EFFECTIVENESS OF TECHNICAL ENGLISH ACQUISITION AMONG ENGINEERING STUDENTS

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Abstract

This study primarily aims to assess the efficacy of Technical English courses delivered to Mechanical, Electronics, and Power Engineering undergraduate students at the University Department of Professional Studies of the University of Split. It focuses on the comparative analysis of the effect of Technical English teaching on the linguistic achievement of the above-mentioned cohorts and thus their rate of Technical English acquisition. To this end, 22 first-year undergraduate students of Mechanical Engineering, 28 third-year undergraduate students of Mechanical Engineering, and 76 first-year students of Electronics and Power Engineering were taught using the same methods of teaching, provided with the same textbook, and required to take the same tests. The main tools for data collection were a pre-test and post-tests. The pre-test included a present situation analysis (PSA) obtained through a questionnaire, while the post-tests included four practical continuous assessment tests and two progress tests that met the criteria of the courses' learning outcomes. The obtained data were analyzed with SPSS to measure the respective students' linguistic achievement across the tested areas and throughout the tested groups. Thus, students' state matura exam results were used as an independent variable and compared to their achievement in all the assessment tests, as well as the branch of study and year-of-study differences in their linguistic scores. The results indicated students' better performance in the tested presentation skills and two sets of statistically significant differences in respective students' linguistic achievement in regard to their year of study and acquired state matura exam level. The findings that were in favor of the presentations, the 3-year students and A-level state matura exam students corroborated our hypotheses regarding the scope of our students' Technical English knowledge and performance. Our assumptions were based on the provision of the same formal elementary and secondary English language education pertaining to the cohorts, involving largely oral assignments, B-level state matura exams, and merely general English courses. The third-year students' and A-level state matura students' outperformance was predicted due to more exposure to English language study and field-specific contents at the tertiary education level

of the former and higher general English proficiency of the latter. However, the results imply that teaching complex language discourse to the first-year students of the above-mentioned engineering disciplines needs consolidation of some academic and/or general English contents in order to facilitate their acquisition of the specificities of the Technical English language.

Keywords: assessment tests, ESP teaching, learning achievement, Technical English acquisition

1. INTRODUCTION

The traditional model of ESP has been the prevalent approach to English language teaching and learning in tertiary education for decades. However, it has been recently challenged by the versatility of interdisciplinary demands and practices of a variety of higher education institutions and professions. These challenges have arisen from a widening gap between the world of business and that of the academy, the increasing interdisciplinary knowledge and skills taught and required by most university study programs, and the overwhelming mixing and blending of genres within and across disciplines.

Aimed at addressing these emerging issues relevant for the fruitful melding of ESP theory and application, recent research in ESP advocates a model of ESP based on the acquisition of professional expertise integrating discursive competence, disciplinary knowledge, and professional practice in a socio-pragmatic communicative event (Bhatia et al., 2011). Discursive competence revolves around constructing, interpreting, and exploiting sets of professional genres within professional contexts and can be regarded as the ability to integrate textual, generic, professional, and social competence. Cultivating the four inextricably linked aspects of discourse competence can pave the way for a successful transition from an academic to a work-related environment and the enhancement of career skills. Professional practice comprises non-discursive tasks and activities the professional performs in an attempt to attain a disciplinary goal. Both discursive and professional practices are incorporated in specific disciplinary, professional, and institutional contexts and are indispensable for successful ESP acquisition. Due to its sociocultural and socio-discoursal aspects, a shift in ESP teaching is argued in favor of the development of "systemic literacy" (Brown, 2008) which encompasses raising awareness of different genres, facilitating recognition of different genre features, their appropriate use and thus bridges the gap to future career skill requirements.

When it comes to engineering, Riemer (2002) emphasizes the importance of both written and oral communication skills and stresses that in their respective professions engineers are expected to be equipped with and display high foreign language proficiency and advanced communication skills (preferably in English).

Taking into account all the proposed guidelines and requirements set by a new model of teaching ESP and aiming for professional expertise in the Technical English context, the faculty at the Foreign Languages Unit have recently revised and updated their ESP courses' curricula and syllabi. In addition to modifying the learning goals and course contents of all the language courses currently offered, they also focused on the amendment of their respective learning outcomes. The evaluation of the effectiveness of their acquisition among engineering students was carried out through appropriate continuous assessment tests, aptly aligned with the corresponding learning outcomes to be attained through a carefully devised teaching process.

The learning outcomes and the assessment tests dealt with within our research will be further discussed and delineated in the methodology section of this paper. However, it seems appropriate to mention that the design of assessment tests was driven by the language teachers' attempt to not only monitor students' progress, but also their learning process throughout the language courses. Thus, it included devising summative tests, used for recording the students' achievement of the specific learning goals and grading their capability in the middle and at the end of the period of study (Harlen, 2005). The formative tests, which were also created, referred to the in-process interactive and continuous assessment of students' performance and promotion of students' learning by providing valuable feedback on their progress (Harlen, 2005; Brookhart, 2010).

The latter tests were favored despite the prevalence of summative assessment at the tertiary level of education and their relevance for the retention of factual knowledge. Due to their frequency and variety, they provide greater fairness in the appraisal of students' overall linguistic performance. Within the course of the language study, varied formative assessment encompassing overall students' linguistic performance is normally performed at regular intervals providing continuous instructional feedback. According to several studies, it may cater to students' psychological needs, boost their intrinsic motivation, and finally foster high-quality learning. Upon conducting a study on formative assessment practices Koka et al. (2017) found that well-organized formative assessment and students' active involvement result in more effective learning and development of communication skills applicable in both academic and professional contexts. Consequently, the two progress tests used in our research as summative tests were outnumbered by the four continuous assessment tests that were designed to be primarily formative assessment instruments, although they also acted cumulatively by contributing to the students' overall grades.

Another aspect of the formative assessment design pertaining to our study that should be addressed is the dominance of continuous written tests (5) over the oral one (1) within the students' portfolio of required tests. The written tests constructed to boost and monitor the development of writing skills among students were preferred due to a variety of reasons. Proficiency in writing requires the acquisition of a high level of spelling accuracy, lexical and morphosyntactic accuracy, complexity and

fluency, and pragmatic and discursive fluency. It is also closely linked with highly developed critical and analytical skills. Due to its complexity, comprehensiveness, and constant effort that needs to be put into its mastering, it is not an easily acquirable skill. However, given the time constraints of busy language courses' curricula at all levels of education, it is often insufficiently practiced.

Therefore, writing has been generally considered as the least developed and the least favorite skill among learners of ESL and ESP in particular. Its underdevelopment among its learners has also been identified in recent theoretical research. Amoako-hene's (2017) analysis of ESP students' scripts indicated a vast range of students' linguistic mistakes ranging from grammatical mistakes through punctuation errors to morphosyntactic mistakes. Khan and Akter (2011) concluded in their research that the most frequently encountered mistakes in students' papers were those related to spelling, numbers, wrong use of collocations, and capitalization. In line with the aforementioned theoretical findings related to a preferable new model of ESP, the benefits of formative assessment, and the necessity of a more frequent implementation of written tests in the teaching process a study was conducted among the Department's ESP students. This paper seeks to present the results of a comparative study on the effectiveness of teaching a tailor-made Technical English course to engineering students and their success in the respective Technical English acquisition. In the following methodology section the participants partaking in our study, the learning outcomes they were expected to achieve, the main instruments for collecting the data on our students' linguistic achievement, and the research questions we focused on will be elaborated. The results of the research will be analyzed and further expanded upon in the discussion and interpretation section. Finally, further implications based on our research conclusions will be provided in the last section of the paper.

2. METHODOLOGY

The participants were four cohorts of undergraduate students studying at the Split University Department who were taught using the same methods of teaching, provided with the same textbook, and required to take the same tests. Out of 126 undergraduate students 39 were first-year students of Electronics, 37 were first-year students of Power Engineering, 22 were first-year students of Mechanical Engineering, and lastly, 28 were third-year students of Mechanical Engineering. The third-year students of Mechanical Engineering were enrolled in the study program based on the curriculum which in the meantime was altered and this meant that they signed up for the Technical English Language I in their fifth semester of the study program, having already attended a variety of four English language classes, while the first-year students enrolled in the course in the first semester, following the new curriculum for Mechanical Engineering and having no English classes prior to this course.

The main tools for data collection were one pre-test and several post-tests. The pre-test included a present situation analysis (PSA) obtained through a classroom questionnaire and indicated that the median year of previous study of the English language was 12 years. The pre-test also showed that all of the students passed English at the state matura exam, which was a prerequisite for enrolling in the above-mentioned study programs. 31% of all students took an A-level state matura exam in English, while the prevalent majority of all students (69%) passed a B-level state matura exam. 86% of the surveyed students were never exposed to any type of English for Specific Purposes before.

In the fall of the academic year 2022-2023, the students from four cohorts attended a course entitled Technical English Language I where they were asked to partake in six assessment tests, which served as our post-test survey instruments. The tests were administered throughout the course and performed an educational function of collecting quantifiable evidence of students' knowledge and proficiency as well as assessing and evaluating the learning outcomes in the course's curriculum design.

The learning outcomes in the course Technical English Language I are in line with the specified goals in the students' textbooks and state that upon successful completion of the course students should be able to:

1. connect and apply complex cognitive language learning strategies through writing notes and summaries to reconstruct meaning,

2. demonstrate an understanding of the complex grammatical structures inherent in the language of the profession,

3. use grammatical, syntactic, and lexical structures (passive, abbreviations, compounds, prefixes, suffixes) and communication knowledge and skills specific to the language of the profession,

4. prepare a structured text of medium length using appropriate language structures,

5. present using the appropriate language,

6. use mathematical and algebraic expressions.

The administered tests that assessed the students' learning progress included a poster presentation (learning outcomes /l.o./ 1, 2, 3, 6), an oral presentation (l.o. 2, 3, 4, 5, 6), a short written test in mathematical, algebraic and geometric expressions (l.o. 6), a short summary of a technical text, and two progress tests which tested the technical vocabulary and grammar studied through the semester (l.o. 1, 2, 3, 4, 6). As can be inferred from the above, the continuous assessment tests cover a broad set of field-specific skills and practical applications in future real-life engineering profession and include oral and written testing. The testing itself was administered during our regular class sessions and the duration of each test varied from a minimum of ten minutes for the oral presentation per a pair of students to a maximum of a 45-minute duration of each progress test.

The data were collected and used for descriptive analysis in order to measure the central tendency of the distribution of the given data about the attainment of knowledge and skills across the tested areas and throughout the four cohorts of students. Furthermore, we uploaded the data in SPSS, where we added variables for the state matura exams and compared them to students' achievement in the assessment tests, as well as a branch of study and year-of-study differences in linguistic achievement. In cases where we found statistically significant differences, we ran multiple comparisons among the four cohorts of students. In addition to a descriptive statistics test, we conducted the ANOVA to compare the variances across the means of the four tested groups, the Tukey HSD test to find significant differences, and Levene's test for homogeneity of variances.

We focused on the following research questions and hypotheses:

1. Which continuous assessment tests will be completed more successfully and which less successfully?

2. Are there any statistically relevant branch differences in the linguistic achievement of the learning outcomes?

3. Are there any statistically relevant differences between the first-year students and the third-year students?

4. Are there any statistically relevant differences among the students based on their state matura exam results?

Hypothesis 1: Oral and poster presentations will produce the best results, while writing a summary will generate the poorest results.

Hypothesis 2: There will be no major statistical differences among the three branches of study.

Hypothesis 3: There will be statistically significant differences among the cohorts of students in favor of the third-year of Mechanical Engineering students.

Hypothesis 4: Those students who have completed the A-level of the state matura exam will score higher on our assessment tests.

3. FINDINGS AND DISCUSSION

The results of our study assessing the efficiency of our engineering students' linguistic progress are categorized into four groups and then further elaborated.

3.1. Success in continuous tests

In order to find out which continuous assessment tests were completed more successfully and which less successfully we used descriptive statistics to average all the

test scores amongst all the cohorts of students to provide a general understanding of the students' overall academic performance across the six tested areas.
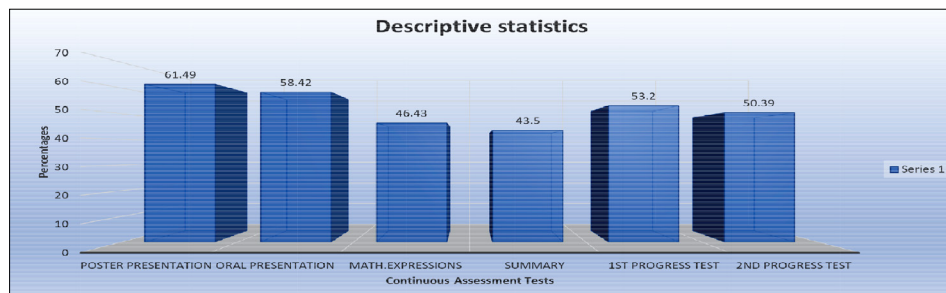

Figure 1. Student success in continuous assessment tests

Our first research hypothesis was corroborated. As can be seen from the graph in Figure 1 the tested students were the most successful in conducting the poster presentation (61.49%), followed by the oral presentation (58.42%). They performed the worst in writing a summary of a technical text, with only a 43.5% success rate. The results of the 1st progress test indicated that 53.2% completed the first progress test successfully, while 50.39% completed the second progress test successfully. The poor outcome of the mathematical expressions test, which was below the passing grade, at 46.43%, may not be reliable and can be explained by the fact that 27% of all Mechanical Engineering students did not partake in this test. Nevertheless, the results of the descriptive statistics indicate overall weak percentages across all the tested areas and across all the student groups, which demand the teachers' attention and possible adjustments of the course syllabus and the teaching process. The obtained results, which range between 61.49% to 43.5% across various tests, reveal generally poor students' mastering of the taught material, which might be due to the previous meager language knowledge (B-levels of the state matura exam) and almost no prior exposure to ESP through secondary education.

Furthermore, the results imply that the two tests in which the students' scores were below the passing threshold of 50% were written ones. Generally, of the four language skills, writing is the most difficult skill to attain as it requires the ability to apply complex cognitive language learning skills and aptitude to reconstruct meaning from a given technical text, using appropriate linguistic structures, sentence constructs as well as field-specific vocabulary, and as such requires more time to practice in order to progress.

3.2. Branch differences

Tables 1 and 2 clearly indicate that our second research hypothesis regarding differences in linguistic achievement across the four examined cohorts was confirmed. In

order to examine the statistically significant branch differences in students' linguistic achievement, we performed the Analysis of Variance (ANOVA) test whose results, as reported in Table 1 below, indicated significant differences in testing scores in mathematical expressions, while in the remaining five continuous assessment tests the results did not produce any statistically significant difference.

Table 1. Comparison of six continuous tests between groups

		ANOVA				
		Sum of Squares	df	Mean Square	F	Sig.
1. Progress test	Between Groups	989.561	2	494.780	1.234	.295
	Within Groups	49711.117	124	400.896		
	Total	50700.677	126			
2. Progress test	Between Groups	685.887	2	342.944	.411	.664
	Within Groups	103358.428	124	833.536		
	Total	104044.315	126			
Poster presentation	Between Groups	26.454	2	13.227	.013	.987
	Within Groups	124875.279	124	1007.059		
	Total	124901.732	126			
Oral presentation	Between Groups	1201.857	2	600.928	.501	.607
	Within Groups	148599.025	124	1198.379		
	Total	149800.882	126			
Mathematical expressions	Between Groups	13441.872	2	6720.936	8.917	.000
	Within Groups	93459.167	124	753.703		
	Total	106901.039	126			
Summary	Between Groups	1145.979	2	572.990	.507	.603
	Within Groups	140085.769	124	1129.724		
	Total	141231.748	126			

The worst-performing group of students in writing mathematical expressions was a cohort of Mechanical Engineering majors whose mean ranks were higher than those of the Electronics students (-22,663), as well as those of the Power Engineering students (-18,728), as reported in Table 2 and observed by conducting the Tukey HSD test. There were no mean differences among the Electronics and the Power Engineering groups. Such results, as already stated in the paragraph above, were rather expected as a low percentage of Mechanical Engineering students took the mathematical expressions test. Therefore, the results regarding the poor outcome of the mathematical expressions assessment in the Mechanical Engineering group of students might be misleading, and might not show sufficient evidence of validity of the obtained data due to the absences during the time slot allotted for this test, and even more so as we found no discrepancies across the groups in other tests.

Table 2. Group differences in writing mathematical expressions

Multiple Comparisons+A1:H40							
Tukey HSD						Interval	
Dependent Variable			Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
Mathematical expressions	Mechanical Engineering	Electronics	-22,663*	5,784	,000	-36,38	-8,94
		Power Engineering	-18,728*	6,001	,006	-32,96	-4,49
	Electronics	Mechanical Engineeering	22,663*	5,784	,000	8,94	36,38
		Power Engineering	3,936	6,271	,805	-10,94	18,81
	Power Engineering	Mechanical Engineering	18,728*	6,001	,006	4,49	32,96
		Electronics	-3,936	6,271	,805	-18,81	10,94

3.3. Year-of-study differences

As can be seen from Table 3, regarding the differences in linguistic attainment based on the year of study, our research hypothesis for this question was corroborated. The third-year students of Mechanical Engineering scored better than their younger counterparts in the three tested areas out of six: the two progress tests (1st progress test, 2nd progress test) and in summary writing.

Table 3. Linguistic attainment between groups based on the year of study

ANOVA		Sum of Squares	df	Mean Square	F	Sig.
1. progress test	Between Groups	1855,918	1	1855,918	4,750	,031
	Within Groups	48844,759	125	390,758		
	Total	50700,677	126			
2. progress test	Between Groups	4261,308	1	4261,308	5,338	,023
	Within Groups	99783,007	125	798,264		
	Total	104044,315	126			
Poster presentation	Between Groups	1457,011	1	1457,011	1,475	,227
	Within Groups	123444,722	125	987,558		
	Total	124901,732	126			
Oral presentation	Between Groups	357,338	1	357,338	,299	,586
	Within Groups	149443,544	125	1195,548		
	Total	149800,882	126			
Mathematical expressions	Between Groups	1186,185	1	1186,185	1,403	,239
	Within Groups	105714,855	125	845,719		
	Total	106901,039	126			
Summary	Between Groups	12681,306	1	12681,306	12,331	,001
	Within Groups	128550,442	125	1028,404		
	Total	141231,748	126			

The expected results of the senior students are basically due to the fact that they had more years of English language study at the tertiary education level including a much higher number of teaching hours. Prior to taking the course in Technical English Language I, the third-year students had taken two semesters of Business English courses, as well as two semesters of Communication Skills courses, in duration of 30 hours per semester each.

Furthermore, being in their third year of professional undergraduate study, these students had much more professional exposure to the field-specific content in other

courses than the junior students. Thus, they are better acquainted with their profession and, having reached their senior year of professional study, probably show more intrinsic motivation to study in comparison with their junior counterparts who have not yet reached this level of enthusiasm for the profession. Also, the higher scores in writing indicate that senior students show more ability to structure complex texts, organize important information and generally have a more comprehensive view of the engineering domain.

3.4. State matura exam and the assessment tests

The fourth research hypothesis was also in line with the obtained data. As confirmed in Table 4, the students who passed the state matura A-levels scored significantly better in the two progress tests (1st progress test, 2nd progress test), in writing the summary of a technical text and in the oral presentation when compared to the students who took and passed the B-levels of the state matura exam.

Table 4. Comparison of the state level Matura exam and success in continuous tests

	Independent Samples Test						
	Levene's Test for Equality of Variances		t-test for Equality of Means				
						Mean	
	F	Sig.	t	df	Sig. (2-tailed)	Difference	Std. Error Difference
1st Progress test	2.136	.146	5.457	124	.000	18.865	3.457
			6.024	97.960	.000	18.865	3.132
2nd Progress test	3.529	.063	3.911	124	.000	20.232	5.173
			3.990	80.030	.000	20.232	5.071
Summary	.998	.320	5.099	124	.000	29.599	5.805
			5.042	74.091	.000	29.599	5.871
Mathematical expressions	.446	.506	1.654	124	.101	9.178	5.550
			1.578	68.097	.119	9.178	5.817
Oral presentation	.004	.948	2.145	124	.034	14.005	6.530
			2.080	70.736	.041	14.005	6.733
Poster presentation	.182	.670	.452	124	.652	2.738	6.065
			.442	72.401	.660	2.738	6.192

These results prove that the students who took A-levels of the state exam tests in English generally possess better knowledge and skills and are better equipped to apply complex cognitive language learning strategies through writing professional summaries. They also demonstrate an understanding and better use of complex grammatical and lexical structures and appropriate language, and, lastly, are better able to use speaking skills even if they have previously not been exposed to the specific language of the profession.

4. CONCLUSION

Finally, we are able to draw a number of conclusions and list a number of corresponding practical implications arising from the obtained and interpreted data.

Overall weak score percentages across all the tested areas and across all the student groups demand the teachers' attention and rethinking about the possible alterations in the syllabus design and instruction. The acquired results may be crucial feedback for the teachers in the future working on modifying the instructional process, amending the used textbooks, adjusting the syllabus, as well as the class time allotted for certain skills, and creating a motivating learning environment.

Furthermore, students' underperformance in the two written tests (mathematical expressions and summary) which account for the two least successfully completed tests points to writing being the least developed skill among our students. It underpins recent scientific studies on its inadequate development among ESP learners. Notwithstanding its linguistic and cognitive complexity, this finding definitely calls for a more comprehensive inclusion of writing skills in the language course syllabus and curriculum design and makes clear a need for a more frequent implementation of teaching writing skills within the academic setting. A shift towards reinforcing writing (writing summaries, reports, abstracts, paragraphs) should incorporate a careful analysis of students' needs related to desirable professional expertise and a thorough adjustment of the teaching process and teaching materials.

Senior students' linguistic outperformance in regard to the three written tests (progress tests and a summary) although accounted for by a longer period of English language study, a higher number of teaching hours and more exposure to disciplinary knowledge through field-specific instruction also raises a question concerning the repositioning of ESP at the very center of the language course curriculum. This may well imply considering moving across the ESP continuum and redesigning teaching materials and readjusting the teaching process in favor of teaching general academic skills such as listening, reading, taking notes, supporting opinions with evidence, representing abstract concepts using figures and tables, understanding common structures of argumentation to first-year students. Even periodic resorting to general English instruction might be worth examining at this point of period of study as consolidation of some general English contents might facilitate the respective students' acquisition of Technical English and might help them bridge the gap between the high-school English threshold level to senior university level. Consequently, more complex and narrowly-defined skills such as writing, technical reading, and presentation skills associated with a particular field as well as complex field-specific lexicon and morphosyntax could be more effectively taught within the traditional ESP to more fluent and competent senior students.

The repositioning of ESP, i.e., exploiting a mix of genres within the broader socio-pragmatic space of ESP scaffolded by periodic inclusion of general English and enhancing both academic and field-specific writing skills should embed frequent use of formative assessment and feedback. Their persistent implementation is likely to help students regulate their own learning, whereas it may certainly prove a valuable asset

to teachers designing a motivating learning environment in the academic setting. Nevertheless, it must be emphasized that effective and flexible use of ESP remains a considerable challenge requiring a great deal of further research.

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UČINKOVITOST USVAJANJA TEHNIČKOG ENGLESKOG JEZIKA KOD STUDENATA INŽENJERSKIH STUDIJA

Osnovni cilj ovog istraživanja odnosi se na procjenu učinkovitosti kolegija Tehničkog engleskog jezika koji se izvode na prijediplomskom stručnom studiju Konstrukcijskog strojarstva, Elektronike i Elektroenergetike na Sveučilišnom odjelu za stručne studije Sveučilišta u Splitu. Rad se posebice usredotočuje na komparativnu analizu učinka podučavanja tehničkog engleskog jezika na jezična postignuća gore navedenih skupina, te njihovu uspješnost u usvajanju tehničkog engleskog jezika. U studiji je sudjelovalo 22 studenta prve godine i 28 studenata treće godine prijediplomskog sveučilišnog stručnog studija Konstrukcijskog strojarstva, te 76 studenata prve godine prijediplomskog sveučilišnog stručnog studija Elektronike i Elektroenergetike. Studente se podučavalo istim metodama nastave, koristili su isti udžbenik, te su polagali iste testove. Kao glavni instrument prikupljanja podataka poslužila su ispitivanja prije i poslije podučavanja (*pre-test* i *post-test*). Ispitivanja prije podučavanja uključila su analizu trenutne situacije koju smo dobili putem upitnika, dok su ispitivanja nakon podučavanja uključila četiri praktična testa kontinuirane procjene i dva testa napretka koji su zadovoljili kriterije ishoda učenja navedenih kolegija. Dobiveni podaci analizirani su pomoću SPSS-a kako bi se izmjerila razina jezičnog postignuća studenata u testiranim područjima i skupinama. Prethodni uspjeh studenata na državnoj maturi poslužio je kao nezavisna varijabla, te je uspoređen sa studentskim postignućima na svim testovima ocjenjivanja. Uspoređena je i jezična uspješnost studenata u odnosu na njihove studijske programe i godine studija. Statistički značajna razlika pronađena je u kategoriji prezentacijskih vještina kod studenata treće godine, te kod onih koji su na državnoj maturi položili višu razinu mature iz engleskog jezika (A), čime su potvrđene naše hipoteze o opsegu znanja i uspješnosti usvajanja tehničkog engleskog jezika. Naše su pretpostavke bile da će uspješnost usvajanja tehničkog engleskog jezika biti bolja kod studenata s položenom višom razinom državne mature, te kod onih na trećoj godini studija primarno zbog veće izloženosti učenju engleskog jezika, te bolje usvojenosti sadržaja specifičnih za područje struke na razini tercijarnog obrazovanja. Ovi rezultati upućuju i na činjenicu da je za podučavanje složenog stručnog jezičnog diskursa studentima prve godine gore navedenih inženjerskih disciplina prethodno potrebno konsolidirati neke akademske i/ili opće sadržaje na engleskom jeziku kako bi im se olakšalo usvajanje specifičnosti tehničkog engleskog jezika.

Ključne riječi: podučavanje engleskog jezika struke, postignuća u učenju, testovi, usvajanje tehničkog engleskog jezika