Article

University Coaching Experience and Academic Performance

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Abstract: The university education process has changed, involving new roles for the student body and the teaching staff. While teachers train for these new functions, it is not the case for students who are neither prepared for group work nor to construct their learning strategy. Coaching can be an essential success factor here. Having been applied in other educational areas, such as educational coaching, and in other non-educational ones, such as sports or business coaching, this original work proposes to evaluate the effectiveness of a university coaching programme in academic performance. Therefore, the aim is to measure the impact of an independent variable, a hybrid coaching programme, on a dependent variable, university academic performance. Trainee teachers in the Melilla Campus of the University of Granada in Spain participated in this coaching programme. The research followed a quasi-experimental design with experimental and control groups ($n = 70$ students, and $n = 69$ students, respectively) with repeated initial and final evaluation measurements (pre-treatment and post-treatment). The professor and the students conducted academic performance evaluations. The performance of the experimental group was increased compared to that of the control one, considering significant differences concerning the starting point both in the average marks provided by the professor for the practices and in those of the students. Other works about coaching have highlighted its advantages, although they are not exclusively focused on the academic area like this study. This study has limitations and needs further research. However, it concludes that the coaching applied to trainee teachers enhances their performance in practical group tasks.

Keywords: higher education; university coaching; academic performance; intervention programme; quasi-experimental study

1. Introduction

1.1. The Concept and Scope of Coaching

The International Coach Federation [1] defines the role of the educational coach as professionals concerned with fostering motivation, teamwork, changes in teaching methodology, and the improvement in the learning process of their students. Coaching is essential for motivating professors to play a better role every day. Overall, these are professionals who are able to develop the potential of educators to change and adapt to new educational needs and demands. Success in educational coaching is due to multiple factors:

(a) Its nature is intrinsically linked to the educational processes. Whitmore [2] states that "coaching consists of releasing the person's potential to take its performance to the maximum. It involves helping the individual to learn instead of teaching him/her" (p. 20).

(b) It is in line with the new educational missions. The World Conference on Higher Education held in 2009 by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) [3], as well as specialized literature [1,4], points the educational mission towards an all-rounded training of the individual. Coaching regards the human being and their talent, qualities, abilities, attitudes, competencies, paradigms, mental models, wisdom, emotions, beliefs, and values. It allows for an improvement in training by analysing "how these [coaching] processes influence the academic, personal, and professional relationships existing within the educational area" [1] (p. 20).

(c) Coaching relies on experimentation with innovative perspectives within the classroom [4]. In this sense, Bou [1] claims that "we want schools where the focus is not only on academic competencies (school programme) but also on the development of relational, emotional, and intellectual competencies (…). We want to educate people and not being merely a factory of academic certificates" (p. 15). By following coaching programmes, professional educators are more willing to reflect on their current teaching practice; they feel more confident to experiment with creative ideas and employ a wider range of innovative teaching techniques [5].

The overall benefit of specialised training on coaching is derived from providing new strategies and practical approaches to help educators and school counsellors to cope with old problems using alternative solutions. It should not be confused with the concept of mentoring, which consists of offering information and external help to channel the students' behavioural patterns. Coaching, on the other hand, is used to enhance the intrinsic competencies of the students. For instance, mentoring tries to provide tools to improve study strategies as well as the vocational decision-making of the students, while coaching is applied to help students find their most optimal way to study and reach objectives. This is valid for all educational stages as it focuses on the necessary development and evolution of the learner with help and guidance from the professors [6,7], who also benefit from the process. Therefore, the concept of university coaching arises where this is particularly valid [8,9].

1.2. University Coaching

Nevertheless, despite its convenience and necessity for the student's learning, this topic has undergone limited experimentation in Spain, apart from a few pilot studies [10,11]. In other pioneer contexts, this concept has been applied in university teaching for fifteen years [12], and institutional university coaching associations can be found [13]. The Coaching in Higher Education Consortium [14] defines university coaching as an action to promote an individualised relationship with students to foster their development, self-understanding, growth, effectiveness, and persistence within the realm of education. Academic success at this stage is higher among those students who follow coaching programmes [15,16], and the dropout rate is significantly lower [17,18].

However, researchers emphasise the belonging of coaching in higher education due to its utility to favour the autonomous development of university students and optimally develop their cognitive ability. Likewise, Becart [19] suggests the use of coaching in higher education as it contributes to the development of competencies such as personal initiative and emotional intelligence, apart from being a powerful tool to develop the capacity for self-discipline, which is paramount in the pursuit of other competencies such as learning how to learn [20]. Van der Weijden, Teelken, de Boer, and Drost [21] recommend conducting sessions for those students who are about to start or that have finished their studies, as this can help them redirect their careers out of academia.

In addition, the commitment to group work in university education is a consequence of the current configuration of the labour market. If there is evidence of an improvement in the effectiveness of the stimulation of work groups in professional performance, then this stimulation should be brought into the field of university education[22].

Due to the even more recent digitalisation of university education, this medium should also be considered for the development of coaching. Some experiences of virtual coaching have been successfully developed.

According to the theoretical corpus on coaching and its practice, different types of coaching have been identified, according to the moments of its development and method: ontological, systemic, with emotional intelligence, coercive, and cognitive; according to its objectives and contents: personal, organisational, and sports. On this occasion, we are interested in cognitive-emotional, personal, and group coaching.

The convenience and suitability of coaching in university education, in the European context particularly, has been highlighted. This goes in line with the objectives of coaching, which are the development of the competencies required by the labour market [8] and increasing the integration of graduates into the labour market [23].

1.3. History of Coaching

In this light, sundry studies have shown the efficacy of coaching programmes in teaching training. For instance, Vernon-Feagans, Kainz, Hedrick, Ginsberg, and Amendum [24] proved the effectiveness of this sort of programme in enhancing the competencies of childhood and primary education teachers in rural schools in the United States through a webcam. Similarly, Early, Maxwell, Ponder, and Pan [25] perceived the improvement of the communication skills of childhood education teachers through these tools.

Coaching practices are also part of other contexts. Colorado and Corcino [26] constated the positive feeling of a group of primary education teachers in Puerto Rico towards coaching after participating in training sessions. Twigg, Pendergast, Fluckiger, Garvis, Johnson, and Robertson [27] also assessed the efficacy of a coaching programme developed by early childhood teachers in Australia. Likewise, Day, Gu, and Sammons [28] showed that coaching trainee secondary education teachers in the United Kingdom improved the attitude and performance of students. Rodríguez-Hidalgo, Calmaestra, and Maestre [29] proved that the coaching programme was efficient for competency development (recognising diversity, autonomous learning, and taking the lead) in future Spanish primary education teachers.

The advantages noticed in the qualitative experiences of social and personal dimensions have been studied further. Some of these dimensions are self-esteem and emotional intelligence, discussed in the works by Rosa, Riberas, Navarro-Segura, and Vilar [30]. Further dimensions are well-being, motivation, and implication, as studied by Lech, Van Nieuwerburgh, and Jalloul [31]. The effect of the latter dimensions in the classroom atmosphere and professional competencies were further researched by Álvarez, Gudiño-Gómez, Macías-Montoya, and Izquierdo [8], along with the self-regulation of the learning process.

Furthermore, Rosa et al. [30] focus on the development of emotional intelligence. This correlates with feelings, thoughts, respect, communication, reflection and self-criticism, the assumption of responsibility and mistakes, and the opportunity for learning and growth. Rodríguez-Hidalgo et al. [29] demonstrate the benefits of multidimensional coaching for competency development for trainee teachers.

Among the proven benefits for those students in other educational stages, the following can be highlighted [32–34]: higher self-confidence and assertiveness, which improves self-esteem, sense of responsibility, and relationships within their social context. It also increases personal autonomy since students learn from their own mistakes. Additionally, coaching fosters problem-solving and decision-making skills.

Other advantages of coaching are increased motivation, value development, better group integration, and frustration management, which improves the ability to reflect and think clearly, as well as increased energy and satisfaction with their work.

1.4. Research Question

Some other benefits derived from this discipline are the deletion of learning-blocking factors, which enhances stress control and establishes clear and attainable aims and goals, as well as a lesser occurrence of conflicts with better strategies to solve them.

The dissatisfaction and weariness of students, due to of the traditional hegemony of outdated methodologies (focused solely on the professor's activity and represented by the masterclass), have given way to a lack of commitment and involvement [35,36]. These two latter qualities are demanded by the emergent methodologies of the European Higher Education Space, which are focused on the student's activity. The balance is found in the methodological virtue combining an active role for professors and students [37,38]. Thus, on the one hand, setting the motivation and guidance of the professor as a starting point as they oversee the learning process [37]. On the other hand, commitment and involvement on the part of students are also needed as they are the developers of their learning activity [38]. Since these roles cannot always be perceived in real life, specific strategies to encourage them are necessary, with coaching being one of the most needed tools for that purpose.

There is, however, a dissociation between the actual characteristics of the university student body and the demands on the university student according to the new university system following the implementation of the European Higher Education Area and the emerging didactic methodologies. This creates a brake on meaningful learning and competence development. On the other hand, there are tools at the disposal of teachers and institutions that can alleviate this problem. One of them can undoubtedly be the tool of university coaching, which has been tried and tested on a few occasions, as indicated above. This is the contribution of this work through the original proposal of the hybrid programme (face-to-face and virtual) of university coaching.

The problem above gives rise to the present research aim: analysing the influence of an intervention programme, consisting of in-person and remote coaching sessions, on the academic performance of university students. These sessions would develop diverse personal dimensions (motivation, commitment, and involvement) and group dimensions (communication, cooperation, and responsibility, among others) to foster an improvement of university academic performance through practical sessions of autonomous group work.

1.5. Purpose of the Study

Consequently, the purpose of this study was the improvement of the academic performance of students in group learning processes. Within this general aim, the following variables were included: (a) commitment to the learning task demanded by the teacher; (b) commitment to the group of fellow students; (c) improvement of the dialogical processes among the group members; (d) optimisation of process development when executing activities; (e) improvement of presentation skills by showing the work done in class. All of the above should contribute to the overall improvement of the performance in the practical sessions and enhancement of these practical sessions.

2. Materials and Methods

A quasi-experimental design of repeated measurements was employed (an initial evaluation before applying the coaching programme and a final one after the completion of the programme) for different units: a control group (CG) and an experimental group (EG).

This research design draws on the research on the effect of an independent variable (the coaching programme) over a dependent variable (student performance).

Hence, there is a null hypothesis showing that the applied university coaching programme does not make any difference in student performance; therefore, the programme is not effective when applied collectively. On the other hand, there is an alternative defending hypothesis that argues that the programme was effective because there has been a significant improvement in the performance of the participants in the experimental group, compared to their initial performance.

2.1. Participants

A total of 139 university students ($n = 139$) out of a population of 970 ($n = 970$) participated in the research. Therefore, we assumed a margin of error of less than 5%, commonly accepted in the study (4.6%). In this way, as proposed in the quasi-experimental design, the participants are not randomly allocated but intentionally, following some pre-established features necessary for the project. The participants were students about to start their teaching degree at the University of Granada, who would need strategies such as learning to learn and teamwork in the future (the didactic essence of the methodology that we strive to optimise with this programme). There were two groups of students studying the same subject. The applied methodology was equal to both groups. Both groups split into two subgroups for practical seminars. Although the professor supervised them, they worked autonomously and in stable groups throughout the experience. Two subgroups were CG ($n_{CG} = 69$), and the other two were EG ($n_{EG} = 70$). The students are principally female (79.14%) at an average age of 23.79 with scattered dispersion (SD = 1.47).

2.2. Study Design

The students were organised into 24 groups (6 for each seminar of both subjects). The programme was implemented with 2 groups (group A and group B) for each of the subjects. In turn, each group was divided for the student work sessions into two subgroups (seminar 1 and seminar 2). Thus, there were 4 groups in total: (1) group A, seminar 1; (2) group A, seminar 2; (3) group B, seminar 1; and (4) group B, seminar 2. In each of these groups, there were 6 working groups with 4 or 5 students per group. The 139 students and the two professors formed the information sample unit (n). However, the average grade on the four practical exercises (P) of the subjects (P2, P3, P5, and P6) within the different student groups constituted the unit of analysis, excluding two of them: P1, considered a test, and P4, which took place during the intervention of the programme. Table 1 holds the details of the information unit and the analysis unit.

Table 1. Sample description of the information unit and the analysis.

		Information Unit		Analysis Unit	
Subject	Groups	Control Group	Experimental Group	Pre-Test (P2–P3)	Post-Test (P5–P6)
1			6 student groups ($n = 36$)	12 marks	12 marks
	A	NO	Teacher 1 ($n = 1$)	12 marks	12 marks
	B	6 student groups ($n = 34$) Teacher 1 ($n = 1$)	NO	24 practical marks P2 + P3 + P5 + P6	
				24 practical marks P2 + P3 + P5 + P6	
	C	NO	6 student groups ($n = 34$)	12 marks	12 marks
			Teacher 2 ($n = 1$)	12 marks	12 marks
2		6 student groups		24 practical marks P2 + P3 + P5 + P6	

D	(*n* = 35)	NO		24 practical marks P2 + P3 + P5 + P6
	Teacher 1 (*n* = 1)			
TOTAL	4 groups	12 student groups (*n* = 69)	12 student groups (*n* = 70)	48 practical marks P2 + P3 + P5 + P6
		Teacher 1–2 (*n* =2)	Teacher 1–2 (*n* = 2)	48 practical marks P2 + P3 + P5 + P6

Note: A = Classroom A; B = Classroom B; C = Classroom C; D = Classroom D; P2 = Practical 2; P3 = Practical 3; P5 = Practical 5; P6 = Practical 6; *n* = sample. P1 and P4 were not evaluated for the research. P1 = because it was considered as a trial. P4 = because it coincided with the development of the programme.

The practical exercises were evaluated in a procedural and final way. These average marks were provided by the subject's professor and by the groups themselves, who assessed their exercises as well as their classmates'. An initial evaluation of practical exercises 2 and 3 was conducted, as well as a final evaluation of practical tasks 5 and 6. To conduct this, professors and students had a series of assessment indicators available, 10 in total, as an evaluation rubric. Figure 1 presents the entire process of previous assessments.
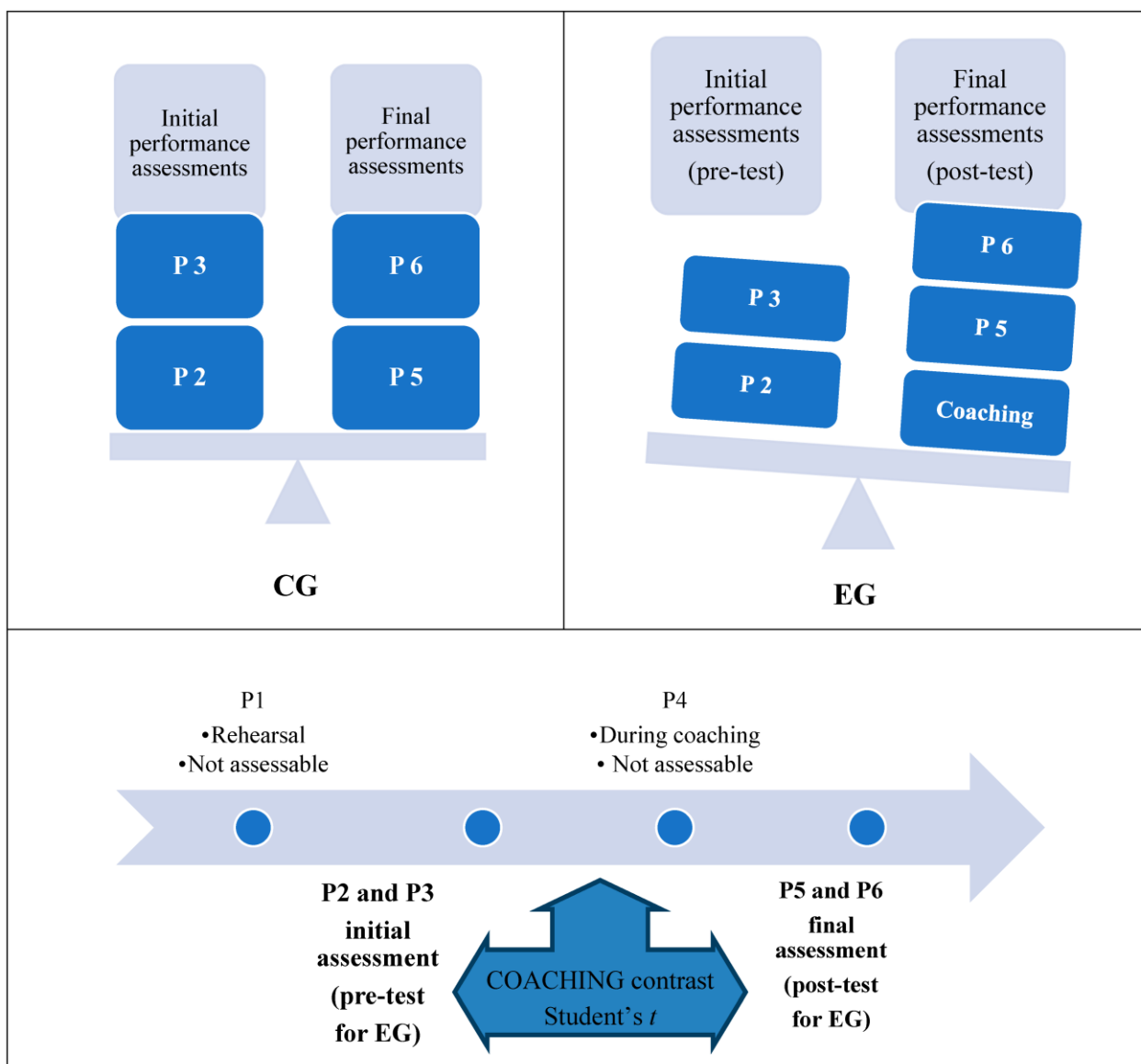

Figure 1. Basic visual representation explaining the assessment and intervention. Note: CG = Control Group; EG = Experimental Group; P = Practical exercise.

2.3. Instrument and Coaching

There were two practical group exercises (P2 and P3) to assess the initial performance of each student. They consisted of practical activities, requested by the professors, included in units 2 and 3 of the subjects' programme. They need to do cooperative work within the different groups, which was guided and supervised by their professors. The assessment of such activities was performed by the professors and, also, by the same workgroups after being presented before them. Then, the treatment was implemented, consisting of a 2 h coaching workshop, with individual and group activities developed by a specialised coach. It also included non-on-site activities, which were provided in a journal put together by this professional. The aim was to confirm it together with the initiation workshop:

The first step was an on-site session with the EG students, where the coach introduced herself and the notion of educational coaching. She also presented its conceptual limits and the reality of its implementation nowadays as a methodology guiding the process taking place during the academic year. Moreover, educational coaching was introduced as a valuable tool to foster the change demanded by the current educational challenges. The theoretical model that underpinned the coaching interventions detailed below was mixed, as indicated in the Introduction, because of its suitability for the education sector. Cognitive-emotional coaching was combined with personal and group coaching as it was aligned with the objectives of this research.

Practical exercises were conducted to experimentally understand the basis for any change process. It was highlighted that, in coaching practice, the coachees oversee their results, assuming the trust relationship and the embraced commitment as a premise. The students, through a practical exercise, were able to understand the existing relationship between their results and the sort of observer they are since reality is perceived through mental maps created from our personal experience. Likewise, they could verify by experiencing the diverse listening levels that can be assumed. With that purpose, a classic strategy for diagnosis in coaching was developed: "the wheel of life", which served as a starting point to analyse the current situation in the students' diverse areas of life. Finally, they were able to visualise and experiment with the feeling of an already achieved aim.

The session's purpose was to motivate the students to reach their desired goals as future teachers, adopting the qualities, skills, competencies, and demeanours typically found in a coach. They could also observe the positive consequences stemming from the application of coaching tools in the education field, through their accomplished performance.

Next, the coach presented a journal that each student had to fill out individually. It was designed to encourage personal self-knowledge and improvement. It also allowed for self-awareness of their situation and their desired goals to reach. The activities were composed to foster action and aim for better results. The students were invited to formulate objectives related to the academic area, which were drawn from their assessment after the diagnosis of their current situation.

This journal pursued several goals such as having better self-knowledge, reflecting on the events happening to themselves, reviewing, questioning, and expanding mental models or understanding the nature of change. Other aims were increasing the students' decision-making ability, finding the areas of life in which they want to conduct changes, deciding what they want to preserve, modify, erase, or include from their daily life.

Some other objectives when using this journal were appreciating creativity as a change factor, learning to formulate efficient goals and determining the current state of those goals, becoming aware of their current values, identifying their resources to establish an action plan, and discovering strategies to create action plans intended to fulfil a goal.

Finally, other intended goals of the journal were finding the factors preventing students to reach what they desired, embracing empowering beliefs, keeping a long-lasting

motivation, receiving insightful feedback regarding their change process, achieving their proposed goals, and celebrating accomplishments.

The journal gathers tools from different authors, such as some coaching classics "*Powerful questions*", "*Wheel of life*" by Meyer [39], "*Values audit*", "*Sponsorship*" by Dilts [40], "*Exploring myself*" by Wolk [41], and others, reinterpreting them in a didactic way so that they are attractive and suitable for the students participating in the exercise. Thus, some of the employed tools were action plan infographics, external locus-internal locus, motivational quotes, a zen tale, and an inspiration board by Aranda [42]. They were practical exercises (P), with a journal format, no timing, and not subject to revision by the professor or the coach who conducted the presential training. The students were suggested to do them at their own pace. During the introduction session, the students committed themselves to complete the activity journal, manifesting an acceptance level higher than 9 on a 1 to 10 scale. The participants' feedback was truly positive.

The journal included tasks such as creating a reflection, leading students to focus on a desirable and attractive yet realistic future; exercises to formulate goals with suitable success criteria; tasks to foster motivation for change; and listing the most important personal values in the present time or the discovery of the available resources to achieve their goals.

Other exercises within the journal were activities to establish an action plan concerning the postulated aims; tasks to understand which difficulties they could come across during the coaching process; exercises to detect limiting beliefs and internal saboteurs; an assumption of the importance of their mental states along this process; a self-evaluation of their activity completion procedure; and, finally, recommendations about other tools.

The experience concluded with the final performance assessment of the students. In fact, during the non-presential stage of the programme, another practical exercise was carried out (P4), which was not considered for this research because it did not fit rigorously with the initial and final evaluations. Thus, once the programme was finished, two more practical exercises were conducted (P5 and P6), which were this time included in this research as a final evaluation. These practical exercises had the same nature and exigence as the previous contrast tasks (P2 and P3), with the sole variations produced by the students' experience and, for the EG, the implemented intervention.

2.4. Procedure for Data Collection

We carried out a combined assessment. On the one hand, the teacher assessed the final quality of the practical exercises submitted by the different groups and their presentation in class. The teacher paid attention to the cohesion and coordination of the group shown in their work; the commitment observed by all and individually; the adequacy of the previous effort, according to a rubric previously agreed with the students; the process of elaborating the work; and its final evaluation. The students in their group also undertook a self-evaluation of their work and elaboration process among their peers in their work group and the presentation in class. The other groups of students in the class also assessed their work. This evaluation process was previously validated and carried out through an ad hoc platform [43–45].

The data on the evaluation of the practical exercises were compiled from the assessment of each activity completed by the groups, which were marked from 0 to 10. The practical exercises involved each group in their practical session of the subject in question studying a series of practical case contents. These contents were previously explained in the theoretical session for the subject and entailed studying the content and searching for new ones to do the practical case. Upon completion, the participants presented their practical work for 7 min to the rest of their peers and subsequently handed it to the teacher. There was a total of 6 practical exercises during the entire course, corresponding to each of the 6 didactic units of the course.

The intervention lasted a month. After the on-site session or coaching workshop, the students wrote in their coaching journals during their self-learning time. A professional coach with specific training and experience oversaw the intervention and created the hybrid programme in collaboration with a team of collaborating professors. This programme consisted of 22 activities, such as those mentioned above, recognised for their effectiveness in academic coaching processes and adapted to university students. Each student had to carry them out autonomously but with the tutoring of the coaching expert to overcome possible difficulties, and under the supervision of the university professor, to guarantee their completion. Meanwhile, in the on-site sessions on this subject, they continued practical 4. Therefore, this activity stood on the sidelines of the research, as stated. Practice 1 was also left out of the evaluation as it was the first practice, which was regarded as a mock practice.

As the experimentation involved human subjects, although they were of legal age, special attention was paid to the ethical dimension of the research. Every single student in the sample voluntarily participated in the study. The study complied with the ethical standards for this sort of investigation (data protection, confidentiality, and approval by education authorities). Since it was a research study sponsored by the University of Granada, we followed every protocol, from the voluntary nature of the initial participation and later withdrawal to the anonymity and protection of the collected data. These guidelines are available on the university website [https://secretariageneral.ugr.es/pages/proteccion_datos] (accessed on 10 June 2022).

2.5. Data Analysis

After the average marks were gathered in an Excel chart, they were exported to the programme SPSS, where they were submitted to the appropriate analyses, according to the nature of the data and the objective of the research.

We carried out descriptive and inferential analyses. At first, we obtained frequencies, average values, and percentages for both groups, according to the measure of the variable. To analyse the differences between groups (experimental/control) and between stages (before/after), we employed the Student's *t* and the ANOVA of a factor. Through Cohen's *d*, we quantified the magnitude of the effect. We also performed the corresponding post-hoc comparisons (Tukey's HSD).

3. Results

The obtained results were presented with the analysis of the assessments by the involved professors, on the one hand, and those of the participating students, on the other hand.

3.1. Professors' Analysis

Table 2 shows that there are no differences among the first practical exercises (initial evaluation) of the CG (P2 and P3) or for the last ones (P5 and P6, final evaluation), according to the Student's *t* values for the same sample, reflected in Table 2. Nonetheless, there are differences between the means of the two initial practical exercises (M_1) and the final tasks' means (M_2), displaying the slightly higher average marks of the latter, even though their effect size is moderate ($d = 0.73$). Moreover, the differences among the four assessment sets (P2, P3, P5 and P6) did not reach statistical significance, reflected in the ANOVA (*F*) of a factor in the bottom row of the table. Thus, there was only one homogeneous set for all the average marks.

Table 2. Average marks in practical exercises assigned by professors to students in CG.

| Ratings Groups | Pre-Test Practical | | | | Post-Test Practical | | | | t (M_1–M_2) | d (M_1–M_2) |
	P2	P3	M_1	t	P5	P6	M_2	t		
CG1	6.5	7	6.75		6.75	6.5	6.63			
CG2	7	7.25	7.13		6.5	7.75	7.13			
CG3	6	6.25	6,13		7.25	7.5	7.38			
CG4	7.25	6.75	7		7	7.25	7.13			
CG5	5.5	6.25	5.88		6.75	6.5	6.63			
CG6	7.75	7.5	7.63		7	7	7			
CG7	6	6.25	6.13		7.5	6.75	7.13			
CG8	6.5	6.25	6.63		6.75	6.5	6.63			−0.73
CG9	6	5.75	5.83		6.5	6.25	6.38			
CG10	5	5.5	5.25	−1.02	6.5	6.25	6.38	−0.41	−2.78 *	
CG11	4.25	5.25	4.75		5.75	6.5	6.13			
CG12	6.5	6	6.25		6.75	7	6.88			
M_3	6.19	6.33	6.28		6.75	6.81	6.79			
SD	0.97	0.69	0.81		0.44	0.49	0.38			
F	$F(3) = 2.47$ (a single homogeneous subset for all data)									

Note: CG = Control Group; P = Practical, M = Mean; t = Student's t; SD = Standard Deviation; d = Cohen's d; F = ANOVA; * $p < 0.05$.

Regarding the initial evaluation, the differences among the practical exercises of the EG were not statistically significant either. However, they were statistically significant, especially among the final evaluation exercises, and differences can also be found in the initial and final means, as can be observed in Table 3. The Student's t for the same sample points to this ($p < 0.05$), as does the effect size of the differences, which is high ($d < 0.80$) in the last rows. ANOVA completes this, establishing different groups considering initial and final evaluation. This is reflected in the bottom row of the table.

Table 3. Average marks in practical exercises assigned by professors to students in EG.

| Ratings Groups | Practical Pre-Test | | | t (P1–P2) | Practical Post-Test | | | t (P5–P6) | d (P5–P6) | t (M_4–M_5) | d (M_4–M_5) |
	P2	P3	M_4		P5	P6	M_5				
EG1	6.25	6.5	6.38		7.75	8.75	8.25				
EG2	7.5	7.5	7.5		8	8.75	8.38				
EG3	7	7.25	7.13		8.25	8.75	8.5				
EG4	6	6.5	6.25		8.5	9	8.75				
EG5	6.5	6	6.25		7.75	8.75	8.25				
EG6	6	6.25	6.13		8.5	9.5	9				
EG7	7	7	7		9	9.5	9.25				
EG8	7.5	7.75	7.63		8.75	9.25	9				2.92
EG9	7.25	7.5	7.38		8.5	9.5	9				
EG10	7.75	7.5	7.63	1.74	9	9.75	9.38	12.19 ***	1.70	9.57 ***	
EG11	6.75	7	6.88		8	8.75	8.38				
EG12	4.5	5	4.75		7.75	8.5	8.13				
M_6	6.67	6.81	6.74		8.31	9.06	8.69				
SD	0.90	0.80	0.84		0.47	0.41	0.43				
F	$F(3) = 35.46$ *** (Tukey: differences between P2 and P3 with P5 and P6, and between P5 and P6/Three subsets ($\alpha = 0.05$): (a) one for P2 and P3; (b) one for P5, and (c) one for P6)										

Note: EG = Experimental Group; P = Practical, M = Mean; t = Student's t; SD = Standard Deviation; d = Cohen's d; F = ANOVA; *** $p < 0.001$.

As a whole, it can be observed in Table 4 that even though the differences between the CG and EG were not statistically significant ($p > 0.05$) in their starting point (initial evaluation) they were indeed after their final evaluation ($p < 0.05$), as per the Student's *t* for independent samples; the effect size of the differences was high in this case ($d > 0.80$). Among other possible causes, and with the necessary caution required around pilot studies such as this one, it can be asserted that some of the previous changes and improvements could have been achieved due to the efficiency of the coaching programme. However, biases in results cannot be discarded, mainly resulting from intervening or odd variables that are hard to be controlled entirely, as stated in the limitations section.

Table 4. Contrast of average marks for the initial and final evaluation in the professors' assessment of CG-EG practical exercises.

		t (CG–EG)	*p*	*d* (CG–EG)
Pre-Test	Contrast of ratings between CG and EG in P2	1.26	0.222	0.51
	Contrast of ratings between CG and EG in P3	1.58	0.129	0.64
	Contrast of ratings between CG and EG in P2 and P3	1.04	0.195	0.56
Post-Test	Contrast of ratings between CG and EG in P5	8.45	0.000 ***	3.43
	Contrast of ratings between CG and EG in P6	10.59	0.040 *	4.98
	Contrast of ratings between CG and EG in P5 and P6	11.5	0.000 ***	4.68
F (P2, P3, P5 y P6)		$F(3) = 24.26$ *** (Tukey: differences between P2 and P3 with P5 and P6/Three subsets ($\alpha = 0.05$): (a) one for P2 and P3; (b) one for P5 and P6)		

Note: CG = Control Group; EG = Experimental Group; P = Practical; *t* = Student's *t*; *p* = *p*-value*: * p <* 0.05; *** *p* < 0.001; *d* = Cohen's *d*; *F* = ANOVA.

The changes point towards enhancing the evaluation of the two final practical exercises. These correspond to the post-coaching for the EG as opposed to their continuity for the CG, represented by Figure 2.
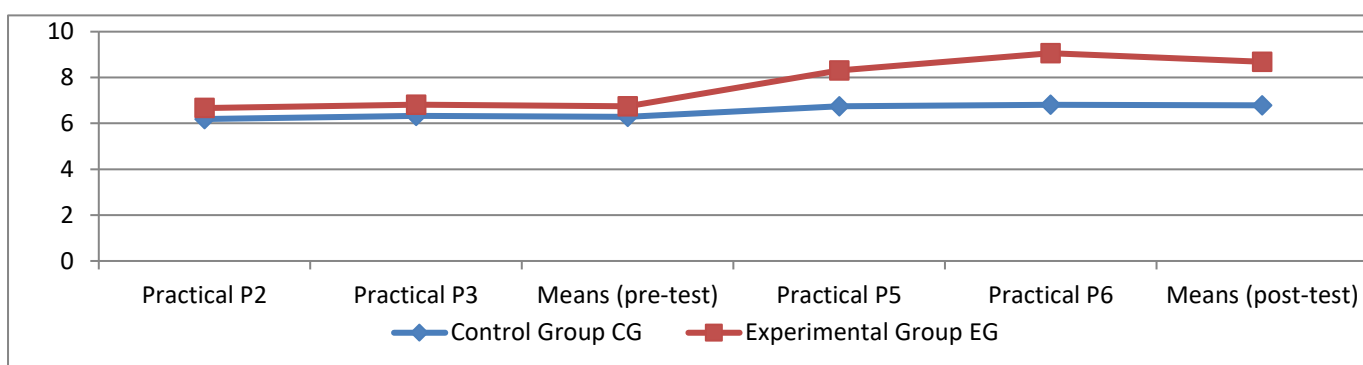

Figure 2. Average grade evolution delivered by professors for the initial (P2 and P3) and final evaluation (P5 and P6) of practical exercises.

3.2. Students' Analysis

After the CG data analysis, detailed in Table 5, we can assert that the timid advancement quantified by the respective means for each practical exercise is not statistically significant, neither between the initial two practical exercises nor between the final two ones; moreover, it is not even statistically significant between the means of both initial and final practical exercises, as observed in the calculation of the Student's *t* (final columns). When the four practical exercises were compared employing ANOVA (bottom row), their differences did not reach the predetermined statistical significance.

Just the opposite is true for the EG, where the Student's *t* analyses conveyed differences in the post-coaching average marks (between P5 and P6) and even more between the initial average marks (P2 and P3 mean) and the final ones (P5 and P6 mean). The penultimate column in Table 6 demonstrates this. In addition, the effect size is large, as shown in the last column. The ANOVA confirms such differences, and the post-Tukey's test traces its causes in the existing variations between initial and final practical exercises, establishing different subsets for each of them. Thus, statistically significant differences between the initial and final evaluation moments are confirmed (Table 6).

The set of global contrast analyses between CG and EG (Table 7) confirms the transforming effect of coaching once again; that is to say, despite there being no existing starting differences in any of the two initial practical exercises between CG and EG, there are indeed variations between the final practical exercises for both groups, as can be observed in Table 7.

Table 5. Average marks in practical exercises assigned by the students within the CG.

Ratings Groups	Pre-Test Practical				Post-Test Practical					
	P2	P3	M_7	*t* (P2–P3)	P5	P6	M_8	*t* (P5–P6)	*t* (M_7–M_8)	*d* (M_7–M_8)
CG1	6.88	6.7	6.79		7.5	6.88	7.18			
CG2	6.5	7.25	6.88		7.41	8.13	7.77			
CG3	8.88	7.51	8.2		7.58	7.5	7.54			
CG4	5.19	6.71	5.95		8.33	8.08	8.21			
CG5	6.38	8.04	7.21		7.91	8.5	8.21			
CG6	7.58	9.17	8.38		8	9.04	8.52			
CG7	8.38	6.67	7.53		7.58	8.33	7.92			
CG8	7.5	7.13	7.32		8.79	7.41	8.1			
CG9	8.17	8.21	8.19		8.5	7.54	8.02			
CG10	8.29	8.33	8.31	−0.52	8.21	8	8.11	0.35	2.14	−0.66
CG11	8.08	8.5	8.29		9.04	9.58	9.31			
CG12	9.08	8.67	8.86		8.38	9.17	8.78			
M_9	7.58	7.74	7.66		8.10	8.18	8.14			
SD	1.15	0.86	0.85		0.53	0.80	0.56			
F				$F(3)$ = 1.38 (a single homogeneous subset for all the data)						

Note: CG = Control Group; P = Practical; *M* = Means; *SD* = Standard Deviation; *t* = Student's *t*; *d* = Cohen's *d*; *F* = ANOVA.

Table 6. Average marks in practical exercises assigned by the students within the EG.

Ratings Group	Pre-Test Practical				Post-Test Practical						
	P2	P3	M_4	*t* (P2–P3)	P5	P6	M_5	*t* (P5–P6)	*d* (P5–P6)	*t* (M_4–M_5)	*d* (M_4–M_5)
EG1	7.08	6.08	6.58		9.08	9.29	9.19				
EG2	5.88	7.3	6.59		8.88	9.17	9.03				
EG3	6.58	6.96	6.77		7.54	8.79	8.17				
EG4	7.33	7.38	7.36		8.5	9.13	8.82				
EG5	8.21	8.54	8.38		9.04	9.67	9.36				
EG6	8.25	8.41	8.33		9.54	9.79	9.67				
EG7	7.58	6.88	7.19		8.88	9.33	9.11				
EG8	8.08	7.67	7.86		8.79	9.08	8.94				
EG9	8.46	8.5	8.48	0.45	9.29	9.38	9.34	3.49 ***	0.83	6.97 ***	2.07
EG10	9.40	8.71	8.86		9.41	9.54	9.48				
EG11	8.29	8.45	8.37		9.38	9.25	9.32				
EG12	8.38	8.54	8.46		8.88	9.08	8.98				
M_6	7.79	7.78	7.78		8.94	9.29	9.12				

SD	0.95	0.86	0.83		0.53	0.28	0.39

F	*F*(3) = 14.46 *** (Tukey: differences between P2 and P3 with P5 and P6/Two homogeneous subsets (*p* = 05): (a) one for P2 and P3; (b) one for P5 and P6)

Note: EG = Experimental Group; P = Practical, *M* = Mean; *t* = Student's *t*; *SD* = Standard Deviation; *d* = Cohen's *d*; *F* = ANOVA; *** *p* < 0.001.

Table 7. Contrast of average marks for initial and final evaluation in the students' assessments of CG-EG practical exercises.

		t (CG–EG)	*p*	*d* (CG–EG)
Pre-Test	Contrast of ratings between CG and EG in P2	0.51	619	0.19
	Contrast of ratings between CG and EG in P3	0.13	0.901	0.06
	Contrast of ratings between CG and EG in P2 and P3	0.32	0.751	0.14
Post-Test	Contrast of ratings between CG and EG in P5	3.84	0.001 **	1.58
	Contrast of ratings between CG and EG in P6	4.56	0.000 ***	1.85
	Contrast of ratings between CG and EG in P5 and P6	5	0.000 ***	2.03
F (P2, P3, P5 y P6)		*F*(3) = 19.05 *** (Tukey: differences between P2 and P3 with P5 and P6 / Three subsets (α = 0.05): (a) one for P2 and P3; (b) one for P5 and P6)		

Note: CG = Control Group; EG = Experimental Group; P = Practical; *t* = Student's *t*; *p* = *p*-value: ** *p* < 0.01; *** *p* < 0.001; *d* = Cohen's *d*; *F* = ANOVA

The differences within the EG lie in the fact that students significantly improved their average marks in comparison to the moment prior to the intervention (initial evaluation) with the post-coaching (final evaluation). This is opposed to the average marks from the CG, as shown in Figure 3, which contains the average mark advancement.
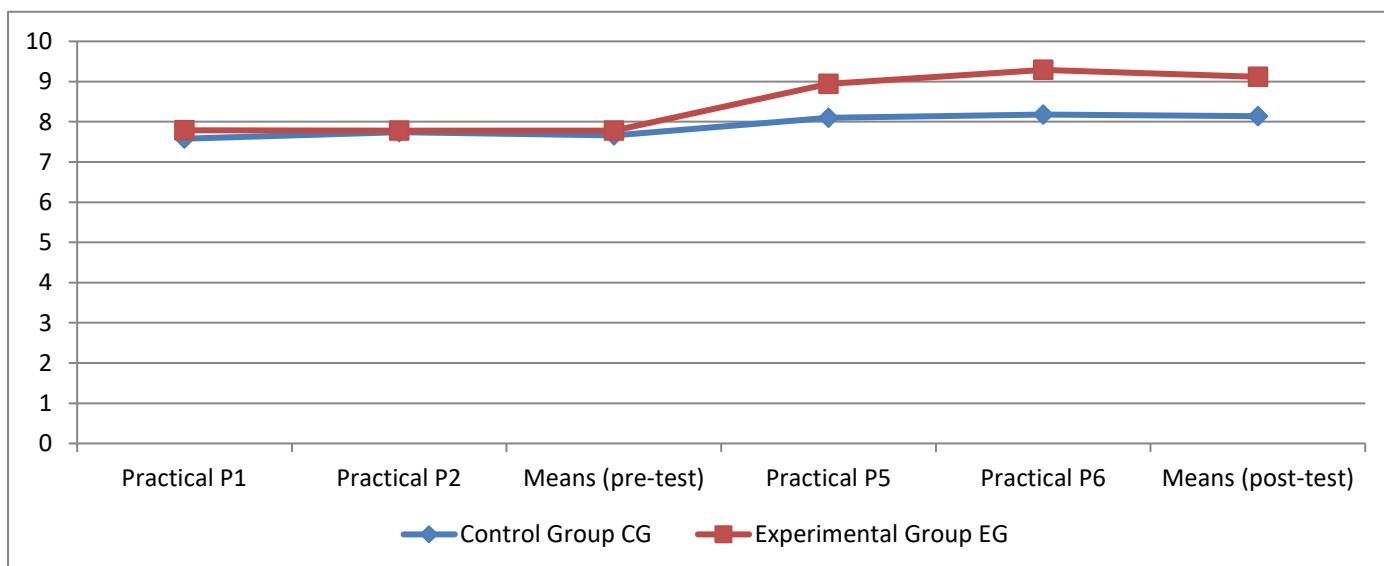

Figure 3. Average mark evolution delivered by students for the initial (P2 and P3) and final evaluation (P5 and P6) of practical exercises.

4. Discussion

To verify the efficiency of university coaching, we contrast the average results for the initial and final evaluations. In the experimental group, there was a comparison of the results achieved in the practices before and after the application of the programme. This contrast also included the control group to detect the impact of the coaching programme.

Coaching implementation experiences for this stage and especially in Spain are scarce. However, there are some such as those by Sanchez and Boronat [46] highlighting the benefits of coaching manifested by the coachees themselves.

In their worldwide bibliographic review on coaching between 2013 and 2017, Ramos, Sierra-Arizmendiarrieta, and Roces [47] barely identify one study on coaching for professors and just eight involving university students. This review highlights Polish research on university learning and teaching improvement. However, they also advise that this learning and teaching improvement is highly linked to the student attitude. Other studies emphasise the kindness of coaching in university tutorials for their contribution to the well-being and the comprehensive development of the students, making this more independent.

In other contexts, results can be found about distinctive improvements in university performance [48–50], as in the case of this research. Adams [48], through his literature review, and Fields [51], through multiple case studies, reveal the incidence of coaching in university students' performance outside the Spanish context. Nevertheless, it has not been effective in reversing students' decision to drop out of university [13] caused by an extreme lack of motivation and weariness. These issues could be mitigated through coaching seminars and attending individual university tutorials [52].

Outside the university field, there are results for middle education. This is perhaps the most chosen stage for being highly controverted. In this stage, we assume certain cognitive and mental maturity, which is crucial in the decision-making process, according to Ramos et al. [47]. Outside the educational field, after analysing coaching programmes for leadership in business organisations, the benefits of job performance in the business world are noteworthy.

In Spain, studies with academic purposes are rare compared to other countries [12,53], but their results are in line with those achieved in this research, as can be seen next. Sanchez and Boronat [46] employ the "strengths, weaknesses, opportunities, and threats" framework to emphasise the benefits and even supply an academic quantitative figure, which represents a 0.8-point increase in performance within the Spanish university context.

Domínguez, Cruz, and Ferrando [11], with the implementation of their programme "Coaching for Learning and Academic Success", obtained a high satisfaction level (91%) and observed an improvement of the students' academic competencies for 83% of the participants. Thus, these studies are in line with the findings stemming from this research.

There are several benefits to the programme which could have increased performance. Firstly, in the individual sphere: improvement of commitment, responsibility, involvement, initiative, motivation, self-learning, the proposal of personal goals, and planning and executing activities. These areas coincide with those highlighted in the research conducted by Rodríguez-Hidalgo et al. [29]: autonomy in learning, initiative, decision-making, and self-criticism, in addition to the recognition of human diversity in the classroom. They also match with studies conducted in other contexts: Purwa and Yulya [54] proved the benefits of coaching and mentoring in sundry facets, such as leadership and motivation. Becart [19] outlines the initiative, emotional intelligence, and self-determination of goals, and Barato and Rodríguez-Moneo [20] add self-regulation and the skill of learning to learn.

As for the social and interactive dimensions of the programme, it develops aspects such as respect towards the works of others, constructive feedback skills, internal dialogue, and communication among peers and with other individuals, both at a small group level (workgroup) and a large group level (class group). The perceived working atmosphere was good. This is essential for generating individual and group cognitive conflict and promoting meaningfully constructed and emotionally regulated learning. There was a total adjustment in the scheduling of deadlines and presentations of the activities. However, we could observe non-compliance with the deadlines (though not very

often) and some group conflicts (non-cognitive) within the activities in the CG. The Mexican research studies by Arzate [55] are on this line, as the authors point out that the social interactions in the classroom, the environment, the conduct, the responsibility, the self-efficacy, self-confidence, and self-regulation improved after a coaching programme.

However, in Arzate's research [55], the coaching programme did not influence academic performance that much. In Rodríguez-Pascual and Martínez research [56], however, the coaching programme contributed to the quality of the required work, as was the case in the present study. Other studies about coaching have highlighted its advantages, although not exclusively focused on the academic area like this one and, according to its research design, not due to coaching.

In a different context, in Indonesia, Purwa and Yulya's study [54] adds benefits to the communication and cooperative work and interactions between students. In the context of the present research, this study aligns with that of Rodríguez-Hidalgo et al. [29], where the optimisation of personal relationships, communication, teamwork, and decision-making process is proved.

5. Conclusions

We have worked on these dimensions, which we expect to have boosted the performance of trainee teachers. The potential added effect of this research is an aspect to be highlighted, since the self-perceived benefit and the good assessment of the programme could be extended to the future teaching careers of the participants in the study. Likewise, due to the apparent benefits of coaching in non-university education, it would be feasible to ponder whether the strategies developed in this programme are also efficient in non-university contexts. Being contrasted within other educational stages, known as educational coaching, and in other non-educational areas like sport or business coaching, this original study is intended to value the effectiveness of a university coaching programme in academic performance.

The practical implications of this research result in the potential benefits of university coaching in performance. If a minimum intervention, such as the self-coaching of this study could have these benefits, a more intense programme could have an even greater impact on the academic and professional performance of the students. Although in the present research paper, we only applied coaching in the higher education context, it promotes the institutionalisation of these programmes for their transversal implementation in academic curricula at all educational stages. The university coaching programme with trainee teachers, based on a mixed theoretical model of academic and systemic coaching and a selection of proven coaching activities, has been validated prior to its harmonised application in this programme.

Limitations and Further Research

The performance improvement in the students' works and presentations could be partly related to the programme since this enhancement is only observed in the EG. However, it could also be the result of biased assessments by the professors and students. Both were familiar with the aim of the programme. Despite this expectancy of the academic performance boost not being explicit, the professors were aware of it.

We did not prove the progress in the direct dimensions of the programme that could have influenced the performance improvement with certainty, i.e., in the responsibility, involvement, commitment, dialogue, and communication. All these areas have not developed in the same way. This requires further research on the direct efficiency of the programme to detect these repercussions in academic performance.

Concerning the observed circumstances on compliance/non-compliance with the deadlines and the presence or absence of personal conflicts, we cannot confirm that this is due to the programme; it might be due to other variables. This may be subject to another qualitative and quantitative study involving the ethnographical observation of the participants, group interviews (focus groups), and personal interviews (clinical).

It is convenient to delve into other aspects within this line of research to confirm whether the benefits of the programme could be obvious in the future teaching career of the participants. Thus, longitudinal research to collaborate with the participants before entering their last stage and at the beginning of their teaching career is necessary.

It would certainly be a good line of research because the participants could apply the acquired tools during the programme not only with themselves but also with their future students. In other words, they would be 'coachees' themselves and 'coaches' for their students, and they would apply coaching strategies with their future students, which undoubtedly requires intensifying the development of the previous programme.

The programme can be made suitable for educational institutions, as well as for its application. This needs joint reflection between experts and institutions and even qualitative methods based on Research-Action or Design-Based Research. This way, we can build a fully adapted programme with the maximum involvement of all participants.

Even though the research methodology employed is one of the most trustworthy and appropriate to check the accuracy of a psycho-pedagogical intervention, that does not mean that it is not exempt from limitations and the need for further research. Therefore, both aspects should be further researched with university students from other classes and specialisation branches, as well as from different contexts and educational stages, to increase the methodological corpus for educational coaching. In addition, there also are limitations intrinsic to the assessing phenomenon: the development of other dimensions, such as motivation, commitment, responsibility, coexistence, and effort, among others, could mislead the assessing agents about the academic progress involved in university performance. Hence, this could be measured with more objective instruments. Participants might feel they have improved because of the intervention, as might professors, because of sheer involvement in the coaching intervention.

Limitations, therefore, appear inherent to the development of data collection, in which average results from professors and students of the participating stages are delivered. This assessment could be complemented by that of other professors and students not taking part in the experience and who may offer more objective data. There are also limitations due to the reduced intervention by the coach and the lack of continuous monitoring of the personal coaching process implied in the completion of the students' self-reflection journals. The individuality of the process is another shortcoming, given the proven advantages of reflective university peer coaching, for instance, in paired [8] and collaborative work; both are considered complementary to the traditional professor-centered coaching approach. Limitations also exist due to the complexity of the coaching process in the university context, as noted by professors Sanchez and Boronat [46], which certainly requires specific training [57].

Despite the possible incidence of rare variables, the programme has clearly achieved its main objective: enhancing the performance of trainee teachers along with further benefits in other dimensions. We advise setting up coaching programmes such as the one in this article. The training has additional benefits for the future pupils of the trainee teachers who took part in this study.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Ethics Committee of University of Granada for studies involving humans.

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

Data Availability Statement: NO DATA AVAILABLE ON THE INTERNET.

Conflicts of Interest: Patents: Both the multiple assessment models used (hetero-assessment, self-assessment, co-assessment) and the digital platform used (PLEVALUA) are duly registered by the authors. Furthermore, institutional permission and informed consent of the students for their use have been obtained. There is no conflict of interest in this regard.

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