD
Scale motiv. strategy	3.438	.314	-1.07	.10	4.727	.212
Scale acad. efficiency	3.648	.627	-.117	.10	-.014	.212
Failure Attribution Scale	2.356	.508	.805	.10	2.035	.212
Success Attribution Scale	2.916	.411	.367	.10	.589	.212
Scale goal attribution in learning	2.649	.467	.228	.10	-.019	.212
Test anxiety scale	2.872	.987	-.075	.10	-.669	.212
Coping with failure	2.926	.537	.319	.10	.392	.212
Scale Self-reg. learning	3.766	.448	-.291	.10	.675	.212
Beliefs in control	3.039	.468	.719	.10	1.749	.212
Looking for soc. support	3.465	.915	-.318	.10	-.339	.212
Valid N (listwise) =114; Min=1; Max=5						

The data from the previous table indicate that goal orientations in learning, which are the basis of skill acquisition and performance, viewed through goal attributions as another important factor for self-determination, are inadequate among many students. This suggests that the consequences of this inadequacy may lead to the creation of a non-academic identity and rejection of academic achievements, in contrast to the goals of their reference group

and personal goals [8]. Inadequate goal orientations also imply an inability to invest effort in proactive self-regulation, leading students to focus on other, often non-academic goals. According to research findings [5], this often involves protecting self-esteem and forming a defensive self-regulation pattern. For teachers, these data are indicative, and they should pay attention to distribution patterns: external attribution of failure, task avoidance, cognitive non-involvement, superficial cognitive processing, and self-handicapping. These patterns can be helpful in mentoring to deal with students' motivations for achievement and diagnose the causes of weak performance, factors that influence weak willpower, negative academic self-concept, and learned helplessness, which can lead to further failures. This pattern, called in the literature a depressive pattern of lack of self-regulation of learning [5], does not mean that individuals do not self-regulate their behaviour, but rather that regulation takes place according to this maladaptive pattern, characterized by frequent reduction of activity, withdrawal from tasks and interactions, or entering interactions to self-confirm their belief in incompetence, with no effort to avoid situations that could be helpful to avoid their negative self-evaluation and negative emotions [5].

Previous data indicate the presence of factors significant for distinguishing among the examined students, with their importance for achievements observed through the correlation between the components of self-regulation and success. The data indicate the statistically significant importance of the following components: motivational strategies ($r = .105$, $p < 0.05$), academic efficiency ($p = .290$, $p < 0.01$) and seeking social support ($r = .090$, $p < 0.05$). Thus, a statistically significant difference in the expression of motivational strategies in self-regulation of learning was found in favor of students who attended digitized classes of ESP learning, which contributes to their academic performance.

The previous finding confirms the assumption about the importance of motivational strategies as a component of self-regulation of learning. These strategies can be considered a key factor for academic success, and should be taken into account when designing ICT-based learning and teaching content. Further testing of this hypothesis was performed using T-tests for independent samples, comparing the results on the motivational strategies scale between students attending digitized and traditional ESP classes. The test showed a statistically significant difference between students attending digitized ESP classes ($M = 3.48$; $SD = 0.31$), and students attending traditional ESP classes ($M = 3.36$; $SD = 0.43$), $t(198) = 3.37$, $p = 0.001$ (two-tailed). The difference between the mean values of the characteristics by groups (mean difference = 0.13, 95% CI: 0.05 to 0.2) was small ($\eta^2 = 0.02$).

This confirms the first hypothesis, and it is concluded that students attending digitized ESP classes show stronger expression of motivational regulation as a component of self-regulation of learning, which contributes to their academic achievements, and is one of the significant factors of academic success. Also, from the perspective of the place and structure of the motivational strategies subscale within the components of students' self-regulation of learning, this finding confirms the accepted view of motivation as a complex, multidimensional construct, which includes assumptions that most authors in this field agree on – cognition, emotions, and behavior. This was also evident in this research, as the findings on this subscale confirmed that students construct their own motivational beliefs and develop strategic behaviours that affect achievement, i.e. self-regulation of learning, which is in accordance with the findings of other researchers [7].

The second hypothesis tested the significance of differences in goal attributions in learning – specifically, the attribution of success and failure – between students who attended digitized classes of ESP learning and students who attended traditional classes of ESP learning, as one of the factors contributing to differences in achievement, closely related to motivational strategies. Some indications of this have already been given in the analysis of previous findings, supporting the justification for accepting this hypothesis. The data of descriptive statistics further testify to the essence of the attributions, which point to characteristics significant for the manifestation of a depressive pattern of behavior that reduces or blocks affirmative self-regulation [4].

The data support the conclusion that the mean values on the subscales, which can contribute to the creation of a depressive pattern of behavior that reduces or blocks affirmative self-regulation, are not insignificant, which can lead to failure. The significance of this for the failure of students who attended digitized classes of ESP learning versus students who attended traditional classes of ESP learning, is essentially the focus of the second hypothesis. The findings contradict the assumption, thus invalidating the second hypothesis.

For the interpretation of the previous finding, i.e. rejection of the hypothesis about the significance of the group of subscales, which is homogenized, and refers to the attribution of success, failure, confidence in control, and test anxiety, it is important to note that their values are not significantly lower compared to other components. This raises questions about their role in the digitized ESP teaching and learning. Specifically, the values are as follows: coping with failure: $M = 2.84$, test anxiety scale: $M = 2.87$, scale of target attributions in learning: $M = 2.55$, success attribution scale: $M = 2.82$, failure attribution scale: $M = 2.23$.

The analysis reveals no significant differences in target attributions, success, failure, and test anxiety between students in digitized and traditional ESP classes, suggesting that these factors do not account for variations in academic success. Instead, differences may stem from other influences. Students in digitized classes managed negative attribution tendencies through self-regulatory strategies, maintaining proactive goal orientation and task performance until success was achieved.

According to literature [8], the findings highlight three information-processing components: knowledge acquisition, meta-components, and action components, essential for learning, planning, and task execution. Higher-

order skills are crucial for working with new material and automating information processes, with success in one area fostering success in others. Intellectual potential and contextual abilities contributed to effective self-regulation and problem-solving, while weaknesses in motivational strategies were identified, including varied information presentation, resource allocation, attention focus, and feedback sensitivity.

3. CONCLUSION

This research highlights the potential of digitized ESP classes to empower students with the critical skills needed to navigate uncertainties and achieve academic success. Regarding digital transformation benefits, digitized English for Specific Purposes (ESP) classes significantly enhance students' self-regulated learning (SRL) by supporting their ability to set goals, monitor progress, and adapt strategies in both individual and collaborative contexts. As for motivational strategies and academic success, a statistically significant correlation exists between motivational strategies and academic success. Students attending digitized ESP classes demonstrated stronger self-regulation and better academic performance compared to those in traditional settings. Higher self-regulation scores were linked to goal-setting and orientation, meta-cognitive strategies, and effective feedback use. Weaknesses were identified in areas such as dealing with failure, test anxiety, and negative attributions, which can hinder academic success. In terms of statistical analysis, students in digitized classes showed higher scores in motivational regulation and academic efficacy. Differences in success or failure attributions and test anxiety were not statistically significant between the two groups. With respect to impact of motivation as a multidimensional construct (cognition, emotion, and behavior), it plays a critical role in self-regulation and academic achievement. Students in digital environments are better equipped to harness these elements effectively. Briefly, digitized ESP learning environments foster better academic outcomes by improving motivational strategies and self-regulation skills.

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