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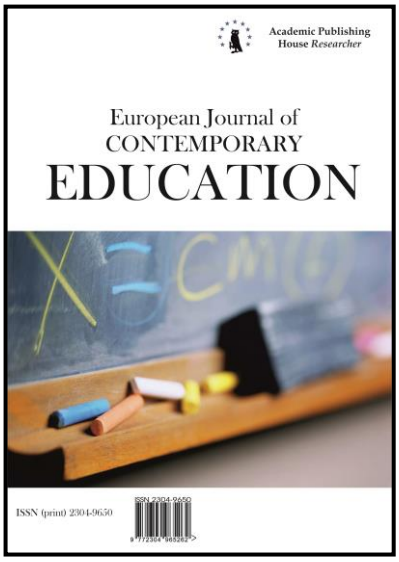


Three Scientific Facts about Ukrainian and Polish Law-Students: Verification of Statistical Hypotheses about their Preferences of Learning at Lectures

Valery Okulich-Kazarin [a, *], Mykola Zhurba [b], Yuliia Bokhonkova [c], Olga Losiyevska [c]

[a] Pedagogical University of Cracow, Poland
[b] Lugansk Regional Institute of Postgraduate Pedagogical Education, Ukraine
[c] Volodymyr Dahl East Ukrainian National University, Ukraine

Abstract

The aim of the study was a verification of statistical hypotheses about the preferences of Ukrainian and Polish Law-students related the method of learning at lectures. There were two groups of Ukrainian Law-students and one group of Polish Law-students.

The main research methods were the methods of sociological research.

There are statistically proved three scientific facts in the study:

1. The general population of Ukrainian and Polish Law-students does not prefer the auditory learning method at lectures.

2. There is no a difference in the preferences of Ukrainian Law-students of 1 and 2 levels from the statistical viewpoint. So, the difference might not be taken into account.

3. There is a difference in the preferences of Ukrainian and Polish Law-students from the statistical viewpoint. So, the difference must be taken into account.

All of the results are highly statistically significant (99.0 %).

The results of the study have a great practical importance: they will help to adapt the forms of lectures to the needs of Law-students. Adaptation benefits both sides – both students and teachers.

Keywords: students' preferences, Law-students, method of teaching at lectures, auditory method, visual method.

1. Introduction

Universities nowadays are subject to pressures of the marketplace (Abubakar, 2018). The Dearing Report (Dearing, 1997) first identified students as the principle customers of universities and, as a result, HEIs have become increasingly subject to commercial pressures.

* Corresponding author
E-mail addresses: v-kazarin@yandex.ru (V. Okulich-Kazarin), zna_3@ukr.net (M. Zhurba), lev0507303039@gmail.com (Yu. Bokhonkova), infinity88lug@gmail.com (O. Losiyevska)

Significant modifications in the competition have made universities adopt the thought process of a corporate business to the extent that students are currently being treated as customers (Abubakar, 2018; Hilman, 2017; Zwain, 2012). In order to attract and retain students, universities must identify and meet student expectations (Elliott, 2001).

During our work, we discussed the preferences of students in the process of teaching/learning at lectures.

On the one hand, there are many classes in higher education that are not equipped with visual means of education. We write about the universities we have seen. This means that in these universities the main part of the lectures is conducted by auditory means.

On the other hand, it is well known that new sources of visual information have entered the life of modern youth. TV, internet, mobile phone, social networks, etc. for the last 50 years. Social media has been gaining a foothold in education (Wang, 2016). Students use social media to complete homework-related tasks and maintain friendship (Weeden, 2013). The youth has changed. The youth use the achievements of technical progress. Their way of thinking changes after the emergence of new gadgets.

Should higher education be changed following the technical progress?

A lecture (from Latin lectio – reading) is logically consistent presentation of certain scientific knowledge to students (Formi i metodi, 2018).

A lecture (from Latin Lectio – "reading") is one of the main forms of study in higher educational establishments, which is a systematic, consistent presentation by the teacher of a specific section of a particular science or academic discipline (Vidy lektsii, 2018).

A lecture is one of the main forms of the educational process and the main method of teaching at the university. Lectures appeared in the practice of teaching in ancient Greece and other ancient states, then they received wide circulation in medieval universities and retained their leading role in higher education to the present day (Formi i metodi, 2018).

There are two alternative methods of teaching in lectures – auditory and visual.

It is important to note that for several hundred years the auditory method of information transmission dominated at the lectures. The visual teaching method was also used. However, from the point of view of the authors the technical means of training which were available 50 years ago don't correspond to modern opportunities any more. Various studies report that visual information is better displayed in the minds of students (Williams, 2009). And it is quite possible that students do not prefer the auditory method of teaching now.

The auditory teaching style allows auditory students to learn by ear or through verbal communication (Carnevale, 2018). Auditory learners are good at remembering what they hear when they learn information through the auditory presentation (Kayalar, 2017). Auditory learning is a learning style when a person learns through listening (Kostelnik, 2004).

Visual education is a style in which a student uses graphs, diagrams, maps and diagrams (Visual learning, 2018). The style of visual training which is often called the style of spatial training is way of training in which information is connected with images.

Understanding how audiences differ in their preferences and accuracy are starting points for identifying what helps stakeholders be comfortable interpreting and using data in graphical forms, which is a prerequisite to having data-informed conversations and decisions (Alverson, 2016).

The lectures differ in their structure, methods of presentation of the material, the character of generalizations and conclusions. Depending on the method of conducting, the following types of lectures can be distinguished (Formi i metodi, 2018).

The aim of the work (Kayalar, 2017) was to evaluate the views of students on auditory learning and learning strategy for the interactive and communicative classroom environment. To assess and compare the views of students, studying a foreign language, on the auditory learning strategy the qualitative research method was used. The students' opinions, obtained during the interviews, show that their skills, attitude and predisposition to auditory learning style are significant and determining factors for effective teaching.

The article (Raiyn, 2016) introduces a new concept for enhancing students' analytical thinking skills based on visual learning strategies. The author's results showed that visual learning tools enhance the students' skills.

Although learning styles have "enormous popularity", there is no evidence that specific student learning styles give the best results (Pashler, 2009). Teachers use social media to create an

alternative platform of instruction (Aydin, 2012; Kurtz, 2009) and build professional learning communities (Cho, 2013).

Therefore, we will not study the results of teaching at lectures. We will study the priorities of Ukrainian students in the process of gaining knowledge at the lectures.

The aim of the research was a verification of statistical hypotheses about the preferences of Ukrainian and Polish Law-students related the method of learning at lectures.

2. Materials and Methods

The study was carried out since January 2018 till February 2019. When planning an ascertaining experiment, we have relied on the results of previous studies. The practical part of the study was focused locally, in Ukraine and Poland. From a theoretical point of view, we relied on studies carried out in different countries before that.

We use the methods of sociological research (Kravchenko, 2014; Volkov, 2003), although Tsvetkova (2018) have found 15 disadvantages of the sociological methods of the study of reading, as a result of which, science can get a false picture. For some statistical calculations we used the methods of social statistics (Vasil'eva, Lyalin, 2012; Minashkin, 2008).

The study was performed in several stages:

- information research;
- planning the ascertaining experiment;
- statistical observation;
- primary processing and grouping of results;
- verification of statistical hypotheses;
- writing the text and correcting the text according to the reviewers' comments.

Information research.

At the first stage, the description of the state of research in this field was made. More than 100 scientific sources were studied, including those published in the journals: European Journal of Contemporary Education, European Journal of Higher Education, Higher Education, Higher Education in Europe, Higher Education Pedagogies, International Journal for Academic Development, Journal of Higher Education Policy and Management, Journal of Marketing for Higher Education, Polish Journal of Management Studies, Research in Higher Education, Studies in Higher Education, etc. The publications that are the closest to the topic of the study were selected for a thorough analysis later. So the literature review includes about 10 publications in journals indexed in databases WoS and SCOPUS. After the information research the aim of the research was formulated.

Planning the ascertaining experiment.

Then the plan of the ascertaining experiment was created.

The object of the statistical study is the statistical population of Law-students in separate countries. The unit of the population is each Law-students. In our case, they were students from Ukraine and Poland.

The subject of the study is the preferences of Ukrainian and Polish Law-students related the method of learning at lectures.

This was used serial (nested) sampling in the study (Vasil'eva, Lyalin, 2012). Serial (nested) sampling assumes that the series or groups of units of the population are to be selected. In our study, the series were selected randomly. These were selected two universities in the cities of tte regional level. Then continuous observation was carried out in each selected series. In our case, the selected series in Ukraine and Poland contain the same number of observation units.

The plan of the experiment included a comparison of preferences in two pairs:

- Law-students of 1 and 2 levels (master study and bachelor study),
- Law-students from Ukraine and Poland.

The theory of experiment planning is a strong research tool. This theory allowed us to compare the preferences of students in two pairs and got three new scientific facts. At this stage, the students of Volodymyr Dahl East Ukrainian National University and Pedagogical University of Cracow were questioned.

The characteristics of the respondents are presented in Table 1.

Table 1. General characteristics of the respondents

Nr	Speciality and level	Amount (M/F/Tr)	Training form	University
1	Law; 1 level	25 (7/18/0)	full-time	Volodymir Dahl East Ukrainian National University
2	Law; 2 level	15 (3/12/0)	full-time	
3	Law; 1 level	43 (17/26/0)	full-time	Pedagogical University of Cracow
	Total number of respondents:	83 (27/56/0)	-	-

Source: Own survey

In total, 83 respondents from two Poland and Ukrainian Universities took part in the statistical observation. Among them were two groups of Ukrainian students (40) and one group of Poland students (43).

Statistical observation.

Then one-time statistical observation was organized (Васильева, Лялин, 2012). The purpose of statistical observation is to obtain reliable information to identify the preferences related the method of learning at lectures in the study population. Statistical observation was a one-time event, organized in Ukraine and Poland.

In our statistical observation we used the method of survey. According to the method of obtaining data, it was a method of self-registration, in which the respondents gave the necessary information, independently filling out pre-distributed registration forms. Here the registration form was used.

The registration form was created at Pedagogical University of Cracow. The registration form contained 9 questions. The main question was number five. It was a question:

- What method of learning do I prefer at the lectures?

Three possible answers were provided:

1. The teacher has a presentation, and I write from slides.
2. The teacher dictates, and I write the lecture.
3. The teacher tells, and I note.

The first variant of the answer refers to the visual way of obtaining information at the lectures. The second and third options relate to the auditory method of obtaining information at the lectures. So, in our observation attribute features were studied (Vasil'eva, Lyalin, 2012). Further, attribute features were converted to numeric values.

Primary processing and grouping of monitoring results.

The study used the second group of methodological techniques and statistical indicators, combined on the basis of the unity of cognitive functions and calculation algorithms (Textbook, 2010). They were:

1) methods for determining average values;
2) methods of studying the variation of the characteristics of the population;
3) a tabular method of presenting the statistical information;
4) graphical method of presenting the statistical information.

First, we calculated the expected value, $\dot{X}$; the standard deviation for the sample, δ_x; the standard deviation for the population, δ_{x-1}.

Let X be a discrete random variable which takes the values $x_1, x_2 \dots x_n$ with respective probabilities $p_1, p_2 \dots p_n$. Then mathematical expectation of X denoted by $\dot{X}$ is defined as (Васильева, Лялин, 2012):

$$\dot{X} = x_1 \times p_1 + x_2 \times p_2 + \dots + x_n \times p_n \quad (1)$$

$$\delta_x = \sqrt{[(x_1 - \dot{X})^2 + (x_2 - \dot{X})^2 + \dots + (x_n - \dot{X})^2) / (n - 1)]} \quad (2)$$

$$\delta_{x-1} = \sqrt{[(x_1 - \dot{X})^2 + (x_2 - \dot{X})^2 + \dots + (x_n - \dot{X})^2) / n]} \quad (3)$$

- n - the total number of data points.

After the determining the average values and the variation of the characteristics, the data were presented in the tabular and graphical form for the further analysis.

Verification of statistical hypotheses.

After that, statistical hypotheses were formulated and verified (Textbook, 2010).

Firstly, it was verified the statistical hypotheses for determining students' preferences.

The Research hypothesis: mathematical expectation of the general totality is equal to the null.

The Research hypothesis H_0: $\mu = 0.0$.

The Research hypothesis asserts that the unknown average $\mu = 0.0$ for the general populations, if one does not take into account random deviations.

The Alternative hypothesis: mathematical expectation of the general totality is not equal to the null.

The Alternative hypothesis H_1: $\mu \neq 0.0$.

The Alternative hypothesis asserts that the unknown average $\mu \neq 0.0$ for the general populations, if one does not take into account random deviations.

Secondly, it was estimated the difference between two mathematical expectations (Chto takoe z-otsenka, 2018). The data of table 2 allows to make comparisons based on the sample mean ($\dot{X}$) and on the mathematical expectation of the General population (μ).

The statistics, which form the basis of the criterion for testing the equality of the mathematical expectations of two general totalities, are based on the difference between the sample averages $\dot{X}_1 - \dot{X}_2$. To estimating the differences between two mathematical expectations, we used a formula (Что такое z-оценка, 2018):

$$z = [(\dot{X}_1 - \dot{X}_2) - (\mu_1 - \mu_2)] / \sqrt{(\dot{S}_1^2 - \dot{S}_2^2)}, \quad (4)$$

where $\dot{X}_1$ - average sample value from the first general totality,

μ_1 - mathematical expectation of the first general totality,

$\dot{S}_1$ - average sample error taken from the first general totality,

$\dot{X}_2$ - average sample value from the second general totality,

μ_2 - mathematical expectation of the second general totality,

$\dot{S}_2$ - average sample error taken from the second general totality.

The Research hypothesis: there are no significant differences between two independent samples.

The Research hypothesis is H_0: $\mu_1 - \mu_2 = 0.0$.

The Research hypothesis asserts that there are no significant differences in the preferences of students, if one does not take into account random deviations.

The Alternative hypothesis: there are significant differences between two independent samples.

The Alternative hypothesis is H_1: $\mu_1 - \mu_2 \neq 0.0$.

The Alternative hypothesis asserts that there are significant differences in the preferences of students, if one does not take into account random deviations. For the standard significance level of 99.0 % ($p = 0.01$), $z_{tabl} = 2.58$ (Chto takoe z-otsenka, 2018).

And, at last, after discussion of the received results, authors have made the conclusion. Correcting the reviewers' comments helped to improve the quality of the paper.

3. Results

Step 1. Primary processing and grouping of monitoring results

The results of the determining the average values and the variation of the characteristics are given in Table 2. The main question of the registration form was: What method of learning do I prefer at lectures?

Three possible answers were provided:

1. The teacher has a presentation, and I write from slides.
2. The teacher dictates, and I write the lecture.
3. The teacher tells, and I note.

For the determining the average values and the variation of the characteristics, the value "0" was assigned to the auditory method of learning at lectures. Answers No. 2 and No. 3 relate to the auditory method of obtaining information at the lectures. So, they were combined before the

calculation. The value "1" was assigned to the visual method of learning at lectures.

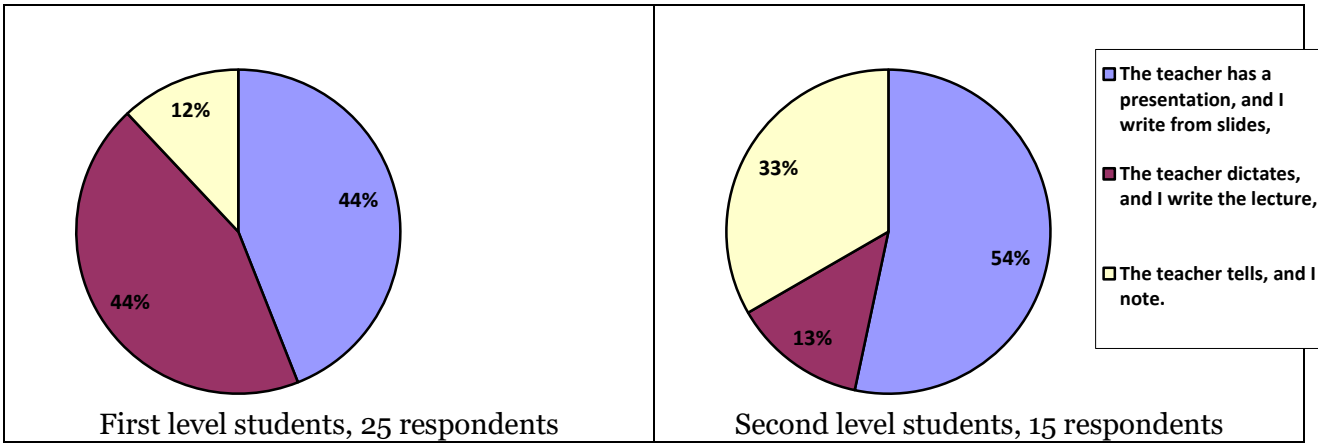
Table 2. Results of determining the average values and the variation of the characteristics (number of variants of different answers)

№	Speciality and level	The number of choices			$\dot{X}$	δ_x	δ_{x-1}
		response 1	response 2	response 3			
1	Law, 1 level	11	11	3	0.44	0.50	0.51
2	Law, 2 level	8	2	5	0.53	0.50	0.52
3	Law, 1 level	43	0	0	1.00	0.00	0.00

Source: The results of own calculations

The Table 2 shows the total results of the initial assessment of respondents' preferences when they receive information at the lectures.

The authors compared the preferences of students of the first and second levels. The comparison results are shown in Figure 1. Here are the preferences of the Ukrainian students of the specialty "Law". There is group 1 for the first-level students. There is group 2 for the second-level students. It was 40 respondents in total.



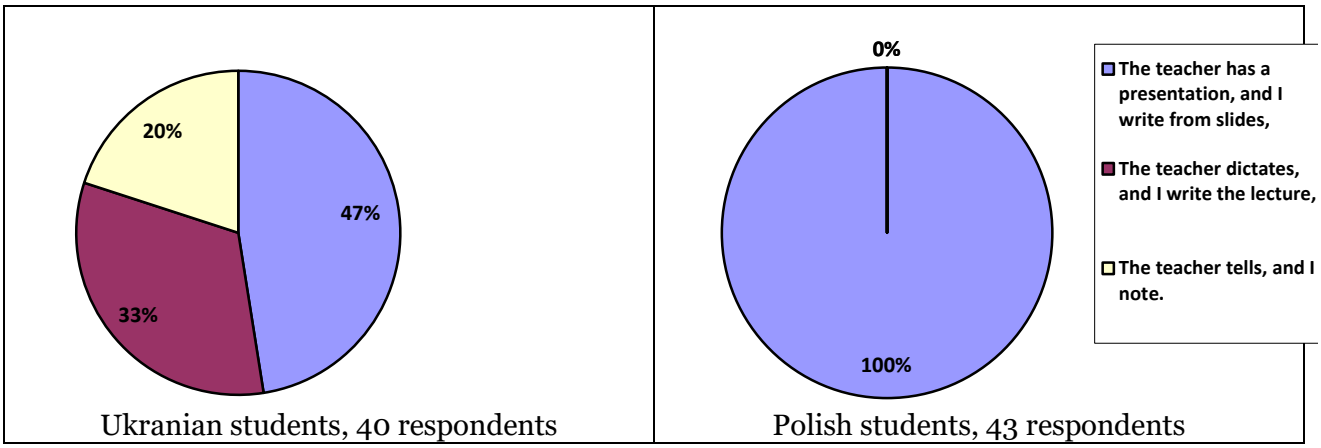
First level students, 25 respondents

Second level students, 15 respondents

Source: The results of own calculations.

Fig. 1. The number of choices of the way of learning at lectures, the first and second levels, %

Then the authors compared the preferences of the Ukrainian students and the Polish students. The comparison results are shown in Figure 2. These are group 1 and group 2 for the Ukrainian students. There is group number 3 for the Polish students. It was 83 respondents.



Ukranian students, 40 respondents | Polish students, 43 respondents

Source: The results of own calculations

Fig. 2. The number of choices of the way of learning at lectures,
Ukrainian students and Polish students, %

Figures 1 and 2 show that the visual method of learning dominates at the preferences of the Polish students. It is shown that the auditory method of learning does not dominate at the preferences of the Ukrainian students. In this situation, Table 2 is not a basis for strong evidence. So, next we made a verification of three pairs of statistical hypotheses.

Step 2. Verification of statistical hypotheses for determining students' preferences: Ukrainian and Polish students prefer the auditory learning method at lectures

At this stage of verification of statistical hypotheses, two alternatives were considered:

1. Ukrainian and Polish students prefer the auditory learning method at lectures.

2. Ukrainian and Polish students do not prefer the auditory learning method at lectures.

The Research hypothesis: Ukrainian and Polish Law-students prefer the auditory learning method at lectures.

The Research hypothesis H_o: $\mu = 0.0$.

The Research hypothesis asserts that the unknown average $\mu = 0.0$ for the general populations of Law-students in Ukraine and Poland. The Research hypothesis is as follows: Ukrainian and Polish students prefer the auditory learning method at lectures, if one does not take into account random deviations.

The Alternative hypothesis: Ukrainian and Polish Law-students do not prefer the auditory learning method at lectures.

The Alternative hypothesis H_1: $\mu \neq 0.0$.

The Alternative hypothesis asserts that the unknown average $\mu \neq 0.0$ for the general student populations of Law-students in Ukraine and Poland. The Alternative hypothesis is as follows: students do not prefer the auditory learning method, if one does not take into account random deviations.

Table 3 shows the calculated data for verification of statistical hypotheses at $\mu_o = 0.0$.

Table 3. Data for verification of statistical hypotheses

№	Indicator	Group number		
		1	2	3
1	Sample size, n	25	15	43
2	Selective average, $\dot{X}$	0.44	0.53	1.00
3	Standard deviation for sample, δ_x	0.50	0.50	0.00
4	Average error, $\dot{S}_{\dot{X}} = \delta_x / \sqrt{n}$	0.100	0.129	0.00
5	Value $\mid t_{stat} \mid$ for $\mu_o = 0.0$, $(\dot{X} - \mu_o) / \dot{S}_{\dot{X}}$	4.400	4.109	∞
6	Value t_{tabl} for significance level 99.0, %, Table 9.1.1 (Textbook, 2010, 42)	2.797	2.977	2.576
7	Result, $t_{stat} > t_{tabl}$	Yes	Yes	Yes

Source: The results of own calculations

Table 3 shows that the t_{stat} value is greater than the t_{tabl} value for the 99.0 % significance level. Therefore, we accept the Alternative hypothesis: the unknown average for the general population of students $\mu \neq 0.0$. This means that students do not prefer the auditory method of learning at lectures, if one does not take into account random deviations.

For 99.0 % significance level (Textbook, 2010: 75), we accept the following result: Ukrainian and Polish Law-students do not prefer the auditory learning method at lectures. This means that university teachers and professors should use visual methods of lectures more widely.

The result is the first scientific fact: the general population of Ukrainian and Polish Law-students does not prefer the auditory learning method at lectures. This fact should be taken into account when reforming Ukrainian and Polish higher education.

Step 3. Verification of statistical hypotheses for estimating the differences between two independent samples: a comparison of the preferences of students of the first and second levels

Figure 1 showed the difference between the preferences of students of 1 and 2 levels. So, the authors estimated the difference between two mathematical expectations at a confidence level of 99.0 (Table 4).

Table 4. Data to verification of statistical hypotheses

№	Indicator	Group number	
		1	2
1	the size of a sample, n	25	15
2	the expected value, $\dot{X}$	0.44	0.53
3	$\dot{X}_1 - \dot{X}_2$	0.09	
4	$\mu_1 - \mu_2$	0.00	
5	the standard deviation for the sample, δ_x	0.50	0.50
6	average error, $\dot{S}_{\dot{X}} = \delta_x / \sqrt{n}$	0.10	0.13
7	$\dot{S}^2$	0.010	0.017
8	$\dot{S}_1^2 - \dot{S}_2^2$	0.007	
9	$\sqrt{(\dot{S}_1^2 - \dot{S}_2^2)}$	0.084	
10	$\mid z_{stat} \mid$	1.071	
11	the value z_{tabl} for the level of significance 99.0	2.58	
12	Result, $z_{stat} < z_{table}$	Yes	

Source: The results of own calculations

For the standard significance level of 99 % ($p = 0.01$), $z_{tabl} = 2.58$ (Chto takoe z-otsenka, 2018).

In our case, $\mid z_{stat} \mid = 1.071$. Since z_{tabl} is higher than $\mid z_{stat} \mid$, then the Research hypothesis is accepted: there are no statistically significant differences between two independent samples.

That is why, the difference in the preferences of students of 1 and 2 levels of education must

not be taken into account.

The result is the second scientific fact: the difference in the preferences of Ukrainian Law-students of 1 and 2 levels must not be taken into account.

Step 4. Verification of statistical hypotheses for estimating the differences between two independent samples: a comparison of the preferences of Ukrainian students and Polish Law-students

Figure 2 showed the difference between the preferences of Ukrainian students and Polish students. So, the authors estimated the difference between two mathematical expectations at a confidence level of 99.0 (Table 5).

Table 5. Data to verification of statistical hypotheses

№	Indicator	Group number	
		1-2	3
1	the size of a sample, n	40	43
2	the expected value, $\dot{X}$	0.47	1.00
3	$\dot{X}_1 - \dot{X}_2$	0.53	
4	$\mu_1 - \mu_2$	0.00	
5	the standard deviation for the sample, δ_x	0.50	0.00
6	average error, $\dot{S}_{\dot{X}} = \delta_x / \sqrt{n}$	0.079	0.00
7	$\dot{S}^2$	0.006	0.000
8	$\dot{S}_1^2 - \dot{S}_2^2$	0.006	
9	$\sqrt{(\dot{S}_1^2 - \dot{S}_2^2)}$	0.079	
10	z_{stat}	6.709	
11	the value Z_{tabl} for the level of significance 99.0	2.58	
12	Result, $z_{stat} < z_{table}$	No	

Source: The results of own calculations

For the standard significance level of 99 % (p = 0.01), z_{tabl} = 2.58 (Chto takoe z-otsenka, 2018).

In our case, $| z_{stat} |$ = 6.709. Since z_{tabl} is not higher than $| z_{stat} |$, then the Alternative hypothesis is accepted: there are statistically significant differences between two independent samples. That is why, the difference in the preferences of Ukrainian students and Polish students must be taken into account.

The result is the third scientific fact: the difference in the preferences of Ukrainian and Polish Law-students must be taken into account.

4. Discussion

Is there any innovative idea in the study?

First of all, it was a new idea to study the preferences of Law-students in two countries. The study of the three groups of respondents from two countries with different cultures helped to get an interesting picture.

Secondly, the results are new scientific facts. The results are not a new theory, a new scientific Law, a new scientific conception. It is the first time that independent student opinions were transformed into real scientific knowledge. These real scientific facts should be taken into account when reforming higher education in Ukraine and Poland.

Thirdly, on the basis of new scientific knowledge about the student preferences the real recommendations could been given for the Top-management of Ukrainian and Polish Universities: university teachers should use visual ways of teaching students at the lectures. Innovative ideas, reflected in the recommendations could be used for improving of teaching-technologies in Ukrainian and Polish Universities.

Can we trust the received results?

First, 83 students took part in our study. Is this number of respondents enough or not enough?

For example, in the survey (Guluţă, 2016) only 50 Romanian managers were interviewed. The author did not interview all Romanian managers. However, the statistical processing methods allowed to show a stable correlation for the whole Romania. In the paper (Kayalar, 2017), the study was carried out only with the participation of 15 university students. In the paper (Özdemir, 2018) the study was carried out only with the participation of 40 respondents. And, in the paper (Pavlova, 2016) there were 48 respondents only.

That's why, we are sure that 83 respondents are sufficient to get a reliable result in the study.

Second, at the step of verification of statistical hypotheses about the preferred method of learning at the lectures, for the standard significance level of 99.0 % the Alternative hypothesis was accepted: Ukrainian and Polish Law-students do not prefer the auditory method of learning at the lectures, if one does not take into account random deviations. The results are highly statistically significant (99.0 %). The result shows that the solution will be correct approximately in 99.0 % of cases and incorrect only in 1.0 % of cases. In this sense, we have a decision-making process with accurate, controlled probability. Despite the fact that the auditory learning method has dominated in higher education institutions for more than 500 years, we are sure that the general population of Ukrainian and Polish Law-students does not prefer the auditory method of learning at the lectures. These are new requirements of students for university teachers to change the method of teaching.

At the step of verification of statistical hypotheses about the existence of significant differences between two independent samples, for the standard significance level of 99.0 % the Research hypothesis was accepted: there are no statistically significant differences in the preferences of Ukrainian Law-students of 1 and 2 levels, if one does not take into account random deviations. The result shows that the solution will be correct approximately in 99.0 % of cases and incorrect only in 1.0 % of cases. In this sense, we have a decision-making process with accurate, controlled probability.

At the step of verification of statistical hypotheses about the existence of significant differences between two independent samples, for the standard significance level of 99.0 % the Alternative hypothesis was accepted: there are highly statistically significant differences in the preferences of Ukrainian and Polish Law-students, if one does not take into account random deviations. The result shows that the solution will be correct approximately in 99.0 % of cases and incorrect only in 1.0 % of cases. In this sense, we have a decision-making process with accurate, controlled probability.

The theory of statistics gives no reason to doubt the correctness of our results. The theory of statistics frees the authors from the need to prove the correctness of the results. Anyone who disagrees with our results can only refute the results. S/he should organize a new study and must use a large sample or higher statistical significance (Textbook, 2010).

The results of the study have a great practical importance. The systems of higher education in Ukraine and Poland cannot ignore the interests of Ukrainian and Polish Law-students who do not prefer the auditory method of learning at the lectures. This means that Ukrainian and Polish higher education needs reform. This reform in higher education should reflect new requirements of Law-students:

- First of all, it is necessary to equip lecture halls with visual teaching aids.
- Secondly, it is necessary to teach Law-lecturers for the use of visual teaching aids.

This will help to adapt the forms of lectures to the needs of Law-students. Adaptation benefits both sides – both students and teachers.

5. Conclusion

It was studied the preferences of Ukrainian and Polish Law-students related the method of learning at lectures. The aim of the study is achieved. Verification of statistical hypotheses helped to prove three scientific facts about Ukrainian and Polish Law-students in the research:

1. The general population of Ukrainian and Polish Law-students does not prefer the auditory learning method at the lectures. The result is highly statistically significant (99.0 %). The result shows that the solution will be correct approximately in 99.0 % of cases and incorrect only in 1.0 % of cases. This means that we have a decision-making process with accurate, controlled probability.

2. There is no a difference in the preferences of Ukrainian Law-students of 1 and 2 levels from the statistical viewpoint. So, the difference might not be taken into account. The result is highly statistically significant (99.0 %). The result shows that the solution will be correct approximately in

99.0 % of cases and incorrect only in 1.0 % of cases. This means that we have a decision-making process with accurate, controlled probability.

3. There is a difference in the preferences of Ukrainian and Polish Law-students from the statistical viewpoint. So, the difference must be taken into account. The result is highly statistically significant (99.0 %). The result shows that the solution will be correct approximately in 99.0 % of cases and incorrect only in 1.0 % of cases. This means that we have a decision-making process with accurate, controlled probability.

The results of the study have a great practical importance. The scientific facts should be taken into account when reforming higher education in Ukraine and Poland. Among other things, we recommend to form new training programs for university teachers. University teachers should learn to use visual ways of teaching students at the lectures. Adaptation benefits both sides – both students and University teachers.

The task of the next study is to assess the preferences of Law-students in other European Countries.

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7. Conflict of interests

The authors declare that there is no conflict of interest regarding the publication of this paper.

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