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The Effect of the Food Expression Art Therapy Group Counseling Program on Self-Efficacy and Self-Learning Control Strategies of Prospective Early Childhood Teachers with Underachievement

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ABSTRACT

The purpose of this study was to apply a group counseling program for food expression art therapy to find out the impact of prospective underachieving early childhood teachers on their self-efficacy and self-learning control strategies. The subjects of the study were 16 second and third graders attending the Department of Early Childhood Education at G University in G City, with 8 control groups and 8 experimental groups. After that, a group counseling program was conducted once a week for 90 minutes, a total of 10 sessions of food expression art therapy. Along with the program, the self-efficacy and self-learning control strategies of prospective early childhood teachers were measured in pre-post-extract, and repeated measurement variance analysis was conducted to verify the effectiveness of the program according to the experimental design. In this study, the self-efficacy of prospective early childhood teachers was significant, and sub-factors confidence, self-regulation efficacy, and task difficulty preference were all significant. In addition, self-learning control strategies, behavioral reduction strategies, and meta-cognition, which are sub-factors, were also significant. The group counseling program applying food expression art therapy has a positive effect on the self-efficacy and self-regulated learning strategy of prospective early childhood teachers with low learning performance.

Key words: Prospective early childhood teachers, Food expression art therapy, Self-efficacy, Self-learning control strategy, Group counseling

1. Introduction

The university is an ivory tower of learning and is a place of education where students learn and achieve their studies. Therefore, rather than just selecting and enrolling excellent students in universities, it is necessary to have constant interest in university students and accountability to support their studies so that students can continue their college life until graduation(1). In 2019, 81,059 students (7.7%) at universities in the metropolitan area and 69,928 (5.5%) at universities outside the metropolitan area gave up their studies(2). There may be several reasons for abandonment of study, but it is often difficult to adapt to the department due to academic underachievement(3).

Previous studies on college life adaptation commonly report a high relationship with academic achievement(4)(5)(6)(7), and satisfaction or adaptation with universities affects learning motivation, attendance, and preparation for learning, which is reflected in students' academic achievement(8)(9). In fact, academic adaptation is known to have a great explanatory power to predict academic achievement among the sub-factors of college life adaptation, and the importance of support measures to improve the level of adaptation to academic life (class, test, etc.) is emphasized (10)(11)(12). The inability of underachieving learners to achieve academic performance compared to their expected potential is often a low academic self-efficacy and self-regulated learning strategy as internal variables (13)(14).

Teachers who have to lead future generations are more important than any other job group, and it is natural for early childhood teachers to learn professional knowledge by caring for and guiding young infants. Therefore, prospective early childhood teachers need to faithfully complete the curriculum in universities. However, although it is a small number, prospective early childhood teachers sometimes show poor academic achievement. Therefore, since it is necessary to ensure that prospective early childhood teachers maintain a certain level of study while attending college, a program is needed to achieve academic improvement for underachievers for prospective early childhood teachers.

Accordingly, this study developed a group counseling program for food expression art therapy(15)(16) based on positive psychology and looked at changes in self-efficacy and self-regulated learning strategies by applying programs of prospective early childhood teachers.

2. Research method

2.1. Subject of study

The subject of this study was conducted on early childhood education students attending G University located in G City. The students who participated in this study were 2nd and 4th graders, and 8 students with 2.5 or less grades in the 2nd semester of 2022 were applied and composed of 8 experimental groups and 8 control groups.

2.2. Study design

The program was developed using the Recursive Systemic Program Development Model (RSPDM) developed by(17) to develop a group counseling program for food expression art therapy to promote self-efficacy and self-regulated learning strategies of prospective early childhood teachers. In addition, a pre-post-harvest test was conducted to confirm the effectiveness of the program.

Table 1. Recursive Systemic Program Development Model

Process of program development	***Main contents***
1st step: Program design	. Design the needs of program freely
2nd step: preliminary study of program	. Analysis of books or articles on the development program
3rd step: inspections of program subjects and environmental needs	. Analysis of need inspection from the relevant persons (three kindergarten teachers)
4th step: plan review and approval	. Overall plan on the program development . Specialist's review, report to organizational head, and approvals (Two food expression art therapy experts, two counseling experts, and one professor of early childhood education)
5th step: Objective and goal setting	. Suggest the attitude, thinking, and behaviors clearly that the participants should change and acquire after the program participation
6th step: selection of contents	. Select the most appropriate experiences or activities . Select activity experiences upon the investigation of the relevant person's needs and the specialist's advice
7th step: contents design	Stage to organize the selected goals systemically
8th step: selection of program strategy	Stage to select the effective strategy so as to achieve the counseling program objectives and to organize the organization, counseling process
9th step: selection of evaluation tools	. Select the evaluation tools to evaluate whether to achieve the program objectives
10th step: implementation of pilot program	. Stage to perform pilot program (8 Early Childhood Education Students) . Receive supervision and checking from the specialists
11the step: program amendment and supplement	. Complete this program by completing and correcting any deficiencies found in the preliminary implementation phase
12th step: program decision	. Decide the program performed as the above steps

2.3. Measuring tools

2.3.1 Self-efficacy scale

To evaluate self-efficacy, a self-efficacy scale modified by (18) was used from (19). This measurement tool consists of a total of 24 questions and consists of three sub-factors: confidence, self-regulation efficacy, and task difficulty preference. Each question has a total of 24 questions, including 7 questions of confidence, 12 questions of self-regulation efficacy, and 5 questions of task difficulty preference. Each question was applied with a Likert 5-point scale (very not = 1, no = 2, normal = 3, yes = 4, very yes = 5). In a study by [18], the reliability of the test was .80

2.3.2 Self-regulated learning strategy scale

This test used a scale adapted by (20). The self-regulated learning strategy test is an adaptation of the Motivated Strategies for Learning Questionnaire (MSLO) produced in 1993 by Pintrich, Smith, Garcia & McKeachie, and consists of a total of 8 questions that measure metacognitive and behavioral control strategies. In the study of (20), the reliability was .79.

2.4. Group counseling program applying food expression art therapy

The developed program of this study is shown in <Table 2>.

2.4.1 Configuration of the program

Table 2. Organization of group counselling programs

session	Activity Topic	objectives by session	Activity	Material	Material Effects
1	Orientation	Understanding the process Repo formation	a banana fight - Self-symbols: Liberalization of snacks - Introduce yourself with snacks	Workbook, banana, snack, 8 verses color paper	Materials that stimulate the curiosity of the participating students, are friendly, and stimulate the five senses
2	self-understanding	positive psychology Improving self-esteem	Knowing your ideal self-concept - Find your strengths : Express your strengths in color *Salt liberalization	Jelly, colored salt, juice bottle	
3	Strengths Relay	Improving the efficacy Exploring positive resources	- Find what you've done well so far - Making a tree of merit	Biscuit, syrup	A wet medium that awakens the freedom and emotions that everyone likes and can freely unfold their imagination
4	My precious dream	Successful agency experience Improvement of efficacy	- Stories of people who achieved their dreams - A brilliant future where your dreams come true *Create a successful sandwich	Sandwich ingredients, sauce, bread	
5	Future success story	Improve achievement confidence	-Write a successful article about the future - Create Future Business Card -Future Interview *Magic Eggs	Boiled eggs, name pens, paper cups	A media that stimulates the imagination to find future possibilities and is full of symbolism
6	Developing a Study Environment	Selection and concentration	- Choice for effective study -Creating a Study Environment: Exploring the Factors that Interrupt My Study -Remove obstruction elements *Hard bread mural	Hard bread, glue gun, name pen	Media that can be expressed in direct connection with students, simple but changeable ways
7	Learning strategy	Improvement of learning ability	- Strategies for improving memory, memorization, and reading skills -SMART Learning Strategies *Freedom of confectionery	Various forms of confection	Medium in which students can easily express their learning ability
8	My own way of studying	Establishing a learning goal plan	- Setting effective goals - Making a study plan - Achievement through strategy *Build a cookie tower	Squid peanuts, shrimp crackers, hardtacks, biscuits	Hard-to-control medias that remind you that you need patience and perseverance to achieve your goals
9	My own study progress	Confirmation of academic achievement	- Describe how you are studying *Freedom of confectionery	Various forms of confection	Small changes, media that can express how you study

10	A prize for me	Altered self-reflection Encouraging Will to Challenge	-Looking back on last time - Create a certificate for yourself * Colored Corn Flakes Award	A picture of a tree Cornflake eight-segment colored paper Sticker	Fruit-flavored colorful cereal that makes you feel good and visually stimulated while eating

2.5. Program implementation

This program selected 16 students with low academic performance from the G University's Department of Early Childhood Education in G City, and conducted a total of 10 sessions every week for 90 minutes, excluding the midterm period from April 6, 2023 to June 12, 2023.

2.6. Data processing and analysis

In this study, in order to verify the effectiveness of the group counseling program applied to food expression art therapy, pre-service early childhood teachers were tested for self-efficacy and self-regulated learning strategies for harvesting. For data analysis, the spss 25.0 statistical program was used to conduct repeated measurement variance analysis with group and test timing as independent variables and self-regulation learning strategies as dependent variables.

3. Result

3.1. Effects on self-efficacy

Covariant analysis was conducted to verify whether the change in self-efficacy score before and after the implementation of the food expression art therapy group counseling program was statistically significant between the experimental group and the control group. At the same time, repeated measurement random analysis was performed as shown in <Table 3> to see if there is a difference by period in the group for pre-, post-mortem, and following tests.

Table 3. Self-efficacy covariate analysis results

Scale	Random source	Sum of squares	Degree of freedom	Mean square	F	p
Sense of self-efficacy (ALL)	Covariate (Pre-inspection)	1.55	1	1.55	24.83	.000
	Whether to participate in the program	.88	1	.88	14.11**	.002
	Error	.81	13	.06		
Confidence	Covariate (Pre-inspection)	3.10	1	3.10	32.57	.000
	Whether to participate in the program	1.69	1	1.69	17.69***	.001
	Error	1.24	13	.10		
Self-regulatory efficacy	Covariate (Pre-inspection)	1.45	1	1.45		.006
	Whether to participate in the program	.64	1	.64	4.74*	.048
	Error	1.75	13	.14		
Task difficulty preference	Covariate (Pre-inspection)	1.83	1	1.83	19.05	.001
	Whether to participate in	.88	1	.88	9.10**	.010

	the program					
	Error	1.25	13	.10		

*p<.05, **p<.01, ***p<.001

As a result of covariate analysis, it was found that the food expression art therapy group coun seling program had a statistically significant effect on the overall score of self-efficacy (p<.01). As a result of covariate analysis, the effect of the food expression art therapy group counsel ing program on self-efficacy was different between the experimental group and the control gr oup. In other words, the food expression art therapy group counseling program was found to have a statistically significant effect on the improvement of self-efficacy only in the experime ntal group (F=14.11, p<.01). The sub-factors of self-efficacy, such as confidence, self-regulat ion efficacy, and task difficulty preference, are also significant as shown in <Table 3>.
Repeated measurement random analysis was conducted to find out whether the effect of the fo od expression art therapy group counseling program on the control group and the experimenta l group varies over time. As a result of the analysis, as shown in <Table 4>, the program effect was statistically significant for self-efficacy according to all periods between pre-post, pre-ext raction, and post-extraction (F=26.67, p<).001). Confidence, self-regulation efficacy, and task difficulty preference, which are sub-factors of self-efficacy, are significant as shown in Table 4. In particular, it was found that the program effect was continuously maintained until one m onth after the end of the program. On the other hand, in the control group, the program effect was not statistically significant by period.

Table 4. Results of repeated measurement random analysis of self-efficacy after a group coun seling program for food expression art therapy in the group

Scale	Sortation	Sum of squares	Degree of freedom	Mean square	F	p	Pre-post	Pre-Following	Post-Following
Sense of self-efficacy (ALL)	Experiment	2.78	1	2.78	26.67***	.001	.010	.001	.010
	Control	.08	1	.08	.20	.672	.687	.672	.714
Confidence	Experiment	5.06	1	5.06	39.08***	.000	.001	.000	.054
	Control	.25	1	.25	.62	.456 .	.888	.456	.266
Self-regulatory efficacy	Experiment	2.31	1	2.31	13.60**	.008	.122	.008	.011
	Control	.00	1	.00	.00	.976	.588	.976	.867
Task difficulty preference	Experiment	1.44	1	1.44	5.04	.060	.227	.060	.086
	Control	.36	1	.36	.41	.540	.763	.540	.546

*p<.05, **p<.01, ***p<.001

3.2. Effects on self-regulated learning strategies

Covariant analysis was conducted to verify whether the change in self-regulated learning strategy scores before and after the implementation of the food expression art therapy group counseling program was statistically significant between the experimental group and the control group. At the same time, repeated measurement random analysis was performed as shown in <Table 5> to see if there is a difference by period in the group for pre-, post-mortem, and following tests.

Table 5. Results of covariate analysis of self-regulated learning strategies

Scale	Random source	Sum of squares	Degree of freedom	Mean square	F	p
Self-regulated learning strategies (ALL)	Covariate (Pre-inspection)	.24	1	.24	.48	.499
	Whether to participate in the program	2.58	1	2.58	5.28*	.039
	Error	6.35	13	.49		
Behavior control strategy Metacognition	Covariate (Pre-inspection)	1.00	1	1.00	1.78	.205
	Whether to participate in the program	3.37	1	3.37	5.97*	.030
	Error	7.33	13	.56		
Metacognition	Covariate (Pre-inspection)	.12	1	.12	.25	.63
	Whether to participate in the program	2.37	1	2.37	5.12*	.041
	Error	6.01	13	.46		

*p<.05, **p<.01, ***p<.001

As a result of covariate analysis, as shown in <Table IV-15>, the effect of the food expression art therapy group counseling program on self-regulated learning strategies was different between the experimental group and the control group. In other words, the learning coaching program had a statistically significant effect on the improvement of the overall score of the self-regulated learning strategy only in the experimental group (p<.05). Behavioral control strategy and metacognition, which are sub-factors of self-regulated learning strategy, were also significant as shown in <Table 5>.

Next, repeated measurement random analysis was conducted to find out whether the effect of the program varies depending on the time. As shown in <Table 6>, group counseling for food expression art therapy did not affect changes in pre-post and pre-extract scores of self-regulated learning strategies, but it was found to have a statistically significant effect on changes in pre-extract scores. (F=12.67, p<.01). Behavioral control strategy and metacognition, which are sub-factors of self-regulated learning strategy, were also significant as shown in <Table 6>. In the control group, the program effect was not statistically significant by period.

Table 5. Results of repeated measurement random analysis of self-regulated learning strategies after the food expression art therapy group counseling program

Scale	Sortation	Sum of squares	Degree of	Mean square	F	p	Pre-post	Pre-Following	Post-Following

			freedom						
Self-regulated learning strategies (ALL)	Experiment	8.09	1	8.09	12.67**	.009	.022	.009	.489
	Control	.39	1	.39	.78	.406	.698	.406	.507
Behavior control strategy Metacognition	Experiment	8.63	1	8.63	11.58*	.011	.015	.011	.613
	Control	.47	1	.47	.65	.445	.502	.445	.576
Metacognition	Experiment	7.56	1	7.56	12.46**	.010	.042	.010	.437
	Control	.32	1	.32	.78	.406	.897	.406	.470

*p<.05, **p<.01

The word “data” is plural, not singular. The subscript for the permeability of vacuum μ_0 is zero, not a lowercase letter “o.” The term for residual magnetization is “remanence”; the adjective is “remanent”; do not write “remnance” or “remnant.” Use the word “micrometer” instead of “micron.” A graph within a graph is an “inset,” not an “insert.” The word “alternatively” is preferred to the word “alternately” (unless you really mean something that alternates). Use the word “whereas” instead of “while” (unless you are referring to simultaneous events). Do not use the word “essentially” to mean “approximately” or “effectively.” Do not use the word “issue” as a euphemism for “problem.” When compositions are not specified, separate chemical symbols by en-dashes; for example, “NiMn” indicates the intermetallic compound $Ni_{0.5}Mn_{0.5}$ whereas “Ni–Mn” indicates an alloy of some composition Ni_xMn_{1-x}.

Be aware of the different meanings of the homophones “affect” (usually a verb) and “effect” (usually a noun), “complement” and “compliment,” “discreet” and “discrete,” “principal” (e.g., “principal investigator”) and “principle” (e.g., “principle of measurement”). Do not confuse “imply” and “infer.”

Prefixes such as “non,” “sub,” “micro,” “multi,” and “ultra” are not independent words; they should be joined to the words they modify, usually without a hyphen. There is no period after the “et” in the Latin abbreviation “*et al.*” (it is also italicized). The abbreviation “i.e.,” means “that is,” and the abbreviation “e.g.,” means “for example” (these abbreviations are not italicized).

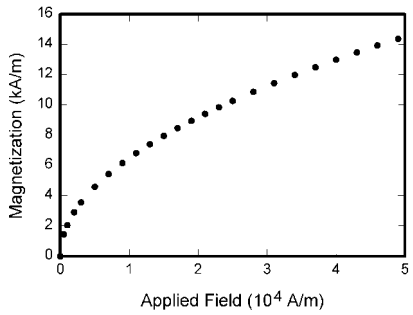

Fig. 1. Magnetization as a function of applied field. Note that “Fig.” is abbreviated. There is a period after the figure number, followed by two spaces. It is good practice to explain the significance of the figure in the caption.

4. Conclusion

PostScript (PS), Encapsulated PostScript (.EPS), Tagged Image File Format (.TIFF), Portable Document Format (.PDF), or Portable Network Graphics (.PNG) sizes them, and adjusts the resolution setting.

In this study, we wanted to find out the effect of group counseling programs applying food ex pression art therapy on the self-efficacy and self-regulated learning strategies of prospective l ow-achieving early childhood teachers.

The program was organized so that participating students could naturally learn self-efficacy a nd self-regulated learning strategies using food media in the 10th session program. For examp le, in the early days, interest-causing food expression media were used, and in the mid-to-late period, food expression media that were difficult to control and control were used as a way to improve self-regulating efficacy and self-regulating learning strategies. This was to improve the patience and concentration of the participating students. In order to improve the self-regul ated learning strategy of underachieving students, a self-regulated learning center was created every session, and the study method was naturally learned and applied to school classes in th e effectiveness of group counseling programs using food expression art therapy was maximiz ed. In addition, in order to learn how to improve memory in every program session, low-achie vement students are trained to use the introduction, development, and finishing processes in c hronological order to apply them to learning strategies.

The program developed in this study was found to improve not only self-efficacy but also sub -factors such as confidence and self-regulation efficacy scores. This shows that the program d eveloped in this study can improve teenagers' confidence, control themselves, and improve th eir preference for task difficulty at the same time. In the fact that self-efficacy is known to be closely related to learning achievement(21)(22), the result that this program improved self-eff icacy is a result of increasing the applicability of this program to school sites in the future. In particular, the results of this study are meaningful in that they can guide students who lack co nfidence to improve their learning habits by improving their interest in learning. The program developed in this study was also found to be effective in improving self-regulated learning st rategies, behavioral control strategies, and metacognition, which are sub-factors. This is consi stent with previous studies(15)(23) that the learning program was effective in self-regulated l earning strategies.

In conclusion, the group counseling program using food expression art therapy promoted self -efficacy and self-regulated learning strategies by approaching low-achievement prospective early childhood teachers without resistance.

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