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Effect of the Organizational Model of the Subject of Activities in the Natural Environment on Students' Satisfaction and Learning

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Abstract: The aim of this study was to identify the most suitable organizational model for teaching the university subject of Outdoor Activities in relation to learning acquisition and satisfaction. For this purpose, four models were designed, some of which were dominated by traditional education and others by innovative education. The data collection instruments were the Spanish version of the Physical Education of the Sport Satisfaction Instrument, adapted to the university context, and the questionnaire on the contents of the subject designed ad hoc. Data collection was carried out before and after the intervention with a total of 125 students. For data analysis, an ANCOVA was performed. The results showed that there were significant differences in satisfaction between groups (p = 0.029), but not in the boredom scale (p = 0.109). With regard to acquisition of learning between groups, there were significant differences (p = 0.005) in the overall grade of the subject. There were also significant differences in the scores for content taught differently depending on the group (p = 0.003), with a higher score in the most innovative group, the intensive-continuous group, compared to the fractioned (p = 0.005) and classic groups (p = 0.015). It is concluded that there is a positive effect between direct and continuous contact with nature, both in the acquisition of learning and in student satisfaction, with the most innovative model obtaining the best results of the study.

Keywords: activities in the natural environment; university education; intensive-continuous; experiential methodology; outdoor education; educational innovation; learning; teaching; knowledge; satisfaction

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1. Introduction

There is a tendency towards boredom in university teaching, accompanied by a great deal of dissatisfaction with how teaching is delivered. This boredom has a negative impact on teaching and learning processes and is directly related to the methodology used and the structure of the subject taught [1]. It is acknowledged that the traditional model centered on the master class or on the exposition method is not the best method of delivering information to the students or for them to absorb it, although it sometimes plays an important role in learning [2]. This model focuses on the protagonism and leadership of the teacher and, therefore, it is necessary to make modifications to it, so that the student becomes the protagonist [3]. Nevertheless, this traditional method remains the most used by teachers [4].

It is necessary to adapt to the new realities of the twenty-first century [5] by seeking more active methodologies in which the student moves from a passive role, listening to the teacher in the classroom, to an active one, becoming the protagonist of their teaching and learning processes. The school needs to attend to the students' interests and motivations, giving them the leading role [6]. This will enable them to build their own knowledge, with the teacher being a facilitator of the process [3]. The teacher becomes a guide, orientor,

or modeler of situations for students to achieve effective learning and is responsible for helping them to develop their education [7].

In recent years, active methodologies have been implemented with the intention of renewing the pedagogical system and improving education [8], and wanting to change from traditional methodologies [9,10]. Comparing traditional classroom education with nature education or adventure education programs, nature classes achieve significantly higher intrinsic motivation, commitment, autonomy, personal competence, interpersonal relationships, enjoyment, and academic performance, as well as improving the learning climate [11].

Natural spaces and environments promote and facilitate learning by improving attention, reducing stress levels, enhancing self-regulation, increasing interest in learning, and engaging in physical activity for pleasure [12]. Using the natural environment as a classroom offers diverse learning possibilities, which can be general or specific learning, focused on specialized knowledge about a subject and related to the development of skills [13]. In addition, outdoor activities play a positive role in experiential learning, self-knowledge, and interpersonal relationships. Theoretical learning alone is not enough; learning through experience in the natural environment itself is necessary. These experiences will leave their mark on the participants [14]. In the end, the best way of learning and the one with which the most lasting learning is achieved is the method developed through the direct experience of the participants [13]. In addition, this environment encourages the integration of learning so that it can be used in daily life and be relevant [8]. Likewise, nature education programs have a positive influence on the improvement of autonomy, which increases intrinsic motivation and students' satisfaction and enjoyment during classes, preventing them from becoming bored [15]. It is important to remember that, in these programs, the teacher is an active guide for the students and has the objective of helping the students to make sense of what they have experienced and to extract what they have learned [13]. Experts say that nature education can be a very important educational tool in the twenty-first century and should be used to achieve positive social development and a positive relationship with the environment [14].

When talking about learning, it is necessary to know that in order to learn we need the brain to be healthy and healthful, and for this it is necessary that there is direct contact between the person and the natural environment [12]. In this regard, research has shown that physical activity can influence the neuroscientific aspects related to all cognitive functions and the more psychological aspects of learning [16].

In light of this, it is important to talk about active educational methodologies that continue to lead to significant learning at all levels. In this case, we are going to highlight experiential methodologies, as they have a positive impact on the learning of academic content, as well as on the integral development of students [17]. The learner is the one who makes the decisions and takes the initiative and is responsible for the results. They actively participate, ask questions, take responsibility, get involved in problem solving, etc., i.e., they are involved intellectually, emotionally, socially, and physically in a holistic way [18]. Experiential education also involves reflection, critical analysis, and synthesis of the experience [18], which helps to focus on the aspects that are intended to be taught and aims to increase the learning of knowledge, skills, values, etc., as stated by the Association for Experiential Education [13]. The teacher provides opportunities, poses problems, sets boundaries, supports and facilitates learning processes, and encourages any learning opportunities that arise spontaneously. Learning takes place from both mistakes and successes [18].

Along these lines, there are different methodologies and organizational models that can be used in teaching, each with different characteristics and objectives. In the following, we will highlight those models used by other authors that have been used as a reference for the design of the models in this study:

- A model based on classroom classes and short duration nature activities in which there is no overnight stay in the natural environment, but day activities in the nearby

environment through which subject content is taught, seeking to increase contact with nature, motivation, competition, and performance at the learning level [19,20].

- A model based on classroom sessions and a final mid-term trip in which to put into practice what has been learned during the course, with the aim of achieving an integral development of the participants [17,21].
- A model based on a long-term trip in direct and continuous contact with the natural environment in which the connection with nature and with the group is predominant. This model is referred to as an expedition. It includes activities in nature during the day and reflections during the night to analyze what happened, exchange experiences, etc. In addition, it can include a day of preparation before the trip. The aim is to encourage relationships, cooperation, connection with nature, responsibility, etc. [22,23].

In addition, it is necessary to know the context in which nature activity programs are applied, as this type of methodology requires a great deal of planning and organization on the part of teachers, because it is not just about going out into the natural environment, but follows rigorous scientific principles [13,21] and there is no universal program that is valid for everyone; rather, it is necessary to adapt it to the environment, the culture, and the participants [24]. It is also important to note that this methodology is dependent on the educational policy and regulations of the institution [25]. There is literature related to both the importance of educating outside the classroom and of students having fun to improve their development, but no references have been found that relate learning and satisfaction with different educational models in order to see if there is a relationship between the two. Therefore, this research aims to analyze the acquisition of learning and student satisfaction according to the organizational model used to teach a subject, contributing to the improvement in university education by providing data on the best organizational models that relate satisfaction, boredom, and learning. With all this, the objectives were to identify which organizational model provides greater satisfaction and greater learning when teaching the subject of Activities in the Natural Environment (ANE) and to analyze the differences between learning depending on how it is taught in each model. The hypotheses posed were that the organizational model that entails greater satisfaction and greater acquisition of learning for students in ANE is the intensive-continuous model, with there being greater differences between groups in the learning of content taught differently depending on the group.

2. Materials and Methods

2.1. Design

The research was a quasi-experimental study with pre- and post-data collection from four groups of students of ANE, to which four different organizational models were applied, some more traditional and others more innovative. The intervention lasted for one academic semester, which corresponds to 5 months.

The research process used was as follows (Figure 1):

For the design of the four models implemented during the research, three actions were carried out: first, a review of the bibliography on organizational models was carried out (Section 1 details the different models that were taken into account); an analysis of the ANE subject guides of all the faculties of Physical Activity and Sport Sciences (CCAFyD) in Spain was carried out; and, finally, the context of the faculty in which the study was to be conducted was analyzed.

The design was implemented by three experts: specialists in ANE, specialists in experiential methodologies, and university teachers and researchers in the field of education through ANE.

In relation to these models, it should be noted that the classes were adapted to the teaching load of the subject. Each of the groups had the same number of hours of each content, but the organizational structure, the place, and the way the classes were taught changed. These are detailed in Table 1.

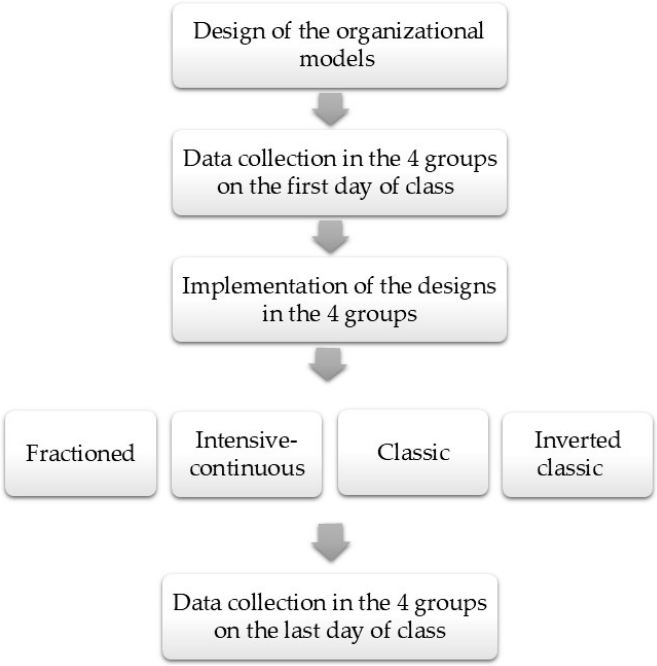

Figure 1. Research process.

Table 1. Structure of the organizational models used to teach the subject.

Fractioned model: model with higher traditional education load		
Three and a half months of classroom classes (a total of 15 sessions of 2 h each).	Four practical sessions in the faculty's facilities and nearby urban parks (3 × 2 h sessions and 1 × 4 h session).	Four days of classes in the natural environment divided into two days with an overnight stay and two independent days interspersed with the other sessions mentioned above.
Intensive-Continuous: model with higher innovative education load		
Seven 2 h classes in the classroom on introduction, basic aspects for walking and staying in the natural environment, and closing of the course.	The contents of these practices are given in the following natural environment sessions.	Six continuous days of classes in the natural environment with overnight stay (with teaching activities during the whole day).
Classic model: model mixing traditional and innovative education		
Three and a half months of classroom lessons (a total of 15 sessions of 2 h each) before the practical sessions.	Four practical sessions in the faculty's facilities and nearby urban parks (3 × 2 h sessions and 1 × 4 h session).	Four continuous days of classes in the natural environment (with full-day teaching activities) at the end of the course.
Inverted Classic model: a model mixing traditional and innovative education		
Four classroom lessons on the basics of walking and staying in the natural environment and three and a half months of classroom lessons (with a total of 15 sessions of 2 h each) after the practical sessions.	Four practical sessions in the faculty's facilities and nearby urban parks (3 × 2 h sessions and 1 × 4 h session).	Four continuous days of lessons in the natural environment (with full-day teaching activities) at the beginning of the course.

The interventions were applied randomly to the four groups of the subject, preset by the head of studies. The teacher was the same for each content in the different groups in order to avoid, as far as possible, the influence of the teacher variable.

2.2. Sample

A total of 125 students from the subject of ANE in the second year of the Degree in Physical Activity and Sport Sciences participated in the study, with an average age of 20.68 ± 2.7 years. There was a total of 93 men (20.9 ± 3.05 years) and 32 women (20.1 ± 1.39 years). They were divided into four groups according to the class group that corresponded to their matriculation. The interventions were randomly assigned among the groups, which were as follows: a fractioned group consisting of 35 students; an intensive-continuous group consisting of 31 students; a classic group consisting of 32 students; and an inverted classic group consisting of 27 students. The inclusion criteria for participation in the study were minimum attendance of 70% of the theoretical classes and 90% of the practical classes with their groups; and completion of the two data collection questionnaires.

2.3. Data Collection Instrument

The instruments used were the Spanish version of the Physical Education of the Sport Satisfaction Instrument (SSI) [26], adapted to the university context, and a questionnaire on learning designed ad hoc for the research.

The validity analysis performed by the authors on the SSI shows Cronbach's alpha values of 0.92 on satisfaction and 0.79 on boredom. In our case, performing the analysis shows Cronbach's alpha values of 0.89 for satisfaction and 0.85 for boredom. The questionnaire was composed of eight items, divided into two dimensions (five items on fun/satisfaction and three on boredom). An example of a satisfaction question is "I usually participate actively in the Outdoor Activities class" and an example of a boredom question is "In the Outdoor Activities class I wish the class would end quickly". Responses were given on a Likert-type scale from one (strongly disagree) to five (strongly agree).

The learning questionnaire was designed ad hoc and expert judgment was used for content validation. For this purpose, a series of questions were designed and passed to a total of eight experts, out of the five minimum that are required [27]. All of them were university lecturers in the subject of ANE, and therefore experts in this content, including PhDs, specialists in experiential methodology, and specialists in nature activities, and linked to the world of research in these fields of study. For the validation of content, we used the classification template designed by Cuervo-Martínez [28], which included four categories (sufficiency, clarity, coherence, and relevance). Kendall's W was determined to confirm whether there was concordance between the opinions of the eight experts. For the evaluation of the questions and answers, a 4-point scale was used to measure the perception of the fulfillment of the established criteria, from level one (very low) to level four (very high). All eight experts agreed significantly in their assessments, $W = 0.421$, $p < 0.001$. Therefore, it can be affirmed that the validation of the content is uniform and there is concordance between their opinions. From the total of 64 initial items, 47 items were finally included in the final questionnaire, which were the questions and answers that at least 80% of the experts agreed on their validity, as recommended by different researchers [29]. The questionnaire measured the degree of students' knowledge acquisition. It consisted of questions on subject content and was structured in such a way that the number of questions corresponded to the number of hours spent on each content during the subject. The answers were selected from three options, of which only one was correct.

2.4. Procedure

The questionnaires were administered at two different times, before and after the intervention, on the first day of class and on the last day of class. All of them were completed in class and on paper, and students were given a total of 60 min to complete them. Personal data were coded to ensure anonymization and confidentiality of responses.

These data were collected so that students who did not meet the inclusion requirements could be withdrawn from the study.

The study was approved by the Ethics Committee of the Universidad Politécnica de Madrid and all participants were informed about the research to be carried out, both verbally and in writing. The objectives of the study were explained to them, as well as what their participation would consist of, the voluntary nature of their participation, the procedures for data collection and protection, and the confidentiality of the data. They were informed that they could decide to withdraw from the study at any time during the process. All those who agreed to participate signed an informed consent form in which they accepted the collection of their data for the purposes of the research.

2.5. Statistical Analysis

Data are shown as mean ± standard deviation. All calculations were performed with the SPSS 28.0 statistical package for Windows. To analyze the differences between groups, we used an ANCOVA, employing the result obtained before the intervention as a covariate. The homogeneity of variances was tested with Levene's test and we performed an F test to evaluate heteroscedasticity. When significant differences were found, we applied post hoc tests with the Bonferroni correction. The level of significance was set at $p < 0.05$ in all cases.

3. Results

The results of satisfaction and boredom (Figure 2) and the students learning scores in each of the four teaching groups are shown below (Table 2). Significant differences were found between groups on the satisfaction scale ($p = 0.029$), but not on the boredom scale ($p = 0.109$). The intensive-continuous group scored higher on satisfaction than the classic group ($p = 0.030$). With regard to the learning, significant differences were found between the groups in the overall grade for the subject ($p = 0.005$), with a higher score in the intensive-continuous group compared to the classic group ($p = 0.008$) and the inverted-classic group ($p = 0.048$). No differences were found between groups in the learnings about content taught in the classroom ($p = 0.056$). Differences were found in the learnings on content taught in the natural environment ($p = 0.016$), where the classic group obtained a significantly lower score than the fractioned group ($p = 0.024$). Significant differences were found in the learnings about content taught differently according to the group ($p = 0.003$), with a higher score in the intensive-continuous group compared to the fractioned group ($p = 0.005$) and the classic group ($p = 0.015$).

Table 2. Results by groups on the variables of learning of the subject.

Group	Final Grade	Contents Classroom	Contents Natural Environment	Contents Taught Differently Depending on the Group
Fractioned	7.70 ± 0.96	8.41 ± 1.11	6.46 ± 1.50	6.58 ± 1.21
Intensive-continuous	7.99 ± 0.91	8.64 ± 1.05	6.37 ± 1.92	7.70 ± 1.39 [a]
Classic	7.25 ± 0.84 [b]	7.97 ± 1.15	5.16 ± 1.64 [a]	6.66 ± 1.43 [b]
Inverted-classic	7.35 ± 0.86	8.06 ± 0.96	5.79 ± 2.25	7.22 ± 1.29

Data are shown as mean ± standard deviation. [a] significant differences with respect to group fractioned ($p < 0.05$); [b] significant differences with respect to group intensive-continuous ($p < 0.05$).

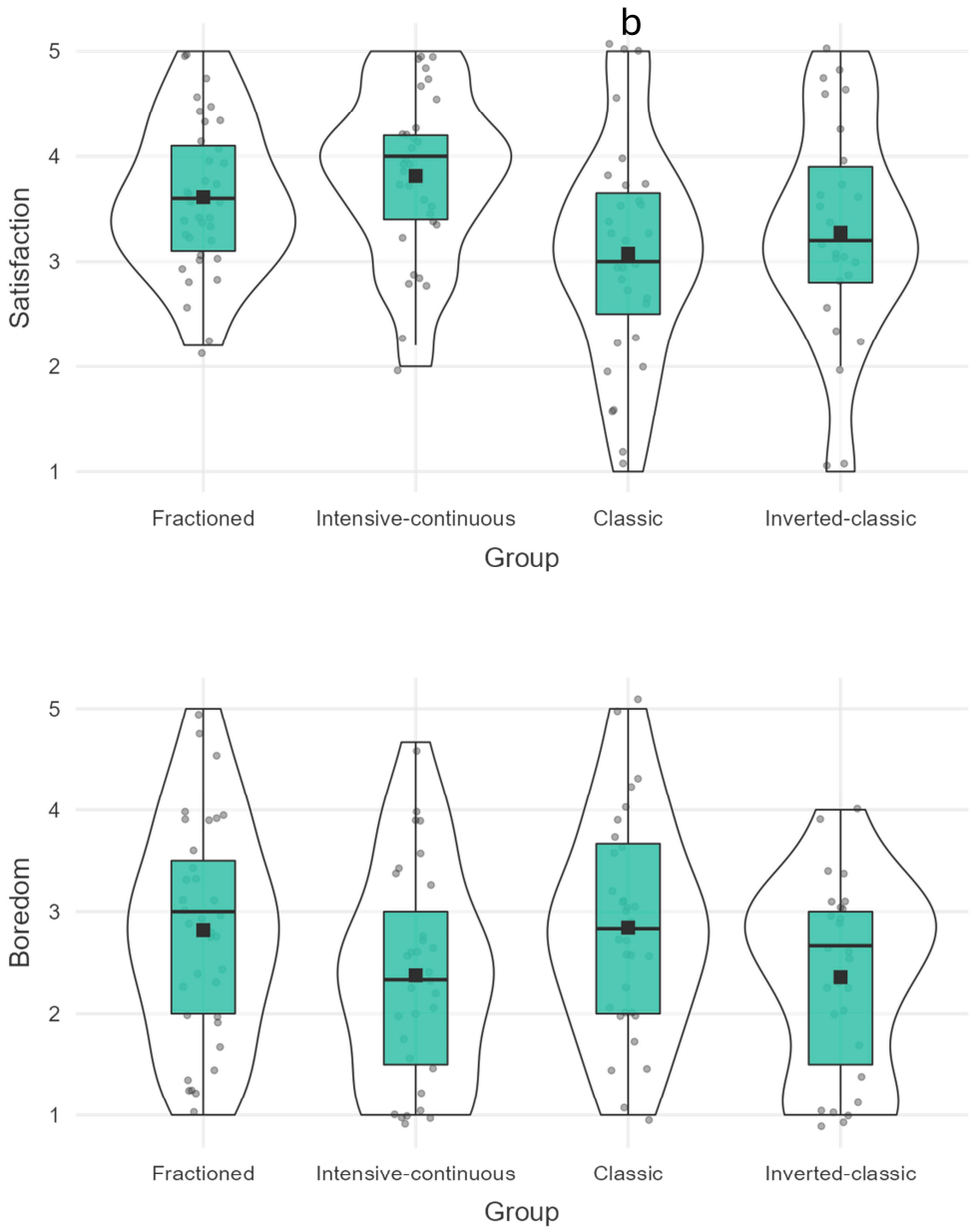

Figure 2. Results by groups on the variable of satisfaction and boredom. Note: [b] significant differences with respect to group intensive-continuous ($p < 0.05$).

4. Discussion

The aim of this study was to analyze which organizational model was the most satisfying and the most successful in terms of learning when teaching the ANE subject. After implementing four different organizational models with each of the groups, it was possible to affirm that the organizational structure and the way the classes were taught had a significant influence on both satisfaction and learning. The intensive-continuous model was found to be the best model for teaching ANE.

Focusing on satisfaction, the results of our study showed that there were significant differences between groups, with the lowest satisfaction percentages in the classic group, with a score of 61.6%, followed by the inverted classic group, with 65.4%. The fractioned and intensive-continuous groups, on the other hand, obtained percentages of 72.2% and 76.2%, respectively. There were no significant differences in the boredom scale. These data agree with those obtained by Baena-Extremera and Granero-Gallegos in their study [30] conducted with secondary school students, in which, with the experimental group, an

adventure education program was implemented. This group obtained higher percentages of satisfaction, reaching 84.4% compared to 72.8% in the experimental group. Our data also agree with those obtained by the same authors [15], in a similar study, in which the experimental group that carried out the adventure education program obtained a satisfaction rating of 83.4% compared to 73% in the control group. In another study by Baena et al. [26], after the intervention, the experimental group obtained 68.2% in the value of satisfaction compared to 55.6% in the control group. As in our case, both groups obtained positive percentages of satisfaction, but those of the group with greater contact with the natural environment were higher.

Trigo-Oroza et al. [31] carried out a study with primary school students in which the authors analyzed the effect of a program of activities in nature on enjoyment, related to satisfaction, as well as motivation and basic psychological needs. In this case, they carried out activities both at school, in the immediate environment, and in the distant environment. Significant differences in enjoyment were obtained, reaching percentages of 99% after the intervention.

All these data show that all educational programs related to activities in nature, in which work is carried out in direct contact with the object of study, have a significantly positive effect on student satisfaction, as this study affirms. As Fuentesal-García and Zamorano-Sande [32] explain, it is essential to organize the activities appropriately in order to achieve full satisfaction among participants.

With the focus on learning, in our study, significant differences were found in the overall rating and between the intensive-continuous group and the fractioned and classic groups. The intensive-continuous group achieved 86% in terms of learning the contents of the subject, the fractioned group achieved 77%, and the classic group achieved 65%. In addition, significant differences were found in the content taught in the natural environment in all groups, with higher scores being observed in the fractioned group, which presented a percentage of knowledge of 73%, in relation to the classic group, which obtained 52%. Furthermore, in the contents that each group received differently, the group that received all the contents in direct contact with the natural environment obtained significantly higher scores, reaching 81%, compared to the split group and the classic group, which obtained percentages of 74% and 58%, respectively. In view of these results, it can be affirmed that direct contact with the natural environment as an educational space and the permanence of spending several days in this environment, together with the experiential methodology, favor the teaching–learning processes, leading to improvements in the acquisition of learning compared to educational options in which the traditional classroom is much more present. This is corroborated by authors such as Mann et al. [33], who, after conducting a systematic review of international research related to outdoor learning, affirmed that there is evidence of the academic benefits of education outside the classroom.

In relation to the results obtained in our investigation, studies by different authors stand out, such as González-Rivas et al. [34], who state that this type of activity favors the acquisition of knowledge and learning about the content covered in the sessions. This, together with the methodology used, highlights a study by Navarro-Patrón et al. [19], carried out with university students, in which they state that the experiential methodology leads to an increase in motivation in students and that this in turn leads to an increase in their academic performance. Furthermore, at this point, when talking about experiential methodologies, in addition to education in the natural environment, it is also important to highlight the role of the teacher, who will be the facilitator of the teaching–learning processes, avoiding the master class and making students active participants, which positively influences the acquisition of knowledge [35]. This motivation together with the sense of belonging to a group and enjoyment are closely related to increased academic performance, as explained by Roa Rocha in their study with university students [5].

Continuing in this line, Mediavilla Saldaña et al. [17] state that education in the natural environment, carried out through these types of active methodologies, as opposed to traditional education, favors cognitive processes, achieving an improvement in learning.

This can be seen in the study carried out in the university context, in which the authors' state that activities in nature developed using the experiential methodology favor the acquisition of knowledge among participants, with this acquisition of knowledge being greater in the open air than in the classroom and reaching 92.05% of knowledge after the intervention; this is a very high percentage that agrees with the 80% obtained in this present study. Mediavilla Saldaña et al. [17] emphasize that this context encourages active participation and first-hand experience of all the content taught, promoting greater and better fixation of knowledge, and favoring the reduction in learning time compared to traditional classroom education in which experiential methodologies are not used. Similarly, in the research carried out by O'Brien [36], in which they studied the importance of regular contact with nature and for prolonged periods of time, they observed that children from several schools that followed the same Forest School program had improvements in skills related to learning such as concentration and other skills. Therefore, the need for continued and regular contact with nature was affirmed.

These types of organizational models, as Parson et al. [37] state, encourage students' motivation to learn. These authors conducted a study in which they implemented an expedition program in higher education, which resulted in an increase in the participants' learning gains and motivation to learn. The results indicate that the implementation of adventure and experiential programs promotes knowledge construction and student engagement. These results are consistent with the knowledge acquisition and satisfaction of the intensive-continuous group in this study. These data are also supported by Cottrell and Cottrell [38] who, after their systematic review, highlighted that activities in nature have benefits in relation to learning, largely due to the interaction of the person with the environment.

Following the conclusions drawn by Baena-Extremera et al. [10] in their work, it is worth highlighting the importance of active teaching methodologies, thanks to which students can be involved throughout the teaching–learning process. Furthermore, they state that motor skills in education exponentially favor students' learning, contributing to their psycho-pedagogical and evolutionary development. The increased motor skills in the classroom are reflected in the intensive-continuous model of the study.

Learning in the natural environment, focused on an educational methodology based on experiential learning and through discovery, can be considered a form of meaningful learning. This type of learning allows new concepts to be related to those already acquired or previously worked on [24]. This is what is sought with the organizational model of the intensive-continuous group, since significant learning is considered to be that in which the receiver of the information gives value to everything they learn and gives personal meaning to the knowledge [27]. To achieve this learning, it is very important that the activities are planned and that there are reflections that allow the student to analyze what has happened [22]. Meaningful learning is an opportunity for the acquisition of new knowledge. For this to happen, it is necessary to restructure university education, among other forms of education, in order to obtain qualified professionals [27].

5. Conclusions

After analyzing the four models, it can be affirmed that the one that uses the most innovative educational methodology, i.e., the intensive-continuous model, achieves a significant increase in student learning. Improvements have been found in the overall learning of the subject, in the contents taught in direct contact with the natural environment and in the so-called "blended" contents, which in this group were also developed in nature. Secondly, there were significant improvements in the learning of the group in the more traditional, fractioned model. In terms of satisfaction, no significant differences were found in any of the models studied, although it is worth noting that the intensive-continuous model is the one with the highest values in terms of satisfaction with the subject. It can therefore be concluded that, if the contents are taught in the natural environment, in direct contact with what is being studied, in a more innovative way and involving students in

their own teaching–learning processes, there is a greater acquisition of knowledge than if the same contents are taught in a more theoretical way and with a greater number of classroom sessions.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data will not be kept in any public repository but will be made available to interested researchers on request.

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