

RESEARCH ARTICLE

Relationship between class concentration, class satisfaction, and academic achievement according to listening type of middle school students in photosynthesis learning

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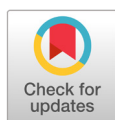
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ABSTRACT

The purpose of this study is to analyze the relationship between class concentration, class satisfaction, and academic achievement according to middle school students' listening style. For this, a study was conducted on 156 8th grade students attending two middle schools in K province who agreed to data collection. At this time, 130 students (66 male students, 64 female students) were used for analysis, excluding cases where some of the tests were not performed or had missing values. The research results are as follows. First, there was no difference in academic achievement according to listening style level. Second, there was no difference in class satisfaction according to listening style. However, in the case of relational and analytical listening styles, there was a correlation with satisfaction with the teaching method. Third, among listening styles, only relational and analytical listening styles had a positive correlation with class concentration. Through this, there is a need to teach science classes to utilize relational and analytical listening styles, and to improve academic performance, teach in a direction that can improve class concentration rather than listening style. In future research, it is expected that comparative analysis will be conducted by dividing schools by level.

Key words : Listening style, class concentration, class satisfaction, academic achievement, photosynthesis, middle school students



OPEN ACCESS

Brain, Digital, & Learning
2024, Vol. 14, No. 2, 213-225

<https://doi.org/10.31216/BDL.20240013>

Received: May 08, 2024

Revised: May 29, 2024

Accepted: June 03, 2024

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Introduction

The direction of education pursued in modern science education is learner-centered classes where the learner becomes the subject of the class. However, it is realistically difficult for this type of class to be implemented in a country where entrance exam-centered education is deeply entrenched, such as the Republic of Korea (Huh, 2010). The most common form of teaching in the Republic of Korea is teacher-centered lecture-style teaching, where the teacher delivers

knowledge to learners. In this teaching and learning situation, the learner primarily takes on the position of a listener, that is, a 'listener' (Lim et al., 2020). As a result, 'listening' can serve as a very decisive element of communication in teaching and learning situations in the Republic of Korea.

Listening is a social skill used when communicating with others for the purpose of smooth interaction, and refers to the act of paying attention to what the conversation partner is trying to say and trying to understand its meaning (Bodie et al., 2013). People have their own diversity in how they pay attention to and process information, and listening types were classified to distinguish them more clearly (Watson et al., 1995).

Listening styles are classified into four types: relational, analytical, task-oriented, and critical (Bodie et al., 2013). The relational listening type is a type that perceives listening to a story as an emotional and empathetic interaction with the speaker, forms a relationship with the other person, understands their emotions, and enjoys the listening process itself (Villaume & Bodie, 2007; Weaver & Kirtley, 1995). The analytical listening type is the type that organizes and analyzes information and listens to the other person before making a conclusion (Bodie et al., 2013). The task-oriented listening type is a type that focuses on efficiency and the core and focuses on the ultimate and core part of what the speaker is saying (Bodie et al., 2013). And the critical listening type is the type that evaluates the other person's message by focusing on its accuracy, inconsistencies, and errors (Bodie & Villaume, 2003).

Previous research on listening types includes studies on relationships and variables between people based on listening types (Jang et al., 2007; Johnston et al., 2000) and studies on relationships with specific variables (Chesebro, 1999; Weaver & Kirtley, 1995) are mainly carried out. Recently, research is being conducted in the Republic of Korea to identify the pedagogical value of listening types. Accordingly, in science education, analysis of differences in science achievement according to listening type (Kim et al., 2018) and research on recall memory network analysis according to listening type (Lim et al., 2020) have been conducted.

Meanwhile, learning results are influenced by several variables such as learners, learning tasks, and teachers (Kang, 2023; Yu & Kwon, 2015). Among them, learner variables that directly perform listening have the most decisive influence on learning results. Among learner variables, class concentration and class satisfaction are known to be the main variables related to learner learning (Kim & Lee, 2016; Sung & Kwon, 2021). Class concentration refers to the ability of learners to select various stimuli coming from outside during the learning process during class time, focus their attention only on things related to the content to be learned, and maintain this on a continuous basis (Kim & Lee, 2016). Class satisfaction is the level of students' awareness of the learning process and results they experience while the class is in progress. It evaluates the degree to which students are satisfied with the class after taking the class (Choi & Cheon, 2011). Previous studies on class concentration and class satisfaction have analyzed factors affecting class concentration (Choi & Cheon, 2010; Kang, 2023; Yu & Kwon, 2015) or to analyze the impact of class strategies on class satisfaction (Choi, 2021; Kim, 2005). As such, there is a lack of research analyzing class concentration and class satisfaction as learner variables related to academic achievement in science.

The content itself is very important in that photosynthesis is not a piece of knowledge but basic knowledge that helps in understanding living organisms as a whole (Chung et al., 2005; Kim & Byun, 2010). Through photosynthesis, students can connect and understand the content from the mechanism by which cells, the most basic unit of living organisms,

produce energy sources, through the energy conversion process of living organisms, and the subsequent energy flow throughout the ecosystem. The concept of photosynthesis is introduced in the sections ‘Structure and Function of Plants’, ‘Plants and Energy’, and ‘Cellular Respiration and Photosynthesis’ at each school level of elementary school, middle school, and high school. Photosynthesis has continuity and sequence in related concepts from elementary school to high school (MOE, 2015; Park et al., 2021). Accordingly, the topic of photosynthesis is worth analyzing because it is a very representative learning topic in life science learning.

Therefore, this study was to analyze how middle school students’ listening style affects class concentration, class satisfaction, and academic achievement in the process of learning the topic of photosynthesis. Through this, it is believed that by analyzing the various influences of listening type as a learner variable on learning, it will be possible to provide various implications for the learner’s learning direction and effective learning environment.

Materials and Methods

Subjects

This study was conducted on 156 8th grade students attending 2 schools and 5 classes in K province. All students agreed to the purpose of the study. Excluding 26 people who did not take part of the test or had missing values for even one question, the remaining 130 people were used in the analysis. The gender ratio of the students used in the analysis was 50.8% (66 students) male and 49.2% (64 students) female. The science achievement level of students at this school is upper-middle.

Questionnaire

There are four types of questionnaires used in this study: listening style, class concentration, class satisfaction, and academic achievement for photosynthesis. However, in the case of academic achievement, the same test questionnaire was administered twice, before and after class. Table 1 below specifically shows the areas and number of questions corresponding to each questionnaire.

Table 1. Categories and number of the questionnaire

Questionnaire	Category	No.
Listening style	Relational listening style(RL)	6
	Analytical listening style(AL)	6
	Task-oriented listening style(TOL)	6
	Critical listening style(CL)	6
Class concentration	Class spirit-directed concentration(CSDC)	10
	Learning-directed concentration(LDC)	10
	Class posture-directed concentration(CPDC)	10
	Class attitude-directed concentration(CADC)	10
	Intensify class-directed concentration(ICDC)	10
Class satisfaction	Class objectives satisfaction(COS)	5
	Class content satisfaction(CCS)	4
	Class method satisfaction(CMS)	7
	Class effect satisfaction(CES)	4
Academic achievement	Definition of photosynthesis	2
	Place of photosynthesis	2
	Reactants and products	2
	Environmental factors	2
	Respiration	2
	Photosynthesis and respiration	2
	Plant nutrition	3

The listening style questionnaire was LSP-R (Listening Styles Profile-Revised). This is a questionnaire that Bodie et al. (2013) modified and supplemented with Watson et al. (1995)'s LSP-16 (Listening Styles Profile-16), which was translated into Korean and used in the study by Kim et al. (2018). The questionnaire is divided into four types: relational listening (RL), analytical listening (AL), task-oriented listening (TOL), and critical listening (CL), and is composed of a 7-level Likert scale. The number of questions is 24, 6 for each type, and the reliability of the LSP-R reported in the original questionnaire was high: Relational ($\alpha = .86$), analytical ($\alpha = .91$), task-oriented ($\alpha = .89$), and critical ($\alpha = .85$). It had high reliability at .85.

The class concentration questionnaire was used by modifying the test tool developed by Park & Kang (2001). The questionnaire consists of five sub-variables: class spirit-directed concentration(CSDC), learning-directed concentration(LDC), class posture-directed concentration(CPDC), class attitude-directed concentration(CADC), and Intensify class-directed concentration(ICDC). The number of questions is 10 for each sub-variable. There are a total of 50 questions. The content validity of this questionnaire was .93.

For class satisfaction, part of the questionnaire used by Baek et al. (2018) was extracted and reorganized to suit the characteristics of the science subject. The questionnaire consists of four sub-variables: Class objectives satisfaction(COS), class content satisfaction(CCS), class method satisfaction(CMS), and class effect satisfaction(CES), with a total of 20 questions. Content validity was .96.

For academic achievement, the photosynthesis questionnaire developed by Bae (2007) was modified to suit the middle school curriculum level by Kim et al. (2018). The questionnaire are seven sub-variables: definition of photosynthesis, place of photosynthesis, reactants and products, environmental factors, respiration, photosynthesis and respiration, and plant nutrition. And the questionnaire consists of a total of 15 questions. The content validity of the questionnaire was .92.

Class Procedures

For this study, life science teachers at each school directly conducted classes. The two teachers who taught the class had between 4 and 6 years of experience and were certified life science teachers. The class was conducted in accordance with the school conditions, and the unit taught was 'Plants and energy', Unit 4 of the 8th grade, for a total of 3 hours. The class was conducted in a teacher-centered explanation format, and the exploratory process and methods were presented for the exploratory activities. The class was conducted specifically through the following process.

First, the definition of photosynthesis is explained, and the place where photosynthesis occurs is confirmed through an experiment observing starch made through photosynthesis in *Hydrilla verticillata* leaves. At this time, teachers taught about the products of photosynthesis by explaining the process by which glucose made in the chloroplast of leaves is converted into starch and stored. And through a color change experiment of the BTB solution, the substances required for photosynthesis were confirmed. It was additionally suggested that oxygen is also produced as a by-product of photosynthesis during this process. In the case of environmental factors that affect photosynthesis, teachers taught about the differences in the amount of photosynthesis depending on the intensity of light, temperature change, and concentration of carbon dioxide depending on the number of lights turned on. Lastly, teachers conducted a class comparing the process of using oxygen in plant cells to decompose nutrients to obtain energy needed for life, as well as the differences between respiration and photosynthesis.

Data Collection and Analysis

After the questionnaire was delivered by mail, the completed questionnaire was collected again by mail. Before class, questionnaires were conducted on listening style, pre-test of academic achievement, and class concentration. After class, class satisfaction and post-test of academic achievement questionnaires were conducted. The questionnaires were conducted under the supervision of the science teacher who conducted the class, and the time required was approximately 10 to 15 minutes each, allowing sufficient time for the questionnaires. The timing of the inspection was set according to the progress of classes at each school. Among them, it was conducted once in accordance with the progress of the photosynthesis topic, but only in the case of the academic achievement test, it was administered twice, once each before and after class.

Each questionnaire was scored for data analysis. For the listening style test, a score of 1 to 7 was assigned to each question according to a 7-level Likert scale written by the student, and the scores for each question corresponding to the 4 listening types were totaled to calculate the score for each category. In the class concentration and class satisfaction questionnaire, scores of 1 to 5 were given to each question according to a 5-level Likert scale written by the student, and all questions were reverse scored. The scores of all questions were added together to calculate the overall and sectional scores. For the academic achievement questionnaire, 1 point was given for a correct answer, and 0 points were given for an incorrect answer or left blank, and the scores for a total of 15 questions were added to calculate the academic achievement score before and after class.

SPSS 26.0 statistical program was used for data analysis. First, descriptive statistics of students' listening style, class concentration, class satisfaction, and academic achievement were analyzed. In order to analyze the differences in class concentration, class satisfaction, and academic achievement according to the level of listening types, students were

divided into three levels, high, middle, and low, based on the scores received in each variable, based on the top and bottom 27%, as in related previous studies. Afterwards, one-way analysis of variance was performed. If a statistically significant difference was found as a result of one-way analysis of variance, a post-hoc test(Scheffe) was additionally performed. Lastly, correlation analysis was performed to analyze the correlation between listening types, class concentration, class satisfaction, and academic achievement.

Results

Descriptive Statistics

The ANOVA Descriptive statistics on the listening style, class concentration, class satisfaction, and academic achievement of the students who conducted the study are shown in Table 2. Descriptive statistics were analyzed as mean(standard deviation). In terms of listening type, the relational listening type was the highest at 31.29 (4.63), followed by the analytical listening type at 27.69 (4.36), the critical listening type at 26.35 (5.35), and the task-oriented listening type at 26.34 (5.78). appeared in that order.

As for class concentration, class attitude-directed concentration showed the highest value at 32.91 (6.30). Next, learning-directed concentration was 32.72 (6.72), intensify class-directed concentration was 32.10 (5.90), class attitude-directed concentration was 31.30 (6.98), and class spirit-directed concentration was 30.80 (6.63).

The class satisfaction was highest at 24.98 (5.42) for the class method satisfaction, followed by class objectives satisfaction at 24.98 (5.42), satisfaction with the class content satisfaction at 14.32 (2.87), and the class effect satisfaction came in the order of 13.08 (3.04). Lastly, it was confirmed that academic achievement improved from 4.12 (2.09) before class to 7.15 (2.72) as a result of class.

Table 2. Descriptive statistical results

Category		M	SD
Listening style	Relational listening style(RL)	31.29	4.63
	Analytical listening style(AL)	27.69	4.36
	Task-oriented listening style(TOL)	26.34	5.78
	Critical listening style(CL)	26.35	5.35
Class concentration	Class spirit-directed concentration(CSDC)	30.80	6.63
	Learning-directed concentration(LDC)	32.72	6.72
	Class posture-directed concentration(CPDC)	31.30	6.98
	Class attitude-directed concentration(CADC)	32.91	6.30
	Intensify class-directed concentration(ICDC)	32.10	5.90
	Sub-total	159.83	29.23
Class satisfaction	Class objectives satisfaction(COS)	16.76	3.10
	Class content satisfaction(CCS)	14.32	2.87
	Class method satisfaction(CMS)	24.98	5.42
	Class effect satisfaction(CES)	13.08	3.04
	Sub-total	69.15	12.25
Academic achievement	Pre-test	4.12	2.09
	Post-test	7.15	2.72

Analysis by Listening Style Level

Class Concentration

Table 3 shows the results of analyzing the difference in class concentration by the level of listening type. There was a significant difference in class concentration according to level in relational listening type and analytical listening type ($p < .05$). A post-test was conducted to specifically confirm the difference in class concentration according to the upper, middle, and lower levels of relational and analytical listening types. As a result, it was confirmed that in the relational listening type, high-level students had higher class concentration than middle and low-level students, and in the case of analytical listening type, high-level students showed higher class concentration than low-level students. Through this, it was confirmed that relational and analytical listening types have a positive correlation with class concentration. Meanwhile, there was no significant difference in class concentration depending on the level of task-oriented and critical listening type ($p > .05$).

Table 3. One-way ANOVA results of class concentration by listening type level

Listening type	Level	N	M	SD	F	Post-hoc test (Scheffé)
Relational listening style(RL)	High	39	173.00	29.98	7.035*	High > middle, low
	Middle	59	157.00	23.85		
	Low	32	149.00	32.16		
Analytical listening style(AL)	High	42	166.50	33.59	3.587*	High > low
	Middle	59	160.83	24.16		
	Low	29	148.14	29.38		
Task-oriented listening style(TOL)	High	46	158.78	26.64	.420	-
	Middle	49	158.06	28.00		
	Low	35	163.69	34.26		
Critical listening style(CL)	High	40	165.85	27.96	1.680	-
	Middle	55	159.45	27.09		
	Low	35	153.54	33.09		

* $p < 0.05$

Class Satisfaction

Table 4 shows the results of analyzing the difference in class satisfaction by the level of listening type. In relational listening type, the mean was distributed according to level as high-level students were 71.28(13.16), middle-level students were 69.1(11.66), and low-level students were 66.25(11.98), but there was no statistically significant difference ($p > .05$). In analytical, task-oriented, and critical listening types, the means were distributed regardless of level, and there was no statistically significant difference ($p > .05$). Through this, it was confirmed that listening type had no direct relationship with class satisfaction.

Table 4. One-way ANOVA results of class satisfaction by listening type level

Listening type	Level	N	M	SD	F
Relational listening style(RL)	High	39	71.28	13.16	1.503
	Middle	59	69.31	11.66	
	Low	32	66.25	11.98	
Analytical listening style(AL)	High	42	71.24	13.01	1.300
	Middle	59	67.34	12.25	
	Low	29	69.79	10.91	
Task-oriented listening style(TOL)	High	46	67.72	12.28	.642
	Middle	49	69.29	11.76	
	Low	35	70.83	13.00	
Critical listening style(CL)	High	40	68.60	14.22	1.425
	Middle	55	67.69	12.28	
	Low	35	72.06	9.25	

* $p < 0.05$

Academic Achievement

Table 5 shows the results of analyzing the difference in academic achievement after class by the level of listening type. There was no correlation between the means depending on the high, middle, and low levels in the relational, analytical, and task-oriented listening types. In the case of the critical listening type, the means were 7.78(2.70), 7.09(2.77), and 6.51(2.58) depending on the high, middle, and low levels, but there was no statistically significant difference ($p < .05$). Through this, it was confirmed that there was no statistically significant difference in academic achievement after class by the level of listening style ($p > .05$). In other words, it was confirmed that listening type had no direct effect on changes in academic achievement after class. This result is different from the results of Kim et al. (2018), who found that task-oriented and critical listening type had a positive correlation with science achievement.

Table 5. One-way ANOVA results of post-test of academic achievement by listening type level

Listening type	Level	N	M	SD	F
Relational listening style(RL)	High	39	7.31	2.45	1.914
	Middle	59	7.47	2.70	
	Low	32	6.34	2.99	
Analytical listening style(AL)	High	42	7.38	2.52	.259
	Middle	59	6.98	2.62	
	Low	29	7.14	3.25	
Task-oriented listening style(TOL)	High	46	7.54	2.79	.776
	Middle	49	6.88	2.67	
	Low	35	7.00	2.72	
Critical listening style(CL)	High	40	7.78	2.70	2.054
	Middle	55	7.09	2.77	
	Low	35	6.51	2.58	

* $p < 0.05$

Correlation Analysis between Listening Style, Class Concentration, Class Satisfaction, and Academic Achievement

Table 6 shows the results of analyzing the correlation between listening type, class concentration, class satisfaction, and academic achievement. Looking at the correlation between listening types, relational listening had a correlation with

analytical and critical listening, analytical listening had a correlation with critical listening, and task-oriented listening had a correlation with critical listening ($p < .05$).

Table 6. Results of correlation analysis between variables (Pearson correlation coefficient)

	RL	AL	TOL	CL	CSDC	LDC	CPDC	CADC	ICDC	COS	CCS	CMS	CES	pre-test	post-test
RL	1														
AL	.359*	1													
	.000														
TOL	-.163	.099	1												
	.064	.264													
CL	.290*	.344*	.387*	1											
	.001	.000	.000												
CSDC	.252*	.260*	-.049	.086	1										
	.004	.003	.579	.329											
LDC	.302*	.316*	.004	.293*	.781*	1									
	.000	.000	.966	.001	.000										
CPDC	.379*	.289*	-.106	.094	.785*	.740*	1								
	.000	.001	.230	.290	.000	.000									
CADC	.356*	.203*	-.122	.195*	.726*	.797*	.818*	1							
	.000	.020	.165	.026	.000	.000	.000								
ICDC	.256*	.314*	-.024	.296*	.660*	.780*	.683*	.810*	1						
	.003	.000	.787	.001	.000	.000	.000	.000							
COS	.166	.135	-.145	-.022	.336*	.293*	.354*	.392*	.389*	1					
	.058	.126	.099	.803	.000	.001	.000	.000	.000						
CCS	.163	.124	-.046	-.063	.268*	.208*	.313*	.300*	.213*	.728*	1				
	.064	.160	.605	.478	.002	.017	.000	.001	.015	.000					
CMS	.222*	.187*	-.047	-.071	.239*	.204*	.272*	.234*	.137	.502*	.659*	1			
	.011	.033	.596	.423	.006	.020	.002	.007	.120	.000	.000				
CES	.125	.151	-.005	.027	.307*	.275*	.372*	.327*	.310*	.542*	.620*	.671*	1		
	.155	.086	.953	.762	.000	.002	.000	.000	.000	.000	.000	.000			
pre-test	.136	.117	.108	.200*	.167	.246*	.143	.250*	.226*	.094	.128	.100	.204*	1	
	.122	.184	.221	.023	.058	.005	.106	.004	.010	.286	.148	.257	.020		
post-test	.171	.009	.069	.173*	.367*	.417*	.243*	.366*	.345*	.077	.130	.033	.124	.299*	1
	.052	.919	.434	.049	.000	.000	.005	.000	.000	.386	.141	.707	.160	.001	

* $p < 0.05$

Looking at the correlation between listening type and class concentration, relational and analytical listening types showed a significant correlation with all sub-variables of class concentration ($p < .05$). Critical listening type showed a significant correlation with learning-directed concentration, class attitude-directed concentration, and intensify class-directed concentration ($p < .05$). Meanwhile, task-oriented listening type did not have a significant correlation with any of the class concentration sub-variables ($p > .05$). Looking at the correlation between listening style and class satisfaction, it was found that there was a correlation between class method satisfaction and relational, analytical listening types ($p < .05$). Looking at the correlation between listening style and academic achievement, it was found that there was a correlation with academic achievement before and after class for those with a critical listening style ($p < .05$).

Looking at the correlation between class concentration and class satisfaction, it was found that there was a correlation between all sub-variables except for the correlation between intensify class-directed concentration, and class

objectives, class method satisfaction ($p < .05$). Looking at the correlation between class concentration and academic achievement, academic achievement after class was found to be correlated with all lower levels of class concentration ($p < .05$). However, in the case of academic achievement before class, there was a correlation only for learning-directed concentration, class attitude-directed concentration, and intensify class-directed concentration ($p < .05$).

Looking at the correlation between class satisfaction and academic achievement, there was a correlation between class effect satisfaction and academic achievement before class ($p < .05$). The sub-variables of class concentration were found to be correlated with relational and analytical listening types. The sub-variables of class concentration were correlated with most sub-variables of academic achievement and class satisfaction ($p < .05$).

Discussion

Through this study, it was analyzed to the relationship between class concentration, class satisfaction, and academic achievement by the students' listening style targeting 8th grade students. The discussion of this study are as follows. First, there was no difference in academic achievement depending on the level of listening style. These research results are in line with the research results of Kim et al. (2018) who found that for 5th and 7th grade students, the difference in science achievement by level according to listening type was not significant, but for 10th grade students, science achievement varied depending on listening type. By comparison, it could be inferred that middle school students' listening style did not have a significant impact on their science achievement. However, through this study, it was confirmed that in the case of middle school students, academic achievement was highly correlated with class concentration rather than listening type (Bodie et al., 2013; Serri et al., 2012).

Additionally, there was no difference in students' satisfaction with the class depending on the listening type. This is believed to be related to research showing that Korean students' satisfaction with classes is high when they receive classes centered on subject matter (Cho, Kim, & Lim, 2021; Park, 2010; Yu & Kwon, 2009).

Second, there was no difference in class satisfaction and class concentration by the listening types. However, the relational and analytical listening type had a correlation with class method satisfaction. And only these types had a positive correlation with class concentration.

Third, class concentration had a positive correlation with academic achievement. This research result is the same as the previous study (Kim et al., 2018). Attention affects the elaboration and organization of information processing, selection of one event over another, and accurate reporting of conscious events (Baars & Gage, 2010). In learning, only stimuli to which attention is paid become the subject of information processing in the brain (Anderson, 2005). Accordingly, it can be inferred that selective concentration can have a positive effect on academic achievement.

Fourth, class satisfaction had a positive correlation with class concentration. This is the same result as the Palmer & Holt (2009). Class satisfaction is an essential factor in the successful performance of schools and is highly related to the quality of learning (Ramsden & Entwistle, 1981; Saadé & Kira, 2006). Therefore, strategies to increase students' satisfaction with classes are required.

Conclusions and Implications

It was analyzed to the relationship between middle school students' class concentration, class satisfaction, and academic achievement by their listening style, as well as the correlation between each variable in this study. The conclusion of the study is as follows.

First, it is effective for science classes at school to teach students to use relational and analytical listening types. Class concentration was positively correlated with relational and analytical listening types, so if the characteristics of the two listening types are appropriately utilized during class, it will contribute to improving students' class concentration. In addition, class concentration had a high positive correlation not only with class satisfaction but also with academic achievement. Accordingly, improving class concentration can have a positive effect on the overall class, including not only students' satisfaction with the class but also improvement in academic achievement.

Second, in order to improve academic achievement, there is a need to teach in a direction that improves class concentration rather than listening style. In the case of academic achievement, there was no correlation with listening type, but it showed a high positive correlation with class concentration. Therefore, in order to improve students' academic achievement, there is a need to provide an atmosphere and conditions that allow them to focus on class.

Because the results of this study were targeted at middle school students, it is difficult to apply them to all students. In particular, it is known that students' listening styles have different effects depending on the school level. Accordingly, there is a need to analyze the influence between class satisfaction, concentration, and academic achievement according to listening type at different school levels in future research. Through this, there is a need to investigate the impact of students' listening styles at each school level on the overall class.

Conflicts of Interest

The authors declared no conflicts of interest.

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