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ORIGINAL

Exploring the synergy: outdoor adventure education, self-efficacy, and learning motivation within the framework of outcome-based education

Explorar sinergias: educación en exploración al aire libre, autoeficacia y motivación para el aprendizaje en un marco de educación basada en resultados

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ABSTRACT

Introductiom: outdoor adventure education (OAE), within a results-oriented educational philosophy, offers dynamic and flexible teaching that enhances self-efficacy in higher education students, aligning with UNESCO's goal of equiTable, quality education.
Objective: amidst educational evolution, traditional classrooms remain central to knowledge, yet 'teacher-centered' approaches may limit learning efficiency. This study aims to assess OAE's impact on self-efficacy among vocational students in central and western China. Utilizing Astin's I-E-O model, we seek insights that support global educational goals for sustainable development and equiTable resources.
Method: through an online questionnaire survey, analyzed with SPSS, 307 valid responses were collected, with 155 participants in OAE and 152 non-participants. G-Power analysis of sample size included 105 OAE participants and 105 non-participants, allowing comprehensive assessment.
Results: findings show increased motivation for practical learning and continuous reading among participants, with a substantial rise in enthusiasm in both male (n=150) and female (n=157) students.
Conclusion: the OAE program, within an OBE framework, addresses resource disparities and fosters commitment to extended learning, marking progress towards holistic educational enhancement aligned with UNESCO's sustainable development and equity principles.

Keywords: Outdoor Adventure Education; Outcome-Based Education; Self-Efficacy; Learning Motivation.

RESUMEN

Introducción: la educación de aventura al aire libre (OAE), en una filosofía educativa orientada a resultados, ofrece una enseñanza dinámica y flexible que mejora la autoeficacia en estudiantes de educación superior, alineándose con el objetivo de la UNESCO de una educación equitativa y de calidad.
Objetivo: en medio de la evolución educativa, las aulas tradicionales siguen siendo esenciales para el conocimiento, pero los enfoques "centrados en el maestro" pueden limitar la eficiencia del aprendizaje. Este estudio tiene como objetivo evaluar el impacto de la OAE en la autoeficacia de los estudiantes vocacionales en el centro y oeste de China. Utilizando el modelo I-E-O de Astin, buscamos obtener ideas que respalden los objetivos educativos globales para el desarrollo sostenible y la equidad de recursos.

Método: a través de una encuesta en línea, analizada con SPSS, se recogieron 307 respuestas válidas, con 155 participantes en la OAE y 152 no participantes. El análisis de tamaño de muestra G-Power incluyó 105 participantes de OAE y 105 no participantes, permitiendo una evaluación integral.
Resultados: los hallazgos muestran una mayor motivación para el aprendizaje práctico y la lectura continua entre los participantes, con un aumento significativo de entusiasmo tanto en estudiantes masculinos (n=150) como femeninos (n=157).
Conclusión: el programa OAE, dentro del marco OBE, aborda las disparidades de recursos y fomenta el compromiso con el aprendizaje extendido, marcando un progreso hacia una mejora educativa integral alineada con los principios de desarrollo sostenible y equidad de la UNESCO.

Palabras clave: Educación de Aventura al Aire Libre; Educación Basada en Resultados; Auto-eficacia; Motivación Educativa.

INTRODUCTION

Research background and significance

In a public policy brief on "Transforming Education" released in August 2023, UN Secretary-General Guterres made it apparent that the current educational system is still beset by a shortage of funding. He specifically mentioned the need to abandon traditional, static conceptions of education in favor of a more flexible and efficient system. In a public policy brief on "Transforming Education" released in August 2023, UN Secretary-General Guterres made it apparent that the current educational system is still beset by a shortage of funding. He specifically mentioned the need to abandon traditional, static conceptions of education in favor of a more flexible and efficient system.[1] According to some, education is a basic human right that not only satisfies other definitions of human rights but also influences people's productivity and overall well-being and helps build inclusive and equal societies.[2]

The use of education as a means to promote employment, change one's destiny or even enhance the economic status of a family has been successfully practiced in China. "One person in vocational education, one person in employment, one family out of poverty" has become the fastest way to interrupt the intergenerational transmission of poverty. However, due to regional and school-to-school variations, there is an uneven distribution of instructional materials. However, the level of information that students acquire in regular classes after enrolling varies because of individual student variances.[3,4]

In light of this, we acknowledge the practical difficulties in education and refer to the United Nations' perspective that education must change to better serve the needs of different students, particularly those attending China's higher education establishments. In order to do this, we will concentrate on investigating whether the cutting-edge method of instruction known as Outdoor Adventure Education (OAE) can raise students' self-efficacy and motivation to study. Higher vocational schools in China are encouraged and supported by the government to offer students opportunities for on-campus and off-campus training or experiential learning. This reduces the unequal distribution of resources and raises the quality of the learners' labor while simultaneously increasing the rate at which practical training equipment is used. Second, OAE places a strong emphasis on real-world problems, collaboration, and knowledge transfer—aspects that align well with the idea of outcome-based education (OBE), which places a strong emphasis on the advancement of students' practical skills and capabilities.[5,6]

Since OAE programs are often carried out through short-term training, they can also widely absorb students from different majors, or even from different schools, regions and countries to enroll in the activities together. Therefore, based on OAE activities under the concept of OBE education, by reorganizing and optimizing the training room courses of Chinese higher vocational colleges and universities, it is entirely possible to achieve the sharing of teaching resources such as high-quality curricula, practical training equipment, professional teachers, etc.; and also provide multiple rounds of short-term programs to provide more flexible time for learners inside and outside the school to participate in vocational skills retraining and re-improvement. This approach can realize the lifelong learning and sustainable development proposed by UNESCO.

In this study, by combining OAE with OBE, we aim to explore how to improve knowledge transfer, clarify learning motivation, and ultimately achieve the educational goals of enhancing learning effectiveness among second-year students in higher vocational institutions. In order to better meet the current educational difficulties, it is anticipated that this study will offer helpful insights on how to enhance the educational experience and overall quality development of higher vocational schools in China.[7,8]

Purpose and research questions

This study's primary goal was to investigate, within the context of outcome-based education (OBE),

how outdoor adventure education (OAE) affects students' momentum and self-efficacy in higher vocational education. The study's specific objectives are to: evaluate how well the OAE curriculum increases students' momentum, or their physical and psychological vigor, in the OBE educational environment; and to evaluate how OAE has affected students' self-efficacy, or their confidence in their capacity to achieve the intended outcomes in a learning setting.

Research framework and theoretical basis

Two well-known theories of education, Outdoor Adventure Education (OAE) and Outcome-Based Education (OBE), are integrated into the research framework for this study. These frameworks provide the context for understanding how OAE, when implemented within an OBE framework, can influence self-efficacy and learning motivation among students. The study will examine the following key components:

Another educational concept and means of influencing educational reform is called Outcome-Based Education (OBE).Under OBE theory, the importance of learning outcomes is emphasized, for example, in an outcome-based approach, curriculum, instructional design, and assessments are not using textbooks to determine curricular objectives and didactic content, but rather on the content[3] required to ensure achievement of a specified set of outcomes. Therefore, OBE focuses on real, real-world skills and abilities, which is almost consistent with the model that students need to "learn by doing, do by doing".

Outdoor Adventure Education (OAE) is a hands-on learning method that incorporates outdoor exercises, teamwork, and obstacles. It has been demonstrated to support self-efficacy, leadership, and personal growth. Outdoor adventure education has been proven as a teaching method that can be integrated into multiple courses and subject areas. Early researchers believe that outdoor adventure education contains three important elements, namely: environmental education, society and individual.[4] Since then, with the development and evolution of OAE, some scholars have gradually realized that outdoor education may not be a narrow "exposed to the natural environment", but to experience the subject learning experience based on sensory stimulation through immersive education.[5]

Self-efficacy: According to social cognitive theory, self-efficacy is the conviction that one can carry out particular actions and accomplish objectives. It is essential to learning and motivation.[6] This study aims to investigate how students' self-efficacy beliefs can be affected by an OAE within the framework of an OBE.

Learning motivation: Learning motivation refers to the internal factors that encourage students to participate in learning activities. It is influenced by multiple factors including self-efficacy in.[6] The study will explore how participation in an OAE program affects students' motivation to learn within the OBE framework.

The theory created by Alexander Astin's (1985,1991) Theory Of Student Involvement.Astin's in 1985 and his later refinement of the I-E-O model (input-environment-result) is one of the most influential models in higher education institutions. The "input" emphasized by the model refers to the characteristics of students before entering the new learning environment, including ideological perception, past experience and personal background; "environment" refers to the new experience of young students in the new learning environment, which can also be understood as the learning experience during the university; "result" means the knowledge system, attitudes, values, beliefs and attitudes formed by young students under the influence of the "environment".[7]

Literature Review

Course development for outdoor adventure instruction

Outdoor Adventure Education (OAE) has a history that dates back to the early 1900s. The term "education in and about the outdoors" was used by early researchers to describe outdoor adventure education.[8] This type of learning is usually defined by several key elements: i.e., place (outdoors), method (experiential education), process (discovery through the senses), discipline (ecology), and cause (advocacy groups), etc. Therefore, OAE can be defined as sensory-based education. OAE has proven to be an effective teaching system, and as a result, nations like the United States, Canada, the United Kingdom, and Japan have implemented and enhanced their OAE programs to differing degrees. During OAE's dynamic history, German educator Kurt Hahn stressed experiential learning, teamwork, and self-discovery, as well as the value of challenge and risk-taking in education. His theories have had a significant and enduring influence on OAE.[9] As the 21st century approached, there was a growing realization of the potential of OAE to enhance all aspects of education. Researchers have begun to examine the possibility that the traditional classroom may not be the only instructional environment, and more than likely, may not be able to provide learners with social-emotional learning opportunities; however, the impact that OAE can have on learners in terms of personal development, leadership skills, environmental awareness, and even academic achievement is certainly evident.[10]

Application of OBE education concept in education

A clear focus on and organization of the whole educational system around all the components required for

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students to succeed at the conclusion of their learning experience is known as outcome-based education, or OBE.OBE advocates reshaping curriculum design, teaching implementation methods, and evaluation of learners' learning outcomes. In this concept, teaching focuses more on cultivating learners' ability to think in teaching and the ability to control practical skills in an immersive teaching environment.[11]

Research and theory on self-efficacy

Self-efficacy is a concept proposed by the famous psychologist Albert-Bandura (Albert Bandura), which has a very important position in the social cognition theory. The theory is that the learner firmly believes that he can complete a specific task and achieve the desired result.[12] The idea is also frequently applied in the sphere of education for the purpose of conducting research to raise student proficiency. Based on Bandura's theory, self-efficacy is primarily derived from four dimensions: physical and emotional state; alternative experience (observing others); social persuasion (being encouraged or discouraged by others); and mastery experience (real performance achievement).[13] In the researchers' research, we found that people with more self-efficacy and more challenging ability to complete learning will also show perseverance in the face of obstacles.

Key factors of students' learning motivation

A complex multi-level structure, motivation is essential to academic performance and the learning process. It also plays a major role in promoting behavior in the human body, determining its energy and determination, guiding behavior, and ensuring its continuity.[14] According to Yilmaz H and Cava (1970), there are four obvious characteristics of learning motivation, namely, the result of personal cognitive assessment, the causes of motivation, the mobility of motivation and the interpretation of cognition.

METHOD

Sample selection and study design

Second-year students from higher vocational institutions in central and western China served as the study's subjects. Group B serves as the control group, and Group A is the experimental group.

The experimental group, designated as Group A, will face challenges from the OAE program;while Group B is the control group, which will not receive the OAE program. The instructional design will develop students' understanding of "fermentation". In this process, the young students will be "fed" with the cultural dimensions of microbial fermentation, fermentation technology and the intrinsic motivation to carry out this productive activity.

Students in groups A and B will be challenged differently in the learning environment; students in group B will be taught in a traditional classroom in the traditional OBE style, learning three modules: "Brewing", "Batik", "Handmade Green Tea", and "Brewing". "The teaching method is traditional, i.e., the teacher does the demonstration and the students do the practical training. The assessment method is written test and practical training. And students in Group A will be challenged by the OAE program under the traditional OBE teaching system. In the process, as the researcher selected three different courses from three professional colleges and found the common point of the three courses, i.e., "fermentation" as the theme, through the microbial fermentation in "winemaking", "batik", and the natural dye in "batik", the students were given the opportunity to learn how to use the natural dyes and the microorganisms. The microcurriculum was designed through the microbial fermentation in "winemaking", the fermentation and production of natural dyes in "batik", and the micro-fermentation phenomenon in "handmade green tea", so as to enable learners to recognize the phenomenon of fermentation, understand the beneficial aspects of microorganisms in people's production and life, and recognize the rational application of microorganisms in their production. This course is designed to enable learners to recognize the phenomenon of fermentation, understand the beneficial aspects of microorganisms to people's production and life, and realize that industrial production can be generated by the proper application of microbial fermentation. Prior to the learning activities, a special OAE course manual will be issued to inform the learners in advance of the learning program, learning content, assessment methods, reference books and pre-trip preparation, etc. During the learning process, learners will participate in modular learning in small groups under the guidance of the OAE program director, and each module will be provided with sufficient time for the production of individual work, group review, and mutual evaluation among the groups to complete one module every two days. Two days to complete a module.

Although both groups A and B participate in outcome-based education (OBE), group A's students are primarily sensory learners as a result of the OAE program, which reinforces the learning objectives through practical experiences.

Due to the modular nature of the program, both groups will be tested on the 7th day of study. The test will be in the form of a group results presentation and a learning outcomes debriefing, where the instructor will evaluate and grade both group performance and individual performance. The presentation and debriefing can be as creative as you like, e.g. research paper + PPT presentation, keynote speech, skills demonstration or

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other artistic presentation forms (figure 1).

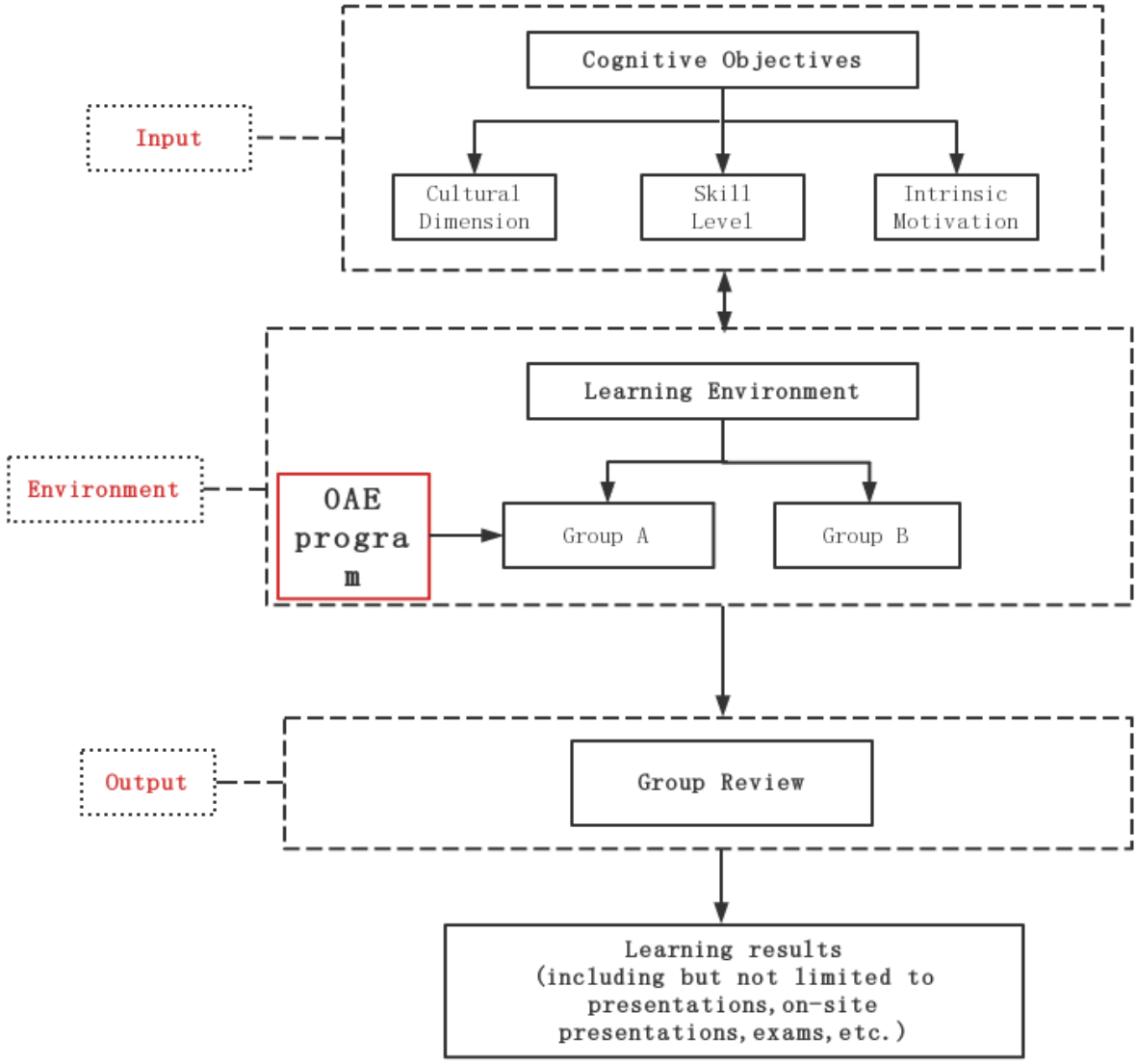

Figure 1. Research design

Study samples and measurement tools

The goal of this study is to conduct a Case-control studies among students in higher vocational colleges in the southwest China G province in order to collect and analyze data. The study is based on the findings of the Outdoor Adventure Education (OAE) framework for education and its effects on learning motivation and self-efficacy. 307 genuine research questionnaires were gathered from the online distribution of the questionnaires used in this study.Of these, 155 participated in the OAE program and 152 were not involved in the OAE project. Among the young students participating in the questionnaire survey, 150 were men and 157 were female. Learning motivation measures using the learning motivation scale developed by Amabir, Hill, Hennessy, Tighe et al.[16] The 11 items on the scale are divided into two subscales: external and endogenous motivation.The self-efficacy scale uses the General Self-Efficacy Scale (GSES), which was developed by Schwarzer and his colleagues.[17] The fifth grade is divided into 9 items, and the higher the score, the higher the efficacy. In this study, the scale Cronbachα coefficient was 0,981, KMO value 0,988 and KMO value> 0,8. Research data is a perfect way to extract information (from the side, more effective).

This time, surveys Online distributed and recovered 307 valid surveys. The following Table displays the basic data of the respondents (table 1).

https://doi.org/10.56294/sctconf20251286

Table 1. Fundamental data and statistics

Demographic variable	Classify	No.	%
Gender	Man	150	48,86
	Woman	157	51,14
Age	Under 18 years old	42	13,681
	18~20	147	47,883
	21~23	75	24,43
	Over 24 years old	43	14,007
School type	Vocational and technical college	164	53,42
	Specialized higher education	82	26,71
	Vocational and technical university	61	19,87
Do you participate in outdoor adventure education programs?	No	152	49,511
	Be	155	50,489

RESULTS

Reliability test. The Cronbach α coefficient, also known as the Cronbach coefficient, intrinsic reliability coefficient, consistency coefficient, and the average of the half-reliability coefficients produced by all feasible item division methods of the scale, is the key reliability test statistic utilized in this study. Right now, it's the most often utilized reliability coefficient.

The Cronbach α coefficient typically ranges from 0 to 1. When the coefficient is between 0,7 and 0,8, it indicates that the scale has a significant level of reliability; if it is less than 0,6, it is typically regarded as having inadequate internal consistency reliability. When it is greater than 0,8, the scale's dependability index is quite good, and the reliability can be deemed to have passed the test (table 2).

Table 2. Reliability test

Inventory	Item	Cronbach's Alpha
Self - efficacy	10	0,973
Internal motivation	4	0,936
External motivation	8	0,965

By using SPSS 23.0 to analyze the sample data for reliability, we can determine that all three scales' reliability values are greater than 0,9, indicating that the data are authentic and applicable survey results and that the questionnaire scale has passed the reliability test.

Validity test: first, the questionnaire's items are measured for KMO and Bartlett's Test of Sphericity. The significance probability of the KMO and Bartlett statistical values is displayed in the following table.

Table 3. Validity test

KMO value		**0,977**
Bartlett sphericity test	Approximate chi-square	7801,223
	df	231
	P value	0,000

Based on the validity test findings, we can determine that the sample data is appropriate for factor analysis and that the variables are correlated. The statistical value of the Bartlett spherical test is 7801,223, and the probability of significance is 0,000, which is less than 0,05. The KMO test, whose value ranges from 0 to 1, is used to look into the partial correlation between variables. The stronger the partial correlation between variables and the greater the impact of component analysis, the closer the KMO value is to 1. This study's KMO value of 0,977 suggests that factor analysis is appropriate.

According to the procedure for extracting eigen values greater than 1, the principal component analys is approach is typically used to extract three common components throughout the factor analysis process. At 81,044 %, the cumulative explanation rate of variance, it satisfies the requirement of accounting for over 60 % of the explanation amount.

By orthogonally rotating indicators, the maximum variance approach helps to better elucidate the structure of each common factor:

The self-efficacy factor ranks first among common factors, followed by the external motivation factor in second place and the internal motivation factor in third place, as indicated by the rotating component matrix.

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The variables of the questionnaire had strong structural validity, as evidenced by the factor load of the 22 measurement questions contained in the three factors extracted, which also exceeded the necessary level of more than 0,5 suggested by pertinent research.

Table 4. Factor analysis

Item	Factor load factor		
	Factor 1	Factor 2	Factor 3
If I put in my best effort during the course of the study, I can always figure out the solution.	0,805	0,290	0,266
In the process of learning, even if other members of the group want to give up, I still have a way to get the results I want.	0,782	0,331	0,276
For me, it is imperative to persist in completing the study task and achieving the task goal.	0,780	0,261	0,269
I have faith in my ability to handle any unforeseen difficulty.	0,802	0,295	0,261
I'm confident that my intelligence will enable me to handle unforeseen circumstances.	0,807	0,300	0,267
If I take the time to make the necessary preparations for participating in the project, I will be able to solve most of the problems.	0,818	0,310	0,226
I can trust my problem-solving skills, so I can confront challenges head-on.	0,823	0,338	0,185
When faced with a difficult problem, I can usually find several solutions.	0,795	0,319	0,219
When I encounter difficulties in practice, I can usually think of some solutions.	0,815	0,325	0,293
I have the ability to handle any situation that comes my way.	0,796	0,314	0,285
I like to take part in the challenge of "result-oriented" learning, so that I can learn new things.	0,361	0,329	0,773
"Results based orientation" can arouse my curiosity, even if it is difficult sometimes.	0,361	0,380	0,746
What I am most satisfied with is that I should thoroughly understand the content of the "results oriented" course as far as possible.	0,360	0,363	0,778
I like to participate in "results based" learning challenges, even if they can't help me with my lessons.	0,366	0,337	0,759
Because the "results oriented" courses are challenging to some extent, it is a happy thing for me to get a good result.	0,328	0,800	0,263
The "results oriented" course has cultivated my self-confidence, which is helpful to improve my average score, so I am concerned about getting a good score.	0,330	0,792	0,276
I want to get better grades than most students in my class.	0,331	0,790	0,221
I want to do well in class because it is important to show my ability to my family, friends or others.	0,268	0,789	0,213
If I preview in an appropriate way, I will be able to successfully pass the test of the "results oriented" course	0,289	0,801	0,235
If I don't learn the "results based" course materials, it is also my own fault.	0,322	0,808	0,241
If I work hard enough, then I can understand the learning content presented in the "results oriented" course.	0,335	0,792	0,296
If I don't understand the challenge content of the "results oriented" course, it is because I haven't worked hard enough.	0,335	0,815	0,262
Characteristic root value	14,587	2,119	1,123
Variance explanation rate %	66,304%	9,634%	5,106%
Cumulative variance interpretation rate %	66,304%	75,938%	81,044%

Correlation study: one statistical technique to examine the degree of association between variables is correlation analysis. It cannot indicate if there is a causal relationship between the two types of phenomena; instead, it primarily indicates whether there is a correlation between two types of variables or two types of phenomena in the direction and magnitude of development and change (table 4).

Table 5. Correlation study

Variable	Self - efficacy	internal motivation	External motivation
Do you participate in outdoor adventure education programs?	0,585**	0,419**	0,387**
* p<0,05 ** p<0,01			

According to the statistical results, we can know that: Self-efficacy and participation in outdoor adventure

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education programs were significantly correlated. There was a positive association between self-efficacy and whether or not to participate in outdoor adventure education projects, as indicated by the correlation coefficient values, which were 0,585, 0,585, and all larger than 0.

There is a positive correlation between internal motivation and whether or not to participate in outdoor adventure education projects; the correlation coefficient values are greater than 0 and indicate that both internal motivation and participation in these projects are significant. The respective correlation coefficient values are 0,419.

The correlation coefficient values between external motivation and participation in outdoor adventure education projects are 0,387 and greater than 0, indicating a positive correlation between the two variables. The external motivation and participation in outdoor adventure education projects are all significant.

Regression analysis: the independent variable is whether to participate in outdoor adventure education projects (0 is not involved, 1 is involved), the control variables are gender, age, and school type, and the three dependent variables are self-efficacy, internal motivation, and external motivation. This is done in order to study the effects of participation in outdoor adventure education projects on self-efficacy, internal motivation, and external motivation. Table 6 displays the outcomes of the construction of three multiple regression linear equation models.

Table 6. Regression analysis

Variable	Model 1 Self - efficacy	Model 2 internal motivation	Model 3 External motivation	VIF
Constant	1,718** (5,835)	2,143** (6,455)	1,646** (5,100)	-
Gender	0,175 (1,369)	0,167 (1,158)	0,379** (2,700)	1,006
Age	0,075 (0,999)	0,023 (0,270)	0,066 (0,807)	1,094
School type	-0,037 (-0,432)	-0,067 (-0,703)	0,000 (0,001)	1,102
Do you participate in outdoor adventure education programs?	1,612** (12,537)	1,159** (7,992)	1,057** (7,497)	1,015
sample size	307	307	307	
R2	0,349	0,181	0,171	
Adjustment R 2	0,340	0,170	0,160	
F value	F (4,302)=40,401, p=0,000	F (4,302)=16,637, p=0,000	F (4,302)=15,611, p=0,000	

* p<0,05 ** p<0,01

The decision coefficients of the three models have a R square of 0,171-0,349 and an adjusted R square of 0,160-0,340. With a significance level of 0,000, less than 0,05, the F statistics of the three regression equation models are 40,401, 16,637, and 15,611, in that order. The regression equation model by model has statistical and explanatory significance as a result, indicating that the regression equation model is significant. Each variable's VIF value is less than 5, indicating that multicollinearity is not an issue.

The results of the regression analysis in Model 1 indicate that self-efficacy will be significantly positively impacted by the decision to participate in outdoor adventure education programs, with a coefficient of 1,612 (t=12,537, p=0,000<0,01). In other words, participants in outdoor adventure education programs will feel more capable of achieving their goals.

In model 2, the regression coefficient value of whether or not to participate in outdoor adventure education projects is 1,159 (t=7,992, p=0,000<0,01), which means that whether or not to take part in programs promoting outdoor adventure education will have a significant positive impact on internal motivation. That is, people who participate in outdoor adventure education projects will increase their internal motivation.

In model 3, the regression coefficient value of whether or not to participate in outdoor adventure education projects is 1,057 (t=7,497, p=0,000<0,01), which means that whether or not to take part in programs promoting outdoor adventure education will have a significant positive impact on external motivation. That is, people who participate in outdoor adventure education projects will increase external motivation.

We can determine that self-efficacy is the highest, internal motivation is next, and external motivation is the lowest based on the coefficients of the three models.

The formula of model 1 is: self-efficacy=1,718+0,175 * gender+0,075 * age -0,037 * school type+1,612 * whether to participate in outdoor adventure education project.

The formula of model 2 is: intrinsic motivation=2,143+0,167 * gender+0,023 * age -0,067 * school type+1,159 * whether to participate in outdoor adventure education project.

The formula of model 3 is: external motivation=1,646+0,379 * gender+0,066 * age+0,000 * school type+1,057

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* whether to participate in outdoor adventure education project (table 7).

Difference analysis. Differences of self-efficacy in each item of outdoor adventure education project or not

Table 7. Difference analysis

Item	***		t	p
	No (n=152)	Yes (n=155)		
In the process of participating in the course study, if I try my best, I can always solve the problem.	2,158 ± 1,367	3,832 ± 1,237	-11,257	0,000**
In the process of learning, even if other members of the group want to give up, I still have a way to get the results I want.	2,059 ± 1,251	3,645 ± 1,385	-10,531	0,000**
For me, it is imperative to persist in completing the study task and achieving the task goal.	2,164 ± 1,258	3,594 ± 1,337	-9,641	0,000**
I am confident that I can effectively cope with any unexpected challenge.	2,132 ± 1,222	3,690 ± 1,389	-10,446	0,000**
With my intelligence, I'm sure I can cope with unexpected situations.	2,178 ± 1,308	3,703 ± 1,378	-9,947	0,000**
If I take the time to make the necessary preparations for participating in the project, I will be able to solve most of the problems.	1,993 ± 1,231	3,748 ± 1,332	-11,991	0,000**
I can face difficulties calmly because I can trust my ability to deal with problems.	2,013 ± 1,276	3,755 ± 1,340	-11,661	0,000**
When faced with a difficult problem, I can usually find several solutions.	2,132 ± 1,316	3,581 ± 1,381	-9,410	0,000**
When I encounter difficulties in practice, I can usually think of some solutions.	2,112 ± 1,242	3,748 ± 1,337	-11,106	0,000**
No matter what happens to me, I can cope with it.	2,086 ± 1,260	3,813 ± 1,273	-11,945	0,000**

* p<0,05 ** p<0,01 *** The average value ± standard deviation indicates whether or not to take part in an outdoor adventure education project.

Table 8 shows that the independent sample t-test is used to determine whether there are significant differences in each self-efficacy item among participants in outdoor adventure education programs. The descriptive mean statistics then show that the average value of each item of the outdoor adventure education project is higher than the average value of the non-participating population. The statistical results show that the significance of each item is 0,000, less than 0,05, indicating that participation in outdoor adventure education projects has significant differences in each item of self-efficacy. Variations in every intrinsic motivational factor, including participation in outdoor adventure education projects.

Table 8. Whether to participate in outdoor adventure education project (average value ± standard deviation)

Item	***		t	p
	No (n=152)	Yes (n=155)		
I like to take part in the challenge of "result-oriented" learning, so that I can learn new things.	2,401 ± 1,387	3,542 ± 1,474	-6,980	0,000**
"Results based orientation" can arouse my curiosity, even if it is difficult sometimes.	2,355±1,349	3,484 ± 1,509	-6,911	0,000**
What I am most satisfied with is that I should thoroughly understand the content of the "results oriented" course as far as possible.	2,283 ± 1,329	3,413 ± 1,381	-7,303	0,000**
I like to participate in "results based" learning challenges, even if they can't help me with my lessons.	2,316 ± 1,359	3,548 ± 1,378	-7,890	0,000**

* p<0,05 ** p<0,01 ***Whether to participate in outdoor adventure education project (average value ± standard deviation)

Table 9 shows that the independent sample t-test is used to determine whether there are significant differences in each internal motivation item among participants in outdoor adventure education programs. The statistical results show that each item's significance is 0,000, less than 0,05, indicating whether or not there are significant differences in each internal motivation item among participants in outdoor adventure education programs. The average value of every item in the outdoor adventure education project is hence higher than that of the non-participating population, as shown by the descriptive mean statistics.

It is evident from the above Table that the independent sample T-test is employed to determine whether different external motivational factors for engaging in outdoor adventure education initiatives differ significantly from one another.[18,19] The statistical results show that there are noTable disparities in the different external motivational factors for engaging in outdoor adventure education initiatives, with each item's significance being 0,000, less than 0,05. The descriptive mean statistics show that participation in outdoor adventure education programs has an average value per item that is higher than that of non-participants.[20,21,22]

The Table indicates that the aim of the study was to find out if involvement in an outdoor adventure

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education program is related to learning motivation and problem-solving abilities.[23] An independent samples t-test was used for statistical analysis, and the study included a series of statements about attitudes and abilities to learn.

Table 9. Variations in the outside factors influencing participation in outdoor adventure education programs

Item	***		t	p
	No (n=152)	Yes (n=155)		
Because the "results oriented" courses are challenging to some extent, it is a happy thing for me to get a good result.	2,414 ± 1,354	3,484 ± 1,452	-6,67	0,000**
The "results oriented" course has cultivated my self-confidence, which is helpful to improve my average score, so I am concerned about getting a good score.	2,322 ± 1,393	3,400 ± 1,399	-6,762	0,000**
I want to get better grades than most students in my class.	2,368 ± 1,413	3,439 ± 1,368	-6,744	0,000**
I want to do well in class because it is important to show my ability to my family, friends or others.	2,395 ± 1,420	3,348 ± 1,435	-5,852	0,000**
If I preview in an appropriate way, I will be able to successfully pass the test of the "results oriented" course	2,388 ± 1,428	3,381 ± 1,383	-6,185	0,000**
If I don't learn the "results based" course materials, it is also my own fault.	2,493 ± 1,437	3,426 ± 1,358	-5,844	0,000**
If I work hard enough, then I can understand the learning content presented in the "results oriented" course.	2,368 ± 1,394	3,471 ± 1,420	-6,864	0,000**
If I don't understand the challenge content of the "results oriented" course, it is because I haven't worked hard enough.	2,368 ± 1,370	3,439 ± 1,437	-6,676	0,000**

* p<0,05 ** p<0,01 ***Whether to participate in outdoor adventure education project (average value ± standard deviation)

The following are the key findings:

Problem-solving capacity: Students who took part in the OAE program showed noticeably superior problem-solving skills when it came to the assertion that one can always solve a problem if they do their hardest while enrolled in a course of study.[24,25] The mean score of the students who took part in the program (2,22) was considerably lower than theirs (3,83).

Learning Persistence: When the others in the group want to give up, I know how to keep going and get the results I want from the learning process. Students that took part in the OAE program showed noticeably greater learning persistence in support of this claim. Comparing their mean score (3,65) to the students who did not take part in the program, the difference was statistically significant.[26,27]

Confidence and Coping Skills: students who participated in the OAE program demonstrated significantly higher scores on confidence in being able to effectively cope with any unexpected challenges and belief in their ability to cope with unexpected situations.[28,29]

Interest in Learning: students who participated in the OAE program showed a higher interest in "results-based" learning challenges. They are more interested in learning new things and are more willing to take on challenging tasks.

Academic Achievement: students in OAE programs are more interested in getting good grades and want to do well in class, which may be related to showing family, friends, or others what they can do.

Students that took part in the Outdoor Adventure Education program showed noTable improvements in their ability to solve problems and be motivated overall.[30] These findings highlight the beneficial effects of outdoor adventure education programs on children and suggest that these programs may foster the growth of students' perseverance, self-assurance, and problem-solving abilities. These skills and attitudes are not only beneficial in the academic realm, but are also important for future careers and life challenges of all kinds.

CONCLUSION

This study demonstrates that outdoor adventure education (OAE) programs positively influence students' learning attitudes and motivation, particularly enhancing self-efficacy and intrinsic motivation. Participants in OAE programs exhibit increased self-confidence and an active approach to academic challenges, emphasizing self-efficacy as a crucial factor in effective learning. Additionally, OAE significantly fosters intrinsic motivation, driving students to learn from genuine interest, which supports sustained academic engagement and personal growth. While external motivation also improves, its impact appears less significant, suggesting a limited role in long-term learning commitment.

These insights have meaningful implications for educational policy and curriculum design. Incorporating OAE

can enhance students' academic interest, motivation, and self-efficacy, potentially enriching their learning experiences and preparing them for future challenges. The study also highlights the need to consider individual differences, as responses to OAE vary, and adapTable program designs may better serve diverse student needs. Overall, this study supports OAE as an effective educational approach, promoting students' comprehensive development and academic success and advocating for its wider implementation.

Study Limitations

Although this study provides valuable insights, there are some limitations:

Sample Limitations: the sample of this study was not broadly representative and the results are not applicable to all student populations due to the explicit limitations of the study location (Province G, Southwest China) and the study population (study in higher vocational colleges and universities).

Self-report measures: the study data relied heavily on students' self-reports, which may be affected by subjectivity and social response bias.

External Factors: other external factors not considered may influence students' motivation, such as family environment, social support, etc.

Future Research Recommendations.

Broader sample study: future studies could increase the sample size and diversity to have a more thorough knowledge of how OAE education affects various student groups.

Multi-method study: combine self-reported data with objective performance data to mitigate subjectivity and increase the credibility of the data.

Long-term follow-up study: due to study time constraints, participants in the OAE program could only be chosen for one cycle of the program. Additionally, because education is a long process, a long-term follow-up study is necessary to evaluate the OAE program's long-term effects on students' motivation and academic performance.

Exploration of external factors: the study can explore more external factors that may affect student motivation to better understand the influencing factors.

In conclusion, this study shows that OAE education has a good effect on students' willingness to learn; however, additional, comprehensive research is required to completely comprehend this effect and its underlying mechanisms. This will help make educational policies and procedures even better.

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