Effectiveness of a School-Based Outdoor Education Curriculum and Online Learning Environment among Prospective Teachers

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Abstract: The aim of this study is to determine the effectiveness of a curriculum developed for prospective physical education teachers to learn an outdoor sports course, using both the school-based outdoor education approach and online learning. The research design involved a mixed method that used both qualitative and quantitative approaches. Since qualitative data were collected in order to support quantitative data, the researchers applied a sequential-descriptive pattern of mixed methods. As a result of the research, the achievement of the outdoor sports lesson and the ability of doing outdoor sports were improved among prospective teachers using both the school-based outdoor education and online learning physical education approaches. The prospective teachers stated that they learned the subjects better by doing, and that they were more motivated to improve their subsequent performance after watching the recorded activities and performances on the learning management system. The prospective teachers generally expressed the positive opinion that the course was helpful for passing the final exam or other evaluations, and that the teaching activities were motivational.

Keywords: school-based; outdoor education; sports course; effectiveness of the curriculum; mixed learning

1. Introduction

Learning is known as a very common process that starts from birth and can last until the end of life. Observations of events around them and testing the hypotheses established during the integration of these events with different concepts cause individuals to use a combination of different learning styles [1]. Enrichment and diversification of these learning styles are of great importance in terms of achieving gains. In this context, in addition to formal education, it is natural for the individual to learn through regular activities that are conducted outside of the school, as a different type of learning. The main purpose of these activities is that the learning is rich and engages the individual [2]. Outdoor education is carried out through structured learning activities in different environments such as natural environments and living spaces outside the classroom [3]. As a result of Pestallozi’s influences, Froebel established children’s gardens and Dewey’s developed the idea of ‘Experimental Education’, which formed the basic philosophical structure of outdoor learning [4]. Thus, outdoor educational practices started for the first time in the late 19th and early 20th centuries [5]. Additionally, outdoor learning arguably first began at the Broadoaks Schools in the United States based on the idea that “nature itself should be employed in classes as a laboratory”. This idea was
introduced to the California State educational program in 1912 and thus emerged as the world’s first outdoor learning and teaching program [6].

Teachers play an important role in the implementation of outdoor pedagogies. Teachers are responsible for acting as supporters and primary agents as well as ensuring that students learn [7]. However, while it is expected that the teacher will provide pedagogical flexibility and confidence during outdoor teaching, a student-centered approach to teaching is required. Educators with opposing ideas about learning outside aim to preserve pedagogy control and predictability, since they see it as risky and dangerous [8]. It is largely recognized that students need problem solving skills, cooperation and agency. If a narrow pedagogical design is used, then these requirements are limited. Outdoor learning is said to have pedagogical potential [7]. From a more theoretical and pedagogical point of view, nature can be perceived as an effective teaching and learning environment. Conversely, teaching indoors can make teachers feel that they have more control. While outdoor environments offer a variety of learning opportunities, making predictions and planning for possible challenges is more difficult in outdoor environments [9,10]. There are opinions that higher education institutions that use outdoor pedagogy in appropriate places will be more successful in the education of prospective teachers [11]. According to a recent study conducted with prospective teachers, open experiential approaches to environmental and sustainability education positively increase environmental attitudes, but are limited in increasing transformational effectiveness [12]. In addition, the studies of [13,14] show that self-efficacy can develop through experience. An example of this is that if prospective teachers have positive outdoor teaching experiences, this creates the feeling that they are more effective when teaching students in the outdoor environment [15]. The use of a school-based outdoor education approach within the curricula has a positive effect on the students and increases their motivation towards a course. This is effective in developing high-level thinking skills such as creative thinking, problem solving, analysis and synthesis [16]. In addition, Duruk et al. [17] stated that these applications were welcomed by the students themselves and that they are effective in eliminating misconceptions, while outdoor learning environments also increase students’ knowledge and self-confidence. Furthermore, education with different activities in informal environments can play an important role in increasing the success of students [18].

Outdoor training is generally known as outdoor learning through experiential learning [19]. Teaching environmental issues to students in traditional methods and classrooms can be extremely complex. For this reason, multidisciplinary holistic teaching and learning approaches are potentially suitable for environmental education and teaching subjects. Such learning approaches allow students to experience all sensory organs (holistic), giving them the opportunity to use them. This type of experiential learning can take place in outdoor environments rather than indoor environments [20,21]. It is possible to find literature on designing effective pedagogy to help students understand environmental education and its importance. Out of school learning experiences, planning and the use of digital technologies (Moodle) to integrate classroom activities with out-of-school applications have yielded useful results. By enabling student interaction with digital technologies, they can be provided with open learning experiences that increase their motivation to learn. Thus, this will lead to increases in the levels of student performance.

Digital technologies make our daily lives easier by providing easy integration to daily activities. In addition, while providing this integration, the ground is being prepared for use in different areas. Particularly in 2000, online learning gained worldwide popularity as a result of the introduction and development of Learning Management Systems [22]. Berking and Gallagher [23] classified online learning environments under four headings: Learning Management Systems, Learning Content Management Systems, Course Management Systems and Virtual Learning Environments.

Moodle (Modular Object Oriented Dynamic Learning Environment) is a learning management system that can easily be used by all users (students, teachers/instructors) for online course and course management systems. Today, the Moodle platform provides easy access to online courses as students are only required to register and create an account [24]. In a broader sense, users can easily access related online courses from anywhere in the world at any time. Since learning takes place independently of time and space, students can learn individually and work in learning environments
that support collaboration [25]. In addition, Moodle course design and course management includes enriched multimedia learning resources, various activities based on communicative and cooperative learning (forum, chat, wiki, etc.), communicative contact with the tutorial and guidance, feedback, assessment and support for controlled learning through monitoring statistics [26].

Outdoor sports and adventure programs not only include natural activities, but also events created to achieve special educational purposes. Activities are organized with different courses in order to increase students’ experience of overcoming challenges, which is specific to the field. Common examples that include risks are hiking, camping, rock climbing, mountaineering, caving, skiing, hiking in snowy environments, underwater sports, orienteering, cycling, sailing, canoeing, canoeing, rafting and nature photography [27–30]. In this case, outdoor sports can be defined as activities that include potential difficulties and risks that exist in nature and trigger the will to fight and survive for human beings with knowledge, skills and condition, without the support of any motor or animal power. Continuous and intensive interaction in the teaching and learning process is meaningful. In line with the educational objectives, nature is one of the best fields of study that will ensure the continuation of the interaction between the learner, the teacher and the learning environment in the development of behaviours such as cooperation, solidarity, creativity development and problem solving because nature offers unlimited possibilities in setting educational objectives [31]. In the basic approach of learning by living, there is a desire to be ‘an active participant’ rather than ‘an audience or listener’ [32]. This philosophy can be defined as learning by applying and is based on the idea that the level of learning to be gained by direct and purposeful participation in the experience may be optimal [29].

In the international literature, mixed learning environments called ‘blended’, ‘hybrid’ or ‘mixed’ are defined as learning environments where the traditional education method is integrated and enriched with online education materials. However, different definitions have been provided by different researchers in the literature. According to Deutsch [33], mixed learning environments are learning environments that combine both online and offline activities and combine traditional face-to-face learning environments with internet-supported learning environments. Mixed learning can also be defined as learning environments where superior qualities and aspects of face-to-face and online learning environments are employed together [34].

In this study, the difference between the success and performance obtained by blending online learning with the school-based outdoor education approach (SBOEA) and Moodle (learning management systems), which is a learning and lesson management system, and the success and performance obtained by students performing outdoor sports in traditional learning environments were examined. In addition, at the end of the experiment, students’ views about these environments were evaluated. In this study, outdoor education is expressed as learning the lessons of outdoor sports by engaging in activities in the natural environment outside the classroom walls. The outdoor learning environment includes mountains, hills, plains, woodland and forests, beaches and seas. In addition, materials and equipment for outdoor sports or living conditions were used in the outdoor learning environment. Before starting the research, the educational needs of the first-year prospective teachers in the physical education teaching department of the universities in Northern Cyprus were determined for teaching the outdoor sports course with SBOEA. In the research, deficiencies were identified in terms of the knowledge and skills of prospective teachers related to outdoor sports.

According to the findings of the studies mentioned above, the contribution of such teaching practices to education is effective and prospective teachers expressed that they are positive about such practices, the method of the education they receive in their undergraduate education, and their approach to such practices, which are essential for the subjects included in the outdoor sports course. Outdoor sports is a compulsory course in the physical education teaching program of many universities. Instead of teaching this course in the classroom by traditional methods or presentation, teaching with a combination of outdoor learning and online learning methods, which is accepted to increase academic success and has proved to be effective in all teaching levels, has become a necessity. It is of utmost importance that prospective physical education teachers are able to transfer this lesson to their students effectively when they become teachers after learning the outdoor sports lesson with
these teaching methods. Therefore, the data obtained from this research will help researchers working in the field to gain a broader understanding about the extent of outdoor learning in undergraduate education and prospective teachers’ views on the subject.

1.1. Purpose of the Study

The purpose of this study is to develop a training program for prospective physical education teachers to learn a natural sports course via both SBOEA and online learning. In addition, the effect of the developed training program on the achievement of physical education prospective teachers, the impact on their ability to do outdoor sports and the views of the prospective physical education teachers about the developed training program are also determined. For this general purpose, the following research questions are also set:

(a) What are the education needs of the prospective physical education teachers of the Faculty of Sport Sciences of the universities when participating in the Outdoor Sports Course through SBOEA?
(b) Is there a significant difference between the pre-test and post-test performance scores of the prospective physical education teachers in the experimental and control groups doing the outdoor sports course through SBOEA and the online learning environment?
(c) Is there a significant difference between the pre-test and post-test achievement scores of the prospective physical education teachers in the experimental and control groups doing the outdoor sports course through SBOEA and the online learning environment?
(d) What are the views of the prospective teachers in the experimental group on the effectiveness of the practices organized for the natural sports course training program developed according to SBOEA and the online learning environment?

1.2. Significance of the Study

If using outdoor learning environments helps to improve prospective teachers’ participation and success, then teachers may feel more confident in using outdoor learning as an effective and inexpensive teaching strategy. The lecturers at the university will have a better understanding of prospective teachers’ learning and will encourage prospective teachers to relate to the learning environments outside the school and lecturers will also be motivated to also give their courses outdoors. University administrators will feel more justified in providing professional prospects for prospective teachers by increasing their engagement in effective outdoor learning activities.

2. Research Method

The research implemented a mixed method design that used both qualitative and quantitative approaches. This integrated method includes collecting, analyzing and combining single or multiple-staged qualitative and quantitative data [35]. Creswell [36] classified mixed method research as convergent parallel, descriptive, explorer, embedded, transformative and multiphase design.

In the study, quantitative data about the educational needs of the prospective teachers were firstly gathered in order to do the natural sports course with SBOEA. Then, according to the findings, a pre-test and post-test experimental design with experimental and control groups was used for the outdoor sports course. After the quantitative data were collected, qualitative data were obtained through the views of the prospective teachers in the experimental group on the effectiveness of the practices organized for the SBOEA and the online sports learning program developed according to the online learning environment. Since qualitative data were collected in order to support these data, a sequential–descriptive pattern of mixed methods was used [36].

2.1. Participants

Since natural sports lessons were taught in the first year for physical education teachers, 180 of the 220 first year prospective teachers at six universities from Northern Cyprus were reached and a needs analysis questionnaire was applied. As a result of the data obtained from the research,
volunteer prospective teachers with a lack of knowledge and skills about outdoor sports were randomly assigned to experimental (n = 30) and control groups (n = 30) for the study. Of the 180 prospective teachers who participated in the needs analysis, 144 (80%) were male and 36 (20%) were female. In total, 36 (20%) of the prospective teachers stated that they did such sports activities once a year, 72 (40%) did so between two and five times a year, and nine (5%) did more than six outdoor sports activities per year. The remaining prospective teachers said they did not do any outdoor sports activities. Thus, experimental and control groups were formed from the prospective teachers who needed to learn the outdoor sports course according to SBOEA.

Examination of the distribution of prospective teachers according to the mean scores (𝑋) of the needs analysis of the natural sports lesson in Table 1 shows that all items at the ‘I disagree’ and ‘I strongly disagree’ level, except for two items that were at the indecisive level. In addition, while the average basic knowledge level of the prospective teachers in the nature course sports was 2.13 and the standard deviation was 0.822, the general average related to the skills of applying what they know in outdoor sports was 2.44 and the standard deviation was 0.923. The overall average of all needs questionnaires was 2.27 and the standard deviation was 0.909. In this case, it is clear that the prospective teachers were lacking, both in terms of their basic knowledge levels in outdoor sports and the skills to apply what they know in outdoor sports as well as both theoretical and practical issues throughout the needs questionnaire. In addition, in response to the open-ended questions that were asked, the students expressed their needs during the course; the activities were video recorded for the reinforcement of the lessons with the applications to be made outside the school, and these records were transferred onto the web environment where the prospective teachers could learn the subjects at their own pace.

Table 1. Distribution of prospective teachers according to average scores of needs analysis.

| Basic Knowledge Levels of Prospective Teachers in Outdoor Sports Course                                                                 | 𝑋     | Sd.  |
|-------------------------------------------------------------------------------------------------------------------------------------|-------|------|
| 1 I can define the characteristics of nature with the concept of natural life                                                   | 2.46  | 0.889|
| 2 In terms of participating in natural life, I know what needs to be done in order to survive in nature                           | 2.30  | 1.10 |
| 3 I know what activities should be done in order not to harm the natural environment, ecology and nature.                       | 2.20  | 0.888|
| 4 I can explain what materials are needed to learn about meteorology.                                                              | 2.37  | 0.099|
| 5 I know all of the ingredients for natural life.                                                                                   | 2.35  | 0.505|
| 6 I know what materials are needed to survive in nature.                                                                             | 2.12  | 0.755|
| 7 I know the benefits of hiking.                                                                                                   | 2.18  | 0.885|
| 8 I know what materials are needed for hiking.                                                                                      | 1.55  | 0.799|
| 9 I know how to use the necessary materials for hiking.                                                                             | 1.62  | 0.955|
| 10 I can define outdoor sports.                                                                                                     | 2.22  | 1.020|
| 11 I know the effects of outdoor sports on human mental and physical health.                                                        | 2.04  | 0.766|
| 12 I know that outdoor sports have social meaning.                                                                                  | 2.54  | 1.015|
| 13 I know that there are different approaches in outdoor sports in other countries                                                  | 2.12  | 0.975|
| 14 I can plan activities in outdoor sports.                                                                                         | 2.15  | 1.123|
| 15 I know what is needed for outdoor sports activities                                                                              | 2.62  | 0.894|
| 16 I know what measurement techniques are used to determine students’ skills in the field of outdoor sports.                        | 1.96  | 1.232|

The Ability of Prospective Teachers to Apply What They Know in Outdoor Sports

| The Ability of Prospective Teachers to Apply What They Know in Outdoor Sports                                                                 | 𝑋     | Sd.  |
|-------------------------------------------------------------------------------------------------------------------------------------|-------|------|
| 17 I can set up a tent in nature.                                                                                                 | 2.73  | 1.050|
| 18 I can find water and make a fire.                                                                                                | 2.55  | 0.789|
| 19 I am proficient at camping and know knot techniques using the necessary materials                                             | 2.41  | 0.985|
| 20 I can navigate in nature using the necessary materials.                                                                        | 1.70  | 1.001|
| 21 I can protect myself from the risks and dangers that can be encountered in nature by using the necessary materials in the nature environment. | 2.37  | 0.798|
| 22 I can perform first aid in nature using the necessary materials.                                                               | 2.48  | 0.875|
| 23 I can do rock climbing in nature using the necessary materials.                                                                  | 2.50  | 0.968|
| 24 I can camp in the winter in the environment by using the necessary materials.                                                    | 2.48  | 0.859|
25 I can do summer camp scouting in nature using the necessary materials. 2.72 0.983

In order to test whether there was a statistically significant difference between the mean scores of the ‘Outdoor Sports Course Multiple Choice Achievement Test’ and ‘Outdoor Sports Performance Test’ pre-test scores of the experimental and control groups at the beginning of the application, analysis was conducted using t-test and the obtained results are shown in Table 2.

According to Table 2, there was no statistically significant difference in the pre-test scores of the experimental and control groups of the prospective teachers in the ‘Outdoor Sports Course Multiple Choice Achievement Test’ ‘Outdoor Sports Performance Rubric’ (p > 0.05). This shows that the mean scores of the ‘Outdoor Sports Course Multiple Choice Achievement Test’ and “Outdoor Sports Performance Rubric” of the experimental and control groups were similar. In other words, the experimental and control groups were equivalent in terms of academic achievement and application skills.

| Groups          | n  | X    | Sd.  | t   | p   |
|-----------------|----|------|------|-----|-----|
| Achievement Test|    |      |      |     |     |
| Control Group   | 30 | 28.5000 | 10.99765 | −0.386 | 0.701 |
| Experimental Group | 30 | 29.6667 | 12.38278 |     | 0.05 |
| Performance Test|    |      |      |     |     |
| Control Group   | 30 | 9.7667 | 7.59620 | −0.218 | 0.828 |
| Experimental Group | 30 | 10.1667 | 6.58150 |     | 0.05 |

2.2. Research Plan and Design

2.2.1. Data Collection

Four data collection tools were developed for this purpose. These are the “Outdoor Sports Course Needs Analysis Questionnaire”, “Outdoor Sports Performance Rubric”, Outdoor Sports Course Achievement Test” and “Semi-Structured Interview Questions for Prospective Teachers”.

2.2.2. Outdoor Sports Course Needs Analysis Survey

The needs analysis questionnaire of the outdoor sports course in accordance with SBOEA was developed by the researchers. Before preparing the needs analysis, the compositions of 20 of the prospective teachers about their needs in the field of outdoor sports were assessed and a two-dimensional need analysis survey consisting of 25 items was formed by considering the current curriculum. In the first dimension, there are 16 items regarding basic knowledge levels in the course of outdoor sports for prospective teachers. In the second dimension, there are nine items regarding the skills applied in outdoor sports. Five subject area experts were interviewed for scope validity. The two-dimension outdoor sports course needs analysis questionnaire consists of 25 items. The Cronbach’s alpha reliability coefficient of the five-point Likert type (1: Strongly Disagree, 5: Strongly Agree) questionnaire was found to be 0.94.

2.2.3. Outdoor Sports Performance Rubric

During the preparation of the performance rubric of outdoor sports, the objectives and the skills and criteria to be acquired were determined by interviewing the experts in the subject area by examining the outdoor sports course curriculum. A 10-item graded key (Rubric) was used for these skills (Table 3). Prospective teachers’ performance levels were as follows: 1 = skill is unacceptably low, 1 = makes frequent mistakes in skill, 2 = moderately successful, 3 = makes occasional errors in skill, 4 = has done successfully. A minimum of 10 and a maximum of 40 points can be obtained from the rubric (Table 3).
Table 3. Definitions of Outdoor Sports Performance Definitions and Scores.

| Skills (Ratings)-T2 | 1 Point | 2 Points | 3 Points | 4 Points | Score |
|---------------------|---------|----------|----------|----------|-------|
| Ability to orientate using the necessary techniques and materials (T2w1) | Ability to orientate using the necessary techniques and materials is unacceptably low. | He/she makes frequent mistakes in orienteering skills using the necessary techniques and materials. | He/she makes mistakes from time to time when orientating using the necessary techniques and materials. | He/she has successfully accomplished the orienteering skills by using the necessary techniques and materials. | 4 Points |
| Ability to hike by applying necessary technical and group behaviours (T2w2) | The ability to hike by applying the necessary techniques and group behaviours is unacceptably low. | He/she often makes mistakes when hiking by applying the necessary technical and group behaviours. | He/she makes occasional mistakes when hiking by applying the necessary technical and group behaviours. | He/she applied the necessary techniques and group behaviours successfully to hiking. | 3 Points |
| Ability to use hiking equipment (T2w2) | The ability to use hiking equipment is unacceptably low. | He/she often makes mistakes when using hiking equipment. | He/she occasionally makes mistakes when using hiking equipment. | He/she has successfully completed the skills to use hiking equipment. | 2 Points |
| Ability to find and recognize nutrients in nature (T2w3) | The ability to find and recognize nutrients in nature is unacceptably low. | He/she often makes mistakes in their ability to find and recognize nutrients in nature. | He/she occasionally makes mistakes in their ability to find and recognize nutrients in nature. | The ability to find and recognize nutrients in nature has been achieved successfully. | 1 Point |
| Ability to use navigation tools and methods in nature (T2w4) | The ability to use navigation tools and methods in nature is unacceptably low. | He/she makes frequent mistakes in the ability to use navigation tools and methods in nature. | He/she makes occasional mistakes in the ability to use navigation tools and methods in nature. | He/she has successfully completed the skills of using navigation tools and methods in nature. | 4 Points |
| Ability to survive in nature by using the necessary techniques with the right information and materials (T2w5) | The ability to survive in nature by using the right information and materials and the necessary techniques is unacceptably low. | He/she makes frequent mistakes in the ability to survive in nature by using the necessary techniques with the right information and materials. | He/she makes occasional mistakes in the ability to survive in nature by using the necessary techniques with the right information and materials. | He/she has successfully completed the survival skills in nature by using the necessary techniques with the right information and materials. | 3 Points |
| The ability to set up a tent using the necessary techniques with the right information and materials (T2w6) | The ability to set up a tent using the necessary techniques with the right information and materials is unacceptably low. | He/she makes frequent mistakes when setting up a tent using the necessary techniques with the right information and materials. | He/she makes occasional mistakes when setting up a tent using the necessary techniques with the right information and materials. | He/she has successfully gained the skills to set up a tent using the necessary techniques with the right information and materials. | 2 Points |
| (T2w1) Applying first aid techniques for high altitude sickness | The knowledge of first aid techniques for high altitude sickness is unacceptably low. | He/she makes frequent mistakes when administering first aid for high altitude sickness. | He/she makes occasional mistakes in first aid intervention in high altitude sickness. | He has successfully applied first aid interventions for high altitude sickness. |
|---|---|---|---|---|
| (T2w2) Ability to recognize and use the materials they will use in the summer camp | The ability to recognize and use the materials to be used in summer camp is unacceptably low. | During the summer camp, he/she makes frequent mistakes in the ability to recognize and use the materials they will use. | He/she makes occasional mistakes in the ability to recognize and use the materials to be used during the summer camp. | He/she successfully acquired the skills of recognizing and using the materials to be used during the summer camp. |
| (T2w3) The skill to be able to follow the steps for putting up the tent and packing it away unacceptably low | He/she makes frequent mistakes in following the steps of putting up the tent and packing it away. | He/she makes occasional mistakes in following the steps of putting up the tent and packing it away. | He/she was successful in following the steps of for putting up the tent and packing it away. |

**Total Score**

T1: Outdoor Sports Course Multiple Choice Achievement Test. T2: Outdoor Sports Performance Rubric. T2w1, T2w2, T2w3, T2w4, T2w5, T2w6, T2w7, T2w8: Outdoor Sports Performance Rubric‘ for each week.
Validity is defined as the degree to which a measurement tool accurately measures the property or characteristics it intends to measure. Content and construct validity analyses can be used to test the validity of a measuring instrument. To ensure the validity and reliability of the performance rubric, the ability to do outdoor sports was examined. Content validity relates to the extent to which the entire test, and each substance in the test, contributes to its intended use. One of the ways to test the content validity of a scale is for experts to assess the instrument. Therefore, in order to determine the content validity of the performance rubric, a preliminary research was conducted before the rubric was prepared and the experts in the subject area were interviewed. In order to determine the validity of the scale, the suitability of the objectives determined according to Bloom’s taxonomy [37,38] for the subjects to be covered every week was evaluated as ‘appropriate and not suitable’ by the experts in five subject areas and percentages were calculated. The percentage of the experts who said it would be suitable for the specified purposes ranged from 82% to 90%. According to Brown [39], the fact that the percentage of comparison is above 80% is important in terms of validity. As a result, the criteria of the rating scale used in this study were accepted as valid. This shows that the performance rubric has content validity.

For the reliability of the scale, a second expert rated the scores in addition to the researcher himself. He was given the necessary training on the other specialist rating scale and the prospective teachers were asked to rate their performance. Then, the correlation between the scores of both experts was calculated as $r = 0.92$.

The measuring instrument is suitable for measuring the structure theoretically. Exploratory factor analysis is one of the techniques used to determine the construct validity of a measurement tool statistically.

Exploratory factor analysis was applied to the scale in order to test the construct validity of the performance rubric to do outdoor sports. Exploratory factor analysis was used to capture the highest variance with the smallest number of factors [40]. In order to minimize the possibility of items appearing under more than one factor, varimax axis rotation was performed.

Exploratory factor analysis was conducted to determine the factor structure and construct validity of the performance rubric. The total variance explained by the obtained factor was 60.5%. This value indicates that the structure of the performance rubric effectively measures the ability to perform outdoor sports.

### 2.2.4. Outdoor Sports Lesson Achievement Test

A success test (applied as test-retest) was developed by the researchers in order to measure the effectiveness of the prospective teachers’ program for outdoor sports according to SBOEA. The success test of the outdoor sports course, which consists of multiple-choice questions, was formed by taking expert opinions for face validity. After the pilot application, the achievement test was applied to 180 prospective teachers and the KR-20 reliability coefficient was calculated as 0.89, indicating that the reliability was high. A KR-20 reliability coefficient of 0.70 and close to one indicates that the test is reliable [41]. The mean difficulty index of the achievement test was 0.54. All questions that were below 0.40 and above 0.80 were excluded from the test. Similarly, items whose discrimination index was less than 0.30 were also removed from the test and the final version of the test consisted of 20 questions. Each question was given a score of 5 points meaning that it was evaluated out of a total of 100 points.

### 2.2.5. Semi-Structured Interview Questions Prepared for Prospective Teachers for Outdoor Sports Course Prepared according to SBOEA

The researchers prepared semi-structured interview questions on the effectiveness of the program and they were designed according to the SBOEA course for the prospective teachers. For the sports course prepared according to SBOEA, sources in the literature were examined, the opinions of education programmers and outdoor learning experts were taken and the interview questions consisting of six questions were prepared accordingly. These questions are: ‘You participated in the activities organized for the training program developed according to SBOEA and you experienced
outdoor education. Consider and explain an outdoor event you have attended.’ ‘What did you do?’ ‘How did this activity help you learn the concepts taught?’ ‘What did you learn about outdoor sports?’ Evaluate this education, what were the good or bad aspects?’ ‘Were the activities for the training program developed according to SBOEA placed on the Learning Management System (LMS) and did the lessons help you learn from there? How did it help?’ ‘Did it help you pass the final exam or other assessments at the end of the lesson? If so, how did it help?’ ‘What was different in your learning activities from what you learned in the normal classroom?’ ‘Did the teaching activities developed according to SBOEA motivate you in the lessons? Would you recommend such activities for other courses? Why?’

2.3. Research Design

In this study, two groups were selected as experimental and control groups. Prospective teachers were randomly assigned to these groups. The research design is shown in Table 4.

| Group          | Pre-Test | Experimental Teaching                                                                 | Post-Test |
|----------------|----------|--------------------------------------------------------------------------------------|-----------|
| Experimental   | T1, T2   | School-based outdoor education approach                                               | T1        |
| Group          |          | Moodle online learning and traditional (face to face) Teaching supported by SBOEA     |           |
| Control        | T1, T2   |                                                                                      |           |
| Group          |          | Traditional teaching                                                                  |           |

Table 4. Experimental Research Design.

T1: Outdoor Sports Course Multiple Choice Achievement Test. T2: Outdoor Sports Performance Rubric. T2W1, T2W3, T2W5, T2W8, T2W6, T2W7, T2W8: Outdoor Sports Performance Rubric’ for each week.

- Independent variables of the study: Outdoor sports instruction adapted to the school-based outdoor education approach, online mixed instruction supported by Moodle SBOEA, teaching through presentation.
- Dependent variables of the study: Achievement in the outdoor sports course, ability to perform outdoor sports.

Table 4 shows the study design with participants separated into experimental and control groups. Before starting the experimental method, a needs analysis survey was conducted to understand the pre-service physical education course needs according to SBOEA, and the prospective teachers’ deficiencies in terms of the knowledge and skills about doing outdoor sports were identified. Then, the “Outdoor Sports Course Multiple Choice Achievement Test” and “Outdoor Sports Performance Rubric” were applied as a pre-test for the prospective physical education teachers in both groups. As a result of the needs analysis, lessons were planned in the experimental group. The planned courses were conducted in the experimental group using a mixed method environment including the “School-based outdoor education approach”, “Online teaching supported by Moodle LMS” and “Face-to-Face” teaching (students were taught theoretical knowledge). In the control group, only face-to-face instruction was given. Before and after the experimental study, the ‘Outdoor Sports Course Multiple Choice Achievement Test’ was applied to both groups. The “Outdoor Sports Performance Rubric” was applied as a pre-test to both groups for eight weeks and then at the end of each lesson by applying a different test to assess their performance each week (from T2W1 to T2W8), and total performance scores were calculated at the end of the program. In addition, interviews were conducted with the prospective teachers in the experimental group using a semi-structured interview form, which lasted approximately 15–20 min.

In this respect, the opinions of the prospective teachers who participated in the research were firstly taken and the environment in which the focus group interview was conducted was determined. In line with the opinions of the prospective teachers, it was decided that the interviews could be held without being interrupted in a classroom in the university, as it was a quiet, comfortable
and relaxing environment. In the classroom, interview questions prepared by the researchers were asked separately to 20 prospective teachers. The curriculum timetable was taken into consideration in determining appropriate interview times for the prospective teachers. Prior to the interviews, the selected prospective physical education teachers were informed about the aims of the planned study. At the beginning of the interviews, the prospective physical education teachers were told that the obtained data would only be used for scientific study and their personal information would remain confidential by using pseudonyms. In order to prevent data loss during the interviews, they were also informed that each interview would be recorded. The interview questions were asked separately to the prospective teachers and the views of the participants were recorded in order. The prospective teachers’ interviews were recorded, and any researcher bias was prevented during the analysis of the data. Thus, the researchers made the necessary analyses with the obtained sound recordings.

2.4. Online Learning Environment Supported by Moodle LMS

Moodle is an open source and open learning development system designed to help educators build online courses. One of the advantages of e-learning is that it provides flexibility in terms of time and space, while the student can access the course materials through their own mobile devices and computers. In addition, it facilitates access to vast amounts of information and motivates students to interact and share ideas. One of the most important characteristics is that each learner learns at his/her own pace, taking into account the individual learning differences of students [42].

Moodle LMS software was designed for web-based distance education. However, it is also used as an aid in face-to-face education. In face-to-face education, the teacher is able to teach the students in the classroom with the help of interactive boards, computers and projection. Both the course notes and course materials prepared for the course can be distributed electronically to students via Moodle. While the formats used to present the course information to students included doc, ppt, pdf, audio, video and animation files for multimedia were also used. In addition, Moodle offers a variety of alternatives to teachers and also provides course materials to students [43]. For this reason, the course was carried out simultaneously through outdoor activities, classroom environments through Moodle, and the learning and content management system (LMS) by the educators.

After defining the course on Moodle, the researchers placed the presentations (slides) and videos recorded on a weekly basis in outdoor learning environments on the Moodle web pages for the benefit of the students. Prior to the experimental process, the prospective teachers were informed about the use of Moodle.

2.5. Data Collection and Procedure

The course was conducted during the 2018–2019 conducted for four hours per week over a period of 8 weeks in order to teach the first-year prospective teachers about the SBOEA course and to enable them to obtain the necessary knowledge and skills for themselves. Before starting the classes, the teaching environments were arranged according to SBOEA.

According to SBOEA, the course environment and the place to be held are determined in accordance with the activity to be performed. Thus, teaching environments and course-related activities are designed for the nature environment in advance. Hence, according to SBOEA, before the activities were conducted in the nature environment, the students were informed about the activities to be carried out in the classroom environment and one-to-one instruction was given during the practices in the nature environment. Furthermore, the teachers were taught during the classes by using discussion, brainstorming, critical thinking and collaborative group work techniques. In other words, after giving the theoretical information required for outdoor sports lessons in the classroom every week, practices were made in the natural environment in accordance with SBOEA. In addition, the theoretical information taught to prospective teachers in the classroom was presented in the form of presentation documents and the applications made in the natural environment were shared in video format on Moodle. Additionally, Moodle’s “big blue button” feature was used by the students to discuss any issues they did not understand either in groups or individually in the Moodle
environment. Moodle was also used for information, announcements and assignments related to the course and experimental process.

All the lessons planned were conducted according to the needs analysis survey, and the curriculum was prepared by the Council of Higher Education. According to the needs of the students, face-to-face training was provided to the prospective teachers in the classroom about the tools they would use in the natural environment (Figure 1).

![Figure 1](image)

**Figure 1.** Teaching compass, map and millieme (6400 in a circle) in nature.

The prospective teachers were asked to prepare suitable clothing and shoes that would be worn in the natural environment, while the tools and materials to be used were provided for the students by the researchers (Table 5) and they were shown how to use them in the natural environment.

| Week | Training                                      | Equipment                                                                 |
|------|-----------------------------------------------|---------------------------------------------------------------------------|
| 1    | Course training                               | Boots (2/4 hardness), 30 litre bag, baton, gaiter, gloves, spare clothes, beanie |
| 2    | Navigating and compass training on a map      | Compass, map, millimetre ruler                                            |
| 3    | Survival training in nature                   | Survival kit                                                              |
| 4    | Mountaineering training                       | Bags, water flasks, baton, compass, map, millimetre ruler                 |
| 5    | Winter camp and setting up tent techniques    | Sleeping bags, mat, camping stoves, water flasks, first aid kit, kitchen tools, |
| 6    | Course progress techniques                    | Baton, beanie, gloves, gaiter, spare clothing, 30 lit backpack,           |
| 7    | Disturbances caused by high altitude and heat change | Water flasks, first aid kit                                                 |
| 8    | Summer camp and setting up tent techniques    | Camping stoves, basic survival kit, first aid kit, mat, kitchen tools     |
The courses offered in accordance with SBOEA were conducted in the coastal, forested and mountainous areas in Northern Cyprus. The selected seaside, mountainous and forested areas were determined after they had been evaluated in terms of course suitability. The courses in the seaside, mountainous and forested areas were taught to the students by the teacher with the build-and-show technique, brainstorming, observation (ant nests, mosque minaret) and necessary materials. Every activity processed with an outdoor approach was recorded (Figure 2).

![Figure 2. Outdoor Sports Course done with outdoor education approach in natural environment.](image)

The blended learning application consisted of two parts, mainly in-class activities and out-of-class activities. In-class activities were based on communication (face-to-face, student-student and student teacher, while out-of-classroom activities were planned based on individual activities and performance in a natural environment rather than online. Open source code software Moodle was used to plan and implement the online activities before the students came to the class. With this software, the weekly activities that the students were required to do were planned for the semester. Some of the activities were planned as a continuation or supportive of the face-to-face teaching in the classroom, whereas others were pre-course activities for the students to do before they came to the class. In Moodle, presentations reflecting a summary of the subject, documents (lecture notes), source videos and assessment and evaluation activities were included in the offline-learning environment. Moodle was also used as a medium for note taking, assignments, announcements, and online chat before and after each teaching session (Figure 3).
2.6. Data Analysis

In this study, for the quantitative data, the mean $\bar{X}$ and standard deviation (Sd.) were used in the calculation of central tendency measures for the achievement and outdoor sports performance tests. Also, the paired t test and two-factor repeated measures ANOVA test were used to reveal the differences between the scores of the pre-test and post-test outdoor sports performance and achievement tests. The significance level of the statistics was taken as 0.05. In order to evaluate the qualitative data, the interviews with prospective physical education teachers were recorded. The data obtained from the interviews were subjected to content analysis and explained by using themes and codes. Through content analysis, data were analyzed and summarized under predetermined themes, and sub-categories are created and interpreted [44]. In the descriptive analysis, the thoughts of the individuals in the interview form were directly quoted. The content analysis process involves coding and structuring categories according to the content of available qualitative data [45]. The expressions that have similar meanings in the data of the research were gathered together within the framework of certain themes and concepts and interpreted in an understandable state [46]. The relationships between the data were determined and categories, sub-categories and themes were created and frequency calculations were made. Also, frequency (n) and percentage (%) were used to demonstrate the findings regarding the views of the physical Education Teachers about the School-Based Outdoor Education Course.

The results of the analysis were coded by two experts with qualitative research experience who had conducted academic studies in the related fields. The interview records of the research conducted with prospective teachers were first coded by the researcher. Apart from the researcher, the coding was also repeated by two independent experts. The following reliability formula was used to calculate the reliability of the interviews [44]:

$$\text{reliability} = \frac{\text{number of agreements}}{\text{number of agreements} + \text{disagreements}}$$

As a result of the coding, the reliability level was found to be 88% with the first expert and 90% with the second expert. According to Miles and Huberman [44], an inter-rater reliability level of 70% is considered to be sufficient. In this study, since this ratio was exceeded, it was concluded that the analyses were performed reliably.

Figure 3. Doing Courses via Moodle.
3. Results

The results for the objectives and sub-objectives of the research are given in this section. Table 5 indicates the distribution of prospective teachers according to the average scores in the needs analysis regarding basic knowledge and their application level in the outdoor sports course.

The two-factor repeated measures ANOVA test was applied to the data obtained from both groups before and after the experiment in order to determine which group was more successful in terms of the outdoor sports course after the application, and the control group was initially equal in terms of the achievement in the outdoor sports lesson (Table 6).

| Table 6. Comparison of Achievement Test Results of Experimental and Control Groups. |
| Group       |  $\bar{X}$ | Sd.  | n  |
|-------------|-----------|------|----|
| **Pre-test**|           |      |    |
| Control     | 28.50     | 10.997 | 30 |
| Experimental| 29.66     | 12.382 | 30 |
| **Post-test**|           |      |    |
| Control     | 74.50     | 9.317  | 30 |
| Experimental| 86.00     | 12.005 | 30 |

When the findings were examined, a two-factor repeated measures ANOVA test was used to compare whether there was a significant difference between the achievement averages of the experimental and control groups in the outdoor sports course. According to the findings shown in Table 6, the pre-test outdoor sports achievement test averages of the experimental and control groups are very close to each other and the groups are equivalent (at a similar level). At the beginning of the experiment, the validity and reliability scores of the research done according to the groups’ success levels in outdoor sports were similar. The results of the test show that there is a significant difference between the experimental groups $[F(1,58) = 4.655, \ p < 0.05, \ \eta^2 = 0.074]$. As a result of the one-way ANOVA test, in the post-test, the students in the experimental group had higher scores in the outdoor sports achievement test ($\bar{X} = 86.50$) compared to the control group ($\bar{X} = 74.50$). The comparison of the results of experimental and control groups’ ability to do outdoor sports performance test is shown in Table 7.

| Table 7. Comparison of the Results of the Experimental and Control Groups’ Ability to Do Outdoor Sports Performance Test. |
| Group       |  $\bar{X}$ | Sd.  | n  |
|-------------|-----------|------|----|
| **Pre-test**|           |      |    |
| Control     | 9.76      | 7.596 | 30 |
| Experimental| 10.16     | 6.581 | 30 |
| **Post-test**|           |      |    |
| Control     | 30.30     | 4.632 | 30 |
| Experimental| 34.00     | 4.616 | 30 |

When the findings were examined, the two-factor repeated measures ANOVA test was used to compare whether there was a significant difference between the means of the performance in outdoor sports for the experimental and control groups. According to the findings in Table 7, the average performances of pre-test outdoor sports performed between the experimental and control groups are very close to each other and the groups are equivalent (similar level). At the beginning of the experiment, the groups’ abilities to perform outdoor sports performance levels were similar and the equivalence of the groups before the experiment was once again ensured. As a result of the the two-factor repeated measures ANOVA test, there is a significant difference between the experimental groups $[F(1,58) = 4.655, \ p < 0.05, \ \eta^2 = 0.074]$. As a result of the one-way ANOVA, we can say that in the post-test, the experimental group students’ ability to do outdoor sports performance scores ($\bar{X} = 34.00$) were higher than the control group ($\bar{X} = 30.03$).

In addition, a significant difference was found between the pre-test and post-test outdoor sports achievement test scores in the control group as a result of the paired $t$-test ($t (29) = -15.913, \ p < 0.01$). Similarly, there was a significant difference between the pre-test and post-test performance scores in
the control group \((t (29) = -11.780, p < 0.01)\). In the experimental group, there was a significant difference between the pre-test and post-test outdoor sports performance scores as a result of the paired \(t\)-test \((t (29) = -14.752, p < 0.01)\). Similarly, there was a significant difference between the pre-test and post-test outdoor sports performance test scores in the experimental group \((t (29) = -14.709, p < 0.01)\). In this case, it can be said that teaching in both experimental groups was effective in terms of achievement and the ability to perform outdoor sports. However, teaching in the experimental group was more effective than the control group.

### 3.1. Views of Prospective Physical Education Teachers about the Program

Semi-structured interviews were conducted for prospective physical education teachers, for both the school-based SBOEA and the training program developed for online learning. The opinions of the prospective teachers were recorded at this stage. The data obtained from the interviews were subjected to content analysis and explained by using themes and codes.

### 3.2. Views of Prospective Teachers Regarding the Outdoor Sports Education Program Developed according to SBOEA

During the activities organized for the SBOEA course, which was developed according to the SBOEA, the prospective teachers experienced outdoor activities. They were asked to consider and explain an outdoor activity that they attended. In particular, they were asked to evaluate how these activities helped them to learn the concepts, what they learned about outdoor sports, and their good or bad aspects. The findings about the views of the physical education prospective teachers about the school-based outdoor education course, its benefits for the students and the strengths of the program are given in Table 8.

**Table 8.** Findings regarding the views of physical education teachers about the School-Based Outdoor Education Course: for the students and the strengths of the program.

| Theme                          | Code                                                                 | n  | %  |
|-------------------------------|----------------------------------------------------------------------|----|----|
| Effective Teaching            | 1. We learned the subjects in a more memorable way.                  | 20 | 100|
|                               | 2. With this method, abstract information became more concrete in our minds. | 18 | 90 |
|                               | 3. We learned better by brainstorming, by asking questions.           | 16 | 80 |
|                               | 4. We learned better by doing                                        | 15 | 75 |
|                               | 5. We learned the subject better thanks to the dialogues we established with our teacher and friends. | 15 | 75 |
| Benefits of the Program       | 6. Our interest in the class increased and the lesson was more fun.  | 18 | 90 |
|                               | 7. Our environmental awareness has increased.                        | 17 | 85 |
|                               | 8. We were able to apply the theoretical knowledge we learned.       | 15 | 75 |

In the interviews with the prospective teachers about the activities in the designed instructional model, the prospective teachers stated that the activities were useful, easy, understandable and the information learned was more memorable, while abstract information became more concrete in their minds (Table 8). They stated that the questions asked during the brainstorming before the course of each lesson increased their awareness about the concepts and subjects to be learned. In addition, they expressed that learned the subjects better by doing. They also stated that they learned the subject better through the dialogues they established with their teachers and friends. Some prospective teachers responded as follows:
“I think this teaching method was very nice, we did the course with activities in the natural environment. For example, when the teacher first asked questions, we could not answer, but then thanks to the activities in the nature environment, all the information stayed in our minds and then we were able to answer.” S1

“It helped us understand better and helped us remember more easily. It made us understand better by doing activities. The only drawback was that it took some time to go to the nature environment and we had to buy some materials so it was financially difficult.” S3

“First of all, we learned the brainstorming method and visuals and subjects in the classroom by attending the class with our friends. Then, we answered the questions asked in this brainstorming activity. We answered the questions confidently about the activities we did in the nature environment outside the school, and applied the techniques shown to us more accurately in the nature environment. We had fun in the activities we did, it was nice.” S7

“Outdoor learning has contributed a lot to our understanding of lessons. For example, the brainstorming that we did in the classroom before the activities aroused our curiosity while our preliminary information was surveyed, and we were able to find answers to the questions that we could not answer before during the application.” S11

“All of the activities were useful, easy and understandable. I enjoyed doing activities very much. For example, my teacher explained how to use a compass in the nature environment. We also learned how to find our way using a compass and a map of the region.” S18

3.3. Prospective Teachers’ Views on the Implementation of the Activities Organized for Outdoor Sports and Putting Them in the LMS

The prospective teachers generally expressed positive opinions about the subjects related to the course activities, videos, and implementing it in the learning management system. The prospective teachers followed the subjects through the LMS and stated that they learned better by having the opportunity to watch the videos repeatedly. Since the syllabus and the necessary information about the course had been previously uploaded to the system, they proceeded to the next subject with the necessary tools and equipment. In addition, the prospective teachers stated that they were more diligent about improving their performance as it was recorded on the LMS. However, they stated some disadvantages, such as the poor Internet speed, as the videos sometimes paused or the sound was disrupted. Some prospective teachers stated:

“Exactly the same subjects we saw in the classroom were based on the learning management system. When I missed the lesson, I had the chance to watch it again and again. I reinforced the subject I learned in the class by asking questions to our teacher both online and in their office hours, as well as by texting outside office hours.” S4

“The subjects that we needed to learn for the outdoor sports course were uploaded to the learning management system with the course schedule. This gave me a general idea about the topics to be covered. We could see how we performed in the activities online. We prepared more diligently, and were motivated to prepare for the next activity. That’s how we learned things better.” S8

“Because of the problems we had with Internet speed, the image was paused in our interviews with our teacher from time to time. However, I can say that our instructor’s feedback was good and generally useful because of the good quality of the course content.” S16

3.4. Views of Prospective Teachers Regarding the Help of the Natural Sports Course-Training Program Developed according to SBOEA Regarding Passing the Final Exam or Other Assessments
The prospective teachers generally gave positive opinions regarding the benefits of the course in terms of passing the final exam or other evaluations. The prospective teachers stated that the subjects were more memorable as a result of the lessons and activities, that they provided permanent learning and also that the environment was more successful as it promoted more active learning. Some prospective teachers stated:

“I think it was a good method because we have handled the topics in a natural environment outside the school, and the subjects remained more detailed in our minds. For example, one of the questions in the exam was about the ‘Baton’ and whether the length of hiking poles can be adjusted with a clip or screw system. The clip system is a locking system on the outer surface of the baton. The advantage is that it is easy to use and fast and we could easily see that our batons were well locked. For example, when we did the nature walk in nature with the baton, it was a practical way of helping us to remember; this has helped us to learn better and in a more detailed way. I think it’s a very good method.” S2

“Since we learned the subjects more permanently with this method, I became more successful and answered the questions more effectively. I recommend that this method be applied for all courses.” S5

“In this lesson, I felt that it was a more active learning environment, so I questioned why it was not done in other classes. I tried to find ways to put myself in a teaching position like this in other courses.” S11

3.5. Pre-Service Teachers’ Views Regarding the Learning Activities That Were Different from What They Learned in the Normal Classroom

When the views of the prospective teachers regarding the aspects that they perceived differently from what they learned in the normal classroom in their learning activities were examined, they stated that pre-service teachers had the opportunity to work with the instructor of the course. They stated that they learned the subjects better as the teaching was student-centred. They learned better through the problem-based processing of activities. At the same time, they stated that it was helpful to conduct lessons in this way, because they had the opportunity to watch the activities online, offline and ask the instructor through LMS. Thus, they said that this method of teaching was more successful than the traditional learning environment. Some of the prospective teachers stated as follows:

“Compared to the traditional classroom settings, our teacher was very helpful. We learned the subjects better in a student-centred way, by doing activities in nature and by living in the natural environment.” S1

“While we learned the subjects better, thanks to the activities we did in the natural environment, all course materials and videos about the activities were uploaded to the learning management system. We could ask questions on the system at the times determined by our teacher or at any time.” S4

3.6. Views of Prospective Teachers Regarding the Motivation of Teaching Activities Developed according to SBOEA

The prospective teachers generally expressed the positive opinion that the instructional activities were motivational. They stated that they had high motivation in the lesson as teaching was performed on a one-to-one basis and was more enjoyable. It was more motivating for the prospective teachers to create a comfortable communication and appropriate classroom climate in the lesson. At the same time, the different and effective method used in the course in the natural environment was effective in increasing motivation. Some prospective teachers stated:

“Our teacher has increased our motivation by encouraging us, enabling us to express our ideas easily with this method and creating a suitable classroom with comfortable communication.” S4
“SBOEA was provided to us in the course and the different methods and techniques used in the course increased our motivation. In this way, I can say that my performance increased in the individual activities and my general achievement level increased.” S13

“Instead of a crowded classroom environment, learning outdoors in a quiet area increased my motivation to study in a natural environment.” S18

3.7. Prospective Teachers’ Views regarding Recommending Such Activities for Other Courses

The prospective teachers were generally positive in terms of recommending such activities for other courses. One of the reasons for this is the effective teaching method. Additionally, the prospective teachers recommended that these activities should be used for other courses as they were able to learn by doing and this was also supported by the LMS, which ensured the students learned in an active learning environment and the course was explained based on problems that involved possible situations in the natural environment. Some prospective teachers stated:

“Yes, I highly recommend it; because of the outdoor education, we learned the necessary tools and technologies about outdoor sports, the information and rules about the learning environment, the content of the course, and learned a lot about the materials.” S3

“It was very meaningful for our instructor who taught the outdoor sports course by using the outdoor teaching approach and the learning management system, to express and present the lesson, to design activities and to actively involve us in the course. Therefore, I would definitely recommend such activities for other courses.” S16

“Since we learned the subjects by doing activities in a natural environment, we were able to experience problems that we could encounter later in the field. Thus, we will not have any difficulties in solving problems that may be encountered in practice related to these issues. I would recommend it in this respect.” S20

4. Discussion

Outdoor education, which is defined as structured learning activities outside of the classroom in different environments, has been stated to be very beneficial for education, and this has also been emphasized in previous studies. However, it is an indisputable fact that such practices are particularly suitable for teaching subjects such as outdoor sports. This is because outdoor learning practices are highly suitable and important for outdoor sports and outdoor sports courses, which are found almost everywhere. Because of the appropriateness of outdoor learning practices for the subject of outdoor sports, the knowledge and views of prospective teachers about primary school and secondary education with regard to outdoor learning practices are very important.

The findings of this study revealed that prospective physical education teachers who took the outdoor sports course had deficiencies in terms of their knowledge and skills. In addition, according to the results obtained from the interviews, the prospective teachers conducted the outdoor sports course in accordance with the SBOEA as well as the online learning environment developed by the experimental study due to the need for learning in the outdoor learning environment. Similarly, in the literature, Hursen, and Islek [47] stated that an SBOE program increased the success of Visual Arts teachers and had a positive effect on their self-efficacy beliefs. Popov [48] stated that teaching well-organized physics courses in open-air environments provides the opportunity to observe, ask, assume and verify the assumptions that remain in the student’s mind. Behrendt and Franklin [49] conducted studies aimed at determining the educational needs of learners in programs developed according to SBOEA. Similar to the aforementioned works, this study reveals that prospective physical education teachers need to learn the outdoor sports course in a more effective and permanent manner.

Since this is an outdoor course, teaching must be provided in the natural environment too, not only indoors or in a classroom. According to this study, it is evident that these practices are useful in the context of preserving the knowledge learned in the outdoor sports course and for preparing the
students for situations that will be encountered while doing outdoor sports in real life after becoming a teacher. Amini [50], Little and Lauver [51], Liu, Tan and Chu [52] also showed that outdoor learning programs have critical importance in increasing the competence of learners in the course.

In this study, the findings revealed that prospective physical education teachers were more successful and had improved skills in outdoor sports in both the school-based SBOEA and the online learning experimental group. Mygind [53] determined that students’ physical activity levels were significantly higher when a combination of indoor and outdoor environments are used. Similarly, the findings of a similar study suggest that outdoor learning activities improve student achievement and social behaviour, similar to the findings of this study [54]. It is known that outdoor learning activities in particular improve students’ psychological well-being by reducing their stress during the transition from primary to secondary school, and increase their physical activities by decreasing their sedentary time [55], [56]. Additionally, in the research conducted by Coll [57], the findings revealed that mixed learning environments where Moodle, outdoor learning experiences and LMS are combined, increase student achievement, which is line with the findings of this study.

As a result of such research, physical education prospective teachers learned outdoor sports by experiencing SBOEA in nature. As the knowledge levels and performances of the prospective teachers were measured every week, it was possible to determine what the prospective teachers knew, thus allowing the instructor to intervene when necessary. In this study, the teaching applied by the instructor of the course was recorded and transferred to the online environment. Thus, if the prospective did not understand something, they could follow both online and offline through the LMS and ask to the instructor.

**Limitations of the Study**

This research was carried out outdoors during the 2018–2019 academic year on days when it was sunny and it was neither too cold nor too hot. During an academic term, prospective teachers from a private university in Northern Cyprus participated in an 8-week programme of outdoor sport activities. The fact that the same researcher teaching in these classes was an instructor could potentially lead to research bias. In order to prevent bias and increase reliability, the researchers applied the activities in conjunction with another instructor who gave a different outdoor sports course and did a separate assessment and took observation notes. In addition, prospective teachers were randomly assigned to the test groups to prevent bias.

**5. Conclusions and Recommendations**

According to the views of the students, the educational needs of prospective physical education teachers were determined in the outdoor sports course. It was determined that the achievement levels of the prospective physical education teachers doing the natural sports lesson and their performance of doing outdoor sports via the SBOEA and online learning were better. The prospective teachers stated that they learned the subjects better by doing, and that they were more diligent about improving their future performance, as all activities and performances were recorded on the LMS. The prospective teachers generally expressed the positive opinion that the course was helpful in terms of passing the final exam or other assessments and that the teaching activities were motivational. Therefore, this suggests that it will be more meaningful for those who will become physical education teachers to learn the outdoor sports course in a learning environment in which LMS is used in combination with outdoor learning activities. Education is defined as a key element of sustainability. Learning environments are one of the most important factors affecting students’ learning processes. A good learning environment supports the interests and aspirations of students and the sustainability of such situations. Teaching–learning in contact with nature also promotes sustainability, because it provides real health, sustainable development education and global citizenship opportunities for outdoor learning.

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M.T. contributed to reviewing and editing all sections; M.T. supervised the work. All authors have read and agreed to the published version of the manuscript.

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