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Correlation Analysis on the Learning Effectiveness of Theory and Practice in Foreign Trade Courses

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Abstract: ***This research focuses on exploring the correlation between the learning effectiveness of theoretical and practical aspects in Foreign Trade courses, such as International Trade Practice Course, Foreign Trade Documentation Course and POCIB Training Course. International Trade Practice and Foreign Trade Documentation courses constitute the theoretical part of Foreign Trade curriculum. Pocib training is the practical component of Foreign Trade courses. By collecting data from 106 students majoring in Business English and applying Spearman correlation analysis with SPSS software, it is found that there is a significant positive correlation between learning effectiveness of International Trade Practice Course and POCIB Training Course, between Foreign Trade Documentation Course and POCIB Training Course. Based on this, suggestions such as optimizing curriculum settings and strengthening the construction of teaching staff are put forward to enhance the quality of foreign trade professional talent cultivation.***

Keywords: Foreign trade courses, Theory, Practice, Learning effectiveness, Correlation**.**

1. Introduction

In the context of the deepening development of economic globalization, the foreign trade industry's demand for professional talents is increasing and becoming more diversified. Foreign trade courses, as the core carriers for cultivating foreign trade professionals, their teaching quality is directly related to the effectiveness of talent cultivation. These courses generally cover two important components: theory and practice. The theoretical part constructs a systematic knowledge system of foreign trade for students, while the practical part focuses on training students' ability to apply theoretical knowledge to actual business operations. However, currently, there is a lack of in-depth research on the correlation between the learning effects of these two components. Understanding this correlation can help optimize curriculum design, improve teaching quality, and supply more professional talents who meet the needs of the foreign trade industry. Therefore, conducting a study on the correlation between the learning effects of the theoretical and practical components in foreign trade courses has important practical significance.

2. Theoretical Basis

The learning transfer theory posits that one type of learning can influence another, and the knowledge and skills learned previously can facilitate the completion of subsequent related learning tasks. In foreign trade courses, the study of theoretical knowledge provides a foundation for students to understand foreign trade business processes, rules, etc., while the practical component is the application and expansion of theoretical knowledge, and there is a potential learning transfer relationship between the two. Based on this theory, it is speculated that there is a close connection between the learning effects of the theoretical and practical components in foreign trade courses.

3. Data and Research Methods

The final exam scores of three courses --- International Trade Practice, Foreign Trade Documentation, POCIB Training of 106 Business English majors in our university are used as data of this research. International Trade Practice and Foreign Trade Documentation courses constitute the theoretical part of the foreign trade curriculum. Pocib training is the practical component of the foreign trade courses.

The exam of International Trade Practices course was based on blank filling, multiple choice, true-false question, sentence translation, case analysis, calculation and so on. And the exam of Foreign Trade Documentation course was based on document filling and short-answer questions. Closed-book exams were adopted in these two courses.

The emergence of the POCIB (Practice for Operational Competence in International Business) software offers a new solution for practical learning in foreign trade courses. The POCIB platform simulates a real-world international trade environment, enabling students to conduct import and export business operations in a virtual business world. It covers multiple links, including trade negotiations, contract signing, transportation and insurance, customs declaration and inspection, comprehensively training students' practical abilities in foreign trade. POCIB Training covers all aspects of foreign trade business. To complete a transaction on the platform, students need to apply knowledge from multiple courses, such as International Trade Practice, Foreign Trade Documentation, International Settlement, Foreign Trade Correspondence, Customs Declaration Practices, and International Logistics, achieving the integration and comprehensive application of knowledge. Students complete a series of specified foreign trade business operation tasks on the POCIB platform, and the platform automatically generates students' practical operation assessment scores based on preseted evaluation indicators, such as operation accuracy, timeliness and business processing rationality, with a full score of 100 points.

The final exam scores of three courses are as follows:

Table 1: Final Scores of International Trade Practice Course, Foreign Trade Documentation Course, POCIB Training of 106 Business English Majors

No.	Trade	Document	POCIB	No.	Trade	Document	POCIB	No.	Trade	Document	POCIB
1	78.00	88.50	84.18	37	87.00	86.00	78.26	73	78.00	68.50	68.67
2	70.00	92.50	81.36	38	82.50	86.50	71.79	74	80.50	77.00	81.97
3	83.50	82.00	74.36	39	60.00	91.50	74.69	75	86.00	84.00	86.22
4	85.00	91.00	90.00	40	90.50	92.50	76.56	76	79.50	67.50	72.07
5	47.00	74.00	74.79	41	91.50	91.00	89.60	77	80.00	87.50	68.43
6	79.50	77.00	78.75	42	61.00	76.50	72.72	78	82.50	66.50	93.59
7	79.50	92.00	78.98	43	82.50	82.00	89.84	79	85.50	91.50	86.30
8	79.00	84.50	72.54	44	84.00	89.00	89.24	80	89.50	56.50	81.23
9	61.00	92.00	84.24	45	65.50	84.50	87.89	81	92.50	77.00	69.60
10	71.00	79.00	82.83	46	84.50	79.50	86.00	82	83.50	86.00	92.86
11	84.00	89.50	76.94	47	64.00	82.50	79.33	83	93.50	85.00	69.60
12	87.00	84.00	81.14	48	72.00	88.00	75.58	84	76.00	44.50	75.58
13	26.00	40.00	69.43	49	83.50	92.00	86.26	85	75.50	63.00	64.11
14	83.00	68.50	78.42	50	84.00	83.00	76.16	86	80.00	60.50	60.24
15	96.00	96.00	83.98	51	73.50	82.50	74.74	87	80.00	84.50	88.71
16	50.00	55.00	69.78	52	80.00	85.00	81.72	88	88.00	71.50	88.71
17	87.00	68.50	72.00	53	83.50	81.50	86.74	89	78.50	64.00	77.14
18	73.50	69.50	80.84	54	89.00	97.00	90.12	90	75.00	52.50	71.38
19	63.50	74.00	74.72	55	79.00	87.50	83.74	91	74.50	66.50	87.71
20	61.00	78.00	88.66	56	64.50	65.00	83.69	92	73.00	63.00	66.88
21	77.50	57.00	41.02	57	80.50	90.00	94.36	93	95.50	74.00	59.12
22	37.50	67.00	47.50	58	79.00	88.00	84.82	94	84.00	83.50	92.52
23	69.00	61.00	59.11	59	83.50	83.00	84.21	95	82.00	77.50	81.23
24	65.50	72.00	61.24	60	89.00	90.50	77.92	96	62.50	83.50	71.38
25	93.50	92.50	88.12	61	60.00	71.00	73.98	97	87.00	90.50	91.61
26	74.50	84.00	83.69	62	91.50	84.00	87.14	98	85.50	82.00	59.12
27	80.50	87.50	85.76	63	87.00	71.50	83.63	99	94.00	91.00	93.59
28	22.00	55.00	72.51	64	91.50	75.50	71.64	100	95.00	74.00	73.95
29	75.50	72.50	81.16	65	94.50	74.00	74.82	101	97.00	92.50	77.83
30	89.00	82.50	91.42	66	67.00	79.50	74.55	102	86.50	85.50	78.37
31	36.50	54.00	60.03	67	84.50	86.50	73.56	103	78.50	90.00	77.29
32	73.00	75.50	70.24	68	95.00	87.00	73.22	104	69.50	59.00	72.55
33	91.00	93.00	69.39	69	74.00	93.50	93.58	105	84.00	66.50	86.30
34	90.00	94.50	80.19	70	76.50	81.00	61.38	106	73.50	81.50	90.84
35	84.50	85.50	70.14	71	71.50	74.00	87.07				
36	44.00	72.00	55.17	72	93.50	95.00	88.33				

The scores are input into SPSS Statistics system. Taking the above three groups of scores as variables, by using SPSS software we can make Kolmogorov-Smirnov Tests to determine whether these three variables are normally distributed or not. We can get the following results by K-S test:

Table 2: One-Sample Kolmogorov-Smirnov Test

		Trade	Document	POCIB
N		106	106	106
Normal Parameters[a,b]	Mean	77.6840	78.8302	78.0208
	Std. Deviation	14.25655	12.07612	10.26736
Most Extreme Differences	Absolute	0.141	0.135	0.075
	Positive	0.090	0.074	0.056
	Negative	-0.141	-0.135	-0.075
Test Statistic		0.141	0.135	0.075
Asymp. Sig. (2-tailed)		0.000[c]	0.000[c]	0.162[c]

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.

From Table 2, we can find that the final exam scores of POCIB Training are normally distributed because the level of significance is more than 0.05 (p=0.162>0.05). We can also find that the final exam scores of International Trade Practice, Foreign Trade Documentation are not normally distributed because the level of significance is less than 0.05 (p=0.000<0.05).

This research focuses on making a correlation analysis on the final exam scores of International Trade Practice Course and POCIB Training Course, Foreign Trade Documentation Course and POCIB Training Course. The above three groups of scores are three independent variables, and all these three variables can be measured at the interval level, but two of these three variables are not normally distributed, so we should make Spearman correlation analysis to decide whether there is a significant positive correlation between the learning effectiveness of International Trade Practice Course and POCIB Training Course, and also decide whether there is a significant positive correlation between the learning effectiveness of Foreign Trade Documentation Course and POCIB Training Course.

4. Research Hypotheses

This study hypothesizes that there is a significant positive correlation between the learning effectiveness of the theoretical and practical components in foreign trade courses. That is, the more solidly students master the theoretical component, the better their performance in the practical component will be.

According to the above data, our question is whether the final exam scores of International Trade Practice course and POCIB Training course are significantly correlated or not, and whether the final exam scores of Foreign Trade Documentation course and POCIB Training course are significantly correlated or not. In another word, is there a relationship between the final exam scores of these courses?

According to this question, we are conducting the following hypothesis test:

Null hypothesis H_0: $\rho = 0$
Research hypothesis H_1: $\rho \neq 0$

Research hypothesis in this research is that final exam scores of International Trade Practice course and POCIB Training course are correlated, final exam scores of Foreign Trade Documentation course and POCIB Training course are correlated. Null hypothesis here is that there is no correlation on the final exam scores between the courses. By using SPSS Statistics system, we can get Spearman Correlation coefficient of these variables respectively. If the absolute value of the correlation coefficient is between 0.3 and 0.7, there is a moderate correlation; being less than 0.3 indicates low correlation; being greater than 0.7 indicates high correlation. We set the significance level at$\leq$0.05. If significance level p is equal to or less than 0.05, we reject the null hypothesis and accept the research hypothesis; if significance level p is more than 0.05, we accept the null hypothesis. (Xu Hongchen, 2013:64)

5. Correlation Analysis

By using SPSS we employ Spearman correlation analysis and a two-tailed test of significance. See Table 3 for the results:

Table 3: Spearman Correlation

			Trade	Document	POCIB
Spearman's rho	Trade	Correlation Coefficient	1.000	0.423**	0.259**
		Sig. (2-tailed)	.	0.000	0.007
		N	106	106	106
	Document	Correlation Coefficient	0.423**	1.000	0.437**
		Sig. (2-tailed)	0.000	.	0.000
		N	106	106	106
	POCIB	Correlation Coefficient	0.259**	0.437**	1.000
		Sig. (2-tailed)	0.007	0.000	.
		N	106	106	106
**. Correlation is significant at the 0.01 level (2-tailed).					

The above table 3 shows the Spearman correlation coefficient (ρ= 0.259), significance level (p = 0.007) and number of the subjects (n = 106) for the Course of International Trade Practice and POCIB Training. The correlation on final exam scores between the two courses is positive and statistically significant (ρ= 0.259, p<0.05). This means that the higher the score of International Trade Practice course is, the higher the score of POCIB Training course would be. But this interpretation in no way implies causality. The significant correlation merely indicates that the two variables covary (Robert Ho, 2006: 192). It is noted that there is a significant low correlation on the final exam scores between the two courses International Trade Practice and POCIB Training.

Table 3 also shows the Spearman correlation coefficient (ρ= 0.437), significance level (p = 0.000) and number of the subjects (n = 106) for the Course of Foreign Trade Documentation and POCIB Training. The correlation on final exam scores between the two courses is positive and statistically significant (ρ= 0.437, p<0.05). This means that the higher the score of Foreign Trade Documentation course is, the higher the score of POCIB Training course would be. It is noted that there is a significant moderate correlation on the final exam scores between the two courses of Foreign Trade Documentation and POCIB Training.

So there is a significant positive correlation between the learning effectiveness of the theoretical and practical components in foreign trade courses.

6. Reasons for Significant Positive Correlation and Discussion

The research results confirm the significant positive correlation between the learning effects of the theoretical and practical components in foreign trade courses, indicating a close mutually-promoting relationship between them. Theoretical knowledge provides a necessary guiding framework for practical operations. After mastering a solid theoretical foundation, students can better understand the requirements and purposes of practical tasks. For example, a deep understanding of international trade terms helps students accurately select appropriate trade terms in actual business, clarify the responsibilities and obligations of both buyers and sellers, and avoid trade disputes. The practical component, on the other hand, deepens students' understanding and memory of theoretical knowledge through actual operations, making abstract theoretical knowledge more concrete. In simulated customs declaration and inspection practices, students can more profoundly understand the filling norms of customs declarations, inspection and quarantine processes, and other theoretical knowledge, thus achieving the internalization and consolidation of knowledge.

Based on the above research results, in the teaching of foreign trade courses, the integration of theory and practice should be further strengthened. On the one hand, a reasonable proportion of theoretical and practical teaching should be arranged to avoid situations where theory is emphasized over practice or the practical component lacks in-depth theoretical guidance. For example, after teaching international settlement theory, relevant practical courses should be arranged in a timely manner to allow students to deepen their understanding of theoretical knowledge through simulating bank settlement business and actually operating the opening, examination, and settlement processes of letters of credit. On the other hand, teachers should pay attention to guiding students to apply theoretical knowledge in practice during the teaching process. Teaching methods such as case analysis and project-driven learning can be used to cultivate students' practical application abilities and problem-solving skills.

7. Analysis of the POCIB Training in Promoting Learning Effectiveness

7.1 Situated Learning and Knowledge Construction

The POCIB platform creates a highly realistic foreign trade business situation for students. Students play different roles in this situation and participate in actual trade activities. According to the situated learning theory, learners are more likely to understand and master knowledge in a real-world situation because knowledge is closely connected to the situation. On the platform, students combine the theoretical

knowledge of foreign trade they have learned with actual operations by completing various tasks, such as negotiating with customers, signing contracts, and handling transportation and insurance matters, achieving the knowledge construction. For example, when learning international trade terms, students actually apply different trade terms in transactions on the POCIB platform, deeply experiencing the division of responsibilities, risks, and costs between buyers and sellers under each term, thus obtaining a more intuitive and in-depth understanding of this abstract concept.

7.2 Practical Feedback and Self-regulated Learning

The real-time feedback and evaluation system of the platform provides students with timely learning feedback, which is an important mechanism for promoting the improvement of students' learning effectiveness. According to the self-regulated learning theory, learners can adjust their learning strategies and behaviors based on feedback to achieve better learning results. On the POCIB platform, every time students complete one step of a task, the system will provide corresponding feedback, telling students whether the operation is correct and providing improvement suggestions. Students can promptly identify their mistakes and deficiencies based on this feedback, actively adjust their learning methods and operation strategies, and conduct targeted learning and practice. This self-regulated learning process helps students continuously optimize their knowledge structure and skill levels and improve learning efficiency.

7.3 Cooperative Learning and Social Interaction

Some tasks on the POCIB platform require students to complete in teams, which promotes cooperative learning and social interaction among students. The cooperative learning theory holds that through cooperation with peers, learners can share each other's views and experiences, learn from each other, and inspire each other, thus broadening their thinking horizons and improving their problem-solving abilities. During the team-cooperation process, students need to communicate and cooperate effectively, jointly formulate plans, divide tasks, and jointly negotiate and solve problems when encountering difficulties. This cooperative learning and social interaction not only cultivate students' teamwork abilities but also promote knowledge sharing and innovation, enabling students to view problems from multiple perspectives and enhance their comprehensive qualities.

8. Suggestions

According to the correlation between theory and practice, an integrated curriculum system should be constructed. In the arrangement of curriculum content, theoretical knowledge and practical projects should be closely combined so that students can apply and consolidate theoretical knowledge through practical activities in a timely manner while learning theoretical knowledge. For example, develop comprehensive courses which are oriented to real foreign trade business projects, allowing students to systematically apply theoretical knowledge to solve practical problems while completing project tasks.

Cultivate "double-qualified" teachers who have both profound theoretical knowledge and rich practical experience. Teachers can improve their practical abilities by participating in foreign trade enterprise practices, communicating and cooperating with enterprise experts, etc. In teaching, teachers can better introduce actual business cases into the classroom and provide more practical guidance for students, promoting the coordinated development of students' theoretical and practical abilities.

Establish a diversified teaching evaluation mechanism that comprehensively considers students' performance in theoretical learning, practical operation abilities, project completion, etc. When evaluating the practical component, not only should students' operational proficiency be concerned, but also their application ability of theoretical knowledge and the manifestation of innovative thinking. For example, in practical assessments, add evaluations of students' thinking and methods for solving practical problems, guiding students to flexibly apply theoretical knowledge to practice.

Through the above research and suggestions, it is expected to provide useful references for the teaching reform of foreign trade courses, promote the continuous improvement of the quality of foreign trade professional talent cultivation, and meet the needs of the foreign trade industry.

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