

Formative and Shared Assessment and Feedback: an example of good practice in Physical Education in Pre-service Teacher Education

Evaluación Formativa y Compartida y Feedback: un ejemplo de buena práctica en Educación Física en la Formación Inicial del Profesorado

Miriam Molina Soria¹ 

Víctor M. López-Pastor¹ 

David Hortigüela-Alcalá² 

Cristina Pascual-Arias¹ 

Carla Fernández-Garcimartín¹ 

¹ Faculty of Education of Segovia, University of Valladolid, Segovia, Spain

² Faculty of Education, University of Burgos, Burgos, Spain

Correspondence:

Miriam Molina Soria,
miriam.molina@uva.es

Short title:

F&SA and Feedback: Good practice in PE in PTE

How to cite this article:

Molina, M., López-Pastor, V. M., Hortigüela-Alcalá, D., Pascual-Arias, C. & Fernández-Garcimartín, C. (2023). Formative and Shared Assessment and Feedback: an example of good practice in Physical Education in Pre-service Teacher Education. *Cultura, Ciencia y Deporte*, 18(55), 157-169. <https://doi.org/10.12800/ccd.v18i55.1986>

Received: 31 November 2022 / Accepted: 12 January 2023

Abstract

This research aimed to: (1) analyse how Formative and Shared Assessment helps students' acquisition of competences according to their self-perception in Physical Education in Pre-service Teacher Education; and (2) verify how Formative and Shared Assessment systems help to improve students' academic performance. A longitudinal study was carried out over five academic years with a sample of 401 students in a Physical Education subject in Early Childhood Pre-service Teacher Education. Three self-perception scales of student competences, an anonymous questionnaire on the assessment of the subject and the final report cards of the subject were used for data collection. Descriptive and inferential statistical analysis was carried out. The results show that there were significant differences in the self-perception of competences between the beginning and the end of the subject, mainly in those specific to physical education; both students' and teachers' satisfaction with the assessment was high and that the chosen assessment method seems to have a strong influence on students' academic performance.

Key words: Feedback, Formative Assessment, Shared Assessment, Physical Education, Pre-service Teacher Education.

Resumen

Esta investigación tiene como objetivos: (1) analizar cómo la Evaluación Formativa y Compartida ayuda a la adquisición de competencias de los estudiantes según su autopercepción en Educación Física en la formación inicial del profesorado; y (2) comprobar cómo los sistemas de Evaluación Formativa y Compartida ayudan a mejorar el rendimiento académico de los estudiantes. Se realizó un estudio longitudinal durante cinco cursos académicos con una muestra de 401 estudiantes de una asignatura de Educación Física en el Grado de Maestro en Educación Infantil (formación inicial del profesorado). Para la recogida de datos se utilizaron tres escalas de autopercepción de las competencias de los alumnos, un cuestionario anónimo sobre la evaluación de la asignatura y los boletines de notas finales de la misma. Se realizó un análisis estadístico descriptivo e inferencial. Los resultados muestran que hubo diferencias significativas en la autopercepción de las competencias entre el inicio y el final de la asignatura, principalmente en las específicas de educación física; que tanto la satisfacción de los estudiantes como la de los profesores con la evaluación fue alta y que el método de evaluación elegido parece tener una fuerte influencia en el rendimiento académico de los estudiantes.

Palabras clave: Retroalimentación, evaluación formativa, evaluación compartida, educación física, Formación Inicial del Profesorado.



This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

Introduction

Before starting, it is necessary to clarify several concepts. According to García et al. (2021) Formative Assessment is:

The cyclical process by which students and their teachers monitor, collect and process information in order to arrive at results that allow judgements and decisions to be made about learning. The information obtained can be used as feedback for each student to activate internal processes and self-regulate their learning (p. 46).

On the other hand, Fraile et al. (2021) consider that Formative Assessment seeks to favour the learning of students and teachers, through becoming aware of their practice. López-Pastor and Pérez-Pueyo (2017) define the concept of Shared Assessment as the dialogical processes that take place between the teacher and the student on the assessment of learning and the teaching-learning processes, normally based on previous processes of students' self-assessment or peer-assessment.

Formative and Shared Assessment (F&SA) do not necessarily go together, i.e., they can be two different assessment processes, sometimes connected and sometimes not. F&SA systems seek to improve student learning, teaching practice and the teaching-learning process, taking into account student participation in the assessment procedure (Boud & Falchikov, 2007; López-Pastor, 2008).

Pre-service Teacher Education (PTE) is the university training stage for future teachers. Researching the application of F&SA systems in PTE is important for several reasons (López et al., 2021): (a) the transferability between living F&SA systems in PTE and their application in future professional practice; (b) the advantages that the application of F&SA systems often has on the learning and academic performance of PTE students; and (c) assessment is a core professional competence in PTE. We will review this in more detail throughout this introduction.

In PTE is important to experience and experiment with assessment systems that are viable and replicable in compulsory education classrooms, in order to facilitate the transfer of knowledge between university and school (Heritage, 2007; Ropohl & Rönnebeck, 2019). Molina and López-Pastor (2019) find that there is indeed a transfer between the systems experienced in PTE and actual classroom practice. Lorente-Catalán and Kirk (2016) and Palacios and López-Pastor (2013) also consider that F&SA systems should be experienced in PTE if future teachers are to transfer this knowledge to their classrooms, and that F&SA systems are not the norm for universities to follow (Wanner & Palmer, 2018). However, Slingerland and Weeldenburg (2019) argue that there is a lack of transfer between the university and the reality of the classroom. This aspect has been defended for several decades; for example, Fullan (1991) claims that teachers tend to reproduce in their classrooms the methods they have experienced as students during their training.

Therefore, there is a need for a close relationship between PTE and F&SA systems. But why implement F&SA systems in PTE? Various studies (Dorit and Nirit, 2020; Leenknecht et al., 2021; López-Pastor and Pérez-Pueyo, 2017) corroborate the advantages of these systems for future teachers: (1) they help in the acquisition of competences; (2) they favour student autonomy; (3) there is a direct relationship between theory and practice; (4) there is active and meaningful learning thanks to constant feedback; and (5) they favour a more individual monitoring of students. In research by Gallardo et al. (2020) and Hortigüela-Alcalá et al. (2021) the authors defend the need to experiment with F&SA systems in PTE for several reasons: (1) because it is a specific competence that must be acquired during training; (2) because students learn more and better; and (3) because it increases students' interest, motivation and autonomy.

One of the reasons for F&SA systems is that they help students to acquire competences. The International Network of Formative & Shared Assessment in Education uses three self-perception scales of competences (transversal, teaching and specific to Physical Education (PE) teachers) that have been validated by Salcines et al. (2018) and used in several studies. For example, Amor and Serrano (2019), Castejón et al. (2018) and Gallardo et al. (2020) claim that F&SA systems help in the acquisition of professional competences. Other studies such as those by Cañadas et al. (2018) and Romero et al. (2016) go further, and state that this help in the acquisition of competences is due to the involvement of the student in their assessment process (self-assessments, peer assessments, etc.). Hortigüela-Alcalá et al. (2016), after analysing five PTE subjects that use F&SA systems, state that there is more acquisition of teaching competences in students who experience these systems compared to those who receive a traditional assessment based on constant marking.

Another reason is that F&SA systems seem to improve students' academic performance (Buscà et al., 2010; López-Pastor et al., 2012, 2013; Mastagli et al., 2020). However, assessing and grading are not synonymous. Grading does imply having an assessment process prior to the awarding of a numerical mark, whereas assessing does not necessarily have to be linked to a grading process (Hortigüela-Alcalá et al., 2019). In this regard, McDonald et al. (2000) argue that marking should be part of a formative assessment process, not only a summative assessment process.

Castejón et al. (2011) and Fraile et al. (2013) claim that F&SA systems influence academic performance due to the continuous monitoring involved, as well as the participation of students in the assessment process. In a study carried out in PTE, Molina et al. (2020) demonstrate a high success rate (97.3% pass rate) and good academic performance among students who opt for F&SA when taking the subject, compared to those who opt for other more traditional learning and assessment methods. In the

study by Romero-Martín et al. (2015), carried out with a large and representative sample from all over Spain (3,030 students and 46 teachers from 32 different schools), students consider the F&SA systems to be demanding, but are very satisfied with them and, above all, with the grade obtained at the end of the subject. López-Pastor (2008) presents an F&SA system in which the results highlight the improvement in students' academic performance due to the continuous feedback processes, because there are more corrections and more involvement on the part of the students.

Different studies can be found on student and teacher satisfaction with the F&SA systems; for example, in Romero et al. (2015) we find that both teachers and students are satisfied with the F&SA system carried out in the subjects. In Gallardo (2018) following a study on the effects of using F&SA processes in Chile, the results show that both students and teachers are very satisfied with the F&SA system carried out in the PTE subject. Similarly, the results of Souto et al. (2020) show that 82.2% of the students surveyed are satisfied or very satisfied with the F&SA system carried out in a PTE subject. In a study by Atienza et al. (2016) with 136 students analysing PTE student perception after the implementation of an F&SA system, the results show that students are very satisfied with the assessment carried out, because they are more motivated, they observe more fairness compared to other assessment systems and because they learn more and better.

Constant feedback plays a fundamental role in the improvement of the afore mentioned aspects. Feedback is the information that is provided for the improvement of student learning and serves to carry out evaluation processes. Hernández et al. (2021) considers that there are four types of feedback: (1) focused on the task; (2) focused on the process; (3) focused on self-regulation; and (4) focused on personal assessment. The same author argues that feedback can be given orally, written on paper or digitised, or by means of rubrics, and can be given individually, in small groups or to the whole class. Boud and Molloy (2013) advocate peer-to-peer feedback, which arises from interactive relationships among students, either as a planned class activity or spontaneously. But not all types of feedback work in all contexts. There is the need for a relationship between the exercise, the response and the type of feedback provided for it to have a positive effect (Hendry et al., 2009; Jang & Marshall, 2017; Jongho et al., 2021; Ngongo & Tistaert, 1984). According to Ketonen et al. (2022) feedback is a process in which both teachers and students are responsible, so in PTE the role of students in the feedback process must also be taken into account (also supported by Nicol et al., 2014). Likewise, Crichton and Valdera (2015) point out in their study that students consider feedback from their teachers and peers to be useful for improving their work and learning. Chan and Luo (2021) organised ten training workshops at Hong Kong University to improve teachers' competence in evaluation

and feedback; the results show that few teachers know how to distinguish constructive feedback, because teachers have different perceptions of feedback practices and use them for different purposes.

How can feedback influence F&SA processes? Lynch et al. (2012) conducted research with 47 students on the impact of feedback on self- and peer-assessment processes. The results show that the combination of self-assessment, peer assessment and feedback, seems to improve the quality of learning and critical thinking skills. Moreover, students prefer teacher feedback to peer feedback. However, the study by Nicol (2019) shows that student-to-student feedback has a greater impact on student learning than teacher feedback. This author claims that feedback among students develops their ability to think for themselves and become more autonomous and independent. This is true if the feedback is understandable, timely and with a commitment on the part of the students to improve. In a previous work, Nicol et al. (2014) claim that the benefits for students' learning come from receiving and producing comments in the form of feedback, because a cognitive and reflective process is produced, as well as an evaluative judgement. However, Gerardus et al. (2016) state that in higher education, students receive feedback in the form of written comments on exercises or tasks to be completed, but they believe that it is doubtful that these comments have an effect on their learning.

The gap in the literature on how F&SA and feedback systems influence the improvement of students' self-perception of competence in PE, as well as the use of these systems to improve academic performance, raises a number of questions for further research. In addition, the satisfaction of both students and teachers with F&SA systems is an under-researched topic. This is a really important issue for future teachers.

Therefore, the study poses two research questions: (1) to what extent does an F&SA system that generates continuous feedback processes improve students' self-perception of competences in PE in PTE; and (2) does the use of F&SA systems and continuous feedback processes influence students' academic performance in PTE and student and teacher satisfaction?

Method

Participants

Data analysed from five academic years of a sample of 401 students from a PE subject in the Early Childhood Education Degree of a Spanish public university (Table 1). The sample is composed of all students who took the subject during those 5 years.

The courses selected are those in which the subject has been taught by at least the same two teachers. Similarly, the F&SA system has not changed over the years.

Table 1. Study sample

Academic year	Students
2017-2018	87
2018-2019	90
2019-2020	68
2020-2021	81
2021-2022	75
Total sample of students	401

Design

A quantitative longitudinal study of a PE subject in Early Childhood Teacher Education course over five academic years was carried out to check if there were significant differences in the degree of acquisition of competences from the beginning to the end of the course.

Approval was obtained from the ethics committee CEICA (Research Ethics Committee of the Community of Aragon). C.P.-C.I.PI21/377.

This paper presents and analyses an example of good practice of F&SA and feedback in PE in PTE. There was constant feedback from the teaching staff to the students, both in the correction of documents of the learning activities assigned and during the face-to-face sessions of the subject. The organisation of the course was as follows: on the first day of class, the assessment and grading criteria were explained to the students, together with the assessment instruments that would be used throughout the course. Teachers provided three learning and assessment pathways, the choice of which was voluntary, and on the first day teachers explained the conditions and commitments of each pathway. The choice of each pathway depended on the students' responsibility, commitment and

compliance with the requirements, and each student chose which pathway he/she preferred to follow:

Continuous pathway: this pathway is based on a continuous, formative and shared assessment system, in which work and feedback are constant. The requirements are: continuous class attendance (only 15% of the lessons can be missed, and all of them must be duly justified), and the obligation to complete all the course work in due time and form.

Mixed pathway: this pathway follows the same evaluation system as the previous one, but the requirements and commitments of the students vary. Students may miss up to 50% of the face-to-face classes and are not obliged to hand in all the assignments, as they are voluntary. They are only obliged to complete the learning activity called Tutored Learning Project.

Final pathway: this route is offered because the university requires students to take a final exam even if they have not attended classes in person or have missed more than 50% of them. This route is based on a final and summative assessment, in which students have to take three final exams: one of a theoretical nature, another practical one and a defence of a Tutored Learning Project.

Figure 1. Percentage of students opting for each learning and assessment pathway

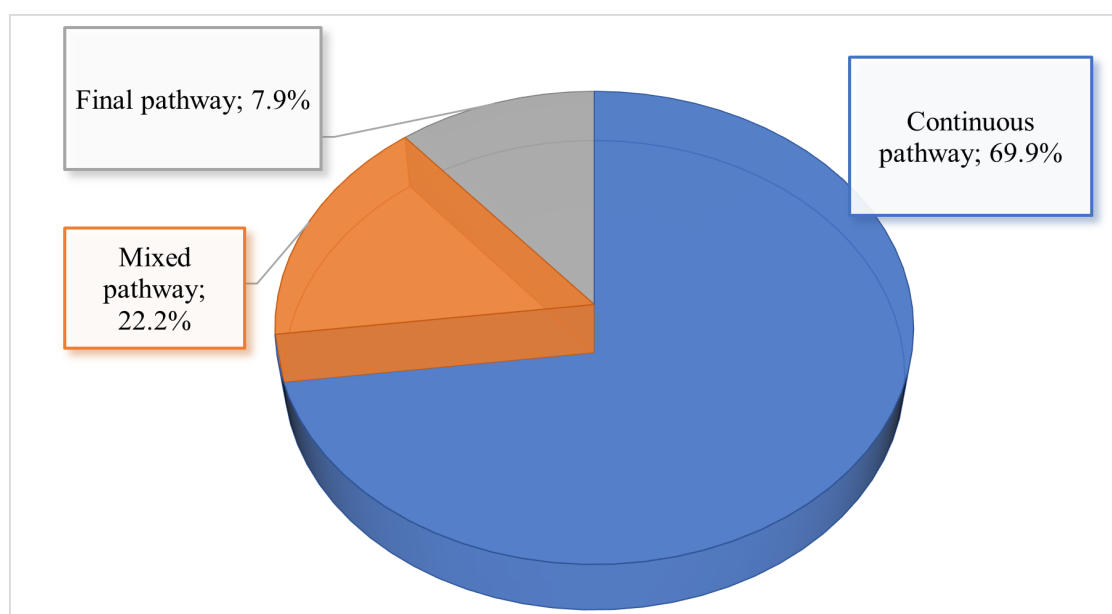
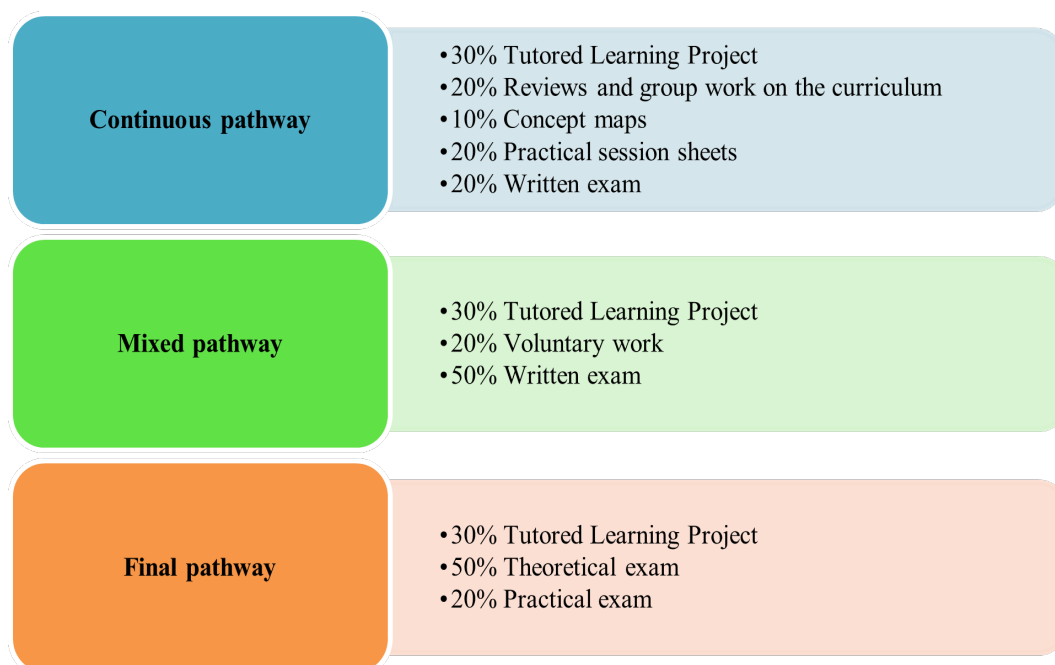


Figure 1 shows the percentage of students opting for each assessment method over the five years analysed. As can be seen, the majority of students opted for the continuous route (70%).

Figure 2 shows the weight of each activity in the final grade for each of the learning and assessment pathways, in percentages.

Figure 2. Weight of each activity in the final grade in percentages for each of the learning and assessment pathways



When students submit a learning activity to teachers, they have one week to correct it. Likewise, when teachers return the corrected activity with the necessary written feedback, students have one week to correct the document on the basis of the information received from the teachers. Feedback is also given during the development of all classes orally even when written documents are handed in, if it is considered necessary to have small meetings with the students to reinforce the written feedback.

Furthermore, on the first day of class, the teaching staff provides a timetable with the organisation of the whole course: theory classes, practical classes and seminars and dates for the delivery of all the learning activities. The learning activities of the subject and the assessment techniques and instruments used in each of them are listed in the following Table 2.

The experience has a high degree of transferability to other PTE contexts, with the logical contextual adaptation in each case.

Instruments

The data collection was carried out through three self-perception scales of competences: (1) transversal; (2) teaching; and (3) specific to PE teaching. These scales have been validated by Salcines et al. (2018), with a reliability of 0.992. A four-level scale is used: (1) Not at all; (2) Not very

much; (3) Quite a lot; and (4) Very much. This instrument is filled in at the beginning and at the end of the course. The competencies to be assessed on each scale are as follows:

- Block I: transversal competencies.
- Block II: teaching competencies.
- Block III: specific PE teaching competencies.

An anonymous questionnaire on the evaluation of good practice is also used, which collects data on student and teacher satisfaction, and is completed by students at the end of the course. This questionnaire has been validated by Castejón et al. (2015) with a validity RMSEA= 0.078 and a reliability index of 0.84. The questionnaire has a Likert-type scale: (1) Not at all; (2) Not very much; (3) Somewhat; (4) Quite a lot; and (5) Very much.

The official subject report cards were used to collect data on academic performance. The grading scale was:

- N.A.: no-show students.
- D: failing students (between 0 and 49 points).
- C: students with a pass mark (between 50 and 69 points).
- B: students with a B grade (between 70 and 89 points).
- A: students with an A grade (between 90 and 100 points).
- A+: students with an honours grade (the two or three best).

Table 2. Learning activities of the subject, feedback process and F&SA system, assessment techniques and instruments for each of them and weight in percentage in the final grade

Learning activity	Feedback and F&SA process	Assessment techniques and instrument	% of the final grade
Tutored Learning Project: this is a theoretical-practical work on a specific topic in which students must develop a theoretical framework and design a practical session.	Constant tutorials are held for the correction of the documents. Feedback is given both in written form (with comments on the document) and orally during the tutorial. The process is continuous and is repeated until the work is of good quality. Once the work has been handed in, the teacher returns it corrected within a week. Written feedback is given and work is done on the self-assessment form that the students have handed in with their work.	-Self-assessment -Rubric	30%
Reviews and group work on the curriculum: reviews present analysis of readings on a specific topic. The work on the curriculum consists of an analysis of the weight of physical education in early childhood education.	Students hand in their work, and the teacher returns it corrected within a week. Written comments are made on the document and feedback is given on the self-assessment form that accompanies the work. In the face-to-face classes, work is done on the content of the work submitted: aspects to be highlighted, doubts, common mistakes, etc. in order to provide quality feedback as a group.	-Self-assessment -Descriptive scale	20%
Concept maps: these are outlines of each topic in the theory dossier.	This is individual work which the teacher returns corrected within one week. Comments are provided and work is done on the students' self-assessment scale.	-Self-assessment -Descriptive scale	10%
Practical session sheets: this is a didactic and teaching skills analysis of each practical session carried out in the subject.	It is a weekly activity that gets constant oral and written feedback. The teachers have a week to correct the document and provide written lateral comments and work on the group self-evaluation that the students have handed in with the document. In addition, in the face-to-face classes, common mistakes or good didactic reflections that the students have had in their work are discussed, thus establishing a peer-assessment process.	-Self-assessment -Descriptive scale	20%
Written exam: this is a written test of the contents worked on throughout the course.	Peer-assessment is carried out when they finish the test. The teacher provides the students with a template for marking the test. In addition, the teacher corrects all the exams after this process and fixes the grade for each of them. A voluntary individual revision can be carried out in order to work on the mistakes made.	-Peer-assessment using a template provided. -Teacher assessment.	20%

Source: own elaboration.

Data analysis

Firstly, using data collected on the self-perception of competence scales, a descriptive statistical analysis (arithmetic mean (\bar{X}) and standard deviation (σ)) and an inferential statistical analysis (Student's t-test) were carried out to check whether there were significant differences between the data collected at the beginning and at the end of the course. The

significance value was $p \leq .05$. The data were analysed with the statistical programme SPSS v.20.0 and are presented in the form of rating scales; thus, the first block of competences with 14 items has a maximum of 56 points, the second block of 17 items has a maximum of 68 points, and the third block with 14 items has a maximum of 56 points.

Secondly, student and teacher satisfaction was analysed with a descriptive statistical analysis, using the mean (\bar{X}) and standard deviation (σ).

Finally, with academic performance, a joint analysis of the five academic years was carried out on the differences in performance according to the three established learning and assessment pathways. In order to be able to make comparisons among years, we worked with the distribution of subjects by grades in percentages.

Results

This section analyses the results obtained. Firstly, the tables containing the data from the three student self-perception scales of competences were developed and analysed. Secondly, student and teacher satisfaction with the assessment system carried out was analysed. Finally, the joint results of the academic performance of the five academic years were analysed.

Table 3 presents the data on the three scales of students' self-perception of competences.

Table 3. Self-perceived competence scale

Block of competences	Block I: transversal competencies					Block II: teaching competencies					Block III: specific physical education teaching competencies				
	Pre-test		Post-test		T-S	Pre-test		Post-test		T-S	Pre-test		Post-test		T-S
	\bar{X}	σ	\bar{X}	σ		\bar{X}	σ	\bar{X}	σ		\bar{X}	σ	\bar{X}	σ	
Academic Year															
2017-2018	44.40	3.82	45.98	4.32	.042*	48.46	6.12	50.36	6.92	.130	38.05	6.92	43.09	6.10	.000*
2018-2019	43.56	3.98	42.73	5.71	.374	46.24	7.03	46.95	7.38	.604	34.02	6.59	42.23	6.11	.000*
2019-2020	42.54	4.44	49.86	9.43	.000*	44.98	9.34	50.63	14.97	.055	34.16	9.21	55.27	9.55	.000*
2020-2021	42.84	4.19	46.59	4.52	.000*	47.35	7.34	51.20	6.83	.002*	36.18	7.31	45.18	5.18	.000*
2021-2022	43.39	4.99	43.35	5.40	.969	45.62	8.19	49.27	7.48	.021*	36.56	7.41	44.04	5.99	.000*

Maximum value Block I: 56 points; Block II: 68 points; Block III: 56 points.

\bar{X} : arithmetic average

σ : standard deviation

T-S: Student's t-test

The results in Table 3 show that self-perception of competence was, in general, medium and high. Furthermore, students tended to feel more competent overall at the end of the subject on all the scales analysed and, in many cases, the differences were significant.

Statistically significant differences between means were always found to be higher at the end of the subject in three years in Block I (transversal competencies), two in Block II: (teaching competencies) and all 5 years in Block III: (specific

PE teaching competencies). It is in this last block that the differences among averages are the greatest.

Table 4 compiles the data for the five years on student satisfaction with the good practice experience and the F&SA system implemented. A five-level Likert-type scale was used (1- not at all, 2- a little, 3- somewhat, 4- quite a lot and 5- a lot).

Table 4. Results of student satisfaction

Academic year	2017-2018		2018-2019		2019-2020		2020-2021		2021-2022	
Item	\bar{X}	σ	\bar{X}	σ	\bar{X}	σ	\bar{X}	σ	\bar{X}	σ
Indicates overall satisfaction with the experience.	4.07	.559	3.59	.879	2.85	.988	4.05	.753	3.90	.718
Indicates overall satisfaction with the evaluation of the experience.	3.84	.730	3.49	.980	3.00	1.117	4.02	.832	3.75	.704

As can be seen in Table 4, students were quite satisfied with the experience and the evaluation carried out. All the averages were high, between 3.49 and 4.07 out of 5, except in the 2019-2020 academic year when satisfaction was lower (2.85 and 3.00), because the subject was taught in

a non-classroom setting due to the confinement provoked by the COVID-19 pandemic.

Table 5 presents the data on teacher satisfaction with the F&SA system implemented in the course. The same Likert-type scale was used as for student satisfaction.

Table 5. Results of teacher satisfaction

Academic year	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	TOTAL	
Item	\bar{X}	\bar{X}	\bar{X}	\bar{X}	\bar{X}	\bar{X}	σ
Teacher's satisfaction with the assessment system used.	5	4	4	4	4	4.20	.447

As the data in Table 5 show, the teaching staff were quite satisfied with the assessment system used in the subject, giving very high values in all the years and obtaining an overall average of 4.20 out of 5.

With regard to academic performance, Tables 6, 7, 8, 9, 10 and 11 show the academic performance of students in each year.

Table 6. Academic performance 2017-2018 (in percentages)

Track	N.A.	D (0-49)	C (50-69)	B (70-89)	A (90-100)	A+ (3 best)	Totals/ track
Continuous	-	-	-	57.9	4.7	2.3	64.9
Mixed	-	7.9	8.7	8.5	-	-	25.1
Final	7.7	2.3	-	-	-	-	10
Totals	7.7	10.2	8.7	66.4	4.7	2.3	100

Table 7. Academic performance 2018-2019 (in percentages)

Track	N.A.	D (0-49)	C (50-69)	B (70-89)	A (90-100)	A+ (3 best)	Totals/ track
Continuous	-	-	6.8	46.2	3.5	4.2	60.7
Mixed	-	5.8	15.2	5.5	-	1.4	27.9
Final	7.2	4.2	-	-	-	-	11.4
Totals	7.2	10	22	51.7	3.5	5.6	100

Table 8. Academic performance 2019-2020 (in percentages)

Track	N.A.	D (0-49)	C (50-69)	B (70-89)	A (90-100)	A+ (3 best)	Totals/ track
Continuous	-	-	2.3	81.1	1.1	2.3	86.8
Mixed	-	6.5	3.3	-	-	-	9.8
Final	3.4	-	-	-	-	-	3.4
Totals	3.4	6.5	5.6	81.1	1.1	2.3	100

Table 9. Academic performance 2020-2021 (in percentages)

Track	N.A.	D (0-49)	C (50-69)	B (70-89)	A (90-100)	A+ (3 best)	Totals/ track
Continuous	-	-	-	65.3	7.4	4.9	77.6
Mixed	1.1	-	3.4	7.4	-	-	11.9
Final	7.9	2.6	-	-	-	-	10.5
Totals	9	2.6	3.4	72.7	7.4	4.9	100

Table 10. Academic performance 2021-2022 (in percentages)

Track	N.A.	D (0-49)	C (50-69)	B (70-89)	A (90-100)	A+ (3 best)	Totals/ track
Continuous	-	2.9	1.4	49.3	1.4	4.1	59.1
Mixed	-	4.1	20.2	12.3	-	-	36.6
Final	-	4.3	-	-	-	-	4.3
Totals	-	11.3	21.6	61.6	1.4	4.1	100

Table 11. Academic performance in the five years (in percentages)

Track	N.A.	D (0-49)	C (50-69)	B (70-89)	A (90-100)	A+ (3 best)	Totals/ track
Continuous	-	0.6	2.2	59.9	3.6	3.6	69.9
Mixed	0.2	4.8	10.2	6.7	-	0.3	22.2
Final	5.2	2.7	-	-	-	-	7.9
Totals	5.4	8.1	12.4	66.6	3.6	3.9	100

The tables show an overall good performance, with high percentages of passes (C or better, 86.5%). Within these, the grade with the highest percentages was always B, but on the other hand, oscillations were observed between years in the A, A+ and C grades.

In terms of performance according to the assessment pathways chosen, strong differences were observed among them, with a clear accumulation of the best grades in the continuous pathway, diverse and generally average grades in the mixed pathway and poor grades in the final pathway (all in NA or D).

Discussion

The first research question refers to the influence of F&SA systems and their continuous feedback processes on the improvement of students' self-perception of competences in PTE. The results are positive and seem to indicate that, in general, students felt that they had improved their professional competences to a greater or lesser extent during the course. Similar results can be found in Cañadas (2018), who in his study finds that students feel more competent thanks to their participation in the assessment process. These results are the same as those found by Amor and Serrano (2019) and Gallardo et al. (2020), who claim that the use of F&SA systems helps in the acquisition of professional competences. The data show that, in general, the averages on the scales are higher at the end of the subject; and statistically significant differences can be seen, especially in Block III (specific PE teaching competences). Therefore, students felt more competent in Block III on specific PE teaching competencies at the end of the subject, a very coherent result, given that this is a specific PE subject. Similar results are reflected in the study by Castejón et al. (2018) and Gallardo et al. (2018), where students feel more competent in all scales at the end of the course, but especially in the specific PE competencies.

Boud and Molloy (2013) and Van-Dinther et al. (2014) claim that the opportunity to receive and give feedback to peers during the course of the subject contributes to the learning of competences because students are involved in their own assessment process. Along the same lines, the new Spanish education law, Organic Law 3/2020, of 29 December, which amends Organic Law 2/2006, of 3 May, on Education (LOMLOE), provides for the involvement of students in their assessment process, and this involvement can take the form of shared assessment in which students exchange information by way of feedback.

But Wanner and Palmer (2018) argue that for feedback to be an effective tool there must be continuous and timely teacher involvement. In other words, continuous and quality feedback seems to positively influence learning, autonomy, motivation and competence acquisition (Crichton & Valdera, 2015; Leenknecht et al., 2020; Wilkie & Liefeth, 2020), but it is the responsibility of both teachers and students (Ketonen et al., 2022 and Nicol et al., 2014); although according to Nicol's (2019) findings, peer feedback seems to have a greater impact. Improving teacher competence in assessment and the quality of teacher feedback requires initial training in which F&SA systems are piloted, as well as ongoing training to improve the competences of teachers who are already professionally engaged in teaching (Chan & Luo, 2021; Ropohl & Rönnebeck, 2019; Schneider & Bodensohn, 2017). In this sense, LOMLOE (2020) defends the need to evaluate one's own teaching practice, a particularly important aspect in the teaching-learning process.

As for the second research question, on how F&SA systems and continuous feedback influence academic performance and student and teacher satisfaction, the results show that students were quite satisfied, both with the experience and with the F&SA system carried out in the subject, which coincides with what was found in the

studies by Atienza et al. (2016) and Souto et al. (2020) on satisfaction with F&SA. Moreover, teacher satisfaction was also high, which, together with the good results, helped to maintain the same F&SA system throughout the five years. Gallardo (2018) also finds high teacher satisfaction after implementing an F&SA system in PTE in Chile. Romero et al. (2015) find similar results of high satisfaction among both teachers and students.

The results of academic performance were very positive, with a high percentage of passes, and a predominance of B grades. It was also observed that the continuous pathway, which is the one that most clearly applies the F&SA systems and regular and systematic feedback, had a strong influence on obtaining better academic performance. Similar results can be found in Arribas (2012), Buscà et al. (2010), Castejón (2011), Hope and Polwart (2012), Johansson et al. (2022), López-Pastor (2008), Molina et al. (2020), Romero et al. (2015) and Ropohl and Rönnebeck (2019). In this respect, Mastagli et al. (2020) also find that students who opt for F&SA systems obtain better academic results than those who opt for summative assessment (final route). Feedback is constant during the course of the subject, both continuous and blended, but according to Guest (2013), feedback is considered the weakest point of assessment, so it is important for students to be able to evaluate both their own work and the work of others through continuous feedback processes in order to achieve greater learning and academic performance (Nicol, 2010). Furthermore, for students to learn and experience these concepts, it is essential that they are part of their assessment process (Boud and Falchikov, 2007), such as in self-assessments or peer assessments. In a study by Yan et al. (2023) they claim that student participation in their assessment process through self-assessment and feedback through comments, improves students' academic results.

This aspect of student participation in marking is contemplated in LOMLOE (2020), as it defends student participation in the assessment process and can take the form of self-grading or dialogue grading, among others.

Moreover, the majority of students opt for continuous assessment, as seen in other similar studies (Castejón et al., 2011; Fraile et al. 2013; López-Pastor et al., 2012, 2013). Therefore, students choose the pathway characterised by continuous and constant feedback as a key element for formative and shared assessment (Hattie & Timperley, 2007).

Practical applications of this work can lead to the use of assessment instruments in a shared way with the students, as well as assessment processes with a leap to grading (self-grading, dialogue grading, grade sharing...), which implies a greater transparency of the F&SA system used in the classroom.

From what has been seen in the discussion, it seems that this type of good practice experiences of F&SA in PTE can have a high degree of transferability to other PTE contexts, with the logical contextual adaptation to each university.

Conclusions

In conclusion, the data show that regular feedback and F&SA systems help to improve students' self-perception of competence throughout the course, and that the largest statistically significant differences are found mainly in Block III (specific PE teaching competencies). Furthermore, the data seem to indicate that the development of F&SA systems in PTE can be considered a good practice; the results show a high level of student and teacher satisfaction with the assessment system used, as well as a high academic performance in the continuous assessment pathway, which provides continuous and shared feedback to students.

The main contribution of this paper is to show that the use of F&SA systems in PTE, with systematic, continuous and shared feedback systems with the student, seem to help to obtain good results in the self-perception of professional competences, satisfaction and academic performance. In this regard, this study may be interesting for PTE teachers who want to implement F&SA systems in their classrooms.

The main limitation of the study is that it is a single case, in a single PTE centre. In this respect, it would be convenient to extend the study to a wider group of subjects and PTE centres, in order to be able to contrast the results obtained.

Funding

Grant RTI2018-093292-B-I00 funded by MCIN/AEI/10.13039/501100011033 and, by "ERDF A way of making Europe".

References

- Atienza, R., Valencia-Peris, A., Martos-García, D., López-Pastor, V. M. & Devís-Devís, J. (2016). La percepción del alumnado universitario de educación física sobre la evaluación formativa: ventajas, dificultades y satisfacción. *Movimiento*, 22(4), 1033-1048. <http://www.redalyc.org/articulo.oa?id=115349439002>
- Amor, M. I., & Serrano, R. (2019). The generic competences in the Initial Teacher Training. A comparative study among students, teachers and graduates of university education degree. *Educación XXI*, 21(1), 239-261. <https://doi.org/10.5944/educXXI.21341>
- Arribas, J.M. (2012). El rendimiento académico en función del sistema de evaluación empleado. *Relieve*, 1(18), 1-15. <http://hdl.handle.net/10550/29801>
- Boud, D. & Falchikov, N. (2007). *Rethinking Assessment in Higher Education. Learning for the long term*. Routledge.
- Boud, D. & Molloy, E. (Coords.) (2013). *Feedback in higher and professional education. Understanding it and doing it well*. Routledge.
- Buscá, F., Pintor, P., Martínez, L., & Peire, T. (2010). Sistemas y procedimientos de Evaluación Formativa en docencia universitaria: Resultados de 34 casos

- aplicados durante el curso académico 2007-2008. *Estudios Sobre Educación*, 18, 255-276. <https://revistas.unav.edu/index.php/estudios-sobre-educacion/article/view/4674>
- Cañadas, L. (2021). Contribution of formative assessment for developing teaching competences in teacher education. *European Journal of Teacher Education*, 44. <https://doi.org/10.1080/02619768.2021.1950684>
- Cañadas, L., Santos-Pastor, M.L., & Castejón F.J. (2018). Desarrollo de competencias docentes en la Formación Inicial del Profesorado de Educación Física. Relación con los instrumentos de evaluación. *Estudios Pedagógicos*, 44(2), 111-126. <http://dx.doi.org/10.4067/S0718-07052018000200111>
- Castejón, F. J., López-Pastor, V. M., Julián, J. A., & Zaragoza, J. (2011). Evaluación formativa y rendimiento académico en la formación inicial del profesorado de educación física. *Revista Internacional de Medicina y Ciencias de la Actividad Física y el Deporte*, 11(42), 328-346. <http://www.redalyc.org/articulo.oa?id=54222171007>
- Castejón, F. J., Santos-Pastor, M. L. & Cañadas, L. (2018). Desarrollo de competencias docentes en la formación inicial del profesorado de educación física. Relación con los instrumentos de evaluación. *Estudios Pedagógicos*, 44(2), 111-126. <http://dx.doi.org/10.4067/S0718-07052018000200111>
- Chan, C. K. Y. & Luo, J. (2021). Exploring teacher perceptions of different types of feedback practices in higher education: implications for teacher feedback literacy. *Assessment & Evaluation in Higher Education*, 44(1), 61-76. <https://doi.org/10.1080/02602938.2021.1888074>
- Crichton, A. & Valdera, F. (2015). Student teachers' perceptions of feedback as an aid to reflection for developing effective practice in the classroom. *European Journal of Teacher Education*, 38(4), 512-524. <https://doi.org/10.1080/02619768.2015.1056911>
- Fraile, A., López-Pastor, V. M., Castejón, F. J. & Romero, R. (2013). La evaluación formativa en docencia universitaria y el rendimiento académico del alumnado. *Revista Aula Abierta*, 41(2), 23-34. <https://reunido.uniovi.es/index.php/AA/issue/view/1040/148>
- Fraile, J., Ruiz-Bravo, P., Zamorano-Sande, D. & Orgaz-Rincón, D. (2021). Evaluación formativa, autorregulación, feedback y herramientas digitales: uso de Socrative en educación superior. *Retos*, 43, 724-734. <https://recyt.fecyt.es/index.php/retos/index>
- Fullan, M. (1991). *The new meaning of educational change*. Cassell.
- Gallardo, F. J. (2018). *Efectos de la utilización de procesos de evaluación formativa en los estudiantes de pedagogía en educación física de la Universidad de los Lagos (Chile)* (Tesis Doctoral). Universidad de Valladolid.
- Gallardo, F. J., López-Pastor, V. M., & Carter, B. (2018). Efectos de la aplicación de un sistema de Evaluación Formativa en la autopercepción de competencias adquiridas en la Formación Inicial del Profesorado. *Estudios pedagógicos*, 44(2), 55-77. <http://dx.doi.org/10.4067/S0718-07052018000200055>
- Gallardo, F. J., López-Pastor, V. M., & Carter, B. (2020). Ventajas e Inconvenientes de la Evaluación Formativa, y su Influencia en la Autopercepción de Competencias en alumnado de Formación Inicial del Profesorado en Educación Física. *Retos*, 38, 417-424. <https://recyt.fecyt.es/index.php/retos/article/view/75540>
- García, J. M., Farfán, J. F., Fuertes, L. C. & Montellanos, A. R. (2021). Evaluación formativa: un reto para el docente en la educación a distancia. *Delectus*, 4(2), 45-54. <https://revista.inicc-peru.edu.pe/index.php/delectus>
- Gerardus, J., Jaspers, M. & Joonsten-ten, D. (2016). A case study on written comments as a form of feedback in teacher education: so much to gain. *European Journal of Teacher Education*, 39(2), 159-173. <https://doi.org/10.1080/02619768.2015.1116513>
- Guest, J. (2013). *Assessment and Feedback*. Aston University <https://doi.org/10.53593/n3216a>
- Hamodi, C., López-Pastor, V. M. & López-Pastor, A. T. (2017). If I experience formative assessment whilst studying at university, will I put it into practice later as a teacher? Formative and shared assessment in Initial Teacher Education. *European Journal of Teacher Education*, 40(2), 171-190. <https://doi.org/10.1080/02619768.2017.1281909>
- Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77, 81-112. <https://doi.org/10.3102%2F003465430298487>
- Hendry, G. D., Bromberger, N. & Armstrong, S. (2011). Constructive guidance and feedback for learning: the usefulness of exemplars, marking sheets and different types of feedback in a first year law subject. *Assessment & Evaluation in Higher Education*, 36(1), 1-11. <https://doi.org/10.1080/02602930903128904>
- Heritage, M. (2007). Formative Assessment: What do teachers need to know and do? *Phi Delta Kappan*, 89(2), 140-145. <https://doi.org/10.1177%2F003172170708900210>
- Hernández Rivero, V.M., Santana Bonilla, P.J. & Sosa Alonso, J.J. (2021). Feedback y autorregulación del aprendizaje en educación superior. *Revista de Investigación Educativa*, 39(1), 227-248. <http://dx.doi.org/10.6018/rie.423341>
- Hope, S.A. & Polwart, A. (2012). Engagement with Online Pre-exam Formative Tests Improves Exam Performance and Feedback Satisfaction. *Bioscience Education*, 20(1), 37-52. <https://doi.org/10.11120/beej.2012.20000037>

- Hortigüela-Alcalá D., Abella, V., Delgado, V. & Ausín, V. (2016). Influencia del sistema de evaluación empleado en la percepción del alumno sobre su aprendizaje y las competencias docentes. *Infancia, Educación y Aprendizaje*, 2(1), 20-42. <https://revistas.uv.cl/index.php/IEYA/issue/view/85>
- Hortigüela-Alcalá, D., González-Víllora, S., & Hernando-Garijo, A. (2021). Do we really assess learning in Physical Education? Teacher's perceptions at different educational stages. *Retos*, 42, 643-654. <https://doi.org/10.47197/retos.v42i0.88686>
- Hortigüela-Alcalá, D., Pérez-Pueyo, A., & González-Calvo, G. (2019). Pero, ¿A qué nos referimos realmente con la Evaluación Formativa y Compartida?: Confusiones habituales y reflexiones prácticas. *Revista Iberoamericana de Evaluación Educativa*, 12(1), 13-27. <https://doi.org/10.15366/riee2019.12.1.001>
- Jang, Y. & Marshall, E. (2018). The Effect of Type of Feedback in Multiple-Choice Testing on Long-Term Retention. *The Journal of General Psychology*, 145(2), 107-119. <https://doi.org/10.1080/00221309.2018.1437021>
- Johansson, E., Kanapathippillai, S., Khan, A. & Dellaportas, S. (2022). Formative assessment in accounting: student perceptions and implications of continuous assessment. *Accounting Education*. <https://doi.org/10.1080/09639284.2022.2091411>
- Jongho Shin, Jeongah Kim, Myung-Seop Kim & Yura Son (2021). Effects of cognitive appraisal styles and feedback types on feedback acceptance and motivation for challenge. *Educational Psychology*, 41(7), 902-921. <https://doi.org/10.1080/01443410.2020.1725449>
- Ketonen, L., Lehesvuori, S., Pöysä, S., Pakarinen, E. & Lerkkanen, M. K. (2022). Teacher and student teacher views of agency in feedback. *European Journal of Teacher Education*, 45(1), 1-16. <https://doi.org/10.1080/02619768.2022.2071258>
- Leenknecht, M., Wijnia, L., Köhlen, M., Fryer, L., Rikers, R. & Loyens, S. (2021). Formative assessment as practice: the role of students' motivation. *Assessment & Evaluation in Higher Education*, 46(2), 236-255. <https://doi.org/10.1080/02602938.2020.1765228>
- Ley Orgánica 3/2020, de 29 de diciembre, por la que se modifica la Ley Orgánica 2/2006, de 3 de mayo, de Educación. https://www.boe.es/diario_boe/txt.php?id=BOE-A-2020-17264
- López Pastor, V.M. (2008). Desarrollando sistemas de evaluación formativa y compartida en la docencia universitaria. Análisis de resultados de su puesta en práctica en la formación inicial del profesorado. *European Journal of Teacher Education*, 31(3), 293-311. <https://doi.org/10.1080/02619760802208452>
- López-Pastor, V. M., Fernández-Balboa, J. M., Santos, M. L. & Fraile, A. (2012). Students' self-grading, professor's grading and negotiated final grading at three university programmes: analysis of reliability and grade difference ranges and tendencies. *Assessment & Evaluation in Higher Education*, 37(4), 453-464. <http://dx.doi.org/10.1080/02602938.2010.545868>
- López-Pastor, V.M., Molina, M., Pascual, C., Fuentes, T., & Fernández, C. (2021). ¿Es importante vivir la evaluación formativa y compartida en la formación inicial del profesorado para poder utilizarla como maestro en el futuro? En W. dos Santos. y R. Stieg, (org.). *Evaluación educativa en la formación de profesores*. (pp. 193-208). Appris.
- López-Pastor, V. M., & Pérez-Pueyo, A. (Coords.) (2017). *Buenas prácticas docentes. Evaluación formativa y compartida en educación: experiencias de éxito en todas las etapas educativas* (e-book). Universidad de León. <https://buleria.unileon.es/handle/10612/5999>
- López-Pastor, V. M., Pintor, P., Muros, B. & Webb, G. (2013). Formative assessment strategies and their effect on student performance and on student and tutor workload: the results of research projects undertaken in preparation for greater convergence of universities in Spain within the European Higher Education Area (EHEA). *Journal of Further and Higher Education*, 37(2), 163-180. <http://dx.doi.org/10.1080/0309877X.2011.644780>
- Lorente, E. & Kirk, D. (2016). Student teachers' understanding and application of assessment for learning during a physical education teacher education course. *European Physical Education Review*, 22(1), 65-81. <https://doi.org/10.1177/1356336X15590352>
- Lynch, R., Mannix, P. & Seery, N. (2012). Promoting deep learning in a teacher education programme through self- and peer-assessment and feedback. *European Journal of Teacher Education*, 12(2), 179-197. <https://doi.org/10.1080/02619768.2011.643396>
- Mastagli, M., Malani, D., Hainaut, J.P., Van Hoya, A. & Bolmont, B. (2020). Summative assessment versus formative assessment: An ecological study of physical education by analyzing state-anxiety and shot-put performance among French high school students. *Journal of Physical Education and Sport*, 20(3), 2220-2229. <https://doi.org/10.7752/jpes.2020.s3298>
- McDonald, R., Boud, D., Francis, J., & Gonczi, A. (2000). Nuevas perspectivas sobre la evaluación. *Boletín Cinterfor*, 149, 41-72. <http://biblioteca.udgvirtual.udg.mx/jspui/handle/123456789/568>
- Molina, M. & López-Pastor, V. M. (2019). ¿Evaluó cómo me evaluaron en la facultad? Transferencia de la evaluación vivida durante la formación inicial del profesorado a la evaluación practicada como docente.

- Revista Iberoamericana de Evaluación Educativa*, 12(1), 85-101. <https://doi.org/10.15366/riee2019.12.1.005>
- Molina, M., Pascual, C., & López-Pastor, V.M. (2020). Academic performance and formative and shared assessment in teacher education. *Alteridad*, 15(2), 204-215. <https://doi.org/10.17163/alt.v15n2.2020.05>
- Ngongo, L. & Tistaert, G. (1984). Le comportement de feedback verbal en classe. *European Journal of Teacher Education*, 7(1), 53-63. <https://doi.org/10.1080/0261976840070105>
- Nicol, D. J. (2010). *The foundation for graduate attributes: Developing self-regulation through self and peer-assessment*. The Quality Assurance Agency for Higher Education.
- Nicol, D. (2019). Reconceptualising feedback as an internal not an external process. *Italian Journal of Educational Research* (numero speciale), 71-84. <https://doi.org/10.7346/SIRD-152019-P71>
- Nicol, D., Thomson, A. & Breslin, C. (2014). Rethinking feedback practice in higher education: a peer review perspective. *Assessment & Evaluation in Higher Education*, 39(1), 102-122. <https://doi.org/10.1080/02602938.2013.795518>
- Palacios, A. & López-Pastor, V. M. (2013). Haz lo que yo digo pero no lo que yo hago: sistemas de evaluación del alumnado en la formación inicial del profesorado. *Revista de Educación*, 361, 279-305. <https://doi.org/10.4438/1988-592X-RE-2011-361-143>
- Romero-Martín, M. R., Asún, S. & Chivite, M. T. (2016). La autoevaluación en expresión corporal en formación inicial del profesorado de educación física: un ejemplo de buena práctica. *Retos. Nuevas tendencias en Educación Física, Deportes y Recreación*, 29, 236-241. <https://recyt.fecyt.es/index.php/retos/index>
- Romero, R., Castejón, F. J. & López, V. M. (2015). Divergencias del alumnado y del profesorado universitario sobre las dificultades para aplicar la evaluación formativa. *Relieve*, 21(1), 1-16. <https://doi.org/10.7203/relieve.21.1.5169>
- Ropohl, M. & Rönnebeck, S. (2019). Making learning effective – quantity and quality of pre-service teachers' feedback. *International Journal of Science Education*, 41(15), 2156-2176. <https://doi.org/10.1080/09500693.2019.1663452>
- Schneider, C. & Bodensohn, R. (2017). Student teachers' appraisal of the importance of assessment in teacher education and self-reports on the development of assessment competence. *Assessment in Education: Principles, Policy & Practice*, 24(2), 127-146. <https://doi.org/10.1080/0969594X.2017.1293002>
- Slingerland, M. & Weeldenburg, G. (2019). Authentic learning tasks and assessment in physical education teacher education. *Infancia, Educación y Aprendizaje (IEYA)*, 5(2), 530-535. <https://revistas.uv.cl/index.php/IEYA/issue/view/174>
- Souto, R., Jiménez, F. & Navarro, V. (2020). La percepción de los estudiantes sobre los sistemas de evaluación formativa aplicados en la educación superior. *Revista Iberoamericana de Evaluación Educativa*, 13(1), 11-39. <https://doi.org/10.15366/riee2020.13.1.001>
- Van-Dinther, M., Dochy, F. Segers, M. & Braeken, J. (2014). Student perceptions of assessment and student self-efficacy in competence-based education. *Educational Studies*, 40(3), 330-351. <https://doi.org/10.1080/03055698.2014.898577>
- Wilkie, B. & Liefeth, A. (2022). Student experiences of live synchronised video feedback in formative assessment. *Teaching in Higher Education*, 27(3), 403-416. <https://doi.org/10.1080/13562517.2020.1725879>
- Yan, Z., Wang, X., Boud, D. & Lao, H. (2023). The effect of self-assessment on academic performance and the role of explicitness: a meta-analysis. *Assessment & Evaluation in Higher Education*, 48, 1-15. <https://doi.org/10.1080/02602938.2021.2012644>