

The Correlation between Senior High School Students' English Learning Strategies and English Achievements

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Abstract

As the focus of foreign language teaching research changes from teachers' teaching to students' learning, more and more researchers begin to pay attention to the internal factors of learners. This research aims to obtain information on the English learning strategies of senior high school students through data collection and analysis, and to explore the correlations between the two factors. Participants are 253 students from a senior high school in Yantai, China. The data are processed through descriptive statistics, Pearson r correlation analysis and multi-linear regression analysis by feat of SPSS version26.0. The results of this research are as follows: English learning strategies of senior high school students are at a medium level; English learning strategies and its four sub-dimensions are significantly and positively correlated with English achievements, among which cognitive strategies and affective strategies significantly predict English achievements. Based on the above analyses, the researcher offers pedagogical implications and constructive suggestions for subsequent studies.

Keywords

Senior High School Students; English Learning Strategies; English Achievements; Correlation.

1. Introduction

According to Gagne's information processing theory, the cognitive process is the process of information processing, involving how to notice, select, and receive information, how to code and internalize the information, and how to use the information to make decisions and guide their own behavior, etc. Different individuals have different characteristics and levels in their learning and psychological activities because of using different information processing methods. Therefore, studying the relationship between different strategy-using levels and different cognitive outcomes among people has great significance for both teaching and learning.

Although some researchers have investigated and discussed about the relationship between English learning strategies (ELs) and English achievements (EAs). Still there are not enough studies concerning senior high school students' ELs in the context of China. This study mainly wants to research the status quo about ELs and EAs for senior high school students (SHSSs), and to dig into the correlation of these factors by analyzing the collected data, hoping to offer referential suggestions and thoughts on improving SHSSs' EAs.

2. Literature Review

2.1. Definition of English Learning Strategies

When Chinese scholars^[1, 2] introduce and investigate language learning strategies (LLs), they refer to the 2nd language or foreign LLs of Chinese students. For the vast majority of Chinese

students, English is the main 2nd language or foreign language. Thus the researcher, when talking about the definition of ELs in this research, takes the definition of Ls.

The research of Ls originated in the 1960s after the Cognitive Strategy was put forward by Bruner, but there is no definition universally approved by academic circles in different countries. Chamot^[3] regards Ls to be the skills, pathways or other conscious behaviors which learners have adopted to achieve maximum efficiency in the process of learning a language. Cohen^[4] recognizes language learning strategies as the conscious or semi-conscious behaviors or mental activities of learners, aiming to facilitate their language learning and make compensations while using the language. In China, Cheng & Zheng^[2] describe Ls both at the micro level and at the macro level. The former is targeted to specific learning pursuits, while the latter takes the form of learning schemes, adjustments in learning, and evaluation of learning results.

As to the sub-dimensions of ELs, O'Malley & Chamot^[5] initially put Ls into the theoretical framework of 2nd language learning and proposed three kinds of strategies according to the cognitive theory of information processing: meta-cognitive strategies, cognitive strategies, and social/affective strategies. In China, seeing cognitive psychology as the theoretical foundation underlying language learning strategies, Cheng & Zheng^[2] hold the view that it is more acceptable to divide Ls into "cognitive strategies, meta-cognitive strategies, affective strategies, and communicative strategies". Since this research is carried out in the context of China, the researcher adopts the definition from Cheng & Zheng and sees ELs as a 4 sub-dimension system.

2.2. Definition of English Achievements

The "English achievements" is a broad concept, and actually it includes not only the test scores from regular school examinations but also other kinds of results from tests or activities organized by off-campus institutions, which brings the need for clarifying the definition of "English achievements" in this research. In *The English Curriculum Standards for Senior High School (2017 version)*^[6], the English test scores of students represent their English academic quality and EAs. Generally speaking, EAs, English academic quality, and English performance are similar in connotation, and in most of the related studies, English test scores from participants are used as the measure of EAs. Given this, the "English achievements" in this study are quantified English test scores of students in their English examinations.

2.3. Previous Related Studies

Some researchers^[7, 8] have investigated the status quo of ELs and reported that meta-cognitive strategies rank first in frequency of application. Some researchers^[9, 10] have proven a positive correlation between Ls and learning achievements. Different language skills (such as listening, speaking, reading, and writing) and language items (such as vocabulary, grammar, and pronunciation) may require different strategies, and different learners may choose different strategies according to their characteristics and goals. Consequently, the choice and use of Ls should be flexible, personalized, goal-oriented, and context-related.

In China, Tan & Zhang^[11] have surveyed the overall situations on ELs of SHSSs via using the SILL from Oxford as a scale, discussing the relationship between students' EAs and ELs. Tao^[12] has investigated the relationship between students' 6-dimension system of ELs and their EAs. Some researchers have concretely dug into the relationship between a certain dimension of strategies and a certain part of students' EAs. Lu^[13] has explored the effect of meta-cognitive strategies on students' listening performance. Zhang^[14] has studied the correlation of meta-cognitive strategies with senior high school students' writing performance.

Based on the literature review, such conclusions concerned with this kind of studies can be made: First, although there have already been many studies titled with research on ELs, yet

due to their different dimensions, the ELSSs in most of the studies are not the same as the ones in this research. Second, there have existed studies investigating the correlation between one certain dimension of ELSSs and one certain dimension of students' EAs, for example, the correlation between meta-cognitive strategies and listening or writing achievements. Seldom are there studies digging into the correlations between every one of the four dimensions of ELSSs and students' EAs. And it is the same with the situation on investigating the predictive power of the sub-dimensions of ELSSs on students' EAs.

3. Research Methodology

3.1. Research Questions

This research mainly wants to investigate the level of students' applying ELSSs in their English learning, and to further explore the effect of ELSSs on students' EAs. Accordingly, the research questions are put forward as follows:

- 1) What is the status quo of English learning strategies for senior high school students?
- 2) What is the status quo of English achievements for senior high school students?
- 3) How is the correlation between English learning strategies and English achievements for senior high school students?

3.2. Participants

264 students in total have participated in this research, however, with 11 uncompleted questionnaires discarded as invalid ones, the final sample turns out to be 253, among whom 92 come from senior one, 84 are from senior two, and 77 come from senior three. 89 of them are male and 164 are female.

3.3. Instrument

The ELSSs questionnaire in this research comes from Cheng & Zheng^[2]. The first 16 items belong to the dimension of cognitive strategies, items 17-26 belong to meta-cognitive strategies, items 27-35 go into the category of affective strategies, and items 36-45 are communicative strategies. Each item is followed by numbers from 1 to 5 (1 stands for "never or almost not true of me", 2 for "general not true of me", 3 for "sometimes true of me", 4 for "generally true of me" and 5 for "always true of me"). The Cronbach's Alpha coefficient is 0.961 and the KMO value of the scale is 0.951 ($p=0.000<0.05$), indicating a high reliability and validity of this ELSSs questionnaire.

3.4. Data Collection and Analysis

The researcher adopts the ELSSs questionnaire as the primary instrument. 264 questionnaires have been handed out and a 100 percent recovery rate has been ensured. The researcher has carefully screened all the collected questionnaires. Finally, the remaining 253 valid papers have been obtained, marking that the rate of valid questionnaires is 95.83%. Besides, the researcher has collected all the participants' test scores of the midterm exam in April 2023 and scores for the final exam in July 2023. Afterward, SPSS version 26.0 has been used for data analysis.

4. Research Results

4.1. The Status Quo of English Learning Strategies

First, descriptive statistical method has been used to figure out the status quo of ELSSs for SHSSs. Judging from the data in [Table 1](#) (see next page), the adoption of ELSSs is at an intermediate level ($M=2.60$). Among the 4 sub-dimensions, the frequency of students' adopting affective strategies is the highest ($M=2.81$), followed by cognitive, meta-cognitive, and communicative strategies.

Table 1. Descriptive Statistical Results of ELSs

	N	Minimum	Maximum	Mean	Std. Deviation
ELSs	253	1.27	4.13	2.60	.5
cognitive	253	1.19	4.86	2.69	.68
meta-cognitive	253	1.0	4.5	2.53	.71
affective	253	1.0	4.78	2.81	.73
communicative	253	1.14	4.14	2.36	.57
Valid N (listwise)	253				

Second, One-Way Between-Subject ANOVA has been adopted to pin down into the situations in ELSs between students in different grades. As the data in [Table 2](#) show, there exist significant differences between students from three grades both at holistic ELSs and the sub-dimensions except for communicative strategies.

Table 2. Differences Between Grades

	Senior 1		Senior 2		Senior 3		F (2,250)	Post Hoc (Games-Howell)
	(n=92)		(n=84)		(n=77)			
	M	SD	M	SD	M	SD		
ELSS	2.44	0.65	2.63	0.54	2.75	0.52	6.03*	Senior1< Senior 3
cognitive	2.45	0.71	2.72	0.60	2.94	0.68	11.77*	Senior 1< Senior 2
								Senior 1< Senior 3
meta-cognitive	2.39	0.77	2.47	0.63	2.77	0.65	7.21*	Senior 1< Senior 3
								Senior 2< Senior 3
affective	2.62	0.76	2.87	0.69	2.98	0.70	5.54*	Senior 1< Senior 3
communicative	2.31	0.66	2.47	0.56	2.30	0.43	2.54	\

* $p < 0.05$.

Third, the Independent Samples t-test has been used for detailed information on the differences in ELSs between male and female students as well as between high-score and low-score groups. Male students are significantly inferior to female students in applying ELSs both at the overall level and at the sub-dimension level (see [Table 3](#)). Students with higher scores adopt ELSs more frequently than those with lower scores (see [Table 4](#) on the next page). That is to say, significant differences in the adoption of ELSs lie between male and female students and between students with different test scores.

Table 3. Differences in ELSs Between Genders

	Group 1 male (n=89)		Group 2 female (n=164)		MD	t(251)
	M	SD	M	SD		
ELSs	2.363	0.5659	2.727	0.5640	-0.364*	-4.896
cognitive	2.412	0.6466	2.841	0.6474	-0.429*	-5.034
meta-cognitive	2.303	0.7080	2.654	0.6758	-0.351*	-3.878
affective	2.531	0.7293	2.968	0.6950	-0.437*	-4.699
communicative	2.203	0.5159	2.443	0.5743	-0.240*	-3.269

* $p < 0.05$.

Table 4. Differences in ELSSs Between High-score and Low-score Groups

	Group 1 high-score (n=64)		Group 2 low-score (n=64)		MD	t (126)
	M	SD	M	SD		
ELSSs	3.163	0.429	2.027	0.453	1.136*	14.584
cognitive	3.406	0.420	2.048	0.494	1.358*	16.744
meta-cognitive	3.214	0.573	1.945	0.558	1.269*	12.685
affective	3.425	0.582	2.146	0.602	1.279*	12.223
communicative	2.607	0.523	1.969	0.471	0.638*	7.257

*p<0.05.

4.2. The Status Quo of English Achievements

First, the results of descriptive statistical analysis in Table 5 show that the status quo of EAs for SHSSs is not ideal enough (M=65.93). The data indicate that the level of the participants' EAs is not high, which perhaps is related with their status quo of using ELSSs shown in Table 1.1.

Table 5. Descriptive Statistical Results of ELSSs

	N	Minimum	Maximum	Mean	Std. Deviation
EAs	253	14.50	127.50	65.934	23.266
Valid N (listwise)	253				

Second, the results of One-Way Between-Subject ANOVA in Table 6 show that the participants' English test scores vary between the three grades ($F(2, 250) = 55.41, p < 0.05$). Bonferroni's Post Hoc procedure indicates that there are differences with significance in EAs between participants from different grades, which perhaps have relations with the differences in their ELSSs shown in Table 1.2.

Table 6. Differences in EAs Between Grades

	Senior 1		Senior 2		Senior 3		F (2,250)	Post Hoc (Bonferroni)
	(n=92)		(n=84)		(n=77)			
	M	SD	M	SD	M	SD		
	EAs	53.02	19.50	63.25	17.38	84.29	21.42	55.41*

*p<0.05.

Third, the results of the Independent-Samples t-test in Table 7 show that the mean value of EAs for male students is 55.13, relatively lower than that of female students (M=71.79). This discrepancy in the mean score (MD=-16.66) is of statistical significance ($t(251) = -5.78, p < 0.05$), suggesting a significant difference in EAs between male and female students. Perhaps this situation can find clues in the differences in ELSSs between male and female students.

Table 7. Differences in EAs Between Genders

	Group 1 Boys (n=89)		Group 2 Girls (n=164)		MD	t(251)
	M	SD	M	SD		
EAs	55.13	20.41	71.79	22.67	-16.66*	-5.78

*p<0.05

4.3. The Correlations between English Learning Strategies and English Achievements

Pearson r correlation analysis has been adopted to figure out the detailed information on the correlation coefficients. As can be seen from Table 8, the holistic ELSs are highly correlated with EAs ($r=0.725$). In the specific dimensions, cognitive strategies have a high correlation with EAs ($r=0.766$), while meta-cognitive strategies, affective strategies, and communicative strategies are moderately correlated with EAs.

Table 8. Correlations Between ELSs and EAs

Variables		descriptive statistics		correlation matrices				
		M	SD	1	2	3	4	5
dependent	EAs	65.93	23.27	0.766*	0.698*	0.624*	0.423*	0.725*
independent	cognitive	2.690	0.678	-	0.842*	0.726*	0.586*	0.906*
	meta-cog	2.531	0.706		-	0.765*	0.540*	0.909*
	affective	2.814	0.736			-	0.652*	0.906*
	communicative	2.359	0.565				-	0.773*
	ELSs	2.599	0.590					-

* $p<0.05$.

The results of the Multi-linear regression analysis show that cognitive strategies and affective strategies significantly predict EAs. The standardized regression equation is $EAs = 0.616 \times \text{cognitive strategies} + 0.116 \times \text{meta-cognitive strategies} + 0.153 \times \text{affective strategies} + 0.100 \times \text{communicative strategies}$ (see Table 9).

Table 9. Summary of Multiple Linear Regression Results ($n=253$)

Variables		R	R ²	Adjusted R ²	F(4,248)	Beta	t(248)	Tolerance	VIF
dependent	EAs	0.779	0.606	0.600	95.555*				
independent	cognitive					0.616	7.923*	0.262	3.810
	meta-cognitive					0.116	1.429	0.240	4.174
	affective					0.153	2.206*	0.329	3.043
	communicative					0.100	-1.861	0.545	1.835

* $p<0.05$.

5. Conclusion

The researcher has conducted a quantitative analysis to dig into the correlation between ELSs and EAs for SHSSs, and the major findings are as follows: First, the participants present an intermediate level of ELSs. In the sub-dimension level, affective strategies rank first followed by cognitive, meta-cognitive, and communicative strategies. There lie significant differences in the overall ELSs and the sub-dimensions between the participants divided by grade, gender, and test scores. Second, the participants' EAs are not high, and significant differences exist between grades and genders. Third, both the overall ELSs and the 4 sub-dimensions are significantly and positively correlated with EAs. Only cognitive strategies and affective strategies are significant predictors to EAs.

Pedagogical implications can be elicited from these research results. First, the level of SHSSs' applying ELSs is only medium (see Table 1), ELSs are significantly correlated with EAs (see Table 8), and participants with higher EAs adopt ELSs more frequently than those with lower EAs (see Table 4). These findings suggest the necessity in teaching and training senior high school students to improve the level of their adopting ELSs. Second, there are significant

differences in using ELSS between participants divided by grade and gender (see Table 2 & Table 3), which indicates a need to start from the reality on students' differences between groups in using ELSS when nurturing them. Third, emphasis should be put on training specific strategies like cognitive strategies and affective strategies because they can significantly predict EAs (see Table 9).

This research inevitably has limitations. On the one hand, due to the time and energy limits, there are shortcomings in the sample size and sampling range in this research. On the other hand, collecting data for this research mainly resorts to the quantitative manner, thus combining qualitative analysis methods is of reference value for future studies.

References

- [1] Q.F. Wen: On English Learning Strategies (Shanghai Foreign Language Education Press, China 1996).
- [2] X.T. Cheng, M. Zheng: English Learning Strategies-From Theory to Practice (Foreign Language Teaching and Research Press, China 2002).
- [3] A.U. Chamot: The learning strategies of ESL students, In Wenden & J.Rubin (eds.). *Learner Strategies in Language Learning* (Prentice-Hall, the USA 1987) p.71-83.
- [4] A.D. Cohen: *Strategies in Learning and Using a Second Language* (2nd edition), (Routledge, England 2014).
- [5] J.M. O'Malley, A.U. Chamot: *Learning Strategies in Second Language Acquisition* (Cambridge University Press, England 1990).
- [6] The Ministry of Education of the People's Republic of China: *The English Curriculum Standards for Senior High School* (2017 version) (People's Education Press, China 2020).
- [7] M.M. UR. Rahman: EFL learners' language learning strategies: A case study at Qassim University, *Advances in Language and Literary Studies*, Vol.11(2020) No.5, p.6-11.
- [8] W.M. Fernandez Malpartida: Language learning strategies, English proficiency and online English instruction perception during COVID-19 in Peru, *International Journal of Instruction*, Vol.14 (2021) No.4, p.155-172.
- [9] M. Papi, A. Rios, H. Pelt, E. Ozdemir: Feedback-seeking behavior in language learning: Basic components and motivational antecedents, *The Modern Language Journal*, Vol.103 (2019) No.1, p. 205-226.
- [10] M. Pawlak: Investigating language learning strategies: Prospects, pitfalls and challenges, *Language Teaching Research* Vol.25 (2021) No.5, p.817-835.
- [11] X. Tan, Z.H. Zhang: An analysis of the relationship between English learning strategies, autonomous learning ability and academic performance, *Theory and Practice of Foreign Language Teaching* (2015) No.1, p.59-65, 88.
- [12] X.Y. Tao: The influence of English learning strategies on students' test scores in senior high school, *Education and Teaching Forum* (2016) No.4, p.264-266.
- [13] Y. Lu: An empirical study of English listening meta-cognitive strategies in high school students, *English Square* (2018) No.6, p.167-168.
- [14] Q.Q. Zhang: Meta-cognitive strategies and English writing teaching in senior high school, *Overseas English* (2020) No.24, p.218-219.