

Disciplinary Literacy Development in the Professional Online Course for Cynological Translators: Ukrainian Case

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Abstract: Ongoing development of modern technologies requires high-level skills and abilities in completing the preparation of the student youth to specific situations in life. The educational system needs to use more efficient approaches in increasing essential skills for modern life and work situations. The study's main aim is to specify the appropriate system of teaching essential and more profound skills of the cynological translators for fulfilling their specific work activities. The study's academic importance lies in revealing new connections between the disciplinary literacy and ESP sphere in preparing the cynological translators with practical meaning for future application. The students of distance course on training the cynological translators-assistants were questioned about the essential components necessary for their job completing. The results were verified by the statistical processing method. The results provided support for the conceptual framework, with crucial elements of disciplinary literacy for cynological translators. Except for the primary skills applied for developing the specific knowledge, the main component for professional realization is acquiring the particular vocabulary and ability to operate with it in practice. This study's implications might relate to the more various scope of disciplinary literacy of the cynological translators.

Keywords: *disciplinary literacy, distance education, graduate students, ESP context, cynological translators.*

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1. Introduction

Modern demands on the quality of education require continuous improvement in approaches to optimal learning, as there has been an increasing trend in recent years to develop communication and reduce the rate of student learning. Today education focuses on the development of general skills. In contrast, the modern education system does not prioritize the development of specialized skills based on generic skills to address real-world challenges.

Although there have been arising a lot of studies in the academic research sphere about disciplinary literacy and its significance for developing a future professional (Shanahan & Shanahan, 2008, 2012, 2014; Evers, 2011; Zygouris-Coe, 2012; Lent, 2015), nearly nothing is known about disciplinary literacy of cynological translators. The continuing proliferation of disciplinary literacy conveys the necessity to define and develop the main components which should be highlighted during the educational process within a particular discipline. The need is illustrated by the fact that the progress in national tests is decreasing these years (Grigg et al., 2007; Kirsch et al., 2002). The ability to be literate in specific areas of life also demands the development of disciplinary literacy (Evers, 2011; Zygouris-Coe, 2012; Lent, 2015). Moreover, the real-life challenges are addressed to the collaboration, developed by disciplinary literacy (Airey, 2011; Lent, 2015; Lent & Voigt, 2018; Shanahan & Shanahan, 2014).

Current research works are concentrating on disciplinary literacy within such disciplines like Science, Maths, English, and History. However, studies are appearing to define the disciplinary literacy components in some other fields. Nevertheless, we have an incomplete picture of the relations of the primary skills and their influence on developing specific skills. Moreover, there is a lack of these studies in the sphere of cynological translators.

Based on the theoretical background, this research is aimed to answer the research question: 'What are disciplinary literacy components for cynological translators?' Particularly, the study is sought to follow two objectives:

(1) To analyze the work activities and tasks for cynological translators to develop a definition of disciplinary literacy for this occupation; and

(2) To verify that the distance course has the necessary for disciplinary literacy of the cynological translators' components, namely, the proof of the congruency between the constituents of disciplinary literacy and the professional online course.

The paper consists of four components. First, it analyses the theoretical sources pertained to disciplinary literacy and components, and the job skills of the cynological translators are analyzed. Next, the research methodology was presented, and data analysis methods discussed. The results are then discussed and summarized. The study ends with a discussion of the implications and limitations as well as the areas of further research.

2. Literature Review

Disciplinary literacy is defined as awareness to assess the specific knowledge and generate knowledge within this particular area (Moje, 2007). Disciplinary literacy is correlated with the critical thinking ability to produce new knowledge but within the required discipline.

The disciplinary literacy theory - regardless of the perspective - offers opportunities for the development of strict subject knowledge. This expertise is developed depending on the ability to generate and present understanding in various forms, analyze how other knowledge represented, and consequently evaluate the truth clarification. With analytical power, the ability to question long-term - and even common - demands knowledge and ultimately to create new knowledge that benefits society. In addition, disciplinary skills are interpreted as the ability to analyze the relationship between plans and goals and ultimate goals (ILA, 2015). It is also defined as being engaged in goals and practices unique to each academic discipline (Spire et al., 2018). In this way, this ability is also related to the representing of high-order skills of a critical thinking process, which is considered to be one of the most required skills in the 21st century. Disciplinary literacy is the ability to use the standard information appropriate for the definite discipline, so with the specific purpose, and to use the generic skills in favor of profoundly learning the specific information within the discipline (Lent, 2015). Other critical thinking skills that support the development of disciplinary literacy are viewing, reasoning, and communicating. Another crucial feature of disciplinary literacy is doing or collaboration, which also navigates difficult content texts and tasks accurately for each subject area (Lent & Voigt, 2018). Therefore, disciplinary literacy can be considered a range or set of background literacies applied for developing specific skills within a discipline as the content-based aim. Thus, Bojović (2017) interprets disciplinary literacy in biotechnology as a combination of significant knowledge from various basic sciences (biology, chemistry, physics, mathematics) that is applied in the production and protection of plants and animals as well as in food processing with reading, writing, listening, speaking and critical skills used (Bojović, 2017). It is also

determined as the ability to interweave with social, semiotic, and cognitive activities that are consistent with substantive practices (Fang, 2012).

Another range of components of the disciplinary literacy in social studies are the skills in: 1) reading; (2) writing; (3) pragmatism; and (4) vocabulary (Kenna et al., 2018). We also suggest that vocabulary often makes the specificity of the scope of disciplinary literacy.

We agree on the definition of disciplinary literacy as the ability to master the primary skills with the high-order thinking skills to acquire specific content knowledge.

2.1 Strategies for disciplinary literacy developing

As our educational aims are growing within the specific frames of requirements of modern society, the strategies for developing disciplinary literacy are gaining momentum in the educational process. So, DL is developing if it arises in meaningful, engaging, and challenging activities, which can help genuinely and consciously attain the specific goal. In this case, the strategies for such development should include collaboration with peers (Lent, 2015).

For the practical development of disciplinary literacy, educational researchers suggest the strategies closely connected with critical inquiry and analysis. For example, for reading activities, the main critical actions for activating the disciplinary literacy may be: 'provide ongoing, embedded literacy professional learning,' 'form a literacy leadership team,' 'make sure professional learning communities or disciplinary literacy cohorts are grounded in continuous disciplinary literacy learning and collaborative inquiry. Other activities, such as, 'provide the resources,' 'ensure that teachers, especially those in cohorts or teams, experience encouragement, support, and opportunities to stretch their skills and knowledge,' 'encourage cross-curricular or cross-team collaboration,' 'foster leadership in all areas,' 'use reflection, learning, and planning collaboratively,' 'find opportunities for co-teaching and peer coaching within disciplines' add the whole pattern (Lent & Voigt, 2018). Bojović (2017) researched the use of reading strategies in biotechnology engineering (Bojović, 2017).

The efficient strategies for developing DL are suggested as balancing between teaching and learning, implementing critical thinking developing tasks, and reflecting on the results on an ongoing basis (NCTE's, 2011). The strategies should be drawn from the specific focus of the discipline, which means the challenged search of the ways of suitable variations in methods (Shanahan & Shanahan, 2012). The techniques for developing DL should be mainly designed to inquire and deeply understand the specific content,

necessary within the discipline, and evaluate the speaker's thinking process (Lent & Voigt, 2018).

2.2 Defining the specific disciplinary literacy for Cynologic Translators

To outline the disciplinary literacy for cynological translators, we analyze the specificity and the primary skills for fulfilling this job.

The competence of translators is defined as work competence:

- Understand the information, its structure, and peculiarities to produce knowledge;
- Accurate identification and determining the necessary information needs;
- Knowledge of the methods and techniques that are most suitable for finding and identifying information resources;
- Evaluation and filtering of the information received to confirm its reliability, validity, and usefulness;
- Selectively include this information in the personal knowledge base so that it can be used effectively and continuously;
- Exchange of knowledge through the interchange of electronic files, communication on mailing lists, creation of collective virtual platforms, etc. ;
- Generate information while developing the skills required for free, correct, logical and well-organized overall writing and communication (Pinto & Sales, 2008).

The area of competence exchange is, therefore, in phases of intellectual activity such as selection, organization, processing, and production, which enable the translator to process, organize, store and maintain original information material by planning, regulating, and maintaining the same processes according to the defined goals be rated. (Pinto & Sales, 2008). Analyzing the suggested ideas, we argue that the main scope of the literacies of translators relates to the information, communication literacy with applying the high-order thinking skills.

Translators play a crucial role in recognizing cultural matters and in reflecting on how and when to take on the part of cultural explanation (Séguinot, 2007). So they are also responsible for the specific issues in their translation. The main points in the critical analysis of translators' jobs are whether they can transfer knowledge in a culturally sensitive way, whether they can cope with challenges occurred between cultures, whether they can effectively fit the professional standard of transferring knowledge in a right way (Séguinot, 2007). It means that the translators should be aware of the specificity of the discipline they work with.

To complete the range of skills adding the specific abilities, which would make the description of cynological translators specific, we could add those skills which reflect the in-depth and developed knowledge for this job. Those are:

- To be able to work in the interpersonal and multicultural surrounding both independently and in a team, constructively communicate and cooperate in native and foreign languages (in written and orally).
- To be able to think critically and creatively, consistently develop professionalism.
- To have basic knowledge in biology, morphology, and physiology of animals and be able to apply it for description and analysis of the parts of the body and static and kinesthetic activities to present the correct translation of the dogs.
- To interpret information about animal science and apply it in the broader context of professional activity and research.
- To be aware of the basic categories of management in organizing the professional events and processes, functions, consistent patterns and their application in professional activity, such as work in a dog show ring, dealing with the related documentation, working with the professional team of stewards and a judge in the ring.
- To be able to identify the main breeds of dogs and their use and classification.
- To declare and understand various opinions and participate in the argumentative discussion, solving functional problems of professional activity.
- To be able to study independently and develop skills, to apply acquired knowledge in professional activity, and to teach others.

Having laid out the primary skills pertained to this specialism, we believe that the disciplinary literacy of cynological translators includes the ability to select, construct, develop, and present specific informational material that enables the translator to process, systematize, store, and retrieve original informative material reflecting on the specific features of the discipline and practicing balanced collaboration with the team.

2.3 Description of the course for cynological translators

To provide the specific training for the cynological translators, we developed the course with both distance and generic way of teaching. The syllabus of the course accentuates the learning the main parts of the specific

knowledge of this field: translation of the dog show description (critique) and the management of dog shows organization. Notably, the translation part includes practicing the terminology used to describe different parts of dogs, dental system, kinaesthetic system, color, and nervous system. More than that, the syllabus contains topics on learning of different ways of providing critiques in the dog show rings, related issues about working ethics and rules in the dog show ring, different aspects of technical fulfilling the work. The students of this course also learn about the management of dog shows organization, ways of providing right documentation, rules, and regulations.

There are different types of classes of this course: lectures, practical pieces of training, audio practice, practicing description. A practice test or audio training follows each theoretical class.

According to the ESP criteria, this course was designed and has the principal stress on the lexis, speaking, and practical traineeship. After taking distance education, the students are supposed to have practical traineeship assisting in the dog show rings. Before taking the examination on this subject, they also have a number of theoretical and practical classes. This course was positively accepted by the students and achieved a positive assessment in their feedbacks.

We make the accent on the target change about the specific content and the practical value of the course, which means the ability to use it in the frames of future job applying the specific content in practice, which may be considered as disciplinary literacy. Therefore, we formulate the hypothesis as the following:

H_0 : There is no correlation between the specific professional skills in the course and disciplinary literacy development.

H_a : There is some dependence between these two variables.

Based on the above-discussed literature, we evaluated disciplinary literacy as a set of specific language skills within the discipline combined with self-organization and contribution to the course.

To prove this hypothesis, we applied statistical analysis.

3. Methods

In this analysis, we used data from a questionnaire of student perceptions of a distance course for cynological translators-assistants of dog show judges in Sumy National Agrarian University, Department of Cynology. This discipline has been taught at the university for several years on a full-time basis, and the distance course has been developed recently and has been functioning for two years. We should have been careful with

implementing the distance course as we might have had the risks not to supply it with all critical issues for thorough learning and timely feedback. We have surveyed the students whether they believe that this course is efficient for them. As the questionnaire contains the questions related to the specific professional sphere, we may use it for assuming that it has the necessary content for supporting the development of disciplinary literacy for cynological translators. This course and student perception have been described. We used statistical software IBM[®] SPSS[®] Statistics (Version 26) for statistical computations.

3.1 Sampling

Data on students' perceptions of characteristics of the distance course for cynological translators and their impacts were collected as part of an evaluation of the implementation using an internet-based questionnaire. The survey was administered in autumn 2018 of full implementation and counted 17 respondents from the first batch of students enrolled in 2017 and the second one in 2018. The students answered the questions on the Google forms about their perceptions. That was the first group of 17 students in this specialty, and we needed to do necessary research to see the flow of the educational process and check the practical meaning of the education. Moreover, the survey could help us adjust the training and reveal possible lacks in the process, so all students of the group took part in the research.

Because of the small number of students, we applied nonparametric tests which are relevant in doing the statistical proof.

3.2 Description of the Questionnaire

This analysis focused on a set of 20 questionnaire items that were designed to measure students' perceptions of the various aspects of the distance course for cynological translators: Level of student contribution to the study process, Level of expectations of the course, Level of initial knowledge, Level of knowledge after the course, the total value of the course, the practical value of the course, level of student load during the course, Level of materials publicity, levels of the sufficiency of materials on the topics 'General Description of the Dog', 'Head Description,' 'Tooth System Description,' 'Neck and Body Description,' 'Limbs Description,' 'Movements Description,' 'Colour Description,' importance of developing more these skills: vocabulary, listening, writing, reading, speaking, each rated on a 5-point Likert scale.

Figure 1 demonstrates the data on the questionnaire's most illustrative answers.

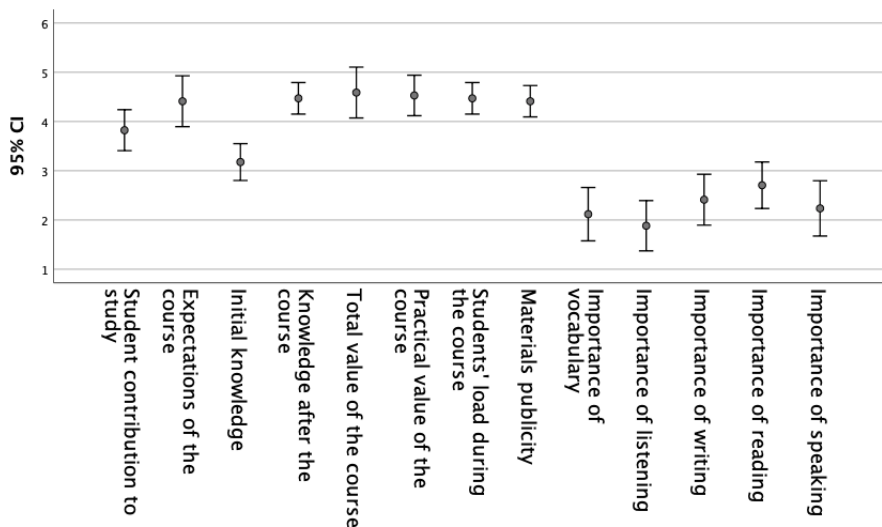


Fig. 1. Error bar of questionnaire items distribution

4. Results

The variables for analysis (Level of student contribution to the study process, Level of expectations of the course, Level of knowledge after the course, the total value of the course, the practical value of the course, importance of developing vocabulary as the main component of ESP acquisition), are dependent, so we apply the paired t-test to check dependence between the variables, which illustrate the relationship to disciplinary literacy, particularly Level of student contribution to the study process – as the ability to self-organization, Level of knowledge after the course – as motivated efforts to attain the total value of the course – as a summing evaluation of the course's parts, practical value of the course – as a practical value of the course for professional usage, the importance of developing vocabulary – as main characteristics of the professional setting. The significance level alpha is set as 0.05.

Statistical treatment

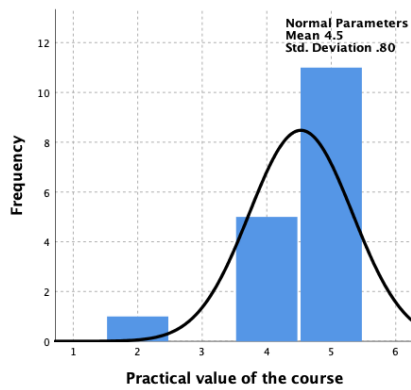
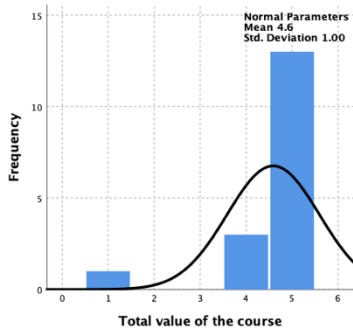
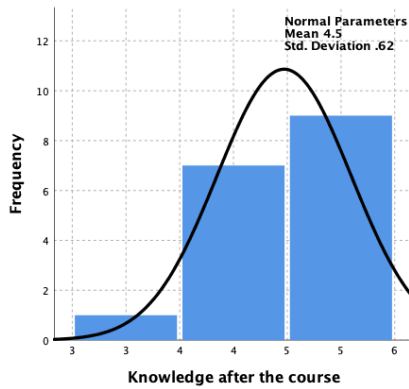
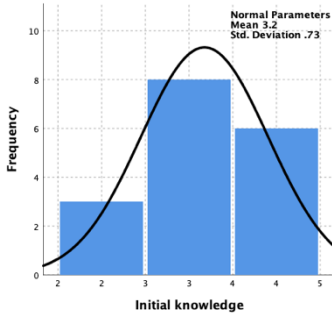
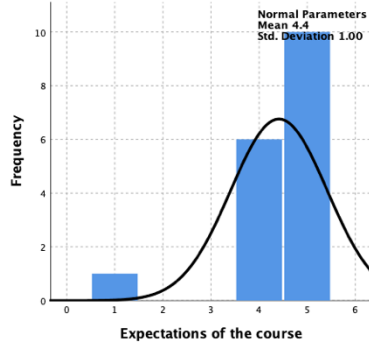
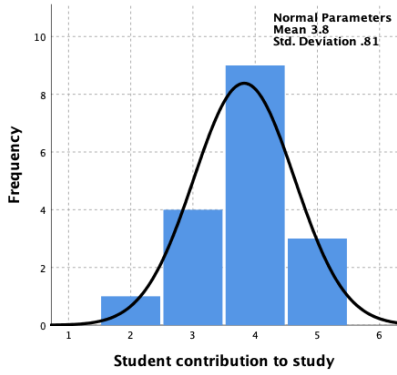
To test the hypothesis relevantly from the statistical point of view we applied One-Sample Kolmogorov-Smirnov Test, which is a nonparametric test checking the assumptions for small samples.

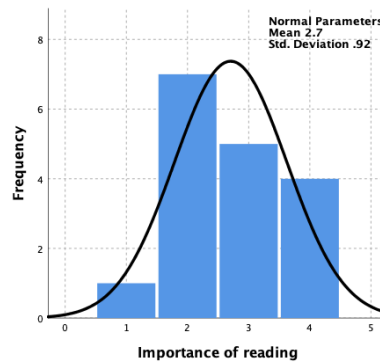
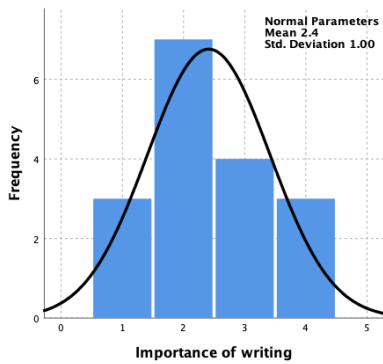
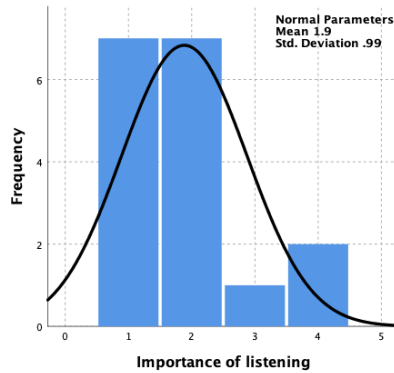
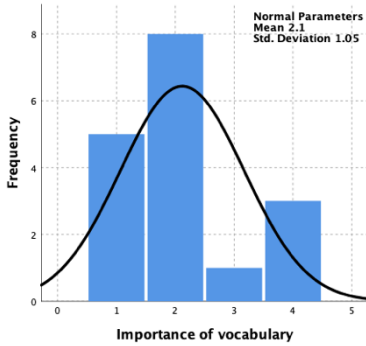
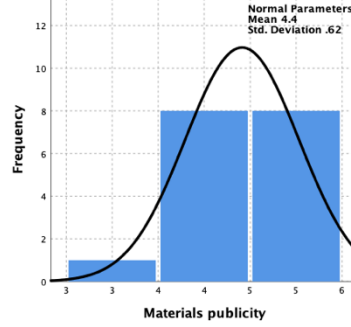
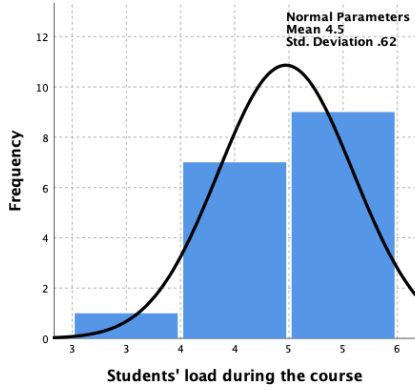
Table 1 presents the results of the hypothesis test summary due to One-Sample Kolmogorov-Smirnov Test with mean and standard deviation.

Table 1. Distribution of Null Hypothesis of the Variables

	The distribution of Null Hypothesis	Mean	StD	Sig.
1	Student contribution to study	4	0.809	0.000 ^a
2	Expectations of the course	4	1.004	0.000 ^a
3	Initial knowledge	3	0.728	0.009 ^a
4	Knowledge after the course	4	0.624	0.000 ^a
5	Total value of the course	5	1.004	0.000 ^a
6	Practical value of the course	5	0.800	0.000 ^a
7	Students' load during the course	4	0.624	0.000 ^a
8	Materials publicity	4	0.618	0.000 ^a
9	Importance of vocabulary	2	1.054	0.000 ^a
10	Importance of listening	2	0.993	0.001 ^a
11	Importance of writing	2	1.004	0.007 ^a
12	Importance of reading	3	0.920	0.006 ^a
13	Importance of speaking	2	1.091	0.015 ^a

Asymptotic significances are displayed. The significance level is 0.050. a. Lilliefors Corrected





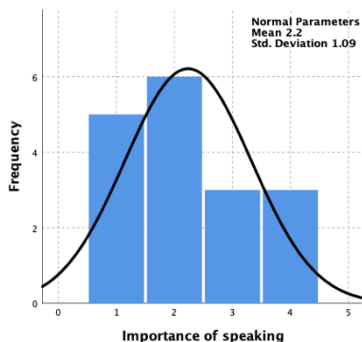


Fig. 2- 14. Normal distribution of the variables

The decision on checking the hypothesis was taken to reject the null hypothesis.

Table 2 and Figure 15 show Related-Samples Friedman's Two-Way Analysis of Variance by Ranks.

Table 2. Related-Samples Friedman's Two-Way Analysis of Variance by Ranks

Total number	17
Test Statistic	43.988
Degree of Freedom	5
Asymptotic Sig. (2-sided test)	0.000

To check the congruency between the constituents of disciplinary literacy and the professional online course we selected the variables responsible for these characteristics based on the grounded research.

Table 3 demonstrates the descriptive statistics of the related pairs, and Table 4 presents the correlations within the defined variables.

Table 3. Paired Sample Statistics

		μ (mean)	number	σ (standard deviation of the sample)	SE(M)
Pair 1	Level of student contribution to study process	3.82	17	0.809	0.196
	Practical value of the course	4.53	17	0.800	0.194
Pair 2	Level of material sufficiency: vocabulary	2.12	17	1.054	0.256
	Total value of the course	4.59	17	1.004	0.243

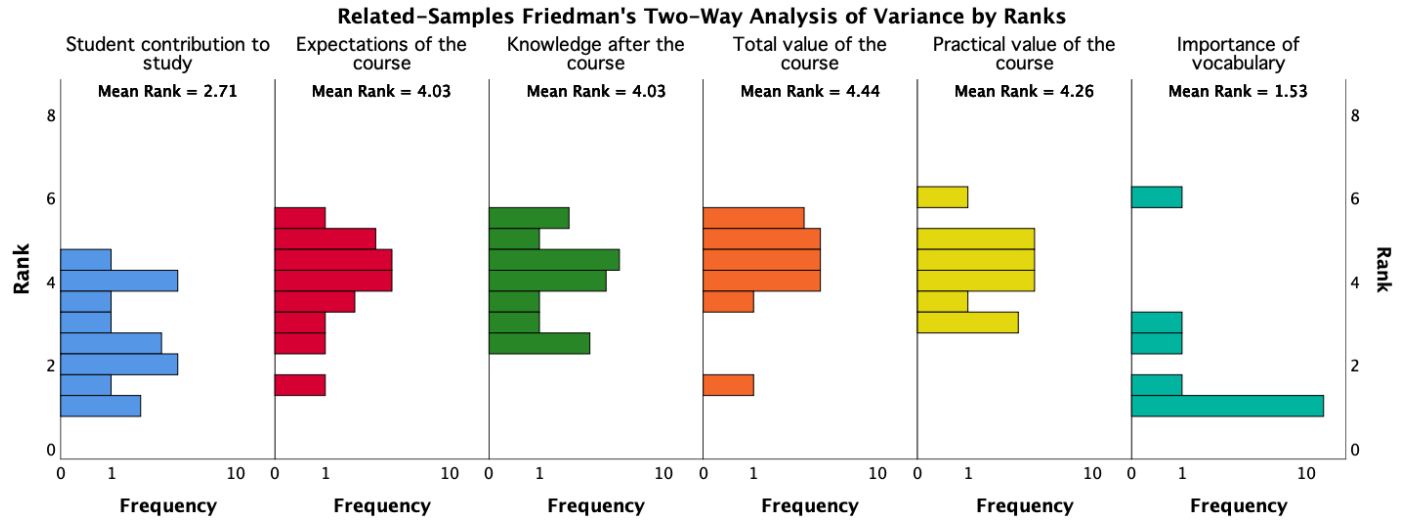


Fig. 15. Related-Samples Friedman's Two-Way Analysis of Variance by Ranks of the core variables

Table 4. Pairwise comparison of the samples of variables

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig. ^a
Importance of vocabulary-Student contribution to study	1.176	0.642	1.833	0.067	1.000
Importance of vocabulary- Expectations of the course	2.500	0.642	3.896	0.000	0.001
Importance of vocabulary- Knowledge after the course	2.500	0.642	3.896	0.000	0.001
Importance of vocabulary-Practical value of the course	2.735	0.642	4.263	0.000	0.000
Importance of vocabulary-Total value of the course	2.912	0.642	4.538	0.000	0.000
Student contribution to study-Expectations of the course	-1.324	0.642	-2.063	0.039	0.587
Student contribution to study-Knowledge after the course	-1.324	0.642	-2.063	0.039	0.587
Student contribution to study-Practical value of the course	-1.559	0.642	-2.429	0.015	0.227
Student contribution to study-Total value of the course	-1.735	0.642	-2.704	0.007	0.103
Expectations of the course-Knowledge after the course	0.000	0.642	0.000	1.000	1.000
Expectations of the course-Practical value of the course	-0.235	0.642	-0.367	0.714	1.000
Expectations of the course-Total value of the course	-0.412	0.642	-0.642	0.521	1.000

Knowledge after the course-Practical value of the course	-0.235	0.642	-0.367	0.714	1.000
Knowledge after the course-Total value of the course	-0.412	0.642	-0.642	0.521	1.000
Practical value of the course-Total value of the course	0.176	0.642	0.275	0.783	1.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is 0.05. a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

We have obtained the significant meanings in most illustrative relationships between the components of disciplinary literacy and the professional components of the course which rejects our null hypothesis and proves our research questions.

Proceeding the test statistics of the results, proved by normal distribution, we checked the correlation between the variables which we defined as the leading indicatives of disciplinary literacy and the professional specificity of the course. Table 5 presents the results in correlation between the variables.

Table 5. Correlation between the variables

		Level of knowledge after the course	Total value of the course	Practical value of the course	Level of contribution to the study process	The Level of material sufficiency: vocabulary
Level of knowledge after the course	Pearson Correlation	1	0.728**	0.596*	0.298	-0.184
	significance (2-tail.)		0.01	0.011	0.245	0.479
Total value of the course	Pearson Correlation	0.728**	1	0.834**	0.367	-0.424
	significance (2-tail.)	0.001		0.000	0.148	0.090
Practical value of the course	Pearson Correlation	0.596*	0.834**	1	0.540*	-0.449
	significance (2-tail.)	0.011	0.000		0.025	0.070

Level of student contribution to study process	Pearson Correlation	0.298	0.367	0.540*	1	-0.561*
	significance (2-tail.)	0.245	0.148	0.025		0.019
The Level of material sufficiency: vocabulary	Pearson Correlation	-0.184	-0.424	-0.449	-0.561*	1
	significance (2-tail.)	0.479	0.090	0.070	0.019	

** . Significant correlation at the 0.01 level.

*. Significant correlation at the 0.05 level.

The results presented in the table, which demonstrate the strong positive correlation between Level of knowledge after the course and Practical and total value of the course are 0.596 and 0.728 correspondently, which also show a significant correlation at 0.01 level.

The dependence between the importance of vocabulary and students' contribution to study is also of substantial value (0.561) in a two-tailed test.

The effect size, according to Cohen's Standard, allows us to see how strong the relationship between our variables. According to Cohen (1988) absolute value $|r| > 0.5$ presents large/strong correlation (Cohen, 1988).

5. Discussion and limitations

This study sought to examine the disciplinary literacy of cynological translators - as the theoretical definition and as the structural components of the distance course for training. To our knowledge, it is the first study demonstrating the disciplinary literacy of the cynological translators, defining the main context of the specific content.

This study contributes to the research and literature on the main concepts in disciplinary literacy. Consistent with the research advocating the idea that disciplinary literacy is awareness to assess the specific knowledge and generate knowledge in this specific area (Moje, 2007) and the ability to use the necessary information in the appropriate for the definite discipline way, so with the specific purpose, and to use the generic skills in favor to learn the specific information within the discipline deeply (Lent, 2015). Moreover, disciplinary literacy is stated as advanced literacy instruction within the subject by applying high-order thinking skills like questioning, visualizing, and summarizing (Hillman, 2014). Having analyzed the set of specific skills for fulfilling the translator's job and the strategies and the

distance course for cynological translators (Pinto & Sales, 2008), we worked out the number of skills that reflect the deep and developed knowledge for this job. This built the background for our definition of disciplinary literacy of cynological translators as a set of general skills to receive and process information through critical thinking in order to obtain specific information materials that enable the translator to process, organize, stock and receive original information materials that reflect the special features of the discipline and balanced cooperation they practice with the team.

The figured-out definition, range of job skills, and analysis of modern research in this field resulted in the need to form the hypothesis that the distance course for cynological translators supports developing the disciplinary literacy of cynological translators needed to be proved. We used the data from the questionnaire for examining the future cynological translators' perceptions about the specific content of the distance course they took. The questions related to the professional issues within the discipline, such as content-oriented vocabulary, authentic environment, and development-specific skills, supported the idea that this course pertained to the development of disciplinary literacy of cynological translators. To prove this conclusion, we used the statistic method for assessing the relative importance of the factors and the concordance coefficient. Our results revealed that the distance course was proved to contain the necessary components for developing disciplinary literacy. The statistical test resulted in a strong correlation between Level of knowledge after the course and Total value of the course and Practical value of the course, the importance of learning vocabulary, and Level of student contribution to the study process. These facts stand for proving our assumptions in building disciplinary literacy.

These findings underscore the importance of determining the course's specific content, particularly the constituents of disciplinary literacy, which makes the ESP education more detailed and efficient.

Our study indicates that disciplinary literacy is an essential factor to take into account the educational process. As today's education is continuing to develop, seeking the effective methods to be improved in preparing future professionals in a different sphere, the idea of paying attention to more qualitative detailed education, which can lead to the goal, seems to be one of the solutions. Similarly, the detailed analysis of the discipline and defining the specific components to study and developing the strategies implying the students' critical thinking and metacognitive abilities can be instrumental in making the accent on teaching English for specific purposes.

The limitations in this study are possible to happen in the process of collecting data and results interpretation. The omission of essential variables, such as additional specific constituents may be related to disciplinary literacy and might have been added for examining.

Another possible deficiency in this paper might be a common method bias. As one single questionnaire for measuring all constructs included was used, the congruency between the variables may be skewed.

Then, another limitation might be connected with the incomplete definition of cynological translators' disciplinary literacy, which is, therefore, a vast field of research for the years to come.

6. Conclusions

Having studied the literature background and found the importance of disciplinary literacy for making the successful professional personality of graduate students, we have also outlined the specific components of disciplinary literacy for cynological translators taking into account their job requirements. Moreover, providing the study with the data gained from the questionnaire about the main features of the distance course for cynological translators, we checked our hypothesis about the correlation between the ESP course with the main accent on professional lexis and skills development and disciplinary literacy development grounding on the theoretical issues. The computed results presented strong correlations between the course's key components, which are characterized as the dependent variables in the theoretical background. However, we admit that the research requires more profound development with the range of related factors in this sphere, which can be the fruitful further investigation.

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APPENDIX

Supplementary data

Table 2. Matrix of rank

	Expert1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Expert 7	Expert 8	Expert 9	Expert 10	Expert 11	Expert 12	Expert 13	Expert 14	Expert 15	Expert 16	Expert 17
Factor1	4	6	6,5	6,5	6	13	7	4	11,5	14,5	5,5	7,5	4	11,5	6	12	6
Factor2	4	2,5	3	6,5	2,5	3,5	3	4	6	6	2	3,5	4	5	2,5	19,5	6
Factor3	8	11,5	16,5	6,5	16	7	13,5	10,5	6	6	13	13	8	5	11,5	12	16,5
Factor4	4	6	6,5	6,5	6	3,5	3	4	2	1,5	5,5	3,5	4	1,5	2,5	12	6
Factor5	4	2,5	3	6,5	2,5	3,5	3	4	2	1,5	2	3,5	4	1,5	2,5	19,5	6
Factor6	4	2,5	3	6,5	6	3,5	3	4	2	6	2	3,5	4	5	2,5	18	2
Factor7	4	2,5	3	1	2,5	3,5	7	4	6	14,5	5,5	3,5	4	5	6	3,5	2
Factor8	4	6	3	6,5	2,5	3,5	3	4	6	14,5	5,5	3,5	4	5	6	3,5	2
Factor9	12	11,5	16,5	17,5	16	13	13,5	10,5	17,5	14,5	13	13	14,5	11,5	11,5	12	12
Factor10	12	11,5	16,5	17,5	10,5	13	13,5	10,5	11,5	14,5	13	13	14,5	11,5	11,5	12	12
Factor11	12	11,5	16,5	13,5	10,5	13	13,5	10,5	11,5	14,5	13	13	14,5	11,5	11,5	12	12
Factor12	12	11,5	16,5	13,5	10,5	13	13,5	10,5	11,5	20	13	13	14,5	11,5	11,5	12	12
Factor13	12	11,5	16,5	13,5	10,5	13	13,5	10,5	11,5	14,5	13	13	14,5	11,5	11,5	12	12
Factor14	12	11,5	16,5	13,5	10,5	13	13,5	14,5	17,5	14,5	13	13	14,5	11,5	11,5	12	12
Factor15	12	11,5	16,5	17,5	16	13	13,5	14,5	11,5	14,5	13	13	14,5	11,5	11,5	12	12
Factor16	19	19	10	17,5	19,5	13	19,5	18	6	6	19,5	19,5	14,5	18	18	3,5	16,5
Factor17	16,5	19	10	20	19,5	19,5	19,5	18	17,5	6	19,5	19,5	14,5	18	18	3,5	19
Factor18	19	16,5	10	6,5	16	13	7	18	17,5	14,5	13	7,5	14,5	18	18	12	19
Factor19	16,5	16,5	10	6,5	10,5	13	13,5	18	17,5	6	13	13	14,5	18	18	3,5	6
Factor20	19	19	10	6,5	16	19,5	13,5	18	17,5	6	13	18	14,5	18	18	3,5	19

Table 3. Matrix of advantages

Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	-	0	4	0	0	0	0	0	5	5	5	5	5	5	5	5	6	4	4	5
2	4	-	5	3	0	1	0	1	6	6	6	6	6	6	6	6	6	5	5	5
3	1	0	-	0	0	0	0	0	3	3	3	3	3	3	3	5	5	3	3	3
4	1	0	5	-	0	0	0	0	6	6	6	6	6	6	6	6	6	5	5	5
5	4	0	5	3	-	1	0	1	6	6	6	6	6	6	6	6	6	5	5	5
6	3	0	5	2	0	-	0	1	6	6	6	6	6	6	6	6	6	5	5	5
7	5	1	6	4	1	2	-	2	6	6	6	6	6	6	6	6	6	6	6	6
8	3	0	5	2	0	1	0	-	6	6	6	6	6	6	6	6	6	5	5	5
9	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	3	5	2	2	3
10	0	0	1	0	0	0	0	0	1	-	0	0	0	0	1	3	5	3	2	4
11	0	0	1	0	0	0	0	0	2	1	-	0	0	0	2	4	5	3	2	4
12	0	0	1	0	0	0	0	0	2	1	0	-	0	0	2	4	5	3	2	4
13	0	0	1	0	0	0	0	0	2	1	0	0	-	0	2	4	5	3	2	4
14	0	0	1	0	0	0	0	0	2	1	0	0	0	-	2	4	5	3	2	4
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	3	5	2	2	3
16	0	0	1	0	0	0	0	0	1	1	1	1	1	1	1	-	2	0	0	1
17	0	0	1	0	0	0	0	0	1	1	1	1	1	1	1	1	-	1	0	1
18	0	0	1	0	0	0	0	0	2	2	2	2	2	2	2	3	4	-	0	2
19	0	0	2	0	0	0	0	0	3	2	2	2	2	2	3	4	4	2	-	4
20	0	0	1	0	0	0	0	0	2	2	2	2	2	2	2	2	2	0	0	-