Self-Efficacy and Autonomous Learning Ability of College Physical Education Students In China

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Abstract

This study investigates the basic characteristics and relationship between self-efficacy and autonomous learning ability of students of Yulin College, Province of China, as well as strategies to improve students' autonomous learning ability in physical education. The results of this research provide educators with the opportunity to develop students' overall development of self-efficacy and self-directed learning. This study utilized a quantitative and descriptive comparative study design. A completely random survey of 384 physical education students from Yulin College was used as a sample for the study.

Keywords

1. Introduce

Self-efficacy and autonomous learning ability are important factors that affect students' academic performance. By studying college students' self-efficacy and self-directed learning ability, we can help students better understand themselves and improve their confidence and motivation to learn, thereby promoting their academic achievement. For example, supportive learning environments can promote the development of college students' autonomous learning ability (Li, C. By 2022).

The reason for studying self-efficacy and autonomous learning ability is that self-efficacy and autonomous learning ability are important factors affecting college students' academic performance and academic development, and studying these two aspects can help us better understand college students' learning. We can find ways and means to improve college students' learning ability, so as to help them complete their learning better. Help them better cope with the challenges in study and life. This is important for expanding the scope and depth of research in these areas.

This study investigates the basic characteristics and relationship between self-efficacy and autonomous learning ability of students of Yulin College, Province of China, as well as strategies to improve students' autonomous learning ability in physical education. The results of the study provide educators with opportunities to develop students' self-efficacy and self-directed learning.

2. Study Scope and Location

This paper mainly studies the two variables of college students' sports self-efficacy and autonomous learning ability and their relationship. The aim is to understand the self-efficacy and self-learning ability of students in Yulin University of Shaanxi Province. In this study, 384 college students randomly selected from 9598 students in Yulin University were surveyed by questionnaires, and 5 of 84 physical education teachers in the school were interviewed. This paper investigates the self-efficacy and self-learning ability of PE students, and forms an

analysis report based on the investigation results to analyze the relationship between these two variables.

3. Presentation, Analysis and Interpretation of Data

Table 1. The Profile of Physical Education student Respondents

Sex		
	Frequency	Percentage
Male	137	35.7%
Female	247	64.3%
Total	384	100%
Age		
	Frequency	Percentage
18 years old and below	14	3.6%
19-20years old	187	48.7%
21-22years old	132	34.4%
23 years old and above	51	13.3%
Total	384	100%
Grade level		
	Frequency	Percentage
Freshman	97	25.3%
Sophomore	119	31.0%
Junior	91	23.7%
Senior	77	20.0%
Total	384	100%

As shown in Table 1, in terms of sex, 137 or 35.7% were male students and 247 or 64.3% were female students. Majority of the respondents were female students. This shows that there are more female students than male students in the physical education program in colleges and universities. This reflects a higher level of participation by female students in the field of study or more self-selection by female students in the field.

In terms of age, 14 or 3.6% of the students were 18 years old and below, 187 or 48.7% were 19-20 years old, 132 or 34.4% were 21-22 years old, and 51 or 13.3% were 23 years old and above. The majority of the respondents belonged to the age group of 19-20 years. This indicates that this age group is when most students enroll in colleges and universities, and that the physical education program is a field that attracts younger students.

In terms of grade level, there were 97, or 25.3%, freshmen, 119, or 31.0%, sophomores, 91, or 23.7%, juniors, and 77, or 20.0%, sophomores. This indicates a relatively even distribution of students across grade levels in the college physical education program.

3.1. The assessment of student-respondents execute their self-efficacy (Problem # 2)

This section provides respondents' assessment of the student-respondents execute their self-efficacy.It includes Situational self-efficacy,Task complexity,Experience of success and Social support.

Table 2. Assessment of student -respondents as regards their self-efficacy in Terms of Situational self-efficacy

Situational self-efficacy	Mean	SD	Qualitative Description	Interpretation	Rank
1. I believe I can perform well in a given situation.	3.01	.518	Very Good	Effective	2
2. I believe I have sufficient ability and skills to solve problems in specific situations.	2.98	.460	Very Good	Effective	4
3. I believe I can communicate and interact effectively with others in specific situations.	3.06	.397	Very Good	Effective	1
4. When I am faced with a new task, you feel confident.	2.81	.588	Very Good	Effective	6
5. When I need to deal with something urgent, I believe I have sufficient resilience.	2.86	.557	Very Good	Effective	5
6. When I need to learn new knowledge or skills, I believe I have enough learning ability.	3.00	.524	Very Good	Effective	3
Composite Mean	2.96	.388	Very Good	Effective	

N=384. Parameter limits: 3.51-4.00 Excellent/Very Effective; 2.51-3.50 Very Good/Effective; 1.51-2.50 Fair/Not Effective; 1.00-1.50 Poor/Strongly Not Effective

Table 2 shows the level of situational self-efficacy factor in terms of self-efficacy of the respondents：the overall composite mean is 2.96 which is interpreted as Effective.This means that overall they hold high self-efficacy in dealing with different situations and tasks.

Table 3. Assessment of student -respondents as regards their self-efficacy in Terms of Task complexity

Task complexity	Mean	SD	Qualitative Description	Interpretation	Rank
1. I believe I have the ability to complete some relatively easy tasks.	3.18	.483	Very Good	Effective	1
2. I believe I have the ability to handle some moderately difficult tasks.	3.05	.457	Very Good	Effective	3
3. I believe I am capable of completing some very complex tasks.	2.73	.617	Very Good	Effective	6
4. I believe I have the ability to overcome some minor difficulties and challenges.	3.16	.435	Very Good	Effective	2
5. I believe I have the ability to deal with some moderately difficult problems and challenges.	3.02	.448	Very Good	Effective	4
6. I believe I have the ability to overcome some very difficult problems and challenges.	2.80	.626	Very Good	Effective	5
Composite Mean	2.99	.374	Very Good	Effective	

N=384. Parameter limits: 3.51-4.00 Excellent/Very Effective; 2.51-3.50 Very Good/Effective; 1.51-2.50 Fair/Not Effective; 1.00-1.50 Poor/Strongly Not Effective

Table 3 shows the level of task complexity factors in respondents' self-efficacy：the overall composite mean of 2.99 is interpreted as Effective.This means that the respondents showed positive self-efficacy in most of the task complexity factors. They believed that they were able to cope with tasks and challenges of various levels of difficulty and showed high self-efficacy especially when dealing with relatively easy and moderately difficult situations.

Table 4. Assessment of student -respondents as regards their self-efficacy in Terms of Task Experience of success

Experience of success	Mean	SD	Qualitative Description	Interpretation	Rank
1. I have often succeeded in similar tasks before.	2.97	.486	Very Good	Effective	4
2. I have had some successes that have given me the confidence to tackle future challenges.	3.14	.467	Very Good	Effective	2
3. I have had some failures, but I have learned from them and become stronger and more confident.	3.10	.450	Very Good	Effective	3
4. I have been praised, which makes me believe that I am capable of good performance.	3.15	.445	Very Good	Effective	1
5. I have received awards, which makes me believe that my efforts will be rewarded.	3.15	.433	Very Good	Effective	1
6. I have helped others to solve their problems, which makes me believe that I am capable of helping others.	3.14	.424	Very Good	Effective	2
Composite Mean	2.58	.288	Very Good	Effective	

N=384. Parameter limits: 3.51-4.00 Excellent/Very Effective; 2.51-3.50 Very Good/Effective; 1.51-2.50 Fair/Not Effective; 1.00-1.50 Poor/Strongly Not Effective

Table 5. Assessment of student -respondents as regards their self-efficacy in Terms of Social support

Social support	Mean	SD	Qualitative Description	Interpretation	Rank
1. My family always supports me and encourages me to pursue my dreams.	3.07	.573	Very Good	Effective	4
2. My friends always give me help and support when I need them.	3.12	.468	Very Good	Effective	2
3. I have teachers who have provided me with valuable guidance and support.	3.13	.446	Very Good	Effective	1
4. My teachers always encourage me and make me believe that I can achieve good results.	3.08	.478	Very Good	Effective	3
5. My classmates are always willing to study and discuss problems with me.	3.06	.417	Very Good	Effective	5
6. My social groups or organizations always give me opportunities to use my talents and abilities.	3.04	.489	Very Good	Effective	6
Composite Mean	3.09	.362	Very Good	Effective	

N=384. Parameter limits: 3.51-4.00 Excellent/Very Effective; 2.51-3.50 Very Good/Effective; 1.51-2.50 Fair/Not Effective; 1.00-1.50 Poor/Strongly Not Effective

Table 4 shows the level of success experience factors in respondents' self-efficacy：the overall composite mean of 2.58 is interpreted as Effective, which indicates that the respondents showed positive self-efficacy in obtaining praise, rewards, and successful experiences, which helped to increase their confidence and motivation in facing various tasks and challenges.

Table 5 shows the level of social support factors of the respondents in terms of self-efficacy :the overall composite mean of 3.09 is interpreted as Effective, which indicates that the respondents as a whole showed a high level of social support factors. They received positive support and encouragement from teachers, friends, family and classmates etc. which was very helpful in improving their self-efficacy and coping with various challenges.

3.2. Significant Difference on the Assessment of the self-efficacy when the profile of the student-respondents when Profile Variables are Considered. (Problem # 3)

Table 7. Differences in the Respondents' Level of self-efficacy when they are Grouped According to Sex

INDICATORS	Sex	Mean	SD	Computed T-value	Sig	Decision on Ho	Interpretation
Situational self-efficacy	Male	3.05	.397	3.717	.000	Rejected	Significant
	Female	2.90	.373				
Task complexity	Male	3.08	.407	3.836	.000	Rejected	Significant
	Female	2.93	.344				
Experience of success	Male	2.62	.328	2.163	.031	Rejected	Significant
	Female	2.55	.260				
Social support	Male	3.14	.412	2.299	.022	Rejected	Significant
	Female	3.05	.328				
Over-all	Male	2.97	.342	3.640	.000	Rejected	Significant
	Female	2.86	.263				

N=384. Level of Significance: *is noteworthy at the 0.05 level. (2-tailed)

Table 7 shows the results of the mean comparison analysis of the respondents' assessment of self-efficacy when grouped by sex.

The calculated t-value for Situational self-efficacy is 3.717 with a significance value of 0.000; Task complexity is 3.836 with a significance value of 0.000; Experience of success is 2.163 with a significance value of 0.031; and The calculated t-value for Social support is 2.299 with a significance value of 0.022.The original hypothesis is rejected since the significance value is less than 0.05 which means that there is a significant difference in the assessment of the student respondents when their sex is used as a testing factor.The overall significant value was calculated t-value of 3.640 and significance value of 0.014,, or interpreted as significant and less than 0.05 significance criterion, which indicates that sex is a significant determinant of self-efficacy with the acceptance of the original hypothesis.

Table 8 shows the analysis of variance (ANOVA) of student respondents' assessment of self-efficacy after grouping the student respondents according to age:

The overall result shows that the calculated f-value of 3.494 and the significance value of 0.016, which means that it is interpreted as significant, is less than the criterion of significance value of 0.05, which rejects the original hypothesis. When the student respondents were grouped according to age, there was a significant difference in their self-efficacy assessment. It indicates that age is a significant factor affecting self-efficacy of student respondents.since the significance value is greater than 0.05, the original hypothesis is accepted which means that

there is no significant difference in the assessment of student respondents when their age is used as a testing factor.

Table 8. Differences in the Respondents' Level of self-efficacy when they are Grouped According to Age

INDICATORS	Age	Mean	SD	Computed F-value	Sig	Decision on Ho	Interpretation
Situational self-efficacy	18 y/o and under	2.89	.441	2.589	.053	Accepted	Not Significant
	19-20 y/o	2.93	.356				
	21-22 y/o	2.93	.422				
	23 y/o and above	3.09	.377				
Task complexity	18 y/o and under	2.92	.411	2.264	.081	Accepted	Not Significant
	19-20 y/o	2.96	.378				
	21-22 y/o	2.97	.376				
	23 y/o and above	3.11	.330				
Experience of success	18 y/o and under	2.50	.261	4.137	.007	Rejected	Significant
	19-20 y/o	2.54	.271				
	21-22 y/o	2.59	.289				
	23 y/o and above	2.69	.320				
Social support	18 y/o and under	2.95	.415	2.043	.107	Accepted	Not Significant
	19-20 y/o	3.07	.332				
	21-22 y/o	3.07	.382				
	23 y/o and above	3.18	.389				
Over-all	18 y/o and under	2.81	.356	3.494	.016	Rejected	Significant
	19-20 y/o	2.88	.280				
	21-22 y/o	2.89	.303				
	23 y/o and above	3.02	.316				

N=384. Level of Significance: *is noteworthy at the 0.05 level. (2-tailed)

Table 9 shows the analysis of variance (ANOVA) of student respondents' assessment of self-efficacy after grouping the student respondents by grade level:

The overall result shows that the calculated f-value of 2.026 with a significance value of 0.110, which means that it is interpreted as non-significant, is greater than the criterion of 0.05 for a significant value and the original hypothesis is accepted. When the student respondents were grouped by grade level, there was no significant difference in their self-efficacy assessment. This indicates that grade level is not a significant factor influencing the self-efficacy of the student respondents.

Table 9. Differences in the Respondents' Level of self-efficacy when they are Grouped According to Grade level

INDICATORS	Grade level	Mean	SD	Computed F-value	Sig	Decision on Ho	Interpretation
Situational self-efficacy	Freshman	2.96	.401	1.485	.218	Accepted	Not Significant
	Sophomore	2.92	.359				
	Junior	2.92	.427				
	Senior	3.03	.362				
Task complexity	Freshman	3.01	.396	2.092	.101	Accepted	Not Significant
	Sophomore	2.94	.359				
	Junior	2.95	.404				
	Senior	3.06	.321				
Experience of success	Freshman	2.56	.289	1.749	.156	Accepted	Not Significant
	Sophomore	2.55	.277				
	Junior	2.58	.294				
	Senior	2.64	.290				
Social support	Freshman	3.11	.378	1.507	.212	Accepted	Not Significant
	Sophomore	3.07	.361				
	Junior	3.02	.341				
	Senior	3.13	.364				
Over-all	Freshman	2.91	.306	2.026	.110	Accepted	Not Significant
	Sophomore	2.87	.281				
	Junior	2.87	.313				
	Senior	2.97	.292				

N=384. Level of Significance: *is noteworthy at the 0.05 level. (2-tailed)

3.3. The assessment of student-respondents execute their autonomous learning abilities (Problem # 4)

Table 10. Assessment of student -respondents as regards their autonomous learning abilities in Terms of Learning Motivation

Learning Motivation	Mean	SD	Qualitative Description	Interpretation	Rank
1. The thought of going to gym class soon makes me feel very happy	2.92	.667	Very Good	Effective	6
2. I can always achieve the goals I set for myself after working hard.	2.96	.485	Very Good	Effective	4
3. I feel relaxed and happy in physical education class and enjoy doing various exercises.	2.98	.596	Very Good	Effective	2
4. I can always achieve the goals I set for myself after working hard.	2.99	.503	Very Good	Effective	1
5. Often invites partners to join them for extracurricular physical exercise.	2.90	.621	Very Good	Effective	7
6. Can organize their physical education study time well.	2.95	.557	Very Good	Effective	5
7. Feels that he/she has potential in physical education.	2.82	.709	Very Good	Effective	10
8. Discusses problems in physical education with classmates in order to improve their physical education skills.	2.89	.592	Very Good	Effective	8
9. Wants to have opportunities to demonstrate in physical education classes.	2.85	.658	Very Good	Effective	9
10. feels that they can learn physical education well with their own ability.	2.97	.573	Very Good	Effective	3
Composite Mean	2.92	.466	Very Good	Effective	

N=384. Parameter limits: 3.51-4.00 Excellent/Very Effective; 2.51-3.50 Very Good/Effective; 1.51-2.50 Fair/Not Effective; 1.00-1.50 Poor/Strongly Not Effective

Table 10 shows the level of the respondents' learning motivation factor in terms of their ability to learn on their own: the overall composite mean of 2.92 was interpreted as Effective.This means that most of the respondents showed positive attitudes and behaviors in terms of motivation and independent learning ability. This is very important for the learning and career development of physical education students.

Table 11. Assessment of student -respondents as regards their autonomous learning abilities in Terms of Learning Process

Learning Process	Mean	SD	Qualitative Description	Interpretation	Rank
1. Students will pay close attention to whether they have mastered the main points of their movements in the process of physical education learning, and they will be more active in physical education after mastering the main points of movement techniques.	3.06	.489	Very Good	Effective	1
2. In the process of learning physical education, they can take the initiative to overcome the interference from outside.	3.01	.521	Very Good	Effective	2
3. wants to show the teacher when they feel that they have mastered the movements.	2.83	.680	Very Good	Effective	5
4. Concentrates well in physical education classes.	2.99	.541	Very Good	Effective	3
5. Students set their own learning goals that are higher than the teacher's basic goals.	2.83	.615	Very Good	Effective	5
6. Always sets an example for themselves in physical education.	2.92	.607	Very Good	Effective	4
Composite Mean	2.94	.473	Very Good	Effective	

N=384. Parameter limits: 3.51-4.00 Excellent/Very Effective; 2.51-3.50 Very Good/Effective; 1.51-2.50 Fair/Not Effective; 1.00-1.50 Poor/Strongly Not Effective

Table 11 shows the level of the learning process factor in terms of the respondents' ability to learn independently, where the following results were obtained for the following indicators: the overall composite mean of 2.94 was interpreted as Effective. this means that they showed high levels of initiative, resistance to frustration and attention control in the learning process of the PE program. However, it is also necessary to pay attention to the fact that some of the respondents still have some problems in setting learning goals on their own.

Table 12 shows the level of learning environment factors of the respondents in terms of their ability to learn independently

The overall composite mean was 3.12 which was interpreted as Effective.This means that the respondents showed high satisfaction with some of the factors in the learning environment.

Table 12. Assessment of student -respondents as regards their autonomous learning abilities in Terms of Learning Environment

Learning Environment	Mean	SD	Qualitative Description	Interpretation	Rank
1. Students hope that the teacher will let us combine as much as possible when they are practicing in sports groups, so that they will be more motivated to participate in sports.	3.08	.466	Very Good	Effective	5
2. Students hope that teachers can provide more exercise methods for them to choose.	3.11	.458	Very Good	Effective	4
3. In physical education class, students hope that teachers can create some opportunities for individual practice to strengthen basic training.	3.08	.510	Very Good	Effective	5
4. The student would like the teacher to prepare more exercises for him/her to choose.	3.12	.475	Very Good	Effective	3
5. The student would like the school to have the opportunity to choose their own sports in class so that they can stay motivated to play sports.	3.13	.450	Very Good	Effective	2
6. Desire for a cordial teacher-student relationship.	3.18	.455	Very Good	Effective	1
Composite Mean	3.12	.360	Very Good	Effective	

N=384. Parameter limits: 3.51-4.00 Excellent/Very Effective; 2.51-3.50 Very Good/Effective; 1.51-2.50 Fair/Not Effective; 1.00-1.50 Poor/Strongly Not Effective

Table 13. Assessment of student -respondents as regards their autonomous learning abilities in Terms of Self-learning management

Self-learning management	Mean	SD	Qualitative Description	Interpretation	Rank
1. I can always encourage myself when I have difficulties in learning or when I get bored with movement practice	3.02	.448	Very Good	Effective	5
2. I can reflect on the reasons for my learning success or failure and learn from my experience	3.09	.418	Very Good	Effective	1
3. I can classify, summarize and organize the knowledge I have learned	3.06	.465	Very Good	Effective	3
4. I don't doubt my learning ability because of the ups and downs of my academic performance	2.97	.505	Very Good	Effective	7
5. I can adjust my learning progress in time to ensure the completion of the planned goals	3.04	.447	Very Good	Effective	4
6. I can correctly analyze and evaluate my technical movements	3.01	.524	Very Good	Effective	6
7. I often reflect on and improve my learning methods	3.07	.467	Very Good	Effective	2
Composite Mean	3.04	.367	Very Good	Effective	

N=384. Parameter limits: 3.51-4.00 Excellent/Very Effective; 2.51-3.50 Very Good/Effective; 1.51-2.50 Fair/Not Effective; 1.00-1.50 Poor/Strongly Not Effective

Table 13 shows the level of self-learning management factors of the respondents in terms of their ability to learn on their own, where the following results were obtained for the following indicators:

The highest scoring indicator is "I can reflect on the reasons for my learning success or failure and learn from my experience" with a mean value of 3.02 or very good, which means that the students are ability to engage in self-reflection. The lowest scoring indicator was "I don't doubt my learning ability because of the ups and downs of my academic performance" with a mean of 2.0 or very good. ", with a mean of 2.97 or very good.This implies that there is some degree of fluctuation in students' self-confidence in the learning process.

The overall composite mean is 3.04 which is interpreted as Effective. this means that the respondent students have strong self-learning management skills.

3.4. The relationship between self-efficacy and autonomous learning abilities(Problem # 6)

Table 20. Relationship between self-efficacy and autonomous learning abilities

		Learning Motivation	Learning Process	Learning Environment	Self-learning management	autonomous learning abilities
Situational self-efficacy	r	0.543	0.542	0.487	0.582	0.601
	sig	0.000	0.000	0.000	0.000	0.000
	Decision on Ho	Rejected	Rejected	Rejected	Rejected	Rejected
	Interpretation	Significant	Significant	Significant	Significant	Significant
Task complexity	r	0.581	0.596	0.541	0.632	0.655
	sig	0.000	0.000	0.000	0.000	0.000
	Decision on Ho	Rejected	Rejected	Rejected	Rejected	Rejected
	Interpretation	Significant	Significant	Significant	Significant	Significant
Experience of success	r	0.507	0.543	0.606	0.593	0.622
	sig	0.000	0.000	0.000	0.000	0.000
	Decision on Ho	Rejected	Rejected	Rejected	Rejected	Rejected
	Interpretation	Significant	Significant	Significant	Significant	Significant
Social support	r	0.580	0.557	0.649	0.640	0.671
	sig	0.000	0.000	0.000	0.000	0.000
	Decision on Ho	Rejected	Rejected	Rejected	Rejected	Rejected
	Interpretation	Significant	Significant	Significant	Significant	Significant
self-efficacy	r	0.657	0.663	0.671	0.724	0.754
	sig	0.000	0.000	0.000	0.000	0.000
	Decision on Ho	Rejected	Rejected	Rejected	Rejected	Rejected
	Interpretation	Significant	Significant	Significant	Significant	Significant

N=384. Level of Significance: *is noteworthy at the 0.05 level. (2-tailed)

As shown in Table 20, the calculated r-value of self-efficacy and self-directed learning ability is 0.754 with a significance value of 0.000, and the hypothesis is rejected as the significance value is less than the set significance level of 0.05. This indicates that self-efficacy and independent learning ability are significantly correlated and positively correlated, and the higher the self-efficacy, the better the independent learning ability of the students. In addition, there is a significant correlation between the four dimensions of self-efficacy and the four dimensions of independent learning ability.

4. Summary of Findings

1. Majority of the respondents were female students. Most of the respondents belonged to the age group of 19-20 years. The distribution of the students was relatively even over the different grades.

2. The respondents students were assessed in terms of self-efficacy where the mean value of Situational self-efficacy is 2.96 or Very Good; Task complexity is 2.99 or Very Good; Experience of success is 2.58 or Very Good; Social support had a mean of 3.09 or Very Good; and the overall composite mean of 2.09 was interpreted as Effective.

3. The results of the comparative analysis of the means of the respondents' assessment of self-efficacy when grouped by sex. The calculated t-value for Situational self-efficacy was 3.717 with a significance value of 0.000; the calculated t-value for Task complexity was 3.836 with a significance value of 0.000; the calculated t-value for Experience of success was 2.163 with a significance value of 0.031. The calculated t-value for Social support is 2.299 with a significance value of 0.022. The original hypothesis is rejected since the significance value is less than 0.05 which means that there is a significant difference in the assessment of the student respondents when their sex is used as a testing factor.

The ANOVA of student respondents' assessment of self-efficacy after grouping the student respondents according to their age, The overall result shows that the calculated f-value is 3.494 with a significance value of 0.016, which means that it is interpreted as significant. The calculated f-value of situational self-efficacy is 2.589 with a significance value of 0.053; the calculated Task complexity has a calculated f-value of 2.264 with a significance value of 0.081; and Social support has a calculated f-value of 2.043 with a significance value of 0.107, and since the significance value is greater than 0.05, there is no significant difference in their assessments. However, Experience of success had a calculated f-value of 4.137 with a significance value of 0.007; there was no significant difference. The ANOVA of student respondents' assessment of self-efficacy after grouping the student respondents by grade, all the indicators have a significance value greater than 0.05, which is interpreted as non-significant.

4. Respondents' assessment of students' self-learning ability, in which the mean value of Learning Motivation is 2.92 or Very Good; the mean value of Learning Process is 2.94 or Very Good; the mean value of Learning Environment is 3.12 or Very Good; Self-learning management had a mean of 3.04 or Very Good; and the overall composite mean of 3.00 was interpreted as Effective.

5. Comparison of the means of the respondents' assessment of Self-learning skills when grouped by sex, the significance value of all indicators is less than 0.05, therefore the original hypothesis is rejected, which means that there is a significant difference in the assessment of the student respondents when their sex is used as a factor in the test.

After grouping the student respondents by age and grade, the ANOVA of the student respondents' assessment of independent learning ability: significant values of Situational self-efficacy, Task complexity, and Social support are less than 0.05, so the original hypothesis is rejected, which means that when the age of the student respondents is used as a testing factor, there is a significant difference between There is a significant difference in their assessment; whereas the calculated F-value of Experience of success is 1.343 with a significance value of 0.260 and since the significance value is greater than 0.05, the original hypothesis is accepted which means that there is no significant difference in the assessment of student respondents when their age is used as a testing factor.

6. the calculated r-value of self-efficacy and self-directed learning ability is 0.754 with a significance value of 0.000, the original hypothesis is rejected since the significance value is less

than the set significance level of 0.05. In addition, there is a significant correlation between the four dimensions of self-efficacy and the four dimensions of self-directed learning ability.

7. Self-efficacy and self-directed learning can be significantly improved in physical education students through targeted interventions and development of indicators for different aspects of self-efficacy and self-directed learning. These factors can be enhanced through appropriate strategies and activities that will improve students' self-efficacy. Their capacity for self-directed learning can be improved by improving the learning environment, encouraging students to set their own learning goals, providing a supportive learning environment, and helping students manage their self-directed learning.

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