

Article

Impact of Sport Education Model on Sports Lifestyle and Attitudes of Vocational Education Training Students

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Abstract: The Sport Education Model (SEM) presents a wide background in the teaching of Physical Education and Sport. This is one of the most studied pedagogical models in the last decade in primary and secondary education. However, the studies of this model that are implemented in Vocational Education and Training within the family of Physical Activities and Sports are limited. For this reason, the aim of the present research was to examine the effect of the application of the SEM on motivation and Basic Psychological Needs (BPN). Secondly, the effect on the social climate of the group, the development of emotions during the intervention, or the students' perception of possible aspects of improvement of the model were studied. A total of 50 students (19.83 ± 3.20) followed a mixed methodology for 12 sessions. To achieve the objectives, the Spanish version of the Sport Motivation Scale questionnaire and the BPN Measurement scale were used. On a qualitative level, semi-structured interviews were conducted with all participants of the study. The results showed that the SEM was very well accepted by the students, who were fully satisfied with the activity. It was also considered a fun intervention, generating good socio-affective relationships, and was useful and practical for their training as future sports coaches. The intervention seemed to have a positive effect on student motivation, although with inconsistent results in the quantitative analysis of this study. Despite the encouraging results obtained, further research is needed to deepen the effect of SE as a key model in the teaching-learning process.

Keywords: SEM; motivation; student behaviour; attitude; self-determination-theory; physical education; pedagogical model; teaching



Citation: Giménez-Meseguer, J.; Ferriz-Valero, A.; Baena-Morales, S. Impact of Sport Education Model on Sports Lifestyle and Attitudes of Vocational Education Training Students. *Educ. Sci.* **2022**, *12*, 896. <https://doi.org/10.3390/educsci12120896>

Academic Editors: James Albright and Federico Corni

Received: 26 July 2022

Accepted: 3 December 2022

Published: 7 December 2022

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1. Introduction

The Sport Education model (SEM) is a well-established approach in sports pedagogy, being one of the most studied pedagogical models in the last decade [1,2]. This pedagogical model was designed to provide students with real and effective experiences in Physical Education and Sport, developing the competences of the area and providing students with greater responsibility and autonomy in their own learning [3].

This teaching model is based on the generation of a context in which students can live the most authentic sporting experience possible. This context leads to an increase in the relationship in the socio-affective domains, among which motivation is increased. When a pedagogical model such as physical education (PE) is able to satisfy the competence and autonomy of students [4], enabling them feel a locus of causality in their own learning, it has a direct relationship with their motivation [5] towards the educational process and the sporting lifestyle, promoting prosocial attitudes and responding correctly in the affective learning domain without neglecting the more social domain by assuming different roles within a team throughout the process [4,6]. For example, the sense of belonging to a

team, the competitive peer-centredness or the acceptance and performance of different roles within a team. According to these variables, it has been reported that it is necessary to create conditions that increase intrinsic motivation through the satisfaction of basic needs [2].

Therefore, this motivation regulates students' desires to behave during the teaching-learning process and maintain a sporting lifestyle. To this effect, the macro-theory of Self-Determination (SDT) [7] is one of the works that best contextualises students' motivation and psychological well-being as essential factors of success in the educational process [8]. Within SDT, the Theory of Basic Psychological Needs (BPN) [9] advances three fundamental needs: Autonomy, based on the desire to feel that one's actions are directly related to the outcome; Competence, which refers to believing in one's ability to perform an activity or task effectively and efficiently; and Relatedness to others, i.e., a sense of belonging to the group [10] as a fundamental characteristic according to the highest representative of this model [3]. The fulfilment of these needs promotes psychological well-being [11]. In fact, Autonomy and Relatedness deserve special attention, as these factors have been linked to higher cognitive abilities such as executive functioning [12] or academic engagement and performance [13], responding, again, to another domain of learning proposed by Kirk [6].

The BPN theory is a precursor to other mini theories within SDT. These other mini-theories differentiate three types of motivations, closely related to BPN that regulate human behaviour: intrinsic motivation (IM), based on the performance of an activity that provides satisfaction per se (described in detail in cognitive evaluation theory or CET); extrinsic motivation (EM), based on the performance of the activity to obtain external recognition or the means to achieve something (Theory of Organic Integration, TIO); and Amotivation (AMO), i.e., the lack of motivation towards the activity [10]. TIO describes different subtypes of EM, some controlled and some more autonomous [11]. On the more controlled side, a student may be motivated by coercion, reward, or external pressures, motives classified as external regulation (ER). Another type of EM within the controlled side is introjected regulation (Introy). This term refers to EM that has been partially internalised. In this case, behaviours are driven by the internal rewards of self-esteem for success and avoidance of anxiety, shame, or guilt for failure. Thus, the focus on approval of self and others is highly present. On the more autonomous side of extrinsic motives, we find identified (Ident) and integrated (Integ) regulations. The first term describes how students consciously accept the value of the activity. The second term, the more autonomous form of EM, implies that the learner not only recognises and identifies with the value of the activity but also considers it congruent with other interests and core values.

Several reviews have been conducted on the effects of SEM in physical education. Manninen and Campbell [4] concluded, after reviewing 25 articles, that SE was shown to influence participants' autonomy, competence, relatedness, and intrinsic motivation, promoting prosocial attitudes. Bessa et al. [14] analysed 51 studies and concluded that this model highlighted improvements in participants' enjoyment, satisfaction, enthusiasm, and commitment. Tendinha et al. [15] analysed 14 studies and concluded that the SE has a positive impact on motivation, autonomy, and enjoyment towards Physical Education.

As specified above, this model has been widely studied, investigating variables of all kinds (psychometric, performance, learning, etc.) in Primary Education [16–18], in Secondary Education [19–21], in Baccalaureate [22,23], and even in sports clubs [24,25]. However, no study is implemented in Vocational Education within the Physical and Sports Activities family [1,2]. Therefore, the present research has as its main objective to examine the effect of the application of the SEM on ME and BPN in vocational students. Secondly, it is intended to examine the possible additional effects, such as the social climate of the group, namely the development of emotions during the intervention. Finally, the students' perception of possible aspects of improvement of the model will also be evaluated. Therefore, the main research question we intend to answer in this research is what effects does the application of SEM have on vocational students? Secondly, we have asked ourselves what would be the effect of an SEM-based intervention on students' motivation and

NBE and what opinions will students have about their experience during the application of SEM?

2. Materials and Methods

2.1. Participants

The sample consisted of 50 students, 41 males and 9 females, from a public school in the town of San Vicente del Raspeig (Alicante, Spain), who were in the 1st year of the VET course called Higher Technician in Social and Sports Animation. The mean age of the participants was 19.83 years (± 3.20). None of the students had previous experience with the SEM. The sample was selected through a non-probabilistic convenience sampling. All the participants belonged to the same centre where the study was carried out. The teacher in charge of delivering the sessions had 15 years of experience as a Physical Education teacher and 3 years of experience implementing the SEM.

Before the start of the intervention, the educational centre and the participants were informed of the characteristics of the study, the voluntary nature of the study and the anonymity and confidentiality of the data provided.

2.2. Design and Procedure

This study follows a mixed methodology, with quantitative pre- and post-test measures and qualitative post-test measures. A convergent parallel design was used, extracting the data simultaneously and assigning a similar value to one type of analysis and another, with the aim of comparing the results of the two types of analysis, delving into them and better understanding the information obtained.

A didactic unit (DU) entitled “Educational-Sports Competition” was carried out, in which six stable teams were formed to play a multisport competition, including indoor football, basketball, and volleyball. The DU had a total duration of 12 sessions of 55 min, organised in 4 sessions per week, over three weeks, following the regular academic timetable. The structure proposed by Siedentop et al. [3] was followed, organising the intervention in different phases (Table 1): (1) initial, introductory phase, led by the teacher; (2) pre-competition autonomous work phase; (3) formal competition phase; and (4) final event.

Table 1. Timing of the Didactic Unit of work developed.

Phases	Sessions	Learning Content
1. Introductory	Session 1	Detailed explanation of the SEM, roles, and points system. Formation of teams, elaboration of anthems, and organisation and preparation of the competition. Autonomous intra-group work session: finalising team anthems, distribution, and organisation of roles throughout the competition and rotation order. Training activities and practice of technical, tactical, and strategic skills in an autonomous way.
2. Autonomous pre-competition work	Sessions 2–4	Review with the teacher of all the elements and roles to be put into practice in the competition.
3. Formal competition	Sessions 5–10	Putting the competition into practice.
4. Final event	Session 11	Final event: final matches, team recognition, and symbolic closing ceremony of the competition.
	Session 12	Group reflections, extraction of conclusions about the lived experience, and proposal of improvements for future editions.

The key elements of the SEM proposed by Siedentop et al. [3]: season, affiliation, regular competition, data records, roles, final event, and festivity, were followed in this manner:
Season: the DU was organised in the form of a sports season. The structure and timing of the DU can be observed at Table 1.

Affiliation: stable teams were established for the whole season. Each team decided on a team name, a kit colour to be worn at every match, and a team anthem to be sung

at the start of every match. Extra points were awarded at matches for the momentum of singing the anthem and for camaraderie. Each team created a team crest. Some teams constructed flags.

Regular competition: six teams were formed and a schedule was drawn up for the formal competition so that all teams would play against each other in all three sports.

Data registration: the results of each day were recorded and updated in a document shared by the whole group. In order to encourage sportsmanship and camaraderie in the game and to divert the focus on winning/losing, a points system was designed whereby points were not only awarded for scoring more or fewer goals in the match, but also for other aspects, such as singing the anthem with enthusiasm at the start of the matches, showing camaraderie and sportsmanship during the match, or shaking hands with the opponent and the referee at the end of the match. The participants who had the role of evaluators, supervised by the teacher, oversaw awarding the additional score for this type of behaviour, following a rubric designed by the teacher for this purpose. The score obtained by each team on each day was recorded to immediately update the ranking, which was visible to all participants.

Roles: the participants adopted the following roles throughout the competition, on a rotating basis: (a) player: participated as a team member; (b) captain: was the team leader for the day, in charge of communicating with the referee and conducting the post-match interview; (c) coach: in charge of leading the warm-up and managing the changes during the match; (d) evaluator and table judges: they counted goals, the time of the match, and filled in the evaluation rubric; (e) referee: in charge of refereeing a match that did not involve their own team; and (f) journalist: in charge of doing interviews and match reports. During the match, the journalists took photos and notes. At the end of the matches, they interviewed the team captains. With the information gathered, they updated the competition newspaper, in an online document shared and visible by the whole group. All the participants went through each of the roles at least once.

Festivity and final event: on the last day of the competition, the final matches were played, a symbolic prize-giving ceremony and a closing ceremony were held, team photos were taken, and each team was provided with a competition newspaper, produced by the journalists, with reports and photos of all the matches. At the end of the DU, a final hour was devoted to a class discussion of the experience and to drawing conclusions and areas for improvement for future editions.

2.3. Instruments

The participants completed two questionnaires before and after the intervention.

- *Motivation in Physical Education classes.* The Spanish version of the Sport Motivation Scale (SMS) [26] was used and adapted to the Spanish context with a sample of 1055 secondary school students, i.e., between 12 and 17 years old [27]. This questionnaire includes 18 items grouped into six factors (three items per factor) that measure: Intrinsic motivation (e.g., "Because it is very interesting to learn how I can improve"), integrated regulation (e.g., "Because the practice of a physical-sport activity is a fundamental part of my life"), identified regulation (e.g., "Because the physical-sport activity is a way to develop myself"), introjected regulation (e.g., "Because I would feel bad if I didn't participate and make an effort in the classes"), external regulation (e.g., "Because I get rewarded by the people around me when I do it"), and amotivation (e.g., "I used to participate and make an effort in the classes but now I wonder if I should continue to do it"). The version used was preceded by the following introductory sentence: "I participate and make an effort in Physical Education Teaching Methodology classes...". The results of the Confirmatory Factor Analysis indicated an acceptable fit of the data in the original validation ($\chi^2 = 481.57$, $p < 0.001$; $\chi^2/df = 4.01$; RMSEA = 0.054 (CI90% = 0.049, 0.059); CFI = 0.94; TLI = 0.95; SRMR = 0.047) [27]. In our study, the Cronbach's Alpha value was 0.579 for intrinsic motivation, 0.817 for integrated regulation, 0.801 for identified regulation, 0.642 for introjected regulation,

0.718 for external regulation, and 0.444 for amotivation in the pre-test. In contrast, the Cronbach's Alpha value for the post-test was 0.666 for intrinsic motivation, 0.863 for integrated regulation, 0.836 for identified regulation, 0.673 for introjected regulation, 0.840 for external regulation, and 0.684 for amotivation.

- *Basic Psychological Needs Measurement Scale (BPNES)*. The Spanish version adapted to the context of Physical Education [28] of the Basic Psychological Needs in Exercise Scale [29] was used. The questionnaire contains 12 items, grouped into three factors (4 items per factor) measuring self-management (e.g., "the exercises I do fit my interests"), competence (e.g., "I feel that I have made great progress towards the final goal I have set myself"), and relationship with others (e.g., "I feel very comfortable when I exercise with my classmates"). The version used was preceded by the following introductory sentence: "In my Didactic Methodology classes in Physical Education...". Two samples of 370 and 364 Spanish secondary school students, aged from 14 to 16, were used in the original validation. The results of the Confirmatory Factor Analysis indicated an acceptable fit of the data ($\chi^2/df = 3.29$; RMSEA = 0.07; CFI = 0.94; IFI = 0.094; TLI = 0.92; SRMR = 0.07) (Moreno-Murcia et al. 2008). In our study, the Cronbach's Alpha value was 0.815 for autonomy satisfaction, 0.492 for competence satisfaction, and 0.784 for relationship satisfaction with others in the pre-test. In contrast, the Cronbach's Alpha value for the post-test was 0.662 for autonomy satisfaction, 0.743 for competence satisfaction, and 0.853 for relationship satisfaction.

2.4. Statistical Analysis

2.4.1. Quantitative Data

The statistical power of the sample size was calculated using G*Power (Ver. 3.1.9.6, University of Düsseldorf, Germany) [30]. The sample size, 50 participants in total, with a mean estimated effect size (0.5) and a significance of 95%, resulted in a power of 0.95. SPSS statistical software version 24.0.0 was used to perform all the statistical analyses of a quantitative nature. Basic inferential statistics (mean and standard deviation) were calculated. The Shapiro–Wilk normality test was performed, obtaining non-normal distributions in all cases ($p < 0.05$). The Wilcoxon test was used to verify the within-group effect of the intervention (pre-test vs. post-test). The effect size was also calculated using Microsoft Excel software [31]. This size was considered small when values ranged between 0.1 and 0.3, medium between 0.3 and 0.5, and large if greater than 0.5 [32,33]. The dependent variables had six domains in motivation and three in BPNs [34]. Time (pre- and post-intervention) was the intrasubject factor, with no control group. A 95% confidence interval was calculated for the differences and the significance value was configured at $p < 0.05$. Finally, in terms of internal consistency, the reliability was calculated with a Cronbach's alpha.

2.4.2. Qualitative data

At the end of the Didactic Unit (within two days of completion), semi-structured interviews were conducted with all the study participants. These interviews wanted to favour the understanding of the quantitative results, to delve into them and to look for other results that are difficult to evaluate with quantitative methods. The interviews began on the same day that the intervention ended, at the same time that the 2nd test for the quantitative analysis was carried out. The interviewing process lasted two days. The interview followed a purposive design, carried out by the lead author of the study, in collaboration with and with supervision by the rest of the research team. Although it had fixed questions, the interviewer was free to cross-examine or partially modify some questions depending on the answers and information provided by the interviewee, with the aim of facilitating communication with the interviewee and extracting the relevant information. It had three parts. In the first part, the interviewee was asked general questions, such as whether he/she had had any previous experience with this type of practice or if he/she had previously mastered the sports that had been practised and was asked to produce a very general assessment of what he/she had experienced in the intervention. In the second part of the

interview, questions were asked to detect their motivation during the Didactic Unit (DU), the involvement the student had had during the intervention, what kind of emotions they had experienced, or how they had felt on a social level within their group. Finally, in the third part of the interview, the student was asked to produce contributions and suggestions to the model, trying to identify which aspects of the intervention the participants had liked.

The interviews were recorded with a mobile device and transcribed verbatim into a text processor for later analysis. Nvivo software was used to transcribe and organize the information. The data were processed using conventional content analysis, as proposed by Hsieh and Shannon [35]. First, the transcripts were read several times in order to become familiar with the content and to obtain an overall idea of the content. Secondly, all fragments that provided relevant information for the study were identified. Finally, these fragments were classified through inductive reasoning into categories and subcategories related to the fields of study of this research.

In order to facilitate the interpretation of the results and cause it to be more consistent, the main researcher carried out an exhaustive observation every day of the intervention and he took notes in a field diary. This was used to contrast and triangulate the information obtained in the interviews. In addition, at the end of the intervention, the researcher contrasted the interpretation of the results obtained with the study participants and the rest of the research team.

3. Results

3.1. Quantitative Results

Tables 2 and 3 show the Wilcoxon test results (pre- and post-test) for boys and girls. It can be seen that, after the intervention, boys increased their integrated, introjected, and external regulation, as well as their autonomy and competence. In girls, only an increase in the integrated regulation variable is observed. The effect size is considered “large” in the case of the motivational variables and “medium” in the case of the BPN’s.

Table 2. Intra-group comparison for boys (pre-test vs. post-test).

D.V.	Average \pm SD		Ranges			Wilcoxon Test		ES
	Pre-Test	Post-Test	Neg (–)	Pos (+)	Neu (=)	Z	Sig.	
Sport Motivation Scale-II in Physical Education (Escala Likert 1-7)								
IM	6.4 \pm 0.7	6.6 \pm 0.5	10	17	14	1.445	0.148	-
Integ	5.6 \pm 1.0	6.0 \pm 1.0	7	25	9	3.448	0.001	0.54
Ident	6.1 \pm 0.9	6.3 \pm 0.8	9	20	12	1.752	0.080	-
Intro	5.9 \pm 0.9	6.2 \pm 0.9	6	23	12	3.148	0.002	0.49
Ext	3.3 \pm 1.4	4.1 \pm 1.7	11	27	3	3.213	0.001	0.50
Am	1.7 \pm 0.9	2.1 \pm 1.3	11	18	12	1.262	0.207	-
Basic Psychological Needs Measurement Scale (BPNES)-(Escala Likert 1-5)								
Aut	3.9 \pm 0.6	4.2 \pm 0.5	9	25	4	2.826	0.005	0.44
Com	4.3 \pm 0.4	4.5 \pm 0.5	8	25	5	2.632	0.009	0.41
Rel	4.6 \pm 0.5	4.7 \pm 0.4	7	15	16	1.611	0.107	-

D.V. = Dependant variables; SD = Standard deviation; Neg (–) = Negative; Pos (+) = Positive; Neu (=) = Neutral; ES = Effect Size; IM = Intrinsic motivation; Integ = Integrated regulation; Ident = Identified regulation; Intro = Introjected regulation; Ext = External regulation; Am = Amotivation; Aut = Autonomy; Com = Competence; Rel = Relationship.

A noteworthy aspect regarding intrinsic motivation and amotivation is that the students initially scored very high and very low, respectively.

3.2. Qualitative Results

The qualitative analysis process yielded relevant results that were classified into five categories, identifying some sub-categories within each domain, as shown below:

Table 3. Intra-group comparison for girls (pre-test vs. post-test).

D.V.	Average \pm SD		Ranges			Wilcoxon Test		ES
	Pre-Test	Post-Test	Neg (–)	Pos (+)	Neu (=)	Z	Sig.	
Sport Motivation Scale-II in Physical Education (Escala Likert 1-7)								
IM	6.1 \pm 0.9	6.3 \pm 0.9	1	4	4	1.414	0.157	-
Integ	5.2 \pm 1.8	5.8 \pm 1.7	1	8	0	2.034	0.042	0.67
Ident	6.2 \pm 0.9	6.4 \pm 0.8	2	4	3	0.843	0.399	-
Intro	5.6 \pm 1.2	5.6 \pm 1.5	2	4	3	0.318	0.750	-
Ext	3.2 \pm 2.1	3.2 \pm 2.1	3	3	3	0.316	0.752	-
Am	2.1 \pm 1.2	2.2 \pm 1.2	3	4	2	0.170	0.865	-
Escala de Medición de las Necesidades Psicológicas Básicas-BPNES-(Escala Likert 1-5)								
Aut	4.1 \pm 0.8	4.2 \pm 0.7	4	4	1	0.216	0.829	-
Com	4.3 \pm 0.7	4.3 \pm 0.5	4	4	1	-0.212	0.832	-
Rel	4.3 \pm 0.9	3.9 \pm 0.9	5	2	2	-1.450	0.147	-

D.V. = Dependant variables; SD = Standard deviation; Neg (–) = Negative; Pos (+) = Positive; Neu (=) = Neutral; ES = Effect Size; IM = Intrinsic motivation; Integ = Integrated regulation; Ident = Identified regulation; Intro = Introjected regulation; Ext = External regulation; Am = Amotivation; Aut = Autonomy; Com = Competence; Rel = Relationship.

3.2.1. Formative/Academic Learning

The participants' narratives revealed formative learning and even led to self-awareness that can be of great use for both the students' professional development and personal growth: *Sports learning at a normative, technical, and tactical level.*

The fact of practising different sports within the same competition resulted in students practising different sporting skills and regulations and having to prepare and put into practice tactical approaches adjusted to the sport they had to participate in each day. This led the students to develop regulatory, technical, and tactical knowledge of the sports covered:

“The truth is that this has also helped me to know the rules of some sports (...) the role of the libero in volleyball has caught my attention, I didn't know this” (Participant 7).

In many cases, this learning flourished because of social interaction among the members of the group itself, which further enriched the experience:

“I especially emphasise the learning of the volleyball rules, because I knew the football and basketball rules, and because in my team we had L.G. and M.A. who were very knowledgeable and explained the special rules to us” (Participant 46).

“I am not good at basketball, but with the advice of my teammates it seemed easier (...). The blocks, the importance of keeping your head up when shooting, I learnt a lot of things I didn't know”. (Participant10).

This learning was seen not only at a technical-tactical and regulatory level from the player's point of view, but the fact of adopting different roles within the competition helped the students to learn about the functions that these roles perform.

- Roles within a competition

“...the role of referee is what surprised me the most (...) To realise how difficult it is to referee, which seems easy when you are playing or watching a match, but when you start refereeing you realise how difficult it is” (Participant 49).

“I really enjoyed being a coach. I've never done it before, and I've seen that I can do it well” (Participant 48).

The fact of practising different sports within the same competition resulted in students practising different sporting skills and regulations and having to prepare and put into practice tactical approaches adjusted to the particular sport they had to participate in each day. This led the students to develop regulatory, technical, and tactical knowledge of the sports covered:

- Intrapersonal knowledge

“I have realised that I have to improve my temperament. Sometimes I lose my temper and I know that I have to change it (...) I already knew that, but this competition in which they take away points if you get angry, if you say something to the referee, it has helped me to realise that even more” (Participant 19).

“I’ve seen that, compared to other teammates, I’m quite good at coaching (...) I’m also good at being captain. I was very good at organising my teammates and creating a good atmosphere so that we could get more points” (Participant 4).

In addition to intrapersonal knowledge, the activity also allowed the students to know and test themselves in functions that are relevant to their professional development, finding narratives from the participants that explain that the activity carried out can have an interesting formative component for their professional development, with most of the interviewees highlighting the role of trainer.

- Practical application of the model

“As we always say, you learn much more on the track than in the classroom. Additionally, here, the fact of managing a team, of competing... That is what we are going to find when we go to work” (Participant 32).

“The role of coach has been the one that I see as the most relevant for our professional future” (Participant 7).

This perception of useful and practical learning for the students, added to the motivational component inherent in the play-competitive activity itself, led to a great motivational development in the learning process.

3.2.2. Motivation

“When it was competition time, during the day I was already thinking about the games that were coming up, looking forward to it” (Participant 18).

“It was something different from going to class, like being involved in a game or something like that. It was amazing” (Participant 44)

“My team made a *WhatsApp* group and everything to discuss things about the league (...) Very motivated, it was very good” (Participant 16).

In addition, during the DU process, a great affective-emotional development was observed, which was expressed in the participants’ narratives. Positive emotions predominated, although some participants expressed having felt some negative emotions at specific moments of the process.

3.2.3. Affective and Emotional Development

- Positive emotions experienced in the process

“I felt joy and fun” (Participant 18).

“...singing the anthem with the teammates, cheering each other on, made me feel happy” (Participant 43).

Although most participants expressed feeling positive emotions during the process, there were also narratives of participants who expressed feeling unpleasant emotions at specific moments, especially at the beginning of the implementation of the DU and mainly referring to the excessive competitiveness of some of the participants.

- Negative emotions

“Some classmates are too competitive, and that made me nervous... I am very calm, and I don’t like so much competition. (...) Yes, it was mainly the boys, the girls are calmer” (Participant 35).

On further questioning about these negative emotions that some participants expressed, they explained that these feelings improved over the course of the DU.

“It was especially at the beginning; we are used to competing to win and it’s hard to change the chip right away... When people saw that the competitions made them lose points, they started to behave better” (Participant 8).

The emotional component of the implementation of the SE and the social interaction it entailed led to an improvement in the social climate and group cohesion.

3.2.4. Social Atmosphere

- Interpersonal relations

“It has made us relate to people we never used to talk to” (Participant 47).

This increased social interaction additionally led to a perception among students of increased social and group cohesion and a feeling of affiliation with the participating group:

- Social and group cohesion

“The competition has brought us closer together (...) with the whole group, but above all with the players in our team” (Participant 19).

“We created a *WhatsApp* group for the team, and we used it to organise ourselves (...) It started as a group just for the competition, but we have already bonded and now that it is over, we will continue to use it for sure” (Participant 13).

- Feeling of affiliation and group membership

The formal identifying elements of the teams in the competition, such as the creation of stable teams, the teams’ clothing, and the creation and singing of team anthems were key to awaken in the students’ feelings of fraternity among the team members and feelings of affiliation and belonging to a group:

“You used to sing the anthem before the match, everyone with the team’s jersey, and you felt important (...) You felt like you were part of a team, like your family” (Participant 18).

Finally, students provided feedback on the model itself, highlighting methodological aspects and interesting ideas for improving the implementation of the model:3.2.5. Contributions to the model

- Rotation of roles and dynamism of the DU

One of the aspects highlighted as positive by most of the participants was the fact of rotating roles within the competition:

“...one day you were the coach and the next game you were a player, the next game you were a journalist (...) I thought it was great to change roles.” (Participant 2).

The dynamism of the DU and the variation of parameters within the DU is something that the participants liked very much. This taste for dynamism and variation of parameters was also reflected in the sports practiced.

- Sports played

Some participants said they would have liked to practice more sports:

“It would have been nice to include more sports, not just the three we did, to play more things” (Participant 14).

Upon inquiring about the type of sports they would like to play, many proposed playing alternative or lesser-known sports instead of traditional sports, arguing that traditional sports can be more conducive to interpersonal conflict during the game than alternative sports:

“I think it would be better to apply it to other less known sports, so that there is less competition and less competition” (Participant 8).

Longer season duration

Finally, most participants said they would have liked the season to have lasted longer:

“It was very short, very few days” (Participant 34).

“It was short, it should have lasted longer, because at the beginning it was difficult to adapt to all the rules, there were more challenges and little by little we were improving (...) When the competition was going better and there was a better atmosphere, it ended, it should have lasted longer” (Participant 21).

4. Discussion

The purpose of this study was to examine the effect of the application of the Sport Education Model (SEM) on motivation and Basic Psychological Needs (BPN) and to investigate possible additional effects, such as the social climate of the group, the development of emotions during the intervention, or the students' perception of possible aspects of improvement of the model, following a mixed methodology in a group of Vocational Education Training Students (VET). The study population is one of the novel aspects of this study, as no previous studies have been found that have analysed the influence of SEM at this educational stage.

Firstly, the quantitative analysis revealed a slight improvement in Intrinsic Motivation (IM) scores in both boys and girls, but this was not statistically significant. It is important to note that students already scored very high in the pre-test, with a score of 6.4 out of 7 for boys and 6.1 out of 7 for girls, so it is difficult to find a statistically significant improvement in the post-test, as the group started with high levels of IM. For this reason, the IM values in the quantitative analysis cannot be attributable to the intervention. Other studies have shown an improvement in IM after the application of the SEM, both in secondary students [19,36] and in Baccalaureate students [37].

In this study, despite not finding a statistically significant improvement in IM, in the qualitative analysis, students reported feeling full satisfaction during participation in the activities, reporting feeling “happy” and “looking forward to class” to participate in the activity, which reflects a motivation for the practice of the activity itself. Likewise, a great affective-emotional development was observed during the process and a great involvement of the students in the development of the activity, which are characteristics typical of intrinsically motivated students [10]. The development of positive emotions is a key factor in the learning process at any educational stage, favouring attention and cognitive processes, cognitive thinking, and academic results [38]. For this reason, including activities in the academic environment that promote this type of emotion can contribute to improving the quality of the teaching-learning process.

In addition to this motivation per se with the practice of the activity, most of the students stated that one of the aspects that made them value the activity the most was that they considered it a very effective way to learn useful and practical content for their training as future sports coaches, since through the practice of the Didactic Unit they all exercised leadership roles, such as coach or captain, they worked on aspects of organising sports championships and learned about the regulatory, technical, and tactical aspects of different sports, among other aspects. This meant that they not only enjoyed participating for the mere fact of practising, but also internalised that what they were practising was something positive for their education. This was reflected in the quantitative analysis, with a statistically significant improvement in the variable Integ. Integrated motivation is the most autonomous form of External Motivation (EM) and implies that students appreciate the value of the activity and identify with the values it conveys [11]. In this study, we observed how students developed this type of motivation, observing a strong consistency between the quantitative and qualitative results.

On the more controlled side of external regulation, a statistically significant increase was observed in both Intro and Ext, but only in the boys, with no change found in the girls. Some studies carried out with secondary school students have detected gender differences in EM. Thus, in a study conducted with 521 secondary school students to examine the motivational profile of students [39], it was shown that girls showed lower levels of IM, while there were no gender differences in IM. However, no evidence has been found in the literature to explain a gender difference in IM after participation in an intervention with the SEM. Analysing the qualitative results of the present study, a possible explanation for the gender differences found here could be an excess of motivation and interest in winning and reaching the top of the rankings in boys. Thus, some of the interviewees explained that some students seemed to be excessively focused on winning, leading in some cases to clashes with peers or unpleasant situations, specifying that these situations occurred in boys, but not in girls. However, more precise and revealing data would be needed to detect a clear gender difference in the levels of external regulation. Moreover, the significant sample difference between genders prevents us from drawing clear evidence.

Regarding BPN, the quantitative analysis revealed a significant improvement in the Autonomy and Competence variables, but only in boys. The relationship did not improve in either boys or girls. This result contrasts with the qualitative analysis. The participants developed a feeling of affiliation and belonging to the group and an improvement in group and social cohesion and social relationships with peers, especially with teammates. The need for relatedness refers to the feeling of belonging to a group [10]. Therefore, the narratives provided by the participants, despite this lack of coherence with what was obtained in the quantitative analysis, seem to show an effect of the intervention on this variable. Other studies carried out in other educational stages have already shown an effect of the SEM on BPN, both in Secondary [36] and Bacalaureate [40].

Finally, the participants made some contributions and suggestions for improvement to the model itself and the specific characteristics in which it was carried out. One of the positive aspects reported by the participants in the interviews was the role rotation carried out, highlighting the role of the coach as one of the ones they liked the most, considering it more valuable for their training. The adoption of roles throughout the DU is one of the key elements of the SEM [3]. Based on this imperative point of the model, different studies have carried out interventions with role rotation or fixed roles throughout the season. In this line, some studies evaluated the difference between the application of role rotation or no role rotation, obtaining similar results, with the difference that rotation produced greater conflicts or problems during the intervention [41], but also an improvement in the motivational climate [42]. Another of the contributions highlighted by the participants in the interviews conducted was the type of sports practised. The students were satisfied with the three sports included, but many proposed to use fewer known sports for future editions. The main argument for this change was to try to eliminate the large differences in technical and tactical ability that often exist between peers when more popular sports are used. Thus, the use of less known and less practised sports, such as alternative sports, could be a good choice to favour the elimination of differences in technical ability commented by the participants or to favour team play and coeducation [43]. The last of the students' contributions were to increase the duration of the DU. The reasons for this increase in duration were mainly to prolong the enjoyment and fun inherent in the activity and to achieve greater familiarity with the key elements of the competition. This result is in line with the postulates of the SEM, which recommend organising long-duration seasons, with durations between 12 and 20 sessions [3]. However, the duration of 12 sessions of 55 min carried out in this study is one of the most used in the literature [2].

Despite the results mentioned above, it should be borne in mind that this research has several limitations, such as not having a control group, which prevents us from establishing a cause-effect relationship or a large difference in samples between boys and girls and does not allow us to rigorously analyse the gender factor in the intervention. Thus, the results obtained should be regarded with caution and used as a basis for future research

in this area of education. Therefore, it is suggested that future randomised studies should be carried out to investigate the benefits of the SEM in the VET stage or other less studied stages or contexts, such as university students or sporting activities carried out in other contexts outside the educational sphere. Similarly, research is suggested, both in VET and in other educational or sporting contexts, on the effect of manipulating key elements of the SEM, such as the type of roles employed or the rotation or non-rotation of roles, the length of the season, the type of sports or activities employed, or the points or ranking system employed, in order to advance and deepen the effects of the SEM in different populations and contexts.

5. Conclusions

This study shows novel results in a very little studied stage, such as VET. The SEM was very well accepted by the students, who said they were fully satisfied with the activity carried out, considering it fun, generating good socio-affective relationships, and being useful and practical for their training as future sports technicians.

The intervention seemed to have a positive effect on student motivation, although with inconsistent results in the quantitative analysis of this study.

Thus, the results of this study are encouraging, but more randomised studies are needed to overcome the limitations of this study and to further investigate the effect of the SEM and possible variations or hybridisations of it on motivation and other key aspects of the teaching-learning process, in order to enable further progress in improving the quality of education, both in VET and in other educational stages.

Author Contributions: Conceptualization, J.G.-M. and A.F.-V.; methodology, J.G.-M. and A.F.-V.; software, A.F.-V.; formal analysis, J.G.-M., A.F.-V. and S.B.-M.; investigation, J.G.-M.; resources, S.B.-M.; writing—original draft preparation, J.G.-M., A.F.-V. and S.B.-M.; writing—review and editing, J.G.-M. and A.F.-V.; project administration, J.G.-M. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the University of Alicante research ethics committee (UA-2020-09-02).

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

Data Availability Statement: Not applicable.

Acknowledgments: The authors appreciate the participation of all students from IES Haygon and the teacher Nerea Espinosa in this research.

Conflicts of Interest: The authors declare no conflict of interest.

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