GENDER DIFFERENCES OF STUDENTS OF TECHNOLOGY AND INFORMATICS PROGRAM IN SENTENCE COMPLETION TEST

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Abstract

The aim of this research is to analyze the gender differences of 51 students of Technology and Informatics program in sentence completion test. From the total number of tested students, 25 of them were girls, while 26 were boys. All students were in the third year of studies at the Faculty of Education in Pristina.

Initially, the frequencies and percentages of results of the tested students were analyzed, then the basic statistical parameters: arithmetic mean ($\overline{X}$), standard deviation (σ), standard deviation of arithmetic mean ($\overline{X}$ σ), as well as minimum scores (Min) and maximum scores (Max) were calculated for all applied variables in this research. Differences between students according to gender were obtained through the analysis of canonical discrimination and the t-test. In addition, through Pearson correlation coefficient, the connection between all applied variables was assessed for the tested students.

Statistical data obtained through the analysis of canonical discrimination show that there are significant statistical differences between genders of students. Results of the t-test prove that there are no differences between genders of students in the variables of the total number of words, the correct number of words divided by sentences and the total number of logical sentences, while there are significant differences in the variables of the total number of correct words in favor of the girls compared to the boys. The data obtained through this research also show that the degree of correlation between the four applied variables is high for both genders of tested students.

It is recommended to continue with further research in the area of sentence completion skills in order to assess specific learning difficulties of students in higher education.

Keywords: specific learning difficulties, success in higher education, sentence completion skills.

1. INTRODUCTION

Offering a variety of *assessment methods* is often recommended as good practice in response to numerous critiques of the over-reliance on traditional examinations and their shortcomings (Craddock et al., 2009, p. 128). According to Herneńdez (2012, p. 490) among other things, assessment is about grading and reporting student achievements and about supporting students in their learning; and continuous assessment often does both of those things. Therefore, continuous assessment practices generally have a formative function for learning and a summative function for certification. Linked to this Crisp (2012, cited in Ito, 2014, p. 146), stressed that formative assessment is designed primarily to improve learning and summative assessment to judge learning.

The *types of assessments* include; assessment for learning, assessment of learning, and assessment as learning. *Assessment for learning* can be equated to formative assessment in learning. *Assessment of learning* is equivalent to summative assessment when it is used in the learning process. *Assessment as learning* involves students making self-assessment on themselves (Matovu 2014, p. 176-177).

According to Cartwright et al. (2009, cited in Chalchisa, 2014, p. 158), outcome-based assessment in higher education has three stages: (1) defining the most important goals for students to achieve as a result of participating in an academic experience (outcomes); (2) evaluating how well students are actually achieving those goals (assessment); and (3) using the results for improving the academic experience.

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In 2012, Higher Education Academy (cited in Hamilton, 2014, p. 2), pointed that the National Student Survey, despite its limitations, has made more visible what researchers in the field have known for many years: assessment in our universities is far from perfect. From student satisfaction surveys to Select Committee reports there is firm evidence that assessment is not successfully meeting the needs of students, employers, politicians or the public in general.

According to Cortiella et al. (2014, p. 2), for the school-age population, the most commonly used definition is found in the federal special education law, the Individuals with Disabilities Education Act (IDEA). IDEA uses the term *specific learning disability* – a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations. Such term includes conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. Such term does not include a learning problem that is primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage.

In specific learning disability, the normal acquisition of the processes of reading, writing and calculation is affected by an underlying neurobiological dysfunction. Additionally, environmental factors – such as school, home, family and social context – contribute to determine their phenotypic expression (Lorusso, 2014, p.78). According to President's Commission on Excellence in Special Education (2002, p. 47), academic achievement alone will not lead to successful results for students with disabilities. Students with disabilities need educational supports and services to promote the acquisition of skills throughout their school lives. However, these support and services may need to intensify during the transition years. Such skills include self-determination, self-advocacy, social skills, organizational skills, community and peer connection, communication, conflict-resolution, career skill building and career development and computer/technological competency.

Before the start of an academic course, the students will only know what their needs are in very broad terms. This is especially true when a student has only recently been identified as a dyslexic learner. There is growing prevalence of students being diagnosed on entry to higher education. In a UK study of over 100 institutions, 43% of the total dyslexic population was diagnosed as dyslexic after admission to university (Reid et al., 2005, cited in Lehany et al., 2009, p. 3). Linked to this Crosling et al., (2009, p. 16) pointed that there are very practical strategies lecturers can employ in the classroom to assist students, particularly those from under-represented groups, to succeed and persist at university. Talking about student support services in their first lectures for the year, *teachers* can play an important role in linking students to relevant supports such as counseling, disability services and career advice.

Research to date may not have the power to offer unqualified support to the implementation of *learning styles* approaches for learners with dyslexia (specific learning disability), but it should stimulate further investigation and provide encouragement to those tempted to engage in practitioner research on the topic (Mortimore, 2005, p. 147).

Fallon (2013, p. 858) argues that achieving the theorized position of a shared partnership space at the intersection of the worlds of *scientists and teachers* is problematic, and that scientists must instead be prepared to penetrate deeply into the world of the classroom when undertaking any such interactions. His findings indicate the epistemological differences, curriculum and school systems and issues, and teacher efficacy and science knowledge significantly affect the process of partnership formation. Furthermore, he argued that the re-thinking of partnerships is needed to reflect present economic and education environments, which are very different to those in which they were originally conceived nearly 30 years ago. He suggests that technology has an important role to play in future partnership interactions.

Regarding *educational success*, National Research Council (2012, p. 38), pointed that most personality psychologists have centered their work on the big five personality traits - conscientiousness, openness, agreeableness, emotional stability, and extroversion - plus general cognitive ability. Although these traits have traditionally been viewed as relatively stable across the life span, a growing body of evidence indicates that personality traits change in response to general life experiences and to structured interventions.

According to Nicol et al. (2006, p. 205), from the self-regulation model and the research literature on formative assessment it is possible to identify some principles of good feedback practice. Good feedback practice is broadly defined here as anything that might strengthen the students' capacity to self-regulate their own performance. A synthesis of the research literature led to the following seven principles. Good feedback practice:

1. helps clarify what good performance is (goals, criteria, expected standards);
2. facilitates the development of self-assessment (reflection) in learning;
3. delivers high quality information to students about their learning;
4. encourages teacher and peer dialogue around learning;

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5. encourages positive motivational beliefs and self-esteem;
6. provides opportunities to close the gap between current and desired performance;
7. provides information to teachers that can be used to help shape teaching.

Education outcomes comprise of knowledge and skills and attitudes and values. *Higher education* therefore contributes both to national economic performance and to the promotion of core values, and thus has a significant cultural dimension (Barr 2012, cited in Brennan et al., p. 4).

2. PURPOSE OF RESEARCH

The purpose of this research is to assess gender differences of students of Technology and Informatics program in sentence completion test.

3. TESTED STUDENTS AND METHODS

3.1 Sample of the tested students

This research consists of a sample of 51 students, respectively 25 girls and 26 boys of the Faculty of Education in Pristina. All the tested students were in the third year of studies, at the Technology and Informatics program.

3.2 Sample of variables

Sample of variables consists of the variable of students according to gender, the variable Sentence Completion Test, respectively the variable of the total number of words (TNOW), the total number of correct words (TNCW), the correct number of words divided by sentences (CWDS), as well as, the total number of logical sentences (TNLS).

Otherwise sentence completion tests most commonly use projective techniques and they come in a variety of forms, have different purposes and are generally quick to administer. The open-ended nature of the tests may facilitate students' ability to express their attitudes and feelings because they allow for a wide variety of responses. Sentence completion tasks can be used as a quick screening of feelings towards self and others (Fisher et al., 2007, p. 53).

For the purpose of this research Sentence Completion Test by Robin Hedderly (1995) is used, which is translated and adapted into Albanian language. This test takes about 10 minutes to complete. The average number of words written in trials is 190-220.

3.3 Statistical analysis of results

For the purpose of reaching the aims of this research, initially, the frequencies and percentages of results of the genders of the tested students were analyzed, then basic statistical parameters, respectively the arithmetical mean ($\overline{x}$), standard deviation (σ), standard error of arithmetical mean ($\sigma_{\overline{x}}$), as well as minimal results (Min) and maximal results (Max) for the applied variables of this research. Through the canonical discrimination analysis and the t-test, differences between genders of students covered by this research were calculated, while the connections among all the variables of this research were evaluated through Pearson correlation coefficient.

4. RESULTS ANS DISCUSSION

4.1 Frequency and percentage of results obtained for girls and boys in Technology and Informatics program (TIP)

With an aim of elaborating in more detail the data collected through this research, analysis of frequency and percentage of results of the tested students has also been done, which are presented in respective tables and figures. For technical reasons, in the tables, only highest frequencies and percentage of students are presented.

Fig 1, respectively table 1, shows that from 25 girls of the Technology and Informatics program (TIP) 10 (40.0%) of them have written mostly from 250 to 295 of the total number of words, while from the 26 tested boys of this program, results show that 6 (22.8%) of them have written mostly 250 to 294 such words.

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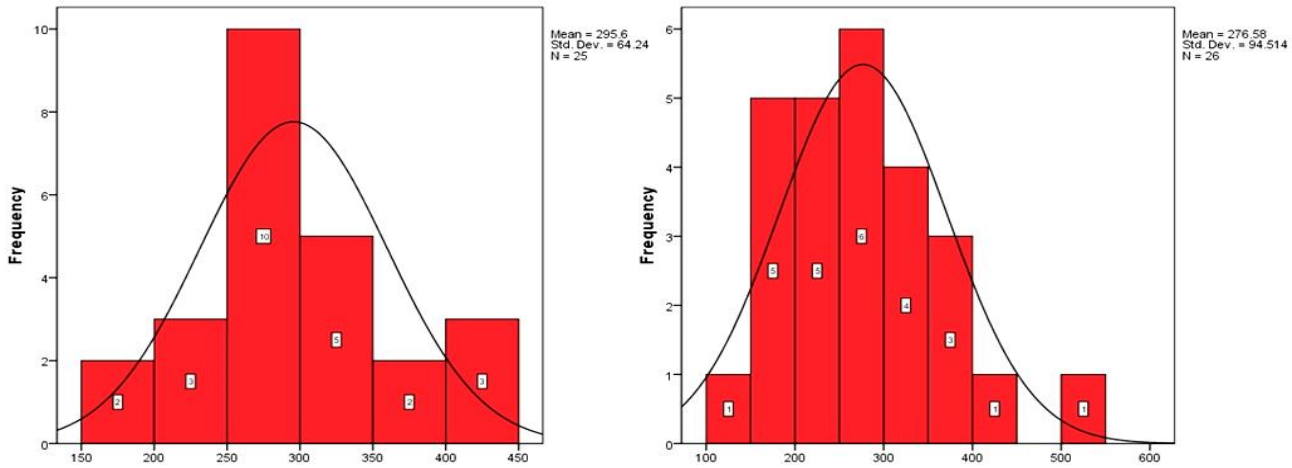

Fig. 1. Histograms of the variable the total number of words (TNOW) for girls and boys of Technology and Informatics program (TIP)

Table 1. Frequency and percentage of the variable the total number of words (TNOW) for girls and boys of Technology and Informatics program (TIP)

Girls of TIP				Boys of TIP			
TNOW		Frequency	Percent	TNOW		Frequency	Percent
Valid	250	1	4.0	Valid	250	1	3.8
	252	1	4.0		263	1	3.8
	256	1	4.0		285	1	3.8
	260	1	4.0		288	1	3.8
	265	1	4.0		291	1	3.8
	272	1	4.0		294	1	3.8
	291	1	4.0				
	292	1	4.0				
	295	2	8.0				
	Total	**25**	**100**		**Total**	**26**	**100**

Frequency and percentage of girls and boys of Technology and Informatics program in the variable of the total number of correct words (TNCW) are presented in fig. 2 respectively Table 2. Obtained results show that 10 girls (40.0%) have written mostly from 207 to 263 correct words, while 6 boys (22.8%) have written from 156 to 194 correct words.

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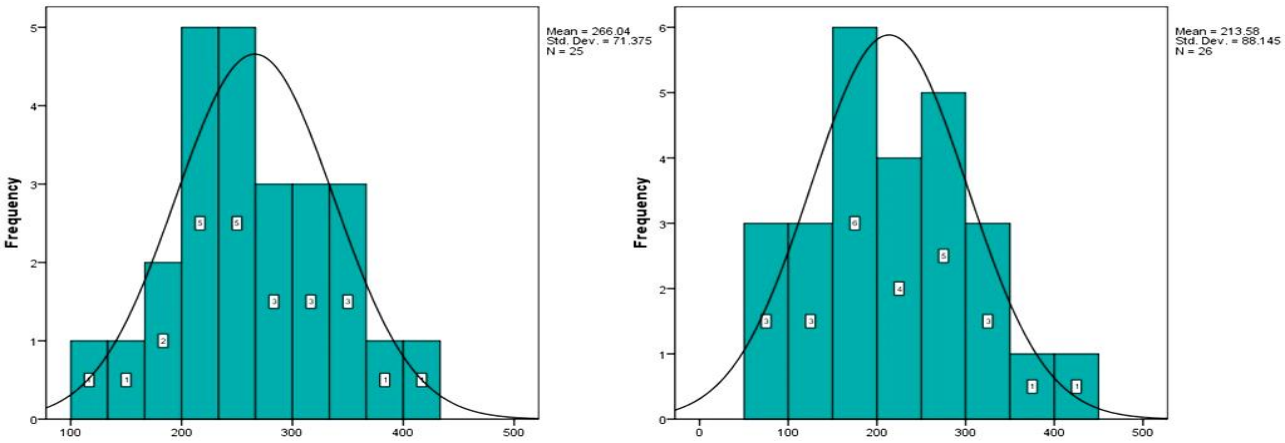

Fig. 2 Histograms of the variable the total number of correct words (TNCW) for girls and boys of Technology and Informatics program (TIP)

Table 2. Frequency and percentage of the variable the total number of correct words (TNCW) for girls and boys of Technology and Informatics program

Girls of TIP				Boys of TIP			
TNCW		Frequency	Percent	TNCW		Frequency	Percent
Valid	207	1	4.0	Valid	156	1	3.8
	218	1	4.0		158	1	3.8
	221	1	4.0		165	1	3.8
	229	1	4.0		175	1	3.8
	230	1	4.0		186	1	3.8
	235	1	4.0		194	1	3.8
	244	1	4.0				
	256	1	4.0				
	259	1	4.0				
	263	1	4.0				
	Total	**25**	**100**		**Total**	**26**	**100**

The analysis of data from fig. 3 and table 3 shows that in the variable of correct number of words divided by sentences (CWDS), the highest percentage of provided answers in this test for the girls is 48.0% (12 girls with 6 and 5 correct words divided by sentences). As for the group of tested boys of Technology and Informatics program, collected data shows that the highest percentage of provided answers in this variable is 38.4% (10 boys with 8 and 4 correct words divided by sentences).

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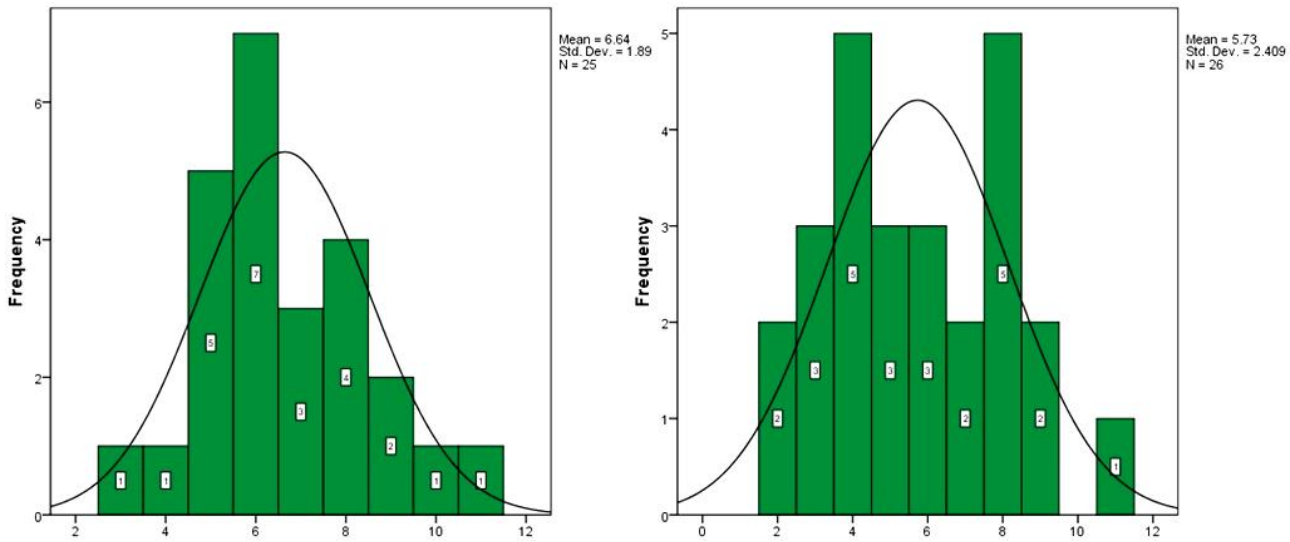

Fig. 3 Histograms of the variable the correct number of words divided by sentences (CWDS) for girls and boys of Technology and Informatics program (TIP)

Table 3. Frequency and percentage of the variable the correct number of words divided by sentences (CWDS) for girls and boys of Technology and Informatics program

Girls of TIP				Boys of TIP			
CWDS		Frequency	Percent	CWDS		Frequency	Percent
Valid	5	5	20.0	Valid	4	5	19.2
	6	7	28.0		8	5	19.2
	Total	25	100		Total	26	100

Fig 4, respectively table 4, shows that from 25 girls of the Technology and Informatics program (TIP) 22 (88.0%) of them have written mostly 40 respectively 39 logical sentences, while from the 26 boys of this tested program, results show that 19 (73.1%) of them have written mostly 40 and 38 such sentences.

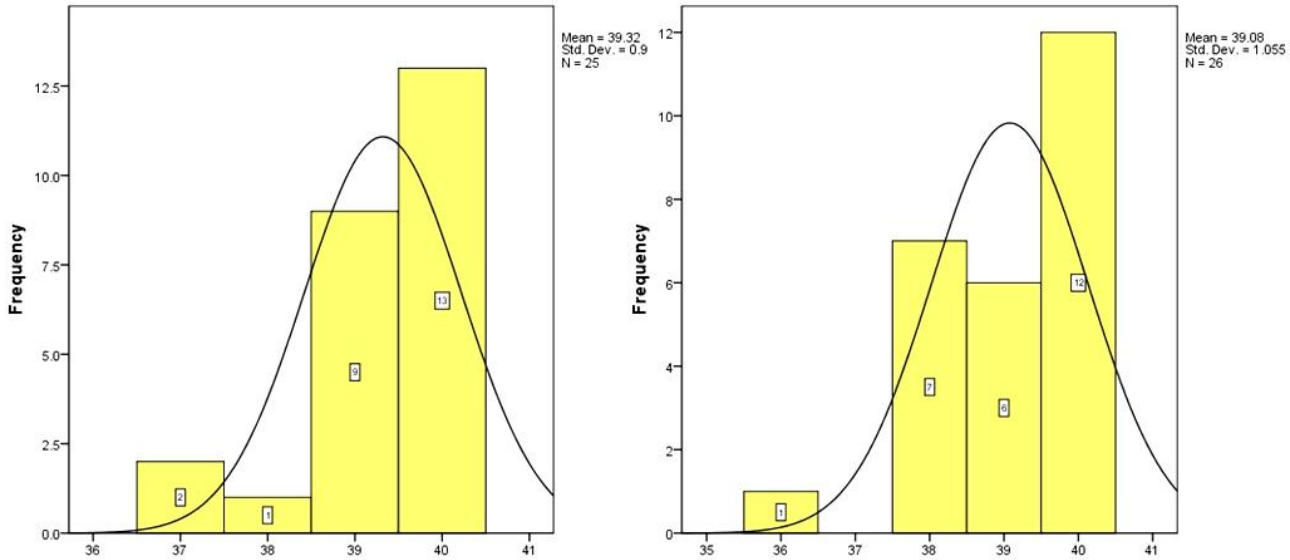

Fig. 4 Histograms of the variable the total number of logical sentences (TNLS) for girls and boys of Technology and Informatics program (TIP)

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Table 4. Frequency and percentage of the variable the total number of logical sentences (TNLS) for girls and boys of Technology and Informatics program (TIP)

Girls of TIP				Boys of TIP			
TNLS		Frequency	Percent	TNLS		Frequency	Percent
Valid	39	9	36.0	Valid	38	7	26.9
	40	13	52.0		40	12	46.2
	Total	25	100		Total	26	100

4.2 The differences in the variables of Sentence Completion Test between girls and boys of Technology and Informatics program (TIP)

In Table 5, results of canonical discrimination analysis of the four variables used in this research have been presented. The data obtained shows that there are statistical differences (Sig = 0.023) between girls and boys of the Technology and Informatics program (TIP)

Table 5 Results of the canonical discrimination analysis of applied variables for students of Technology and Informatics program (TIP)

Discriminative Function	Canonical correlation	Wilks' Lambda	Df	Sig	C_G	C_B
1	.462	.786	4	.023	.521	-.501

Variable	r_y	r
TNOW	-0.451	0.638
TNCW	3.256	0.410
CWDS	-2.415	0.242
TNLS	0.060	0.229

With an aim of elaborating in more detail the obtained results through the canonical discrimination analysis, calculation of basic statistical parameters has been done: arithmetical mean ($\overline{X}$), standard deviation (σ), standard error of arithmetical mean ($\sigma_{\overline{X}}$), minimal results (Min) and maximal results (Max), as well as, the t-test of applied variables for both tested genders of students.

Table 6. Basic statistical parameters for applied variables and the results of the t-test for girls and boys of Technology and Informatics program

Variable	Girls					Boys					t-test	2 Tail Sig
	$\overline{X}$	σ	$\sigma_{\overline{X}}$	Min	Max	$\overline{X}$	σ	$\sigma_{\overline{X}}$	Min	Max		
TNOW	295.6	64.24	12.84	191	421	276.5	94.51	18.53	133	532	0.837	0.406
TNCW	266.0	71.37	14.27	127	413	213.5	88.14	17.28	75	418	2.330	0.024
CWDS	6.6	1.89	0.37	3	11	5.7	2.40	0.47	2	11	1.495	0.141
TNLS	39.3	0.90	0.18	37	40	39.0	1.05	0.20	36	40	0.883	0.381

Elaboration of obtained results from Table 6 shows that despite better results of girls, there are no significant statistical differences between them and boys in the variables dealing with the total number of words (TNOW), the correct number of words divided by sentences (CWDS), and the total number of logical sentences (TNLS). However, there are significant statistical differences in favor of girls in the variables of the total number of correct words (TNCW) where the validity of the t-test is 0.024.

4.3 The connection between the variables of Sentence Completion Test for girls and boys of Technology and Informatics program (TIP)

Pearson correlation coefficient was used to examine the scale of correlation between the four applied variables of Sentence Completion Test for the both tested genders of students.

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As seen from the results presented in Table 7, significant correlation at the 0.01 level (2-tailed) for the girls of Technology and Informatics program, has been realized between the variables TNCW with CWDS (0.930), the variables TNOW with TNCW (0.782) and CWDS (0.636), as well as between the variables CWDS and TNLS (-0.542). Meanwhile, significant correlation at the 0.01 level (2-tailed) has been obtained only between the variables TNLS with TNCW (-0.441). Other correlations are not significant at the level of 0.01 or 0.05.

Table 7. Correlation between the applied variables for girls of Technology and Informatics program (TIP)

Correlation		TNOW	TNCW	CWDS	TNLS
TNOW	Pearson Correlation	1	.782**	.636**	-.073
	Sig. (2-tailed)		.000	.001	.727
	N	25	25	25	25
TNCW	Pearson Correlation	.782**	1	.930**	-.441*
	Sig. (2-tailed)	.000		.000	.027
	N	25	25	25	25
CWDS	Pearson Correlation	.636**	.930**	1	-.542**
	Sig. (2-tailed)	.001	.000		.005
	N	25	25	25	25
TNLS	Pearson Correlation	-.073	-.441*	-.542**	1
	Sig. (2-tailed)	.727	.027	.005	
	N	25	25	25	25

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

Examination of obtained results from Table 8 shows also that significant correlation at the 0.01 level (2-tailed) for the boys of tested program, has been realized between the variables TNCW with CWDS (0.973), the variables TNOW with CWDS (0.627) and TNCW (0.622). The significations of other correlations are not at the level of 0.01 or 0.05.

Table 8. Correlation between the applied variables for boys of Technology and Informatics program

Correlation		TNOW	TNCW	CWDS	TNLS
TNOW	Pearson Correlation	1	.622**	.627**	.032
	Sig. (2-tailed)		.001	.001	.878
	N	26	26	26	26
TNCW	Pearson Correlation	.622**	1	.973**	.235
	Sig. (2-tailed)	.001		.000	.248
	N	26	26	26	26
CWDS	Pearson Correlation	.627**	.973**	1	.150
	Sig. (2-tailed)	.001	.000		.464
	N	26	26	26	26
TNLS	Pearson Correlation	.032	.235	.150	1
	Sig. (2-tailed)	.878	.248	.464	
	N	26	26	26	26

**. Correlation is significant at the 0.01 level (2-tailed)

Based on the results presented in Tables 7 and 8, it can be concluded that the degree of correlation between the applied variables that assessed sentence completion skills is higher for both genders of the tested students.

5. CONCLUSION

With an aim of assessing the gender differences of 51 students of Technology and Informatics program in sentence completion skills, the following tests were applied: the total number of words (TNOW), the total

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number of correct words (TNCW), the correct number of words divided by sentences (CWDS), as well as the total number of logical sentences (TNLS).

Frequencies and percentages of results of the tested students show that girls and boys from the Technology and Informatics program have written mostly from 250 to 295 of the total number of words. The higher number of correct words for the girls was from 207 to 263, and for boys from 156 to 194. In the variable of correct number of words divided by sentences, the highest percentage of provided answers in this test for the girls is 6 and 5, whereas for boys 8 and 4 correct words divided by sentences. As for the variable the total number of logical sentences, results show that girls and boys have written mostly 38, 39, respectively 40 such sentences.

By means of the canonical discrimination analysis, it can be concluded that there are statistical differences (Sig = 0.023) between genders of tested students studying at Technology and Informatics program. Elaboration of results of the t-test shows that there are no differences among genders of students in the variables of the total number of words, the correct number of words divided by sentences and the total number of logical sentences, while there are significant differences in the variables of the total number of correct words in favor of girls compared to the boys.

Results of this research also confirm that the degree of correlation between the applied variables that assessed sentence completion skills is high for both genders of the tested students.

Based on all the results of this research, it is recommended to continue with further research in the area of sentence completion skills in order to assess specific learning difficulties of students in higher education.

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