

# Possibilities and limitations of formative assessment in Projects Oriented Learning

## Posibilidades y limitaciones de la evaluación formativa en los Proyectos de Aprendizaje Tutorados

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## Abstract

As Formative and Shared Assessment (F&SA) and significant learning are given scant attention in physical education (PE) subjects in the Primary School Education Degree course, there is a need to analyse the students' perception of the possibilities and limitations of F&SA in the context of an educational proposal based on Project Oriented Learning (POL). A methodological approach was used for the study, carried out by means of a Likert scale questionnaire, which was quantitative while the scope was descriptive. The study was carried out on a sample of 651 students between 2014 and 2020. The results show that the students considered the F&SA approach useful for improving their acquisition of professional skills and the development of functional and meaningful learning. They also thought it was necessary to strengthen the negotiation of this assessment at the beginning of the subject and that a stable and experienced teaching staff was required to carry out this type of project. From the results we concluded that students should be given a voice in these possibilities and limitations to improve their own teaching practice in the area of PE in the Early Childhood Education Degree course, as it would help them to feel qualified to teach this discipline in their future professional careers.

**Key words:** Higher Education, feedback, experiential learning, teacher education.

## Resumen

La Evaluación Formativa y Compartida (EFyC) y los aprendizajes significativos son deficitarios en asignaturas de educación física (EF) en el Grado en Educación Infantil, por lo que es necesario analizar la percepción del estudiantado sobre las posibilidades y limitaciones de la EFyC llevada a cabo en una propuesta educativa, a partir de un Proyecto de Aprendizaje Tutorado (PAT). El enfoque metodológico es cuantitativo y el alcance descriptivo, utilizando como instrumento un cuestionario tipo Likert. La muestra es de 651 estudiantes, desde 2014 hasta 2020. Los resultados reportan que los y las estudiantes consideran muy favorable este sistema de evaluación para la mejora de la adquisición de competencias profesionales y el desarrollo de aprendizajes funcionales y significativos; pero es necesario fortalecer la negociación de evaluación al inicio de la asignatura y se requiere de un profesorado estable y con experiencia para llevar a cabo esta tipología de proyectos. Como conclusiones, es necesario dar voz al estudiantado sobre estas posibilidades y limitaciones para mejorar la propia práctica docente en el área de EF en el Grado de Educación Infantil, favoreciendo la sensación de sentirse capacitados para impartir esta disciplina en un futuro profesional próximo.

**Palabras clave:** enseñanza superior, retroacción, aprendizaje por experiencia, formación de profesores.



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## Introduction

Higher Education in Spain has been influenced for the last twenty years by documents such as the Bologna Declaration, The Berlin Communication (European Higher Education Area, 1999 and 2003) and the Framework Document "Integration of the Spanish University System in the European Higher Education Area" (MEC, 2003), all of which have impelled educational study plans towards a curriculum of competences and improved both the teachers and students' roles in the teaching-learning process and evaluations (OECD, 2002; Perrenoud, 2004). However, it must be said that university teachers in general have a pessimistic perception of the impact of the competences approach and of its improvements to their educational practices. In addition, the efforts made have not always brought about the expected structural changes (López-López et al., 2018; Solá, 2020). In the opinion of Barba-Martín et al. (2020), teachers consider that the Bologna Plan has not achieved all the intended changes and blame this on the large student numbers and on the deficient teachers' permanent training, which points to a requirement for a study of the possibilities and limitations of developing this approach in Spanish teachers' initial training.

Early Childhood Education is organised into three areas, in which Area 1 refers to "Knowing oneself and personal autonomy" (Orden ECI/3960/2007). According to this document, teachers should program and propose both everyday activities and didactic proposals at specific times in the PE areas in early childhood education. These initiatives include those that encourage learning through the body and movements from a universal and transversal perspective (Martínez-Mínguez et al., 2017). However, the reality in educational centres shows that early childhood teachers do not feel they are sufficiently well trained in practice to give these classes and so other profiles are sought to carry them out. This situation leads us to reflect on the right type of initial training to make them feel better trained in the PE area. Some of the possible causes could have to do with the type of contents, competences, methods and evaluations used in subjects related to PE in early childhood schools.

According to Zabalza (2002), one of the reasons for not obtaining the expected results in Higher Education is related to evaluations, as they have a strong influence on the students' learning process. Evaluations should be used as a strategy to improve and encourage the educational experience from the beginning to the end of the training process (Romero-Martín et al., 2014). Evaluations are thus one of the aspects that should impel students to learn and imbue them with a desire to improve, while keeping them continually up to date with their progress, not only at the end of the process (López-Pastor, 2009; Zabalza 2002). This involves changing from an "evaluation of learning" to an "evaluation to learn" (López-Pastor, 2009), and even an "evaluation as learning" (Torrance, 2007), as a

good evaluation may be the best educational activity. For Álvarez (2008), learning-oriented evaluations should be based on three fundamental aspects: they should present evaluations as learning tasks, involve the students in the evaluation and offer the results as a type of feedback.

For Hortigüela et al. (2016), using open participatory methods gives the students a greater role in their own learning process and helps them to acquire a more positive perception of its transfer. Gallardo-Fuentes et al. (2018) also report increased student self-perception of the improvement of their professional competences by means of formative and shared evaluations (F&SE). Along the same lines, some authors consider that active methods and formative evaluations have a positive incidence on increasing the students' learning levels (Barrientos et al., 2019; Brown & Glasner, 2000; Colomer et al., 2018) and empowering authentic and significant learning (Martínez-Mínguez & Flores, 2014). López-Pastor (2009) considers formative evaluations to be the same as any evaluation whose principal aim is to improve the teaching-learning processes in which it is contained. An increasing number of authors indicate the importance of applying a formative character to evaluations (Galván & Farías, 2018; Valvanuz & Salcines, 2018) against the traditional view of them as summative and finalist (Brown & Glasner, 2000; López-Pastor, 2009; Zabalza 2002). The specialised literature contains many examples of successful applications of F&SE in the initial teacher training phase (Barba-Martín et al., 2010; Barba-Martín & López-Pastor, 2017; López-Pastor & Pérez-Pueyo, 2017; Gallardo & Carter, 2016; Knight, 2005; López-Pastor, 2008, 2009, 2012; Martínez-Mínguez, et al., 2019; Romero-Martín et al., 2017). Other studies deal with the transfer between using F&SE in initial teacher training and when the students start out on their professional careers as teachers (Hamodi et al., 2017; Molina & López-Pastor, 2017, 2019). Barrientos et al. (2019) point out that applying F&SE and/or Evaluation to learn systems makes students take PE more seriously and teachers better organize their teaching processes.

Some researchers consider it is becoming increasingly necessary to apply formative, varied and continuous evaluation systems (Gómez & Quesada, 2017; Hortigüela et al., 2019), which can be understood as a new evaluation culture (Rust, 2007), a culture that integrates evaluations as part of the formative process giving students an active and autonomous role as a guarantee of empowering learning (Maureira-Cabrera et al., 2020).

Diverse authors recommend giving participation to all the agents involved in the evaluation process and making use of self-evaluations and co-evaluations (Lin & Lai, 2013; Medina-Rivilla et al., 2013; Rodríguez et al., 2011) in the compilation, application and evaluation of instruments and results to achieve more intense teaching throughout the entire formative process. Formative assessments require diverse activities and comprehensive data-collecting systems of students' progress that allow fair, correct and precise value

judgements to be made (López-Ruiz, 2011). According to García-Sanz (2014) these instruments should satisfy the principles of instrumental and multi-varied triangulation.

The choice of alternative types of evaluation (continuous, final or mixed, and self-assessment, co-assessment and dialogued assessment) creates a link between formative evaluations and responsibility, implication, participation and control of the students' learning (Aparicio-Hergueras, et al., 2021; Falchikov, 2005; López-Pastor, 2009; Molina et al., 2020; Vallés et al., 2011). In this regard, Cano (2012, 16) considers that "It is interesting to diversify the agents involved in the evaluation so that the students can participate and put possible strategies for self-evaluation and evaluation between equals into action." If the aim is to find out the results of applying the competence approach in Spanish Education we must give students a voice and analyse their perceptions.

When different agents intervene in the evaluation process they are obliged to understand, know and coordinate with each other (Martínez-Mínguez et al., 2019). Panadero et al. (2019), in a study that explored evaluations in the current Spanish Higher Education, concluded that evaluations between equals and self-evaluations were not normally used. For Martínez-Mínguez et al. (2019) this situation would improve if teachers and students were to be given better training for their reflective and critical capacities, with the support of the Administration (Zapatero et al. 2018).

Another key factor that can influence the possibilities and limitations in the expected structural changes through the new curriculums for competences is the methodology used. This is a key factor for developing effective, systematic, functional and significant learning activities, while giving students relevant competences for their future professional careers (Peñarrubia-Lozano, et al., 2021) and favouring a transforming learning model.

Diverse active methodologies have been used in Higher Education, such as Learning-Service, designed to improve the quality of the learning process in the educational community (Martín et al., 2018) and Project Oriented Learning (POL), which were given in the primary PE area and in the opinion of López & Vicente (2015), López-Pastor et al. (2020) and Martínez-Mínguez et al. (2020) are good practice as a methodological activity. For Álvarez (2008), the POL have three characteristics: i) they allow the students to learn autonomously in different scenarios supervised by a teacher, ii) their learning principle is based on "how to do" and develops professional skills and competences, and iii) the students are responsible for their own learning, although the teacher can be called on if required. The POL are based on cooperative learning to promote the acquisition of generic professional competences, leadership, self-sufficiency, a critical capacity and communicative skills (Barba et al., 2012), also values like fairness, solidarity, responsibility and cooperation (Guilarte et al., 2008). Current research

on the POL in the Teachers' initial training reports that students perceive an improvement in their professional competences (Barba-Martín, 2017; López-Pastor, et al., 2020; Molina et al., 2022; Martínez-Mínguez et al., (2022) and also have greater satisfaction, since they consider these to be effective experiences that can be transferred to their professional careers (Molina et al. 2022). According to Manrique (2017), their learning autonomy is also improved, as are their strategies for programming and searching for information.

The POL are based on a formative assessment whose principal aim is to improve the learning-teaching processes in which they are contained (López-Pastor, 2009) while promoting authentic learning (Barba-Martín et al., 2010). The assessment should be part of the training process with continuous feedback to inform students of the point of the learning and competence acquisition process they have reached (Cañadas, et al. 2018; Martínez-Mínguez & Flores, 2014). Some studies report students' satisfaction with POL co-assessment through the feedback received (Martínez-Mínguez et al., 2019), or in general (Galván & Farías, 2018; Gómez & Quesada 2017; Valvanuz & Salcines, 2018).

In the study by Martínez-Mínguez et al. (2020) the students reported that the POL require intense and constant attention although they are well balanced as regards theory and practice. They also considered the formative assessment and the feedback received in this type of project to be good for acquiring professional competences. Authors such as Nieva et al. (2020) state that the students consider that the greatest benefit to their learning comes from the feedback received, as it makes them reflect, learn from their mistakes and be more aware of the quality of their learning.

Some studies on university teachers who teach from the perspective of the formative shared assessment, for learning and as learning, have a positive opinion in general, even though it involves much dedication and effort, but these are balanced by the results obtained (Colomer et al., 2018; Hortigüela et al., 2019; Nieva et al. 2020; Romero-Martín et al., 2014). It is thus of interest to study the possibilities and limitations of this type of assessment and its effects on the competences acquired by students in early childhood PE subjects to make them feel sufficiently well prepared to give classes in Area 1 of the curriculum through practical sessions.

The aim of the present study was thus to analyse the students' perception of the possibilities and limitations of formative shared assessments in improving the learning process by means of an active participative methodology in the area of early childhood school PE.

## Methodology

The study was carried out within a positivist paradigm, giving a scientific character to education by measuring real observable things or data in the social sciences and

discovering the relationships between the facts (Bisquerra, 2014; Latorre et al., 2003).

The methodological focus was quantitative, using the support of small qualitative notes through a design embedded in a dominant quantitative model (Hernández et al., 2014).

Creswell (2009, 188) states that "... more information can be obtained from a combined quantitative and qualitative study than from either form alone", since it provides a greater understanding of the reality studied.

The scope of the study was descriptive and was based on a review of the literature from the perspective of its objectives. The aim was to specify the important properties and characteristics of the subject analysed by specifying the characteristics of the groups, processes, objectives or phenomena analysed (Hernández et al., 2014).

### Contextualisation

The study involved a subject included in the area of PE entitled "Corporal and Psychomotor Education", a

compulsory subject in the fourth year of the Degree in Early Childhood Education at the Educational Science Faculty of the Autonomous University of Barcelona (AUB). The results were obtained during the period between the 2014-15 and 2019-20 academic years, with the exception of 2017-18, which was omitted due to a lack of data because the subject participated in a research project in which the POLs were not analysed.

The EF&C activity is carried out during this subject through a POL known as the Co-Tutored Psychomotor Learning Project in which groups of five students must design and carry out a psychomotor session first with their classmates and then with pupils in a school. The evaluation is by means of hetero-assessment, co-assessment and self-assessment.

Table 1 gives the details of the F&SA instruments in the order in which they were used in the project.

**Table 1.** Description of F&SA instruments in the POL

Evaluation Instrument	Description	Assessor
1st Scale of Professional Psychomotor Self-Assessment Competences	Allows students to self-assess their professional psychomotor competences.	S
2nd Rubric: theoretical explanation of psychomotor competences	Assesses specific aspects of psychomotor content: concepts, evolution of content and methodology	S; U; C
3rd Practical teaching assessment guide for university sessions	Assesses key elements of teaching role in a Psychomotor session	U
4th Hypothesis of practical university session	Considers and anticipates possible practical events in a university session	S; C
5th School assessment session guide	Assesses key elements of Psychomotor session adapted to a real context	P
6th Hypothesis of practical school session	Considers and anticipates possible practical events with children	S; P
7th Rubric: explanation of POL and documentation of Psychomotor session with children	Assesses key aspects of POL and documentation of Psychomotor session with children	S; U; C
8th Scale of Professional Psychomotor Self-Assessment Competences	This scale is repeated at the end of the project to identify competence changes acquired during the process	S

**Note:** (S)= Student; (U)= University teacher; (P)= Psychomotor teacher; (C)= Classmates (students).

### Sample

The sample was homogeneous (Hernández et al., 2014) as all the 650 participants were students of the subject analysed in the five academic years between 2014 and 2020 except 2017-18 for reasons beyond our control (see

Table 2). This allowed us to "focus on the subject under study or highlight situations, processes or episodes in a social group" (Hernández et al., 2014, 388).

**Table 2.** Study sample

Years	Participants	Sex		Age (average score)
		Women	Men	
2014-2015	108	106	2	24.14
2015-2016	137	134	3	24.42
2016-2017	118	115	3	24.14
2018-2019	148	145	3	22.56
2019-2020	140	134	6	22.89
<b>TOTAL</b>	<b>651</b>	<b>126.8</b>	<b>3.4</b>	<b>23.63</b>

### Instrument

A single data collection instrument was used in the study which was applied in five consecutive years entitled "A questionnaire on POLs as a Good Practice experience" (QTLPGPE). This was developed from the "Questionnaire on the methodology and evaluation in Primary Education PE" designed by the Formative and Shared Assessment Network in University Teaching and validated by Castejón et al. (2015).

The questionnaire containing 16 questions was answered after finishing the degree course. Two questions were selected that analysed the 11 items considered to be the most important to respond to the study's aim.

I.- Say whether you agree with the following statements in relation to the subject's assessment system:

- a) There is a previous, negotiated agreement of the assessment system.
- b) It focuses on the project, on the importance of daily work.
- c) The student is more motivated and the learning process is more motivating.
- d) The marking system is fair.
- e) It allows functional and significant learning.
- f) The theory and practice are interrelated.
- g) There is feedback and the possibility of correcting errors in documents and activities.

II) Indicate whether you agree with the following statements regarding the subject's method of assessment.

- h) The work dynamics are not well known, they lack habit.
- i) It needs to be previously understood.
- j) The work/credit ratio is out of proportion.
- k) It demands to participate in my own assessment (self-assessment).

Both questions were answered on a Likert scale of between 1 and 4 points (1= 0, 2= Little, 3= Quite a lot, 4 = Perfectly). "Don't know" or "Can't answer" were also possible.

For the qualitative data, an open question was analysed on the good practice learned from the TPL included in the subject.

### Data analysis

The mean of the points (M) was used for the qualitative analysis of the two QTLPGPE questions, as it was the arithmetic average of a distribution (Hernández et al. 2014), the standard deviation (SD) and the average deviation of the points with respect to the average (Jarman, 2013). The averages and SD of the student sub-groups were also compared.

The quantitative analysis was carried out on the IBM Statistical Package for the Social Sciences (SPSS) Version 20, while the qualitative analysis of the open question was done on the Nudist N-Vivo 11R program. The qualitative responses were in the form of codified textual citations, indicating the participant's academic year.

The participants were previously informed of the study's aims and characteristics in accordance with the AUB's recommendations as regards their consent, the anonymity and confidentiality of the answers and the diffusion of the data.

### Results

Table 3 gives the quantitative results of both questions and their 11 items. Most of the statements are seen to have elicited favourable responses and have an arithmetic mean of more than 3 out of four, except for three questions with less than 2.5, which coincided with the three highest SDs. The arithmetic means of the different statements show some differences in the different years, although the overall mean and SD are very similar (higher than 3 and 0.8, respectively) and that the 2018-19 year had the highest mean (M= 3.28).

The data in Table 3 are then analysed according to the variables given in Table 4, which were divided by a deductive-inductive categorization process (Gibbs, 2012) into five groups: participation, learning process, motivation, creating instruments and time dedicated.

The relationship between the quantitative data obtained and the variables created is then described and complemented by qualitative contributions from the responses to the open question in the questionnaire.

**Table 3.** Average scores and standard deviation of both questions

Question	Total sample		Year		Year		Year		Year		Year	
	M	DT	2014-2015		2015-2016		2016-2017		2018-2019		2019-2020	
			M	DT	M	DT	M	DT	M	DT	M	DT
a	2.13	1.263	1.90	1.216	2.11	1.404	2.00	1.174	2.55	1.180	2.02	1.313
b	3.49	.654	3.34	.776	3.45	.594	3.45	.674	3.67	.552	3.49	.651
c	3.38	.678	3.29	.740	3.40	.601	3.26	.781	3.55	.621	3.33	.630
d	3.12	.76	2.93	.865	3.25	.677	3.07	.777	3.24	.731	3.10	.746
e	3.75	.464	3.68	.544	3.74	.458	3.66	.510	3.84	.389	3.82	.404
f	3.72	.513	3.66	.532	3.75	.466	3.59	.604	3.74	.525	3.80	.420
g	3.37	.821	3.10	1.098	3.62	.557	3.26	.871	3.48	.726	3.29	.749
h	1.95	1.164	1.76	.980	1.50	1.091	2.07	1.170	2.19	1.179	2.22	1.202
i	3.17	.785	3.07	.717	3.12	.763	3.15	.746	3.30	.819	3.21	.832
J	2.4	1.318	2.32	1.223	1.57	1.134	2.99	1.151	2.51	1.277	2.61	1.354
K	3.48	.761	3.45	.817	3.35	.801	3.36	.828	3.70	.530	3.49	.768
<b>OVERALL AVERAGE</b>	<b>3.13</b>	<b>.8</b>	<b>3.01</b>	<b>.84</b>	<b>3.07</b>	<b>.75</b>	<b>3.13</b>	<b>.81</b>	<b>3.28</b>	<b>.75</b>	<b>3.14</b>	<b>.8</b>

**Table 4.** Relation of study variables with statements on both questions in QTLPGPE questionnaire

Dimension	Variables	Questionnaire questions
Possibilities and limitations of the Assessment	Student participation in assessment	i; k
	Systematic, functional and significant learning process	b; e; f; g
	Students' motivation	h; c
	Student participation in compiling instruments	a; d
	Time required	j

### Variable 1: student participation in the assessment

The statements related to this variable in both questions were: k) *It demands to participate in my own assessment (self-assessment), and i) It needs to be previously understood.* In both, the answers have a mean greater than 3 out of 4 (M = 3.48 y M = 3.17, respectively), and confirm that self-evaluations are used in the POL and that there is a need to know the methodological and assessment process of the proposed experience from the beginning of the subject.

Some of the students' opinions that corroborate their perception of this variable are also given in relation to the POL assessment process. They also consider that the self-assessment allows them to reflect on what they have learned and what needs to be improved.

I would recommend it, since I consider that putting the documentations into practice is very effective for the self-assessment, for learning from one's mistakes, for realizing what you got right and for developing as an educator (student in 2016-17).

I think that at the beginning the activity was not very clear since we did not know much about the subject, even though everything was explained in the teaching guide. After doing it you realise that the activities are about self-criticism, self-assessment and a revision of everything you have done in the subject. I have no doubt that it is work, but work that involves you, it is whatever you want to put into it at whatever level of awareness and self-assessment you want (student 2018-19).

As this student has pointed out, the POL consists of a set of diverse activities presented at the start of the year and could give a sensation of puzzlement and misunderstanding. However, Item i) confirms that the students were able to understand the POL as a whole and one of the reasons for this perception could be that the subject is well organised and supported by the teachers.

I find the subject to be well structured and planned. The POL is a different type of activity but is very useful for practical and effective learning. It may be a lot of work at the beginning, but the guides, indications and tutorials with the teachers are a great help (student 2019-20).

It is a long activity that includes different areas that lead to a final objective. Also, as it consists of sub-activities it allows a learning process in which you gradually acquire the concepts and this is enriching, since in my case I could clearly see improvement and evolution (student 2019-2020).

### **Variable 2: systematic, functional and significant learning process**

All the statements referring to the formative and shared assessment of the learning process all are considered to be higher than 3.

Those considered best were *e) It allows functional and significant learning* (M = 3.75) and *f) It allows functional and significant learning* (M = 3.72). The third best evaluated was *b) It focuses on the project and on the importance of daily work* (M = 3.49), while the fourth was *g) There is feedback and the possibility of correcting errors in documents and activities* (M = 3.37).

The qualitative data confirmed that the POL and F&SA promote the acquisition of useful, necessary and lasting learning.

This is one of the subjects in the course in which I learned most and will be most useful to me in the future as a teacher. The type of subject involving a great deal of practice is really appreciated as much more is learned and more experience is gained (student 2018-2019).

This was the most significant activity that I have done throughout the course. I think that all the subjects should include activities of this type as they give us the opportunity to program things and put them into practice in a real group, seeing in a critical way what we have done best, what needs to be improved and what we must do to improve etc. (student 2014-2015)

In the opinion of the latter student, in Item f) the importance of knowing a real school context in which the theoretical and practical knowledge can be put into practice is highlighted:

It has made me see the reality of a centre of education, what psychomotor sessions are like, how to plan them and put them into practice at first hand (...) it allows you

to see and hear in a real experience all that you have learned in the subject (student 2015-2016).

I think that this activity is highly positive as it involves going to a school and putting a proposal made in the university into practice; very often, we don't know whether all we propose will work in a real context (student 2014-2015).

Finally, the students describe the importance of Item g) in the POL and F&SA. They considered it to be an experience with the significant help of their teachers that allows them to see the point they have reached in the learning process and what they must do to improve:

In the POL I saw the connection between the university and the school as really positive. The help from the teacher has been a great help and we got the sensation that it was one of the subjects in which we learned most, since we were actually involved in it (...) the help from the psychomotor educator was impeccable. The experience has made us reflect on many attitudes, both positive and negative, and even on attitudes we were not even aware of (student 2018-2019).

This is a very recommendable activity in which you can see your weak points as a teacher, also your limitations and what you need to improve. At the same time it helps you to see what a session is actually like and it makes you adapt all the session to the children's needs at all times (student 2014-2015)

### **Variable 3: students' motivation**

The results of Item c) *The student is more motivated, the learning process is more motivating* describes the students as involved in the development of the experience, as it has a mean of 3.38, while the results of *h) The work dynamics are not well known, they lack habit* obtained a score of less than 2 out of 4 (M = 1.95). Item h) may therefore indicate that using similar experiences to those in this subject is still not common in higher education.

The opinions found in these academic years describe the students as claiming more learning experiences like the POL, in which their personal involvement plays a relevant role:

I think that if more core subjects of this type were to be included in the course we would learn more and finish the degree course better prepared. Personally, I greatly enjoyed the POL (student 2019-2020).

Few subjects are so enjoyable and make you feel you have evolved and learned so much in such a short time (student 2018-2019).

I consider it a highly motivating activity as it is different to what we are used to (student 2019-2020).

### **Variable 4: student participation in creating the instruments**

The items referring to this variable were *a) There is a previous, negotiated agreement of the assessment system* and *d) The marking system is fair*. A value of 2 out of 4 was obtained for

a), showing a low perception of this previous agreement in the subject ( $M = 2.13$ ), since the teaching-learning activities and assessment were only designed by the teachers. However, in spite of this perception of a low consensus the students consider the mark to be fair with an  $M = 3.12$  (Item d).

The results of Item a) indicate one of the experience's limitations and the opinions expressed corroborate this perception:

I consider that the assessment rubrics should be designed jointly by teachers and students, possibly starting from an item compiled by the teacher, but allowing the students to select the items they consider to be the most important. (student 2019-2020).

The only aspect I would change is the assessment, since what is done in the session with adults is given a higher score than the one with children, and I personally performed much better in the school than at the university (student 2016-2017).

In spite of this obstacle, it can be seen from Item d) that the students were in general satisfied with the POL and F&SA as described in the following evaluations:

For me this was a completely new activity. In all my years as a student I had never been in this situation. At the beginning I was a bit lost, I didn't know where to start but in the end the members of the group gradually made their contributions and together we moved forward in the activity and at the end I was very satisfied with the result. I think it was one of the few activities I have done in the university that seemed to be really useful for my future career as a teacher (student 2018-19).

You need to give it a lot of time for everything to turn out well and you have to be meticulous about not leaving out any of the details and always keep the basic theory in mind. In spite of that, it was one of the most enriching projects I have taken part in during the course and I am happy with the result obtained both personally and as regards my training (student 2019-20).

### Variable 5: time devoted to the subject

Regarding the last variable j) *The work/credit ratio is out of proportion*, the participants said they found that the subject's credits and the time required to carry out the different exercises were not in proportion ( $M = 2.4$ ) and its SD is the highest of all the items ( $SD = 1.318$ ). These results could indicate that the students have an asymmetric perception of an excessive amount of work and time they need to devote to the POL.

In spite of being one of the activities that gave me most work during the course, it was also one of those I enjoyed most and I can say with certainty that we learned everything down to the last detail.(student 2019-20).

I think that it demands a lot of you. You have to devote many hours of working on your own but the final result is very useful and significant (student 2017-2018).

In these qualitative aspects, the need to change the subject from six-monthly to annual is considered, corroborating the perception of a high workload in the subject and that more time is needed to carry out the POL:

The only thing I would change is to extend this subject to an entire year because you have to do a lot of work in a short time (student 2015-16).

I think it is very useful and you learn a lot. I also think there is a lot of work to do for the number of credits in the subject. I think this amount of work deserves more credits (student 2018-19).

## Discussion

The results agree with those reached by Álvarez (2008) in that the formative assessment helps to acquire professional competences ( $M = 3.48$ ), promotes functional and significant learning ( $M = 3.72$ ) and strengthens the relationship between theory and practice ( $M = 3.75$ ), showing the highest means. They also agree with those made by Meyer (2002) in that the POL and its assessment provide the students with the right tools to solve the problems they will find related to the area of early childhood PE in their professional careers. These data are related to those given by Barba et al (2012), who associated the POL with teachers' work through generic and professional competences.

Regarding the variable participation of the students in the assessment, the results indicate that it helps to increase the critical and communicative capacity, as the students are required to participate in their own assessment ( $M = 3.48$ ), as Barba et al. (2012) pointed out when they refer to the generic competences such as leadership, self-sufficiency, critical and communicative capacity and their assessment by the POL.

The students reported satisfaction with the feedback received and the possibility of correcting mistakes ( $M = 3.37$ ), as in the studies by Gómez & Quesada (2017) and Valvanuz & Salcines (2018). This confirms that the F&SA improves the teaching-learning process with continuous feedback to inform the students about what point of the learning process and they have reached and the competences they have acquired (López-Pastor, 2009; Martínez-Mínguez & Flores, 2014). In agreement with Panadero & Lipnevich (2022), it is important that the information contained in the feedback is of good quality, adapted to the students' characteristics and can be useful to the learning process.

Romero-Martín et al. (2014) consider that the assessment should not be used only in the learning process but also as a strategy for the students' improvement and assistance during the entire formation process. In the present study, the students also considered that the POL focused on the process and gave a great deal of importance to daily work ( $M = 3.39$ ).

As regards limitations, in general few negative aspects were found, in agreement with the study by Gallardo-



Fuentes et al. (2018). One of the aspects that could be reviewed in our study is the aspect of the previous negotiation of the assessment process, which should be improved as it is closely related to the concept of the F&SA (Atienza et al, 2016).

Another limitation we found is related to the perceived imbalance between the credits awarded and the hours devoted to the subject. This is something that should be borne in mind in the future to improve the formative assessment of the POL. However, the studies by Gallardo-Fuentes et al. (2020) and Souto et al. (2020) consider that this imbalance is due to comparing competence subjects with others that have a traditional assessment system, since it has been shown that the actual hours spent by the students are in proportion to the subject's official credits.

Finally, with regard to the limitations, the tendency of the overall arithmetic means can be seen to rise gradually until the 2018-19 academic year and then fell in the final year, although it was still higher than the previous years. This could have been due to a change in the teaching staff in the final year analysed. In complex subjects such as the F&SA and POL stability and experience are required in the teachers to understand the different phases in this learning and assessment process.

## Conclusions

In conclusion, this study responded to its main objective of analysing the possibilities and limitations of the F&SA to improve the significant and functional learning process of PE in the Early Childhood Education PE degree course.

The helpful aspects perceived by the students in the F&SA are as follows: it increases their participation in the evaluation process (by self-evaluation and co-evaluation) and their awareness and understanding of the assessment process required in their learning; it closely resembles a school's educational reality by means of the POL; it increases their motivation and involvement in their PE formative process; and makes them aware of the positive effects of a constant and continuous work effort throughout the subject.

As regards its limitations, there was no previous negotiation of the subject's assessment system, although the students consider it to be fair and are aware of the point they have reached in the learning process at all times in the POL. In this perception, the feedback they received from the teachers and the quality of the different instruments played key roles throughout the duration of the subject.

The results indicate that the F&SA provides the students with the basic competence tools in early childhood school PE. They also consider themselves to be qualified to confidently give practical corporal classes in their future professional careers.

Based on the significance of the analysed experience, it could be repeated in a future line of study or adapted to

other higher education courses in which the relationship between theory and practice is a relevant aspect of the learning process.

Missing out the 2017-18 academic year during the study period (2014-20) and changing the teachers of the subject in the different years were seen to be limiting aspects.

Finally, this study allowed the teachers of the subject to determine the methodological and assessment aspects that need to be improved, also those that should be maintained for the acquisition of the necessary professional competences in PE required by early childhood school teachers. As one of the students remarked:

I think that filling in this questionnaire is a good tool for knowing the pupils' opinion so as to be able to make changes to certain aspects to improve the experience in the subject. Not many subjects take the pupils opinions into account (student 2016-17).

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