

## METACOGNITIVE AWARENESS OF READING STRATEGIES AMONG ESP STUDENTS REGARDING THEIR PRIOR EDUCATION

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**Abstract.** *Reading literacy is extremely important in any education. Successful education greatly depends on the understanding of the written word. Reading is a cognitive process in which the interaction between reader and the information in the text takes place. One of the most important goals at the Faculty of Mechanical Engineering and Naval Architecture on the Department of Technical English is to enable students to use applicable reading strategies in order to find and understand relevant technical information with the special attention to precision. Since the Faculty enrolls students of mixed abilities and mixed prior knowledge of foreign languages, this study aims to investigate metacognitive awareness of students while reading. The study investigates types of strategies and frequencies of strategies which students use while reading academic technical texts. Strategies and their frequencies are compared with the prior students' education and the results of ESP reading comprehension test taken at the end of the third semester at the Faculty and the duration of learning English. The research includes 90 students at the second year in the fourth semester. The goal of this research is to determine whether students at the Faculty differ in their habits of using reading strategies regarding their prior education and whether the choice of strategies and their frequencies are related to the results on the test in Technical English and the duration of learning English. The results of the research are presented in the paper.*

**Key words:** *academic text, ESP students, metacognitive awareness, reading strategies*

### 1. INTRODUCTION

Reading literacy is extremely important in every education since written word transmits all kind of information and knowledge. Successful education greatly depends on the understanding of written texts. Reading, as an intellectual skill, is especially important while learning from texts and it greatly influences the success in education (Daneman, 1996). Second language researchers presume it is of high importance to investigate reading strategies in order to help students better understand written academic text. That is extremely important in LSP (Language for Specific Purposes) especially if we take into consideration the difficulty and the specificity of written texts in specific field. The awareness and the use of cognitive and metacognitive strategies are closely related to the efficiency of the reading process (Chan, 2003:177). Exploring the metacognitive awareness of reading strategies should have an important impact and implications for developing students reading efficiency.

## 2. THEORETICAL FRAMEWORK

Mokharty & Sheorey (2001) define metacognitive awareness as ‘knowledge of the readers’ cognition relative to the reading process and the self-control mechanisms they use to monitor and enhance comprehension. Reading strategies are defined as conscious procedures which are used by readers in order to understand text while metacognitive awareness helps in better understanding of strategies and this better understanding differentiates skilled from unskilled readers (Mokharty & Sheorey, 2001). Auerbach & Paxton (1997) and Carrell et al. (1989) regard metacognitive awareness as planning and consciously executing appropriate actions to achieve a particular goal – to be a critical element of proficient, strategic reading. Auerbach and Paxton (1997) explained that metacognitive awareness “entails knowledge of strategies for processing texts, the ability to monitor comprehension and the ability to adjust strategies as needed” (p.240-241). This awareness and monitoring the process is called metacognition.

Many researches have shown that there is a positive relationship between students’ metacognitive awareness of the reading process and their ability to read and excel academically (Cohen, 1986, Carrell, 1988, Mokhtari & Sheorey 2002, Chan, 2003). Early ESL reading research provided theoretical background for this area stating that reading is an active process in which the interaction between a reader’s knowledge and information in the text takes place. Reader uses background knowledge and strategies such as previewing the text, using clues to understand the text (Clarke & Silberstein, 1977). Singhal (2001:156) defines metacognitive strategies as: ... behaviors undertaken by the learners to plan, arrange, and evaluate their own learning. Such strategies include directed attention and self-evaluation, organization, setting goals and objectives, seeking practice opportunities, and so forth. In the context of reading, self-monitoring and correction of errors are further examples of metacognitive strategies.

Recently, researchers have been oriented to define what skilled readers (in L1 and L2) do while reading, including what strategies they use, how they use them and under what conditions they use them (Mokharty and Sheorey, 2002). Auerbach & Paxton (1997) conducted a research where they applied L2 research reading findings in the classroom so the students could discover the effects of the use of new strategies in reading comprehension performances. They combined direct and indirect strategies instructions which proved to have positive results not only in raising metacognitive awareness of students while reading but also they increased their level of engagement in reading English texts. Conducted 38 research findings on native English speakers’ reading by Pressley & Afflerbach (1995) pointed that proficient readers who are strategic and ‘constructively responsive’ take specific and conscious steps while at the same time orchestrating their cognitive and affective resources to ensure maximum comprehension. Chan (2003) also points out that the awareness and the use of cognitive and metacognitive strategies are closely related to the efficiency of the reading process. Metacognitive strategies enable the control over personal cognition, for example, focusing on a certain problem, self-evaluation, scanning the text, relating to prior knowledge, cooperation in the classroom, defining personal goals, etc. Metacognitive awareness is the awareness of certain actions which students do in order to reach a certain goal. Using metacognitive strategies can help students understand which strategies are more efficient (declarative knowledge) and how to use certain strategy (procedural knowledge) and when to use certain strategy while reading (Anderson, 2002; Carrell et al., 1989). According to Chan (2003), poor readers score lower than good readers in using all reading strategies, and especially in using sophisticated cognitive and metacognitive strategies. The metacognitive

ability to select and use particular strategies in a given context for a specific purpose means that the learner can think and make conscious decisions about the learning process (Anderson, 2002). Baker and Brown (1984) also emphasize the importance of using and knowing strategies and regulating their usage. Readers' awareness of thoughts while reading shows that a reader is planning, monitoring, evaluating and using available information in order to understand what he/she is reading. That awareness is called metacognitive awareness, which together with the use of strategies includes metacognitive knowledge, i.e. knowledge of different types of tasks and reading strategies (Baker and Brown, 1984).

### 3. PURPOSE OF THE STUDY

The research was conducted at the Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb. In order to enroll at the Faculty of Mechanical Engineering and Naval Architecture, students have to pass English with at least the minimum of a credit pass at The State Matura A2 level (the National Secondary School Leaving Exam in Croatia). Having that in mind, teachers are faced with classes of students with different prior education and different language levels. One of the most important goals at the Department of Technical English is to enable students to use applicable reading strategies in order to find and understand relevant technical information with the special attention to precision. This could be extremely difficult if teachers are faced with such a difference in language levels among students. That is the reason why the study explores the use and the awareness of metacognitive strategies among second year ESP students at the Faculty. Furthermore, it gives an insight into the most frequent metacognitive strategies among second year students and compares them to students' prior education and the results of the ESP reading comprehension tests taken at the third semester and the duration of learning English. The purpose of the study is to raise the importance of the metacognitive awareness, and accordingly, implement it in ESP classes. The overall score awareness will indicate how often students believe they use strategies while reading academic materials. The obtained information about the score on each subscale will indicate whether some strategies are used more than others and students might want to learn about them more and implement them in their reading.

### 4. HYPOTHESIS

In the light of the above, the study asks the following research questions:

- 1: What is the overall use of metacognitive reading strategies among Croatian ESP students?
- 2: What are mean values in three reading subscale strategies according to prior education?
- 3: Is there any significant difference in strategy use regarding prior education?
- 4: Is there connection between students' metacognitive awareness of reading strategy use and their results in ESP reading comprehension test?
- 5: Is there connection between students' metacognitive awareness of reading strategy use and the duration of learning English?

## 5. METHODOLOGY

### 5.1. Participants

Participants of this study were 90 second year ESP students (aged 20-21) at the Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb. Technical English is taught at the second and the third year at the Faculty. Out of 90 students, 78 were male and 12 female. Out of 90 students, 25 (28%) students come from vocational schools and 65 (72%) come from gymnasiums.

The average number of learning English for both groups (vocational schools and gymnasiums) was  $M=11.03$  years ( $SD=2.70$ ,  $Mo=10$ ). For vocational schools the average number of learning English was  $M=10.29$  years ( $SD=3.27$ ,  $Mo=10$ ), while the average number of learning English among gymnasium students was 11.31 years ( $SD=2.43$ ,  $Mo=11$ ). Conducted t-test confirmed that there was no statistical difference between both groups regarding the duration of learning English ( $p= .116$ ;  $t=1.587$ ).

All of the participants are attending compulsory Technical English classes once a week at the Faculty. After each semester they have reading comprehension test in Technical English. Besides, they have to read academic texts for other assignments and other courses. Since all students are over aged they voluntarily agreed to participate in the study.

### 5.2. Data collection

Prior to the questionnaire filling, students were informed about the purpose of the study. They were explained about the notion of metacognitive strategies and it was stressed that there were no correct answers in the questionnaire and that they should answer as honestly and possible. The students were reminded that the questionnaire and their answers refer only to the strategies they use while reading faculty-related materials, not leisure materials such as newspapers or magazines. After that, students had to fill in the questionnaire. It took approximately 15 minutes to fill it in.

### 5.3. Instrument

The instrument consisted of two parts. The first part included questionnaire in Croatian which consisted of 15 questions of different types: multiple choice, short answers, yes/no questions. In the questionnaire general information about learning language or languages were obtained. Students had to give information about previous education, duration of English language learning, learning of other languages, results of the State Matura in reading comprehension, level of the State Matura in English and the results on ESP test. The last question asks about whether they see ESP as an important part of their education.

The second part included the Survey of Reading Strategies (SORS), developed by Mokhtari and Sheorey (2002), in order to determine the participants' metacognitive awareness of reading strategies used in academic texts. The SORS has demonstrated reliability and validity. According to Mokhtari and Sheorey (2002) the internal consistency reliability coefficient (determined by Cronbach's alpha) was 0.92 for the Global Reading Strategies; 0.79 for the Problem Reading Strategies and 0.87 for the Support Strategies. The SORS is intended to measure the type and frequency of reading strategies that ESP students use while reading academic texts. The SORS consists of 30 items, each of which uses the Likert scale (1 – never or almost never to 5 – always or I almost always do that). As mentioned, the SORS investigates three broad categories of reading strategies: Global

Reading Strategies (GLOB), Problem Reading Strategies (PROB) and Support Reading Strategies (SUP). GLOB includes 13 items which are intentional, careful planning techniques by which readers monitor their reading (having purpose in mind, previewing the text as to its length and organization, using typographical tables and graphs). PROB comprises 8 items. Those techniques are actions that readers use while working directly with the text. Those techniques occur when material becomes difficult and reader uses techniques like rereading in order to improve comprehension. The last category SUP contains 9 items. SUP refers to basic support mechanisms which readers use in order to comprehend texts. Those include using dictionary, taking notes, underlining and highlighting. The averages for each subscale show the mean frequency with which students use strategies while reading academic text. The higher the averages, the more frequently the student uses the specific strategy. Total score is gained by adding up individual scores of each student for each subscale and for the entire instrument. Total average score for each subscale and for the entire instrument is compared between students of different prior education (gymnasium and vocational school) and with the results on ESP test and the duration of learning English. High strategies are those scoring 3.50 or higher, medium 2.5-3.49 and low strategies are 2.49 and below.

## 6. RESULTS

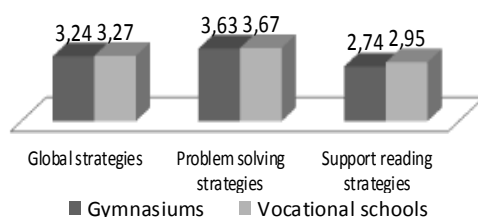
Research question 1: What is the overall use of metacognitive reading strategies among Croatian ESP students?

The study investigated students' overall use of metacognitive reading strategies. The overall total score for all students is  $M=3.21$ ;  $SD=0.48$  which is medium according to Mokharty and Sheorey (2002) levels of use. Minimum average total result is 2.03 while maximum is 4.20. The Table 1 shows overall use of metacognitive strategies.

Table 1 Overall use of metacognitive strategies

Keys to averages	N	Percent
Low (2.49 and lower)	5	5.6
Medium (2.50-3.49)	55	61.1
High (3.50 or higher)	30	33.3
Total	90	100.0

The Table 1 shows that out of 90 participants in the study, 5 (5.6%) reported low use of metacognitive strategies, 30 (33.3%) participants reported high use, while 55 (61%) students reported medium use of metacognitive strategies. The results show that students, in general, are moderately capable to effectively use, monitor and plan their reading. Accordingly, since most of the students reported medium use of strategies, we may conclude that Croatian ESP students seem to be moderately aware of reading strategies. In order to answer research question 2 What are mean values in three reading subscale strategies according to prior education?, the study investigated the frequency of all three subscales and compared them according to the students' prior education. Graph 1 gives an answer to mean values in three reading strategies according to prior education



Graph. 1 Overall mean values in three reading strategies according to prior education

As indicated in Graph 1, both groups of students mostly use PROB strategies while reading academic texts ( $M=3.63$  for gymnasiums;  $M=3.67$  for vocational schools). Interestingly, students coming from vocational schools have even slightly higher average grade ( $M=3.67$ ) for PROB strategies than gymnasium students ( $M=3.63$ ), although statistically not

significant. GLOB strategies have mean value of  $M=3.24$  among gymnasium and  $M=3.27$  among vocational school students. The least used strategy type is SUP strategy ( $M=2.74$  among gymnasium students;  $M=2.95$  among vocational students). This result is partially consistent with the study by Mokhtari and Reichard (2002). In their study, all three subscales are of moderate average score, while among Croatian ESP students GLOB and SUP are of moderate but PROB strategies of high average score. Furthermore, Mokhtari and Reichard (2002) indicated that the preferred strategy is PROB followed by GLOB and then SUP where the results in this study are consistent with those findings. The conducted t-test showed that there is no statistical difference between those two groups of students in regard to the use of all three subscales ( $p=.402$ ;  $t=-.843$ ). The mean values of each item of each subscale is compared and analyzed, then compared between both groups in order to better explain these results and to get the answer to the third research question if there is any significant difference in strategy use regarding prior education. According to the overall means of the SORS subscale, PROB strategies were the most preferred metacognitive strategies in both students' groups. The Table 2 shows mean values for each PROB item reported by gymnasium students and vocational school students.

Table 2 Mean values for PROB strategies for gymnasium and vocational school students

Strategy number	Problem solving strategies	Gymnasiums		Vocational schools	
		M	SD	M	SD
7	I read slowly and carefully to make sure I understand what I am reading.	3.38	1.10	3.68	0.69
9	I try to get back on track when I lose concentration.	4.03	1.04	3.96	0.97
11	I adjust my reading speed according to what I am reading.	3.75	1.26	3.84	0.94
14	When text becomes difficult, I pay closer attention to what I am reading.	3.74	1.16	3.84	1.14
16	I stop from time to time and think about what I am reading.	3.17	1.15	3.00	0.91
19	I try to picture or visualize information to help remember what I read.	3.46	1.30	3.84	0.98
25	When text becomes difficult, I re-read it to increase my understanding.	3.68	1.17	3.72	0.93
28	When I read, I guess the meaning of unknown words or phrases.	3.57	1.01	3.44	0.96
Overall means		3.63		3.67	

As Table 2 indicates, out of 8 PROB strategies, 4 strategies (strategy number 9, 11, 14, 25) are indicated as high for both groups of students, while 1 PROB strategy is indicated as medium in both groups (strategy number 16). Not one item was at low usage level. Both groups of students indicated strategy number 9 'I try to get back on track when I lose concentration.' the highest usage level (M=4.03 gymnasium students; M=3.96 vocational school students). The lowest score was given by both groups to strategy number 16 (I stop from time to time and think about what I am reading). The strategy number 16 was given mean score of M=3.17 by gymnasiums, and M=3.00 by vocational schools. The only differences in averages in regards to three groups of high, medium and low were in strategies: number 19 (I try to picture or visualize information to help remember what I read.) Gymnasium students indicated it at medium usage level (M=3.46) and vocational students at high usage level (M=3.84). Furthermore, strategy number 7 (I read slowly and carefully to make sure I understand what I am reading) gymnasium students (M=3.38) ranked at medium usage level and vocational students (M=3.68) at high usage level. On the other hand, strategy number 28 (When I read, I guess the meaning of unknown words or phrases) scored high

Table 3 Mean values for GLOB strategies for gymnasium and vocational school students

Strategy number	Global strategies	Gymnasiums		Vocational schools	
		M	SD	M	SD
1	I have a purpose in mind when I read.	3.60	1.11	3.72	0.89
3	I think about what I know to help me understand what I read	3.74	1.16	4.00	0.95
4	I take an overall view of the text to see what it is about before reading it.	2.66	1.36	2.76	1.12
6	I think about whether the content of the text fits my reading purpose.	2.71	1.30	3.00	1.29
8	I review the text first by noting its characteristics like length and organization.	3.23	1.49	3.40	1.00
12	When reading, I decide what to read closely and what to ignore.	3.82	1.05	3.80	1.00
15	I use tables, figures, and pictures in text to increase my understanding.	2.95	1.26	3.40	1.04
17	I use context clues to help me better understand what I am reading.	4.08	0.95	3.64	1.03
20	I use typographical features like bold face and italics to identify key information.	2.80	1.37	2.56	1.22
21	I critically analyze and evaluate the information presented in the text.	3.06	1.13	2.84	0.98
23	I check my understanding when I come across new information.	3.54	1.07	3.64	0.86
24	I try to guess what the content of the text is about when I read.	3.37	1.28	3.00	0.76
27	I check to see if my guesses about the text are right or wrong.	2.57	1.26	2.80	1.04
Overall means		3.24		3.27	

usage level among gymnasium students ( $M=3.57$ ), and medium usage level among vocational students ( $M=3.44$ ). This result is not consistent with Mokhart and Sheorey (2001) findings stating that the participants prefer 'guessing unknown words from the context' most frequently among problem-solving strategies, even though this strategy is usually encouraged in ESP courses and courses in general and learners are usually trained to apply it if they encounter any unknown word in the text thus causing problems in comprehension.

Table 2 shows that GLOB strategies are the second most favored category. As Table 3 indicates out of 13 GLOB strategies five strategies (strategy number 1, 3, 12, 17, 23) are indicated as high for both groups of students while 8 GLOB strategies (number 4, 6, 8, 15, 20, 21, 24, 27) are indicated as medium. Interestingly, not one item was at low usage level. Students from gymnasiums reported strategy number 17 (I use context clues to help me better understand what I am reading) the highest usage level ( $M=4.08$ ), while students from vocational school scored strategy number 3 (I think about what I know to help me understand what I read) at highest usage level ( $M=4.00$ ). This result could be connected to their prior education where vocational students have already been taught ESP and prior knowledge helps them in understanding the text. The lowest score given by gymnasium students was strategy number 27 ( $M= 2.57$ ) (I check to see if my guesses about the text are right or wrong), while strategy number 20 ( $M=2.56$ ) (I use typographical features like bold face and italics to identify key information) has lowest usage level among vocational school students.

Table 4 Mean values for SUP strategies for gymnasium and vocational school students

Strategy number	Support reading strategies	Gymnasiums		Vocational schools	
		M	SD	M	SD
2	I take notes while reading to help me understand what I read.	1.98	1.08	2.28	1.02
5	When text becomes difficult, I read aloud to help me understand what I read.	2.35	1.47	2.16	1.51
10	I underline or circle information in the text to help me remember it.	2.63	1.29	2.48	1.32
13	I use reference materials (e.g. a dictionary) to help me understand what I read.	2.63	1.18	2.76	1.23
18	I paraphrase (restate ideas in my own words) to better understand what I read.	2.74	1.17	3.68	0.80
22	I go back and forth in the text to find relationships among ideas in it.	4.02	0.89	3.64	0.86
26	I ask myself questions I like to have answered in the text.	2.22	1.17	2.48	1.08
29	When reading, I translate from English into my native language.	2.77	1.29	3.40	1.08
30	When reading, I think about information in both English and my mother tongue.	3.31	1.25	3.68	1.03
Overall means		2.74		2.95	

According to the overall means of the SORS subscale (Table 1), SUP strategies had the lowest score among both group of students. As Table 4 indicates, out of 9 SUP strategies three (strategy number 2, 5, 26) are indicated as low for both groups. Two strategies (strategy number 13, 29) are indicated at medium usage level by both groups, while only strategy 22 (I



go back and forth in the text to find relationship among ideas in it) was indicated at high usage level ( $M=4.02$  for gymnasiums;  $M=3.64$  for vocational schools). The lowest score was given to strategy number 2 (I take notes while reading to help me understand when I read) by gymnasium students ( $M=1.98$ ), while vocational school students gave strategy number 5 (When text becomes difficult, I read aloud to help me understand what I read) the lowest usage level ( $M=2.16$ ). Strategy number 22 (I go back and forth in the text to find relationships among ideas in it) was indicated at high usage level among gymnasium students ( $M=4.02$ ), while strategy number 30 (When reading, I think about information in both English and my mother tongue) was at the highest usage level among vocational school students ( $M=3.68$ ). The only differences in averages in regards to three groups of high, medium and low were in strategies: number 10 (I underline or circle information in the text to help me remember it). Gymnasium students indicated it at medium usage level ( $M=2.63$ ), while vocational students indicated it at low usage level ( $M=2.48$ ). The second difference was noticed in strategy number 30 (When reading, I think about information in both English and my mother tongue) where, surprisingly, vocational students indicated it at high usage level ( $M=3.68$ ), while gymnasium students indicated it at medium usage level ( $M=3.31$ ).

Prior to the comparison, Shapiro-Wilk and Kolmogorov-Smirnov tests of normality were conducted which shown that distribution does not significantly deviate from the normal one ( $df=90$ ;  $Sig=.0200$  Kolmogorov-Smirnov test;  $df=90$ ;  $Sig=0.694$  Shapiro-Wilk test).

In order to answer research questions 4 and 5: Is there connection between students' metacognitive awareness of reading strategy use and their results in ESP reading comprehension test and the duration of learning English, multiple Pearson correlation analysis was conducted. Table 5 shows that the results in reading comprehension ESP test do not correlate with the overall means of GLOB, PROB, SUP strategies. Overall reading strategies do not correlate with the ESP test achievement ( $r=.011$ ,  $p=.918$ ), which means that the use of reading strategies does not influence the ESP test achievement.

On the other hand, Table 5 shows the results that indicate that the duration of learning English is negatively and significantly correlated with the overall reading strategies ( $r=-.235^*$ ,  $p=.026$ ). Moreover, only PROB strategies are negatively and significantly correlated with the duration of learning English. It means that the longer students learn English, the fewer PROB strategies they will use while reading.

Table 5 Pearson Correlation between strategy subcategories and the test achievement and duration of learning English

Strategies	ESP test achievement	Duration of learning english
<b>GLOB</b>		
Pearson Correlation	.052	-.193
Sig. (2-tailed)	.635	.070
<b>PROB</b>		
Pearson Correlation	.071	-.214*
Sig. (2-tailed)	.516	.044
<b>SUP</b>		
Pearson Correlation	-.107	-.187
Sig. (2-tailed)	.328	.079
<b>Overall reading strategies</b>		
Pearson Correlation	.011	-.235*
Sig. (2-tailed)	.918	.026

\*\* Correlation is significant at the 0.01 level (2-tailed); \* Correlation is significant at the 0.05 level (2-tailed)

As indicated in Table 5, the findings are not in line with those of studies (Allen, Bernhardt & Demel 1988; Baker & Boonkit, 2004; Cubukcu, F. 2008; Sheorey & Mokhtari, 2001; Anderson, 1992; Baker & Brown, 1984; Carrel et al., 1989; Zhang, 2001) that found significant correlation between metacognitive awareness and reading comprehension achievement. Those studies showed the connection between advanced reading proficiency and active strategy use which was documented for EFL students. Accordingly, skilled readers, i.e. readers who achieve better results in reading comprehension tests, have an enhanced metacognitive awareness of their own strategies which in turn leads them to greater reading ability. That was not confirmed in the study.

## 7. DISCUSSION

The study indicated that Croatian ESP students are moderately aware of the use of metacognitive strategies while reading. Furthermore, in regards to each subscale it indicated that ESP students moderately use GLOB and SUP strategies, while PROB strategies are at high usage level for both groups of students. The order of preference states that the preferred strategy is PROB followed by GLOB and then SUP strategies. According to the overall means of the SORS subscale, these results are consistent with the findings of Shoerey and Mokhart's (2001) and Mokhart and Reichard (2004) study that non-native readers use PROB strategies most frequently, since these strategies are critical for comprehension. An interesting fact was that each subscale had a higher score among vocational students than gymnasium students although statistically not significant. The higher use of PROB strategies among vocational school students could be related to the fact those strategies are critical for comprehension, they are localized, focused, problem-solving or repair strategies used when problems develop in understanding textual information, thus students tend to use them more in order to understand the text. GLOB strategies are the second most favored category. Accordingly, students have the ability to plan and manage their reading comprehension process. But this awareness should be more implemented in the class. Furthermore, SUP strategies refer to support mechanisms required to clarify certain doubts and information (for example: the use of dictionaries, going back and forth, translation into mother tongue etc.). These strategies were indicated as the least favored and least frequently used strategies among the three given strategies. Maybe the reason for this lowest use lies in the fact that those strategies could be time consuming and thus students reluctantly use them.

The study did not show significant correlation between students' metacognitive awareness of reading strategy use and their results in ESP reading comprehension test. Even though the previous studies indicated that readers who achieve better results in reading comprehension tests, have an enhanced metacognitive awareness of their own strategies which in turn leads them to greater reading ability, this was not confirmed in the study. The results could be connected to the specificity of the participants in the study. Since those students do not study general English but ESP, we may connect the use of strategies to the specific content students encounter. On the other hand, there is also a possibility that students are more focused on specific vocabulary which is highly important to them and lectures are based on learning vocabulary and precise translation. If they regard themselves as proficient users, which descriptive statistics has partially confirmed (in ESP test achievement mean value is  $M=3.48$ ;  $M_0=4$ ;  $SD=1.031$ ), they see no point in spending time

on strategies that are time consuming. They might consider strategies like taking notes, reading aloud, underlying information, using dictionary or paraphrasing ineffective. The other reason might be not being taught in high school about the use of strategies and their impact on proficiency in reading or learning language in general.

This may also be connected with the last results in PISA (Programme for International Students Assessment) where 15 year old Croatian students were tested in reading comprehension. PISA studies whether students have gained skills and abilities (among them the ability to use strategies to comprehend the reading material) to actively participate in the modern society. The findings in PISA study show that the Republic of Croatia is on the 35<sup>th</sup> place among 65 countries and it belongs to the group of countries that have the result significantly lower than the OECD average. Almost 19% of Croatian students are placed below level 2 which is considered to be the basic level of knowledge and ability in reading comprehension, while only 4.4% of students have abilities and skills at the highest levels 5 and 6 (PISA, 2015). The results of the research and negative correlation, thus, could be connected to the results of PISA study. The problem may not be solved on the academic, but on primary and secondary school level. From the early education pupils should be taught how to develop, apply and implement effective reading strategies. With such perceived knowledge they should just broaden the gained knowledge at faculties, no matter what specific field they are dealing with.

## 8. CONCLUSION

The conducted research has shown moderate use of metacognitive strategies while reading academic texts among students at the Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb. The study confirmed that the most preferred subscale among students is PROB strategies, then GLOB strategies, and the least preferred is SUP strategy. There was no statistically significant difference in the use of strategies regarding students' prior education. Although the study has shown moderate use of metacognitive strategies, there was no correlation between the use of strategies and the results on ESP test which is contrary to the recent findings. The study has shown negative correlation between the duration of learning English and the use of PROB strategies, which indicated that the longer students learn English the fewer PROB strategies they use. Reasons for such results could be found in students' unwillingness to apply strategies or maybe with the fact that they were not taught about applying effective strategies in school. However, the results are consistent with PISA results in Croatia where Croatian students had results in reading comprehension significantly lower than the OECD average. Such results emphasize the fact that education in the application of strategies is necessary since once educated students and pupils will rely more on effective strategies while reading academic texts and by doing so will become critical readers and thus be able to actively participate in today's modern society.

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