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**From assessment for ranking toward assessment  
for learning: An action research study in  
preservice physical education teacher during a  
year-long school placement**

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Porto, 2022



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for learning: An action research study in  
preservice physical education teacher during a  
year-long school placement**

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aos nossos pais que eles são/foram bons pais.

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não os terem educado,  
quando os filhos são 'educados' devemos elogiar os pais pela  
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## ABSTRACT

Traditionally, an interest in exploring assessment has focused on determining grades, aptitude, or achievement with less concern in supporting the learning process or helping students in co-constructing (e.g. making decisions) and co-regulating (e.g. self and peer assessment) their learning. Enhancing learning is difficult, and there has been an increased interest in Assessment for Learning (AfL) as a means of considering students' learning through the alignment of three message systems: assessment, curriculum, and pedagogy. The intention of AfL is to make the teaching-learning process clear and understandable for students by involving them in this process. However, it is recognised that enacting AfL is challenging for teachers and preservice teachers (PSTs). Subsequently, the intent of this research was to inform and consider future AfL practices in school physical education and physical education teacher education (PETE) programmes. The interconnected purposes were to examine (i) how physical education PSTs improved their assessment literacy, (ii) how physical education PSTs learned to enact AfL principles in their teaching during school placement, (iii) the consequences on students' experiences and the impact on co-construction and co-regulation of their learning, and (iv) students' perceptions of their learning. The participants were me, teacher educators (from university and school), PSTs and school students. Data collection took place over one school year during the school placement component of 15 PSTs. Based on action-research cycles, the research is predominantly qualitative (e.g., interviews, participant observations, field notes, reflections, surveys, reports) with a quantitative component captured through a questionnaire. A literature review study and four empirical studies were carried out. The literature review identified the need to create a space on PETE programmes to improve PSTs' assessment literacy and support PSTs in the enactment of AfL in their teaching. The main empirical findings reveal i) the complexity of reconsidering understanding, planning and enactment of assessment practices; ii) PSTs' assessment literacy improvements, despite struggling to avoid replicating their experiences as school students; iii) that learning community members supporting and assuming a practitioner researcher's role aided PSTs being more successful enacting AfL; iv) the importance of having access to learning goals and assessment criteria for students' involvement in co-construction and co-regulation learning processes; and v) that students' learning profile and perspective was affected by Covid-19.

**KEYWORDS:** ASSESSMENT AS LEARNING; ASSESSMENT LITERACY; TEACHER EDUCATION; PRACTITIONER RESEARCHER; LEARNING PROFILES.



## RESUMO

Tradicionalmente, a prioridade da avaliação continua focada na atribuição de notas, no classificar o desempenho ou atitudes dos alunos, sem qualquer preocupação em usá-la como um suporte à aprendizagem ou ajuda aos alunos na co-construção (por exemplo, tomar decisões) e co-regulação da sua aprendizagem (por exemplo, auto e heteroavaliação). Potenciar a aprendizagem é difícil e a avaliação tem tido um parco contributo. Este cenário, aumentou o interesse na avaliação para a aprendizagem (AfL), por esta ser orientada para a aprendizagem dos alunos, através do alinhamento do sistema de três mensagens: avaliação, currículo e pedagogia. AfL procura tornar o processo ensino-aprendizagem claro e compreensível para os alunos, envolvendo-os ativamente nesse mesmo processo. No entanto, a AfL é reconhecida como sendo desafiante para os professores e, ainda mais, para os professores em formação (PSTs). Assim, a intenção desta investigação foi informar e considerar futuras práticas de AfL na educação física escolar e nos programas de formação de professores de educação física (PETE). Os objetivos, interligados, pretenderam examinar como é que os PSTs de educação física melhoraram a sua literacia de avaliação, aprenderam a usar os princípios da AfL no seu ensino durante o estágio profissional, bem como as consequências que isso originou nas experiências dos alunos e o impacto na co-construção e co-regulação da sua aprendizagem, e complementarmente, investigar a perceção dos alunos sobre a sua aprendizagem. Participaram nesta investigação, eu como investigador, formadores de professores (da faculdade e da escola), PSTs e alunos da escola. Os dados foram recolhidos ao longo de um ano letivo integral durante o estágio profissional de 15 PSTs. A investigação, baseou-se em ciclos de investigação-ação, sendo predominantemente qualitativa (por exemplo, entrevistas, observações participante, notas de campo, reflexões, questionários, relatórios) contemplando também uma componente quantitativa, com recurso a um questionário. Esta investigação engloba um estudo de revisão de literatura e quatro estudos empíricos. Na revisão de literatura foi identificada a necessidade de criar um espaço nos programas PETE para melhorar a literacia de avaliação dos PSTs e apoiar os PSTs na aplicação da AfL no seu ensino. Os principais resultados empíricos revelaram i) a complexidade de reconstruir entendimentos, planeamentos e aplicação das práticas de avaliação; ii) melhorias na literacia de avaliação dos PSTs, isto apesar das dificuldades em evitar replicar as suas experiências escolares como alunos; iii) que o apoio da comunidade de aprendizagem e o investigador ter assumido o papel de praticante ajudou os PSTs a terem mais sucesso na aplicação da AfL; iv) a importância de os alunos terem acesso aos objetivos de aprendizagem e critérios de avaliação para melhor se envolverem nos processos de co-construção e co-regulação da sua aprendizagem; e v) que o perfil e perspectiva de aprendizagem dos alunos foi afetada pelo Covid-19.

**PALAVRAS-CHAVE:** AVALIAÇÃO COMO APRENDIZAGEM; LITERACIA DE AVALIAÇÃO; FORMAÇÃO DE PROFESSORES; INVESTIGADOR PRATICANTE; PERFIS DE APRENDIZAGEM.



## **ABBREVIATIONS**

AfL - Assessment for Learning

OST - Occupational socialisation theory

PETE – Physical education teacher education

PSTs – Preservice Teachers



## I. INTRODUCTION

---



## 1.1. Rationale

### **Challenges of (physical education) teacher education**

Physical education teacher education (PETE) programmes are surrounded by the challenges of preparing physical education teachers to deal with a context of accelerated societal change and increasing uncertainty, a need for the inclusion of all students regardless their diversity, a demand for social justice practices, a redesigning of curriculum, pedagogy and assessment centred on students-learning and needs, a requirement to adapt and integrate digital technologies (MacPhail & Lawson, 2020; Penney et al., 2009). PETE programmes are even confronted with the need to preparing student teachers to become agents of change in the school placement they enter and in their future as teachers. Therefore, redeveloping PETE programmes seems as necessary as challenging. Calls for reformulation points towards practice-based teaching and research-informed practice (Brevik et al., 2017), the need to address the large school-university gap (Lawson, 2018) and the need for more collaborative work between stakeholders in different contexts (MacPhail, 2020). These challenges and calls for changes, add up to the well-known need of helping Preservice Teachers (PSTs) reconsider conceptions and practices previous developed as school students (pre-professional socialisation experiences) (Richards et al., 2014). Appreciating that 'apprenticeship of observation' has a huge impact on the way PSTs' feel, think and act (Lortie, 1975), PETE programmes need to consider ways to address it.

Teaching PSTs is different from teaching school students. PSTs as future teachers need to learn how and when to use different practices to help different students in different contexts reaching their learning goals (Darling-Hammond, 2006). PSTs also have to learn to ask themselves why they should teach, and their students learn, something. It is considered that PETE (practices) must change, providing PSTs with opportunities for having an active role. Effective teacher educators (Loughran, 2014) and powerful teacher education programmes (Darling-Hammond, 2010) seem to be the ones that are focused on developing PSTs' skills to teach and putting what they learn into practice.

Loughran (2014) suggested teacher education programmes have two roles: teaching about teaching and teaching how to teach (use contents in practice). The move from teaching (only theoretical) contents to have student teachers enacting it in their classes (Brevik et al., 2017; DeLuca et al., 2018) intends to allow future PSTs to see (experience) how things are done/work in practice rather than only hearing (recall) how things are supposed to work. It is expected that having PSTs as active constructors of their learning can allow them to reflect and rethink their conceptions and practices (DeLuca et al., 2013). Developing a sense of agency may allow PSTs to consider and enact practices that they believe can increase students' learning, even if those are different from teachers in their workplace. This seems particularly important when entering schools, considering that PSTs tend to 'wash-out' what they learned on PETE programmes when confronted with school reality. For this reason, as soon as PSTs are provided with opportunities to move away from their traditional passive student role to start thinking and acting like a teacher interested in promoting active student role, the better.

Providing PSTs with more opportunities to teach school students before school placement may be another aspect to consider on the (necessary) reformulation of PETE. This should be attempted in a perspective of narrowing the (considerable and identified) gap between universities and schools (Lawson, 2018) and find some agreement on what is intended for school students to learn, and for student teachers to possess. Identifying those agreements may well require collaborative work among stakeholders (teacher, teacher educators, preservice teachers, policymakers) from different contexts (MacPhail, 2020). Otherwise, the risk of innovative practices being taught on PETE and not being transferred to physical education practices remains high. Apart from that, teachers in general, are quite resistant to change dominant practices in physical education (Kirk, 2010; Slingerland et al., 2017). This resistance is even more evident on assessment, with teachers tending to maintain a traditional orientation when they do not have contact with alternative assessment practices (DeLuca et al., 2018; Slingerland et al., 2017), and PSTs trusting only on (summative)

assessment they had experienced as students (DeLuca et al., 2013; Mjåtveit & Giske, 2020).

## **1.2. Research problem framework**

Assessment, curriculum, and pedagogy are considered to be the 'three message systems of schooling and dimensions of quality physical education' (Penney et al., 2009). The alignment of these three dimensions affects education effectiveness regarding what counts as learning (Coombs et al., 2018). Traditionally, assessment oversees all teaching-learning decisions (Baird et al., 2017). However, subordination of curriculum, teaching and learning to summative assessment has been questioned due to the negative consequences and limitations it raises on teaching and learning priorities, nature of activities and goals, the development of autonomy, creativity, and meaning of learning (Graça et al., 2019). These constraints in the development of curriculum and learning experiences justify the need of considering and promoting alternative ways to assess, which are expected to be oriented towards students' learning (Hay et al., 2015).

In the realm of educational reform of several countries, there is a movement towards assessment for learning (Leirhaug & Annerstedt, 2016; MacPhail et al., 2018), which has not yet had an impact on many teachers' practices, showing physical education's incapacity to change (López-Pastor et al., 2013). Therefore, assessment priority remains on determining grades, aptitude or achievement (Bennett, 2011; Darmody et al., 2020; Graça et al., 2019): a) through frequent assessment of performances in isolated or de-contextualised skills (Penney et al., 2009; Tolgfors & Öhman, 2016), b) assessment of quantity and quality of attendance, use of physical education uniform, effort and behaviour (Kniffin & Baert, 2015; Svennberg et al., 2014) c) determine the level of a performance, without any special concern in fostering learning (Kniffin & Baert, 2015; MacPhail & Murphy, 2017). This more traditional assessment does not consider or include students in the assessment process (Borghouts et al., 2017; Leirhaug & Annerstedt, 2016; Redelius & Hay, 2012).

Assessment practices mostly used in school are highly questionable as educative approaches and have led to several problems which are described in literature as: i) failing to meet students' needs (Black & William, 1998; Broadfoot, 2017); ii) decisions and criteria ambiguous and unknown by students (Borghouts et al., 2017; Redelius & Hay, 2012); iii) (in)appropriateness of traditional forms of assessment in the contemporary world (López-Pastor et al., 2013); iv) lacking in authenticity (Hay & Penney, 2013); and v) misaligned with teaching-learning processes (Baird et al., 2017; Penney et al., 2009). Redelius and Hay (2012)'s work revealed that students identified other factors contributing to determine their grades in physical education apart from their learning outcomes. Valuing things in physical education that should not be assessed, like attendance or how someone is dressed, which cannot be considered learning, allow other educative agents (students, parents, teachers from other subjects, policymakers) to question physical education subject relevance on the curriculum (Andersson, 2014; Young, 2011).

Assessment is considered one of the biggest challenges teachers have to deal with. In physical education, assessment is also considered a fraught and troublesome issue (López-Pastor et al., 2013): there is considerable resistance to accept PE grades for calculation average for university admission; there is disparity in matters of assessment between scholars recommendations and teachers practices (Young, 2011); there is controversy about the appropriate criteria, contents, and assessment forms; there is criticism about the ecological validity and consequences of testing fitness, and about the authenticity of objective measures of performance on de-contextualized skills (Lorente-Catalán & Kirk, 2015); there is reproach of basing assessment on subjective or administrative criteria, like effort or attendance (Young, 2011); and finally, there is a stubborn problem of aligning the purposes of teaching-learning with assessment requirements (Penney et al., 2009). It is not easy to enhance learning in physical education, and assessment has been little help to encourage or assist students' learning. Teachers need to think about what, how and why they are assessing and for what purpose (Black & William, 2018; Kniffin & Baert, 2015).

Baird et al. (2017) argue that theories of learning and theories of assessment should be developed more closely with each other. The change of learning paradigms from behaviourist to socio-constructivist theories moved the focus of the teaching-learning process from teaching to learning, from teachers to students, and from assessing grades to assessing for improving students' learning (Coombs et al., 2018). The success of teaching depends on what students do to learn. Like Stiggins and Chappuis (2011, p. 18) said: "adults are not in charge of the learning. Learners are. If students don't want to learn or don't feel able to learn, there will be no learning".

Teaching itself does not always represent learning, because teaching is a relational activity which depends on the context, on the characteristics of who is learning, and the moment (Graça, 2015). The way learning is understood also changed from happening solely to an individual towards happening in interaction with the context and those involved in it (Allal, 2020; Fletcher, 2018). According to Black and William (1998), and William (2011), the solution can be on Assessment for Learning (AfL) underpinned by socio-constructivist learning theories, which envisages learning as jointly created by the learners and their social environment (Vygotsky, 1978) and as a mean to the call for alignment of the three message systems: assessment, curriculum and pedagogy (Penney et al., 2009).

AfL, as the name itself indicates, is any assessment carried out primarily with the aim of promoting students' learning (Leirhaug & Annerstedt, 2016; William, 2018). Leirhaug and Annerstedt (2016) signalled four AfL key principles: (i) sharing learning intentions with students; (ii) sharing criteria for success; (iii) involving students in assessing their own (and other students') learning, and (iv) providing feedback that moves learners forward. William and Leahy (2015) refer that each principle contains several assessment techniques, however they are 'tight but loose', which means that every teacher has to find their own ways of putting them in practice in their own reality. Those principles ask for an alignment and embedment of assessment in the teaching-learning process (DinanThompson & Penney, 2015; Graça et al., 2019; Hay et al., 2015).

Embedding assessment is a means of using all its potential to improve the teaching-learning process and students' learning, i.e. using assessment evidence to identify students' needs, so the teaching-learning process can be adapted and improved to attend those needs and help students moving their learning forward (Batista et al., 2019; Wiliam, 2018). These principles convey to promote students' learning, a clear and understandable teaching-learning process for students, collaborative environments, self and peer assessment and self-regulation (Broadfoot, 2017; López-Pastor et al., 2013; Lorente-Catalán & Kirk, 2015). The idea is having students aware of their current level, their learning goals, and the best way to close this gap (Tolgfors & Öhman, 2016; Wiliam & Thompson, 2007). That is, using assessment to engage and actively involve students in the construction and regulation of their teaching-learning process (Coombs et al., 2018; MacPhail et al., 2018; Tolgfors, 2019). Panadero and Alonso-Tapia (2013) consider that students can only be effective in assessing their learning when they possess a similar understanding of assessment criteria to that of their teachers. Therefore, AfL effectivity depends critically on the effective use of AfL principles to increase students' motivation, commitment to learn, and responsibility to their own and peers learning.

Borghouts et al. (2017), Lorente-Catalán and Kirk (2015), and Mertler (1998) welcomed and commended the increase of research on assessment, particularly in empirical studies. Baird et al. (2017) and López-Pastor et al. (2013) underscored either the advantages of AfL and the lack of practical examples. Although teachers acknowledge AfL may be meaningful to improve students' learning, teachers in general, struggle to change their (assessment) practices (Chng & Lund, 2018; Hay et al., 2015) and do not have the knowledge and/or the skills to successfully enact AfL in their practices (Leirhaug & Annerstedt, 2016; Moura et al., 2021). These challenges are even bigger for PSTs (Moura et al., 2020). This is expected, considering AfL requires teachers to change the way they are used to thinking, planning and teaching (Batista et al., 2019). Therefore, action research studies are needed to examine the issues of adopting AfL, and its benefits on students learning (Wiliam, 2011).

It is necessary to realise a) how difficult it is to enact AfL (López-Pastor et al., 2013) as it demands time, resources and deep (pedagogical) content knowledge to put into practice (Baird et al., 2017), what may lead teachers to eschew it from their practices; b) there is a lack of practical examples carried out by teachers enacting AfL (Borghouts et al., 2017; Burrows et al., 2020), which may lead teachers to consider it as not workable in schools reality; and c) teachers need support to change assessment practices and little has been done to help physical education teachers (with AfL) (Leirhaug & MacPhail, 2015).

Changing teachers' understandings and practices in relation to how assessment should be embedded and aligned with pedagogy and curriculum requires improving teachers' assessment literacy (Batista et al., 2019; DinanThompson & Penney, 2015). Changing understandings and practices appears to be more problematic to PSTs who, have not had experience as teachers, have dispositions towards assessment as result of their experiences as students, a process defined as 'apprenticeship of observation' (Lortie, 1975). In many cases, these experiences seem to dictate PSTs' understandings and practices at the expense of what they learned during their PETE (Richards et al., 2014). The reliance only on summative assessment or assessment practices without any concern for learning are consequence of teachers' low levels of assessment literacy (DeLuca et al., 2018; Popham, 2011).

Although there is not a consensual definition of what assessment literacy is, there is some agreement that a teacher to be considered assessment literate needs to have the know-how, skills, and knowledge to understand assessment role and function within education (Pastore & Andrade, 2019; Stiggins, 1995). They must also be able to design, enact and interpret different processes of collecting evidence, to successfully embed assessment in the teaching-learning process as a process that continually supports learning, and to have students actively participating in the assessment of their learning (DinanThompson & Penney, 2015).

Hay and Penney (2013) defined that, to be assessment literate, teachers have to master four interconnected components: (i) assessment comprehension - focused on knowing and understanding 'what', 'why', 'when' and 'how' to assess

better; (ii) assessment application - focused on knowing how to plan and enact effective, meaningful, and relevant assessment successfully, involving students actively in their learning and assessment process; (iii) assessment interpretation - focused on the analysis and use of data gathered from assessment practices, and considering the negotiation of social relations of assessment; and (iv) critical engagement with assessment - focused on being conscious about the impact or consequences of assessment, challenging the 'naturalness' of practices, performances and outcomes of assessment.

Assessment literacy concept evolved over the years from a one-dimensional to a multi-dimensional perspective, as a consequence of the change of learning paradigms and of understanding what academic success is (Looney et al., 2018; Pastore & Andrade, 2019). Over the years, primary definitions intended to measure practical aspects of an assessment started to be considered embedded in the teaching-learning process as a lever to improve teaching and learning. Later, the socio-constructivist learning paradigm led to the active involvement of students in assessing their learning. Context and cultural elements strongly influence assessment literacy (Coombs et al., 2018; Livingston & Hutchinson, 2017; Xu & Brown, 2016). So, the context and the people with whom teachers work may be a critical aspect to consider if improvements on teachers' assessment literacy are intended.

### **1.3. Justification and relevance of the research**

The PhD project submitted to 'Fundação para a Ciência e Tecnologia' in 2018 was already necessary but gained even more prominence throughout the PhD. By the time, it was stated in the project that 'the movement for assessment towards learning, in the realm of educational reform (Leirhaug & Annerstedt, 2016; MacPhail et al., 2018), had not gotten the attention of Portuguese educationists and policymakers. However, this changed during my PhD with the emergence of educative laws (law decree 54/2018 and 55/2018). One of the goals of these new law decrees intended to attend one of the concerns claimed by the time the PhD project was written – 'assessment priority remains on

determining grades, aptitude or achievement, without any special concern in fostering learning’.

Although some changes started to appear in some schools and teacher practices, as expected, these changes are slow and remain ‘more the exception than the rule’ across these contexts, not to mention, at a national level. Improving assessment literacy among all teachers (at different career stages and teaching levels) is necessary if changes are intended (DeLuca et al., 2018). For that reason, changing assessment practices and transforming programmes is not only a necessity on PE but also on PETE. PETE programmes cannot or should not keep advocating for something they also do not use. For that reason, teacher educators must practice what they preach (MacPhail et al., 2019).

Teacher educators who want their student teachers to reflect about their teaching, should analyse the strategies they use in their teaching and reflect with student teachers about it to enhance their understanding of how and why teachers decide the way they do. If teacher educators intend for their students (future teachers) to enact AfL, teacher educators should use AfL in their classes rather than only summative practices with few or no students’ participation in assessment (AIESEP, 2020; Brevik et al., 2017; Starck et al., 2018).

Teacher Education programmes lack coherence about the assessment message given across their different modules/courses (DeLuca & Bellara, 2013), lack in having explicit modules focused in improving PSTs’ knowledge and skills about assessment (Haywood-Bird & Kamei, 2019), and when those modules exist, they seem disconnected from practical aspects of the classroom (DeLuca & Klinger, 2010; Ribaeus et al., 2020). Without assessment courses explicitly focused on improving PSTs’ assessment literacy, PETE programmes are most likely going to keep producing PSTs unfamiliar with AfL (Moura et al., 2021).

PE and PETE programmes and practices are also misaligned to this ever-moving world (Lawson, 2018; MacPhail, 2017) and need to be rethought and reconfigured to try to deal with the 21<sup>st</sup> century challenges and pitfalls: globalisation, diversity (contextual and cultural), neoliberal accountabilities and digital technologies (MacPhail & Lawson, 2020). These challenges add up to the already identified 21<sup>st</sup> century skills: critical thinking, creativity, collaboration,

metacognition, and motivation, and the consequent interrogation on how to best assess those skills (Webb et al., 2018). Besides that, PETE remains with the unsolved problem of counterbalancing the negative impact of ‘apprenticeship of observation’ which limits PSTs’ understanding and practices of assessment to summative (Mjåtveit & Giske, 2020).

Improving PSTs and teachers’ assessment literacy is a necessity if assessment is to be a support for improving students’ learning. There are considerations for the reformulation of PETE to be outlined around practice-based teaching and research-informed practice (Brevik et al., 2017). These practical approaches should promote a space in which student teachers can develop their assessment literacy, i.e. engage with different uses and purposes of assessment, go back and forth through assessment theories and practices, develop critical thinking about (distinct forms of) assessment, plan and enact effective, meaningful and relevant assessment in practice, and perhaps, unlearn negative conceptions (AIESEP, 2020; Kleij et al., 2015; Starck et al., 2018).

The use of these practical approaches can possibly be reinforced if teacher educators are able to analyse, reflect, and discuss strategies used in their own teaching (MacPhail et al., 2019). Furthermore, experiencing assessment only during the school placement looks limited (Hamodi et al., 2017; Starck et al., 2018) and may not be the best solution, considering that many (cooperating) teachers tend to have low assessment literacy levels (DeLuca & Klinger, 2010; Volante & Fazio, 2007). However, the reconfiguration of PETE needs to be aligned to, and to consider, PE needs, if changes are intended (Lawson, 2018). Otherwise, there is the risk of remaining with the large school-universities gap and with innovative practices that are ‘washed out’ when PSTs or beginning teachers enter schools.

To bridge the gap between PE and PETE, teachers and teacher educators need to start working together and learning from each other (MacPhail, 2020), which can happen, for example, in learning communities. According to MacPhail (2020), working together means working with teachers rather than on teachers, i.e., teacher educators are not the only problem solvers, this is a bidirectional process in which everyone’s contributions (ideas, knowledge, practices, and experiences)

are valid and welcomed, and the diversity of learning communities' members become beneficial and enriching (MacPhail & Lawson, 2020). Knowledge is constructed in interaction, embracing the idea of socio-constructivist learning theories, and the different stakeholders (teachers, teacher educators, PSTs) can contribute and learn from each other (Alves et al., 2017; Skerrett & Williamson, 2015). Bringing universities closer to schools and trying to find common understandings among all stakeholders (teacher, teacher educators, preservice teachers, policymakers) involved in those fields would be necessary (Darling-Hammond, 2010; Mjåtveit & Giske, 2020). It may develop cooperating teachers' and PSTs' assessment literacy (Volante & Fazio, 2007), and would probably provide more support to PSTs deal with the challenges of enacting AfL (Ribaeus et al., 2020).

Collaborations in learning communities have already proved to be meaningful in supporting teachers and PSTs (Burrows et al., 2020). Teachers on the study of Gutierrez (2019) highly valued the collaborative planning and close relationships with the facilitators of the professional development, considering it provided chances to learn from each other. It is essential that teachers and PSTs assume an active role in learning communities and/or professional development. The idea is not that teachers learn what they should do but, instead, reflect and discuss what they know and how they can improve it.

Although important, these collaborations are scarce (Burrows et al., 2020) and long overdue (Lawson, 2018), which may lead teachers and PSTs to quit when trying 'more ambitious' practices because they receive no support when attempting them. For example, the support teachers receive when enacting AfL is regarded as essential to its success (Qin & Yi, 2021; Schildkamp et al., 2020). This is expected considering AfL is quite challenging, especially for those with lower assessment literacy levels. Considering PSTs' lack of experience, their unfamiliarity with AfL, the necessity of being critical and reflexive about teaching, learning, and the knowledge acquired as school students and as student teacher, assuming a practitioner researcher's role can be essential to help PSTs better engage with their teaching and their students' learning, actively constructing their knowledge and become transformative teachers (Heissenberger & Maticsek-

Jauk, 2020; Tolgfors, 2019). Researching their own practices can also help PSTs redirecting their attention to their students' needs (Rutten, 2021), which is necessary if improvements on students' learning are intended.

Although it seems consensual that teaching should be focused on students' learning and needs (Graça et al., 2019; Tannehill, 2017), there is disagreement if we ask teachers/teacher educators/researchers to answer some questions about 'learning in physical education': What is learning in physical education? What can physical education offer? What legitimise physical education? Physical education: why and for what? What are students' perceptions about learning in physical education? Regardless the answer about what learning in physical education should be, AfL allows the alignment between assessment, curriculum, and pedagogy, and makes the teaching-learning process clear and understandable for students. However, more empirical studies on the impact of AfL on students' learning are necessary.

This thesis may be relevant and provide some contributions to address six needs mentioned in literature regarding (preservice) teachers' difficulties in being familiar and successfully in the enactment of AfL: 1) improving assessment literacy among teachers and PSTs; 2) increasing research on assessment, particularly practical examples of enacting AfL and its impact on (preservice) teachers' teaching and students' learning; 3) providing support to PSTs when enacting AfL; 4) finding a 'common ground' between teachers, PSTs and teacher educators, for example, through learning communities; 5) 'teach by example' or 'practice what you preach', i.e., PSTs learning AfL by using it before going to school placement and facilitators (teacher educator and researcher) reflect with them about teaching and learning strategies used in the classroom; and 6) PSTs researching their own practices.

I am aware of the challenge to face the change, to change, and to be successful. I am humble and admit that reconfiguring PETE and PE is difficult, but highly necessary, if we intend to prepare student teachers and school students for the challenges of the 21st century and move students' learning forward by creating teachers better prepared and educated.

## 1.4. Research problems and goals

The present investigation is related to a research problem identified in social and educational science literature and a movement, in the realm of educational reforms, for assessment towards learning (Leirhaug & Annerstedt, 2016; MacPhail et al., 2018). This concern is linked to all educational cycles and areas but has not got yet 'so much room' in practice, considering the worrying lack of empirical studies and the potential benefits highlighted in literature for students' learning.

The main purpose of this thesis is to:

- examine how physical education PSTs learned to use AfL principles in their teaching during a year-long school placement, and the consequent impact on their students' learning.

To do so, this research specifically intends to:

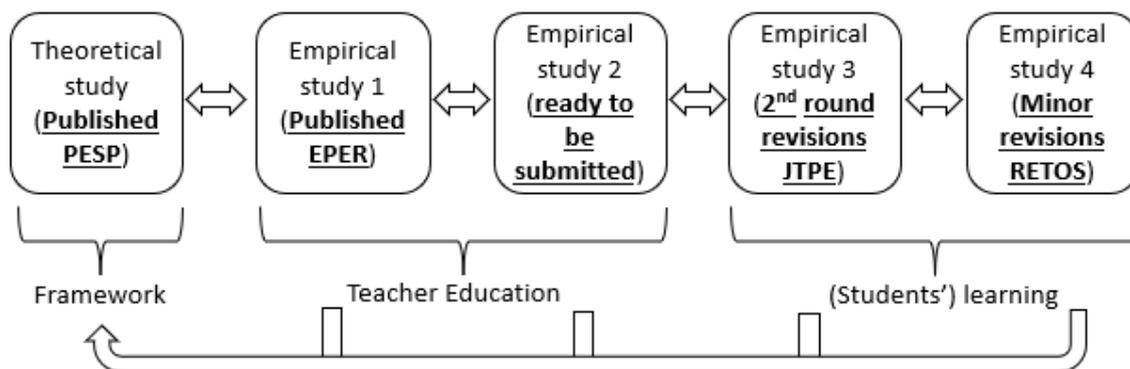
- 1) To explore the value and meanings the participants (PSTs, cooperating teachers and students) ascribe to the use of AfL in physical education teaching;
- 2) To analyse the problems and dilemmas of learning to implement AfL principles in physical education teaching in the context of preservice school placement;
- 3) To examine the impact of the use of AfL on students' perceptions, patterns of participation, learning involvement, and achievement.

Ultimately, it is expected that this research can contribute to work on assessment issues on teacher training during school placement and to endorse reform movements towards changing assessment practices in physical education, toward a more inclusive and equitable quality education.

## 1.5. Thesis structure

Although this document is organised in chapters based on articles published or submitted in peer reviewed journals, the thesis has its value and meaning if considered as a whole, since none of the papers on their own can fully address and explore the research under discussion throughout the document. Papers are interconnected and informed each other throughout the whole process, by revisiting each previous chapter in developing the next one. This allowed a contextualised analysis and interpretation of the process of preparing PSTs to enact AfL in their lessons and the consequent impact on their students' learning through a different lens.

This thesis encompasses a longitudinal study of one-year throughout the school placement of physical education PSTs involved in an action-research. This document is structured by two type of papers: i) theoretical and ii) empirical. The first paper intends to create a conceptual basis of knowledge for the PhD student to have a current state of international literature on AfL, physical education and PETE, informing and preparing path for the following papers to address the learning, the use and the impact of PSTs enacting AfL in their teaching practices at the school placement. The empirical papers are closely aligned to the specific goals of this thesis. Paper two and three analyse the process of improving PSTs' assessment literacy (by means of practical experiences before school placement, seminars, being practitioner researchers, and involvement in a learning community before and throughout) to increase their chances of being successful at enacting AfL in their practices as they struggle to not replicate their experiences as students. Paper four and five focus on learning, with paper four exploring the impact of PSTs' practices on their students' learning, and paper five looks into Portuguese students' perceptions about learning by means of the 'Effective Lifelong Learning Inventory' (ELLI) questionnaire (Crick et al., 2004). The alignment between papers can be also analysed on Figure 1, based on the idea of 'theory of action' presented by Rutten (2021).



**Figure 1. Alignment of papers, inspired by Rutten (2021)'s 'theory of action'.**

Writing these different papers allowed a bigger dissemination and discussion of the results with very different specialists and members of the scientific community as well as receiving continuous feedback throughout the process. The intention to reach a wider audience also led to the construction of papers in the English idiom and submission to journals from teaching, teacher education, general education, in addition to specific journals in physical education area.

The thesis has a standard format, but each study has its own particularities to respect journals' rules and styles, mainly in terms of citations and references, according to the journal in which the paper was published or submitted as well as abbreviations, number and list of figures and tables. Table 1 provides information about the papers that are part of this thesis.

**Table 1. Summary of structure and contents included on the thesis.**

Theoretical study		
Theoretical study (pp. 27-55)	<b>Moura, A.,</b> Graça, A., MacPhail, A., & Batista, P. (2021). Aligning the principles of assessment for learning to learning in physical education: A review of literature. <i>Physical Education and Sport Pedagogy</i> , 26(4): 388-401. DOI:10.1080/17408989.2020.1834528	<b>Published</b> in a scientific journal with double peer-review: <i>Physical Education and Sport Pedagogy</i>
Empirical studies		
Empirical Study 1 (pp. 59-84)	<b>Moura, A.,</b> MacPhail, A., Graça, A., & Batista, P. (2022). Providing physical education preservice teachers with opportunities to interrogate their conceptions and practices of assessment. <i>European Physical Education Review</i> , 1-18. DOI: 10.1177/1356336X221129057	<b>Published</b> in a scientific journal with double peer-review: <i>European Physical Education Review</i>
Empirical Study 2	<b>Moura, A.,</b> Graça, A., MacPhail, A., & Batista, P. (2022). Enhancing the enactment of Assessment for	<b>Submitted</b> to a scientific journal with

(pp. 85-116)	Learning principles during school placement: Preservice teachers as practitioner researchers within a learning community	double peer-review: Journal of Educational Change
Empirical Study 3 (pp. 117-146)	<b>Moura, A.</b> , MacPhail, A., Graça, A., & Batista, P. Encouraging students to co-construct, co- and self-regulate their learning within a cooperative learning environment in physical education. <i>Journal of Teaching in Physical Education</i>	<b>Submitted</b> to a scientific journal with double peer-review: Journal of Teaching in Physical Education (2 <sup>nd</sup> round revisions)
Empirical Study 4 (pp. 147-166)	<b>Moura, A.</b> , Graça, A., MacPhail, A., & Batista, P. Student's perspectives about their learning profile before and after Covid-19. <i>Retos</i> .	<b>Submitted</b> to a scientific journal with double peer-review: Retos (Minor revisions)

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## **II. THEORETICAL STUDY**

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## **2.1. Aligning the principles of assessment for learning to learning in physical education: A review of literature**

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## **Aligning the principles of ‘assessment for learning’ to learning in physical education: A review of literature**

**Background:** A comprehensive international literature review on alternative assessment in physical education has been provided by López-Pastor, Kirk, et al. (2013). The authors remarked that while more authentic forms of assessment in physical education have been evidenced over the last three decades, the extent to which alternative assessment practices have become common practice in the teaching of physical education is yet to be established.

**Purpose:** This review provides an updated perspective on the prevalence of assessment for learning (AfL) principles in physical education discourse since the 2013 publication (López-Pastor, Kirk, et al. 2013). The intent is to inform and consider future AfL practices in school physical education and physical education teacher education (PETE) programmes.

**Methods:** Eligibility criteria for the review required full-text articles written in English or Spanish; published (open access and/or in print) in peer-reviewed, academic and professional journals; and limited to the period 2013 to 2019. Inclusion criteria required articles to report assessment being used to promote learning in physical education, regardless of making reference to ‘assessment for learning’.

**Findings:** Fifty-two articles met the inclusion criteria. A thematic analysis of these articles resulted in four themes: i) traditional positioning of assessment in physical education; ii) AfL and physical education; iii) the constraints in enacting AfL in physical education; and iv) how to most effectively embed AfL in daily physical education practices.

**Conclusions:** The main conclusions of this review are that i) AfL is a learning-oriented assessment based on socio constructivist theories and integrated into the teaching-learning process, ii) physical education teachers continue to use assessment solely to grade students; iii) physical education teachers do not have the necessary skillset to use AfL in physical education successfully; iv) physical

education teachers need to be supported to implement AfL; and v) it is necessary to consider how best PETE programmes can infuse AfL across the programme.

Keywords: assessment; learning; teacher education; teaching-learning theories

## **Introduction**

Acknowledging that assessment for learning (AfL) has gained prominence in assessment-related literature (Hay, Tinning and Engstrom 2015; Leirhaug and MacPhail 2015), it appears that this is yet to transfer to physical education teachers and, in turn, the teaching of school physical education and physical education teacher education (PETE) programmes.

The purpose of this review was to provide colleagues with a broader and updated perspective of the reference to, and use of, AfL within the physical education context since the international review of literature by López-Pastor, Kirk, et al. (2013) on alternative assessment in physical education. The intent is to inform and consider future AfL practices in school physical education and PETE programmes. In positioning AfL, the authors are guided by the definition provided by Black et al. (2004, 10): AfL is any assessment for which the first priority in its design and practice is to serve the purpose of promoting students' learning.

## **Methods**

It was deemed appropriate to conduct a review to identify and map the available evidence. The procedures for this review were informed by Petticrew and Roberts (2006)'s guidelines. The stepwise approach used encompasses (i) formulating search terms, (ii) selecting databases, (iii) conducting the literature search, (iv) formulating inclusion

criteria and applying these criteria to selected relevant literature, and (v) the extraction of data.

The formulation of search terms and eligibility criteria for searching appropriate databases was intended to focus on identifying the most pertinent retrievals related to AfL in physical education, without omitting studies related to AfL that did not reference the term 'AfL'. López-Pastor, Kirk, et al. (2013)'s review considered to have effectively captured the history of and evolving developments in assessment literature in physical education up until 2013. The authors believed it was timely to review the interim period from 2013 to 2019 given the heightened interest in changing the focus from 'what teachers teach' to 'what students learn' and, by association, an interest in using assessment as a support of, and for, learning.

The retrieved studies were considered relevant and included in this review when they convincingly connected 'assessment' and 'learning' in physical education and were the central foci of the paper. To locate relevant articles that had not been detected in the database search an additional manual search was used. This was completed by searching the publications of individual authors prominent in the field of assessment and learning in physical education and by visiting the reference list of the more pertinent selected articles arising from the database search. The inclusion of this manual search in the findings intends to provide a more comprehensive acknowledgement of assessment and its' association with learning in physical education literature. This review includes articles retained from both the database and manual searches.

### **Procedures**

#### *Databases and search terms*

Three specific terms were chosen for the B-on Database search: ‘physical education’ AND ‘assessment for learning’ AND ‘teaching’. The B-on Database was selected because it includes many of the leading publishers of scientific journals and international databases most relevant to research in physical education (e.g., Elsevier, Taylor & Francis, Web of Science, Academic Search Complete, Sage Premier, EBSCO Health).

### *Eligibility criteria*

Eligibility criteria for the review required full-text articles written in languages (English or Spanish) understood by the authors; published in peer-reviewed, academic and professional journals; and limited to the period 2013 to 2019. The manual search for relevant articles included searching peer-reviewed outputs from individual authors prominent in the areas of physical education and assessment and the reference lists of eligible articles identified through the database search. For both searches, inclusion criteria required articles to report assessment being used to promote learning in physical education, regardless of reference to ‘assessment for learning’ or ‘AFL’.

### *Selection of articles and descriptive overview*

Two of the authors independently conducted the retrieval of articles provided by database searches in December 2019 to ensure consensus on relevant articles.

The selection of articles began with examining each of the 415 references retrieved from the database search (informed by the three specific search terms and the eligibility criteria). After removing 11 duplicates, the number of references reduced to 404. Abstracts from the 404 articles were analysed by the same two authors. Each author

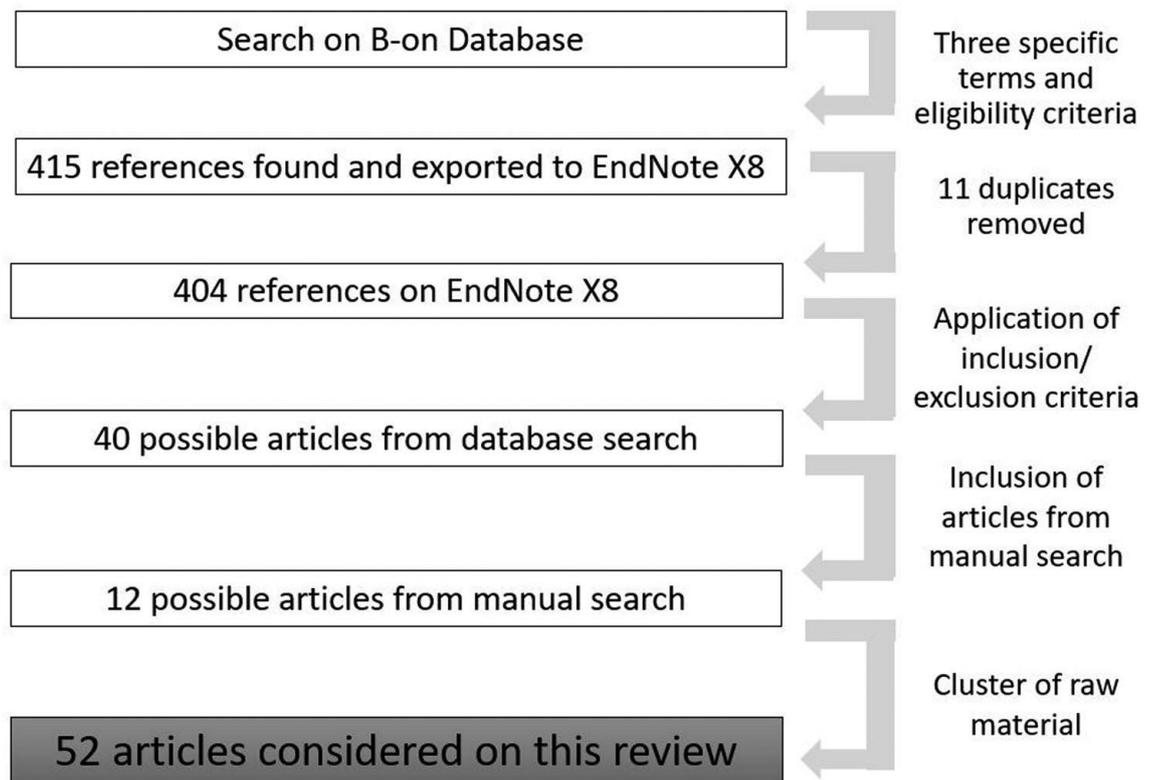
independently indicated which articles were relevant to the review before comparing results across the two authors and considering any discrepancies. Both authors agreed that 40 articles met the eligibility and inclusion criteria and these articles were exported to a new EndNote file. Additionally, the manual search conducted by the lead author and verified by a second author located 12 articles that satisfied all the eligibility and inclusion criteria. This resulted in a total of 52 articles being considered relevant to the review. The process of selection of references for review is summarised in Figure 1.

### *Data extraction and data analysis*

The 52 articles were examined through an inductive thematic analysis (Braun and Clarke 2012). The thematic analysis process involved four steps: i) reading each article and noting the main conclusions; ii) assembling the numerous conclusions of each article in a Word document; iii) labelling the conclusions of each article with initial codes before grouping them into more generic topics; and iv) organizing the more generic topics into themes.

The choice of themes arose through an open and emerging analysis (Braun and Clarke 2012). After coding conclusions of each article, initial codes were iteratively grouped into generic topics. All the material was carefully read and some 'initial codes' were removed while other codes were grouped together into generic topics. The inclusion or movement of individual sentences or initial codes into one or more generic topics was completed through constant comparison. Each generic topic was then organized and the authors' discussion lead to the creation of the main themes to be explored: i) traditional positioning of assessment in physical education; ii) AfL and physical education; iii) the

constraints in enacting AfL in physical education; and iv) how to most effectively embed AfL in daily physical education practices. Some themes are broken into subthemes.



**Figure 1. Flowchart of references selected.**

## Results

### *Descriptive overview*

The 52 articles contained 103 authors, with the authors most frequently publishing in the area of interest being Víctor López-Pastor (seven), Ann MacPhail (five), David Kirk (four), Eloisa Lorente-Catalán (four), Björn Tolgfors (three), and Petter Leirhaug (three). The number of articles being published has remained relatively constant with a minimum of five articles in both 2014 and 2019 and a maximum of ten articles in 2013. Thirty-one different journals published the 52 articles, with the larger frequency being attributed to

European Physical Education Review (ten), Physical Education & Sport Pedagogy (five), Sport, Education & Society (four), Journal of Physical Education, Recreation and Dance (three), and Retos (three). Of the 52 articles, 38 are empirical articles of which 20 are aligned with exploratory analysis, 10 intervention studies, and eight descriptive studies of teachers' and/or students' perspectives. The remaining 14 are non-empirical studies, with one of these being a literature review. Table 1 provides a summary of the ideas and authors discussed throughout the following section.

**Table 1. Summary of ideas and corresponding authors**

	<b>Ideas</b>	<b>Authors</b>
Traditional positioning of assessment in physical education	Assessment is closely associated to evaluation and is used solely for the purpose of grading students	Lorente-Catalán and Kirk (2013), MacPhail, Halbert and O'Neill (2018), Hay, Tinning and Engstrom (2015), MacPhail and Murphy (2017), Rodríguez-Negro and Isasti (2016)
	Assessment is characterised as being misaligned with curriculum and pedagogy, with students having a passive role in the teaching-learning process	Borghouts, Slingerland and Haerens (2017), Hamodi, López-Pastor and López-Pastor (2017), Hay, Tinning and Engstrom (2015), Kniffin and Baert (2015), Leirhaug (2015), Leirhaug and Annerstedt (2016), López-Pastor, Kirk, et al. (2013), Lorente-Catalán and Kirk (2015), Sofo et al. (2013), Svennberg, Meckbach and Redelius (2014), Tolgfors (2019), Zhu (2015)
	Assessment has an associated negative connotation	Slingerland et al. (2017)
AfL and physical education	AfL's main objective to improve students' learning in physical education is considered as a significant strength	Borghouts, Slingerland and Haerens (2017), Fencel (2014), Hay, Tinning and Engstrom (2015), Hortigüela-Alcalá, Pérez-Pueyo and Abella (2014), Leirhaug (2015), Leirhaug and Annerstedt (2016), Leirhaug and MacPhail (2015), López-Pastor, Kirk, et al. (2013), MacPhail, Halbert and O'Neill (2018), Tolgfors (2019)
	Assessment is integrated/embedded in the teaching-learning process to attend to students' needs (teaching) and allow students to reach their learning goals (curriculum)	Borghouts, Slingerland and Haerens (2017), Brink and Bartz (2017), Chng and Lund (2018), Córdoba-Jiménez, López-Pastor and Sebastiani-Obrador (2018), DinanThompson (2013), González-Campos, Castañeda-Vázquez and Campos-Mesa (2018), Fencel (2014), Hay, Tinning and Engstrom (2015), Kniffin and Baert (2015), Lander et al. (2016), Leirhaug and MacPhail (2015), López-Pastor, Kirk, et al. (2013), MacPhail, Halbert and O'Neill (2018), MacPhail, Tannehill and Goc Karp (2013), Salimin et al. (2018), Salom (2019), Tannehill (2017), Tolgfors (2018), Tolgfors and Öhman (2016)
	Necessity for teachers to share the teaching-learning process (learning goals and assessment criteria) and evidence collected from assessment with their students	Chng and Lund (2018), Leirhaug and MacPhail (2015), MacPhail, Tannehill and Goc Karp (2013) Ní Chróinín and Cosgrave (2013), van der Mars, Timken and McNamee (2018)

**Table 1. Continued.**

	<b>Ideas</b>	<b>Authors</b>
	Students act as socio- constructivist learners, i.e., they are aware and are responsible for their learning and use assessment to regulate it. They are aware of their learning goals which helps them to improve their learning in physical education	Andersson (2014), Andersson (2016), Barrientos-Hernán, López-Pastor and Pérez-Brunicardi (2019), Bourke and Mentis (2013), Córdoba-Jiménez, López-Pastor and Sebastiani-Obrador (2018), DeLuca et al. (2013), Eather et al. (2017), Fencel (2014), Gallardo-Fuentes and Thuillier (2016), Hamodi, López-Pastor and López-Pastor (2017), Hay, Tinning and Engstrom (2015), Kniffin and Baert (2015), Leirhaug and Annerstedt (2016), Lorente-Catalán and Kirk (2013), Lorente-Catalán and Kirk (2014), Ní Chróinín and Cosgrave (2013), O'Loughlin, Ní Chróinín and O'Grady (2013), Romero-Martín et al. (2017), Salimin et al. (2018), Tolgfors (2019), Tolgfors and Öhman (2016)
	AfL is absent from teachers' practices because teachers do not have sufficient knowledge and skills to implement AfL successfully	Gallardo-Fuentes and Thuillier (2016), Hortigüela-Alcalá, Pérez-Pueyo and Abella (2014), Leirhaug (2015), Leirhaug and Annerstedt (2016), Lorente-Catalán and Kirk (2015), MacPhail and Murphy (2017), Tolgfors and Öhman (2016), van der Mars, Timken and McNamee (2018)
The constraints in enacting AfL	AfL requires teachers to change their thinking and practices which may be more challenging than changing only assessment techniques	Brink and Bartz (2017), Chng and Lund (2018), Hay, Tinning and Engstrom (2015), Leirhaug and Annerstedt (2016), Lorente-Catalán and Kirk (2013), van der Mars, Timken and McNamee (2018)
	Physical education teachers do not feel confident/comfortable while using AfL and/or being supported to use it	Hamodi, López-Pastor and López-Pastor (2017), Lander et al. (2016), Leirhaug (2015), Lorente-Catalán and Kirk (2013), MacPhail and Murphy (2017), Redelius, Quennerstedt and Öhman (2015), Slingerland et al. (2017), Tolgfors and Öhman (2016)
	Teachers are more familiar with traditional assessment and/or perceive AfL as challenging due to the amount of work it demands	Chng and Lund (2018), Gallardo-Fuentes and Thuillier (2016), Hamodi, López-Pastor and López-Pastor (2017), Hortigüela-Alcalá, Pérez-Pueyo and Abella (2014), López-Pastor, Pintor, et al. (2013), Molina and López-Pastor (2019), Ní Chróinín and Cosgrave (2013)
	The use of AfL during PETE is valued by PSTs as it develops their understanding about how to use AfL in their future teaching	DeLuca et al. (2013), Hamodi, López-Pastor and López-Pastor (2017), Lorente-Catalán and Kirk (2013), Lorente-Catalán and Kirk (2015), Molina and López-Pastor (2019), Romero-Martín et al. (2017)
How to most effectively embed AfL in daily practices	PETE programmes have to consider how best to support PSTs to use AfL effectively	Hamodi, López-Pastor and López-Pastor (2017), Leirhaug and Annerstedt (2016), MacPhail, Tannehill and Goc Karp (2013), Starck, Richards and O'Neil (2018)
	Continuous professional development is a key aspect to enhance physical education teachers' assessment practices and to develop their knowledge and skills to determine how best to use assessment evidence	Barrientos-Hernán, López-Pastor and Pérez-Brunicardi (2019), Chng and Lund (2018), DinanThompson (2013), Hay, Tinning and Engstrom (2015), Kniffin and Baert (2015), Lorente-Catalán and Kirk (2015), Molina and López-Pastor (2019), Rodríguez-Negro and Isasti (2016), van der Mars, Timken and McNamee (2018)
	AfL as an entity does not solve all teachers' problems Networks are essential to support and scaffold teachers use of AfL in physical education and make continuous professional development more effective in upskilling physical education teachers in assessment	Hay, Tinning and Engstrom (2015), Hortigüela-Alcalá and Pérez-Pueyo (2016), Tolgfors (2018) DinanThompson and Penney (2015), Eather et al. (2019), Kniffin and Baert (2015), Lorente-Catalán and Kirk (2013), Lorente-Catalán and Kirk (2014), MacPhail and Murphy (2017), Molina and López-Pastor (2019), Slingerland et al. (2017), van der Mars, McNamee and Timken (2018)

## Analysis of themes

### *i) Traditional positioning of assessment in physical education*

It is noted that assessment has been consistently aligned with the purpose of allocating

grades to students (Hay, Tinning and Engstrom 2015; Lorente-Catalán and Kirk 2013; MacPhail, Halbert and O'Neill 2018; MacPhail and Murphy 2017), resulting in assessment of learning (i.e., a summative assessment usually captured by allocating grades) being a common practice in teachers' practice in physical education (Rodríguez-Negro and Isasti 2016).

It is reported that physical education teachers have been using standardised assessment (assessment not necessarily aligned with the teaching-learning process), fitness testing and de-contextualised testing skills on a regular basis (Lorente-Catalán and Kirk 2015); assessing aspects of physical education (e.g., attendance and dress) that are not meaningful learning goals (Borghouts, Slingerland and Haerens 2017; Kniffin and Baert 2015; Tolgfors 2019; Zhu 2015); using assessment criteria and making decisions that are not shared with students (Borghouts, Slingerland and Haerens 2017; Svennberg, Meckbach and Redelius 2014); and using assessment without involving students in the consideration of assessment (Hamodi, López-Pastor and López-Pastor 2017; Leirhaug and Annerstedt 2016; Sofu et al. 2013). Bourke and Mentis (2013) reiterate that when students participate in assessment, the assessment tends to be mediated and organised by teachers, providing the students with minimal, if any, opportunity to engage meaningfully with the assessment process. Such instances represent what López-Pastor, Kirk, et al. (2013) defined as 'traditional assessments' - assessment solely for grade purposes, used after the teaching-learning process, and without students' participation, noting that such assessments were ever present in multiple physical education practices around the world.

The consequences of this are significant in terms of the teaching-learning process and the effect assessment practices can have on students' learning. Summarizing the evidence presented across the literature, traditional assessment practices have led to a

misalignment between assessment, curriculum and pedagogy (Hay, Tinning and Engstrom 2015), i.e., learning goals are not aligned to what is valued and assessed (Borghouts, Slingerland and Haerens 2017; Leirhaug 2015); adopt ambiguous criteria, making it difficult for students to understand what is expected from them (Borghouts, Slingerland and Haerens 2017; Svennberg, Meckbach and Redelius 2014); convey to students that to be successful in physical education, it is sufficient to participate and behave in an acceptable way (Zhu 2015); and encourage a negative connotation on assessment which, in turn, causes anxiety and panic among students, teachers, parents and decision-makers (Slingerland et al. 2017). These assessment practices are disruptive to a meaningful, relevant and worthwhile physical education experience and can result in students believing that there is nothing worthwhile to learn in physical education.

*ii) AfL and physical education*

An increased focus of AfL and physical education reports the positive impact of AfL on the physical education teaching-learning process and students' learning (Borghouts, Slingerland and Haerens 2017; Hay, Tinning and Engstrom 2015; Leirhaug and MacPhail 2015; López-Pastor, Kirk, et al. 2013). The positive impact is attributed to assessment being considered a pedagogical necessity (Hay, Tinning and Engstrom 2015; MacPhail, Halbert and O'Neill 2018). That is, assessment is regarded as central to the teaching-learning process (Leirhaug and MacPhail 2015; MacPhail, Tannehill and Goc Karp 2013) and as a way of developing students' ability to regulate their own (and peers') learning in physical education (Hamodi, López-Pastor and López-Pastor 2017; Lorente-Catalán and Kirk 2014).

The value of AfL in physical education: There is a growing acknowledgment of the value of AfL in physical education (Hay, Tinning and Engstrom 2015; Leirhaug and Annerstedt 2016; López-Pastor, Kirk, et al. 2013; Tolgfors 2019). Teachers using AfL aim to enhance students' learning (Borghouts, Slingerland and Haerens 2017; Leirhaug 2015; Leirhaug and MacPhail 2015; MacPhail, Halbert and O'Neill 2018), providing them with better experiences (Fencl 2014) and opportunities to develop positive feelings about physical education. MacPhail, Halbert and O'Neill (2018) report that using assessment as part of the teaching-learning process (AfL) is more effective in promoting meaningful student learning when compared to more traditional assessments in physical education. Hortigüela-Alcalá, Pérez-Pueyo and Abella (2014) concluded that students from different classes who participated in the same subject, with the same goals and content but using assessment throughout the process (AfL) rather than traditional assessment, had higher perceptions of learning in physical education than those exposed only to traditional assessment.

The impact of AfL on what and how students learn in physical education depends on what their teachers want them to learn (González-Campos, Castañeda-Vázquez and Campos-Mesa 2018; Tolgfors 2018). Borghouts, Slingerland and Haerens (2017) report that physical education teachers need to know what they want their students to achieve in physical education to appropriately decide assessment and teaching practices. The use of AfL provides support during the teaching-learning process that encourages teachers and students to identify to what extent learning goals are being achieved and any necessary changes (Kniffin and Baert 2015; MacPhail, Halbert and O'Neill 2018; Salimin et al. 2018; Tannehill 2017).

Ongoing information collected through assessment (for learning) impacts positively on physical education teachers' teaching, allowing them to make better decisions for student learning in physical education and design appropriate instruction (Brink and Bartz 2017; Chng and Lund 2018; Fencel 2014; Salimin et al. 2018). Knowledge is co-constructed when the process is shared by teachers and students, and students can identify their current level and the next steps to achieve specific physical education learning goals (Leirhaug and Annerstedt 2016; Salimin et al. 2018). Learning becomes the shared responsibility of teachers and students, as they work as collaborators to achieve learning goals in physical education (Ní Chróinín and Cosgrave 2013).

*Assessment, curriculum and pedagogy:* In contrast with traditional forms of assessment completed at the end of a physical education unit, AfL embeds assessment throughout the teaching-learning process (Kniffin and Baert 2015; MacPhail, Tannehill and Goc Karp 2013; Salom 2019). This represents a shift for many in physical education on the way the teaching-learning process is considered and enacted. It is not sufficient to align assessment with curriculum and pedagogy because the alignment is not linear (MacPhail, Tannehill and Goc Karp 2013). Instead, assessment has an interactive and dynamic relationship with curriculum and pedagogy (MacPhail, Tannehill and Goc Karp 2013; Salimin et al. 2018; Tannehill 2017; Tolgfors 2018). Subsequently, evidence collected through assessment is used on an ongoing basis to improve the teaching-learning process in physical education (Lander et al. 2016; López-Pastor, Kirk, et al. 2013).

Evidence arising from ongoing assessment allows physical education teachers to (re)analyse and (re)adapt learning tasks, instruction and feedback to meet students' needs (Córdoba-Jiménez, López-Pastor and Sebastiani-Obrador 2018; DinanThompson 2013;

Salom 2019; Tolgfors and Öhman 2016). Such ongoing assessment evidence provides teachers with meaningful information to more effectively instruct, clear learning outcomes allow for appropriate decisions on how to assess (Leirhaug and MacPhail 2015; MacPhail, Tannehill and Goc Karp 2013). Furthermore, assessment criteria have to be aligned with physical education learning goals and both have to be shared with students.

Evidence collected during the teaching unit in physical education needs to be shared with students to help them monitor their own progress (van der Mars, Timken and McNamee (2018). It is crucial that assessment criteria are shared and understood by students at the beginning of the physical education unit (Leirhaug and MacPhail 2015; MacPhail, Tannehill and Goc Karp 2013; Ní Chróinín and Cosgrave 2013), acknowledging that ‘students are the ultimate users of any assessment information that is elicited’ (Chng and Lund 2018, 31).

*Students’ role and learning in AfL:* AfL is founded on socio-constructivist learning theories which means that learning is co-constructed by teachers and students (Hay, Tinning and Engstrom 2015; Lorente-Catalán and Kirk 2014). Knowledge is co-constructed when teachers and students actively participate in the teaching-learning process (including assessment) (Barrientos-Hernán, López-Pastor and Pérez-Brunicardi 2019; Gallardo-Fuentes and Thuillier 2016; Leirhaug and Annerstedt 2016).

Empowering students on the teaching-learning process allow students to take responsibility for their learning in physical education, which helps them to understand and regulate their own, and peers’, learning process (Kniffin and Baert 2015; O’Loughlin, Ní Chróinín and O’Grady 2013; Tolgfors 2019). Students can regulate their learning in physical education through techniques of self, peer and co-assessment (Barrientos-

Hernán, López-Pastor and Pérez-Brunicardi 2019; Bourke and Mentis 2013; DeLuca et al. 2013; Romero-Martín et al. 2017). These techniques help students gain an understanding of their learning (Andersson 2014), as well as expose them to criteria on which the assessment is based (Córdoba-Jiménez, López-Pastor and Sebastiani-Obrador 2018; Hay, Tinning and Engstrom 2015).

Students' participation in assessment has a positive impact on students' learning in physical education (Andersson 2016; Eather et al. 2017; Fencel 2014; Tolgfors and Öhman 2016). When students participate in assessment in physical education they learn to use higher order thinking skills (Fencel 2014); learn to think and analyse critically what they are learning (Lorente-Catalán and Kirk 2013); develop competences and knowledge applicable to other subjects or contexts of life (Lorente-Catalán and Kirk 2014; Tolgfors 2019); and build competencies of leadership, communication and teamwork (Fencel 2014). Students need to know 'what', 'how' and 'why' they are learning and assessing (Kniffin and Baert 2015) to feel engaged and responsible for their learning.

### *iii) The constraints in enacting AfL*

While the previous section advocates for the positive impact that AfL can have on the teaching-learning process in physical education (Hay, Tinning and Engstrom 2015; Leirhaug and MacPhail 2015; Tolgfors 2019), there is a literature base in physical education suggesting that AfL in physical education remains conceptually weak and absent from teachers' practices (Lorente-Catalán and Kirk 2015; MacPhail and Murphy 2017; Tolgfors and Öhman 2016; van der Mars, Timken and McNamee 2018). According to Leirhaug and Annerstedt (2016, 625) 'most physical education teachers (...) possessed little experience, and some none, in integrating AfL into their teaching'. Others have

reported that physical education teachers lack the skills to conduct the teaching-learning process associated with AfL successfully (Gallardo-Fuentes and Thuillier 2016; Hortigüela-Alcalá, Pérez-Pueyo and Abella 2014; Leirhaug 2015).

Borghouts, Slingerland and Haerens (2017) reported that while physical education teachers appreciate AfL, they have difficulty in enacting it. The ability to change practices is reported as the main challenge (Chng and Lund 2018; Hay, Tinning and Engstrom 2015). It is necessary to understand the challenges physical education teachers face when attempting to implement AfL to provide them with realistic solutions that fit with the reality of their teaching contexts (López-Pastor, Kirk, et al. 2013). It is suggested that physical education teachers do not have the skillset to effectively use AfL in their classes as they lack time to invest in training to become sufficiently competent in AfL (DeLuca et al. 2013; López-Pastor, Kirk, et al. 2013).

Understanding and enacting AfL requires more than changing assessment techniques in physical education (Brink and Bartz 2017; Leirhaug and Annerstedt 2016; Lorente-Catalán and Kirk 2013; van der Mars, Timken and McNamee 2018). Physical education teachers need to rebuild their thinking, conceptions and practices to use assessment to improve students' learning in physical education. Teachers feel insecure when they start using AfL (Hortigüela-Alcalá, Pérez-Pueyo and Abella (2014). This insecurity is attributed to doubts on how to use assessment evidence to enhance students' learning (Lander et al. 2016); lack of experience in communicating aims and learning goals to students (Redelius, Quennerstedt and Öhman 2015); and lack of experience in including students in the assessment process (Lorente-Catalán and Kirk 2013).

The absence of teachers using AfL in physical education practices may be explained by the lack of support and lack of networks. Lack of support from schools with

colleagues unwilling to change practices and the associated summative regime (Hamodi, López-Pastor and López-Pastor 2017; Leirhaug 2015; Slingerland et al. 2017; Tolgfors and Öhman 2016); and networks of teachers interested in advancing the implementation of AfL (Lorente-Catalán and Kirk 2013; MacPhail and Murphy 2017; Slingerland et al. 2017). The absence of AfL as a central thread throughout PETE programmes (López-Pastor, Kirk, et al. 2013; Slingerland et al. 2017; Zhu 2015) is likely to contribute to producing beginning teachers unfamiliar with AfL. Another challenge to increasing the use of assessment as part of the teaching-learning process in physical education is teachers familiarity with traditional assessment in physical education, which is construed as easier and safer to manage given the level of familiarity teachers have gained over the years (Hortigüela-Alcalá, Pérez-Pueyo and Abella 2014; Molina and López-Pastor 2019). Moreover, physical education teachers may not be overly concerned with capturing students' learning if there is no formal requirement for them to do so (Sofa et al. 2013).

There are additional challenges to changing one's philosophy and teaching practices towards AfL and these include using assessment as part of the teaching-learning process with large groups of students (López-Pastor, Pintor, et al. 2013); dealing with the increase of workload associated with enacting AfL (Gallardo-Fuentes and Thuillier 2016; Hamodi, López-Pastor and López-Pastor 2017; López-Pastor, Pintor, et al. 2013; Molina and López-Pastor 2019); and dealing with the increased time needed to plan (Chng and Lund 2018; Ní Chróinín and Cosgrave 2013). There has been a call within physical education for more practical examples of planning for, and enacting, AfL as well as more action research projects carried out by teachers on the reality of introducing AfL (Borghouts, Slingerland and Haerens 2017; López-Pastor, Kirk, et al. 2013).

*iv) How to most effectively embed AfL in daily practices*

To consider how best to encourage and support widespread and effective use of AfL in physical education teachers' practice, it is necessary to consider related opportunities evident through PETE programmes and continuous professional development (CPD).

*PETE programmes:* Preservice teachers value exposure to, and experience with, AfL during their teacher education programmes (Molina and López-Pastor 2019; Romero-Martín et al. 2017), acknowledging that it develops their literacy and skills to implement AfL as beginning teachers (DeLuca et al. 2013; Hamodi, López-Pastor and López-Pastor 2017; Lorente-Catalán and Kirk 2013; Lorente-Catalán and Kirk 2015; Molina and López-Pastor 2019). While a number of authors have recommended increasing exposure to AfL literature and practices on PETE programmes (Lorente-Catalán and Kirk 2015; MacPhail and Murphy 2017; Slingerland et al. 2017), there is an appreciation that PETE programmes may have to consider significant changes to prepare teachers capable of implementing AfL (Hamodi, López-Pastor and López-Pastor 2017; Leirhaug and Annerstedt 2016; MacPhail, Tannehill and Goc Karp 2013; Starck, Richards and O'Neil 2018).

Preservice teachers in some studies (e.g. Barrientos-Hernán, López-Pastor and Pérez-Brunicardi 2019; Lorente-Catalán and Kirk 2015; Molina and López-Pastor 2019) recognized the need for CPD to deal with the different challenges arising specific to their likely teaching contexts.

*Continuous professional development:* CPD is a key aspect to enhancing teachers' practice. Physical education teachers are reported to have low literacy levels in terms of assessment, and therefore need to develop their knowledge and skills to determine how best to use assessment evidence to improve students' learning (DinanThompson 2013; van der Mars, Timken and McNamee 2018). This will hopefully, in turn, result in physical education teachers being able to ask 'why', 'how', 'when' and 'what' to assess to determine what evidence they require from assessment (Chng and Lund 2018; Hay, Tinning and Engstrom 2015; Kniffin and Baert 2015; Rodríguez-Negro and Isasti 2016). As with any consideration for enactment, AfL needs to be viewed critically and reflexively as each teaching context differs (Hay, Tinning and Engstrom 2015; Hortigüela-Alcalá and Pérez-Pueyo 2016; Tolgfors 2018).

It is necessary to realize that physical education teachers in school contexts have different goals and work practices than those involved in PETE programmes. Physical education teachers need support in determining how best to use AfL ideas that they identify in related AfL literature/resources (DinanThompson and Penney 2015; Kniffin and Baert 2015), appreciating that it may be difficult for teachers to experience success in implementing AfL (Lorente-Catalán and Kirk 2013). Consequently, it is important that physical education teachers support each other in their understanding and enactment of AfL, sharing related difficulties and strategies (Lorente-Catalán and Kirk 2014).

CPD is more effective when physical education teachers are part of collective networks (Lorente-Catalán and Kirk (2013). Networks are a key aspect to support teachers' use of AfL (DinanThompson and Penney 2015; Lorente-Catalán and Kirk 2014; Molina and López-Pastor 2019; van der Mars, McNamee and Timken 2018), specifically when physical education teachers are given the opportunity to share AfL practices.

Teachers involved in such networks have recorded the extent to which they value the continuous support and interactions leading to development of their AfL knowledge (Eather et al. 2019; Slingerland et al. 2017) in the ‘safe environment’ created by such networks (van der Mars, McNamee and Timken 2018).

Despite the notion that such networks appear to be a fundamental component to a supportive environment for the enactment of AfL in physical education, ‘no real effort appears to have been made to create the supportive environment in physical education for successful implementation of the AfL strategies’ (Leirhaug and MacPhail, 2015, 637). It has been suggested that AfL practices in physical education will not become widespread as long as physical education teachers continue without such support (MacPhail and Murphy 2017).

### **Discussion**

Results from the review convey that while AfL has continued to receive increased attention in the literature, it is not so prevalent when we explore physical education teachers’ practices (Lorente-Catalán and Kirk 2015; MacPhail and Murphy 2017; van der Mars, Timken and McNamee 2018). It is envisaged that, to transform and improve physical education teachers’ assessment practices, it is necessary to reconstruct the way physical education teachers think about, and use, assessment.

Transitioning from traditional assessment to AfL embodies a shift of the teaching-learning process in physical education, and not only assessment techniques (Brink and Bartz 2017; Leirhaug and Annerstedt 2016; van der Mars, Timken and McNamee 2018). Teachers have to move away from a sole reliance on assessment oriented to grades (Hay, Tinning and Engstrom 2015; MacPhail, Halbert and O’Neill 2018), assessment criteria

and learning tasks unrelated to learning goals (Kniffin and Baert 2015; Tolgfors 2018) and students not being involved in participating in the teaching-learning process (Hamodi, López-Pastor and López-Pastor 2017; Leirhaug and Annerstedt 2016).

While assessment, curriculum and pedagogy need to be aligned, this does not mean they are considered as linear. A reliance on viewing them as linear results in teachers continuing to consider assessment as an ‘add-on’ to the process of learning in physical education (MacPhail, Tannehill and Goc Karp 2013). Assessment needs to be integrated into the teaching-learning process, used as a continuous process to allow teachers and students to identify what is necessary to change during physical education classes to improve students’ learning (Lander et al. 2016; Leirhaug and MacPhail 2015). Students’ learning is not an exact process given that what teachers teach and students do in physical education does not always result in learning. Assessment evidence throughout physical education classes can be used to support students’ learning (Lander et al. 2016; O’Loughlin, Ní Chróinín and O’Grady 2013; Tolgfors 2019), and allows for the design and use of appropriate instruction, learning tasks and feedback to meet students’ needs (Córdoba-Jiménez, López-Pastor and Sebastiani-Obrador 2018; DinanThompson 2013; Ní Chróinín and Cosgrave 2013).

AfL is based on socio constructivist theories, encouraging students’ role in physical education classes to change from passive (without responsibility and voice) to active (with responsibility and voice). Learning is the responsibility of teachers and students, knowledge is co-constructed (Barrientos-Hernán, López-Pastor and Pérez-Brunicardi 2019; Lorente-Catalán and Kirk 2014), and the teaching-learning process is shared ‘with’ students and not done ‘to’ students. This means that assessment criteria and learning goals need to be shared with students (Molina and López-Pastor 2019; Romero-

Martín et al. 2017) to allow them to analyse their own (and peers') learning. The intention of AfL in physical education is not only about bringing assessment and students into the teaching-learning process, but to change the focus of teachers' and students' efforts from grades to learning. This means that learning (regardless of what is decided for students to learn) needs to guide the whole teaching-learning process (learning-oriented assessment) and assessment contributes to improving the process (assessment supporting learning).

Although teachers agree that AfL can positively impact students' learning, they find it difficult to implement in their practices (Borghouts, Slingerland and Haerens 2017) because teachers do not possess the knowledge and skillset to enact AfL in physical education successfully (DeLuca et al. 2013; López-Pastor, Kirk, et al. 2013). While it is acknowledged that it is necessary to improve teachers' assessment literacy (DinanThompson and Penney 2015; Starck, Richards and O'Neil 2018), little has been done to aid physical education teachers' capacity to deal with AfL. While there are some examples of supporting physical education teachers to use AfL (Córdoba-Jiménez, López-Pastor and Sebastiani-Obrador 2018; Slingerland et al. 2017), this needs to be accompanied by research that informs how to most effectively support physical education teachers in using AfL.

While CPD on AfL is a key aspect to meaningful engagement with, and enactment of, AfL, more needs to be done in this space. Teachers working on their own may find it difficult to change the way they think and teach (Lorente-Catalán and Kirk 2013). Consequently, it would be important that expert teachers/teacher educators/researchers in AfL work together with physical education teachers to help them understand and implement AfL. Simultaneously to this, networks with physical education teachers from

different schools could be created, allowing teachers to meet and share experiences and views on implementing AfL in physical education.

Changes to PETE programmes are also necessary if the physical education profession is to be proactive and supportive of physical education teachers practicing AfL (Slingerland et al. 2017; van der Mars, Timken and McNamee 2018). PETE programmes need to seriously consider the extent to which the programme encapsulates the intention to teach future physical education teachers how to use AfL. This implies teaching by example, i.e., physical education teacher educators not only recommending the use of AfL but also incorporating AfL principles throughout their own practice as a teacher educator. These concerns are also shared in the International Association for Physical Education in Higher Education (AIESEP) position statement on physical education assessment which advocates for investment in assessment literacy among physical education teachers (AIESEP, 2020).

### **Final remarks**

There has been a noticeable shift in educational practices from focusing on teaching to focusing on learning (Hay, Tinning and Engstrom 2015). Such a shift has been accompanied by an increased interest in AfL as a way in which to strengthen the centrality of student-centred learning (Leirhaug and Annerstedt 2016). AfL not only centres the learning process through co-constructed learning (between students and teachers) but also in guiding the teaching-learning and assessment process. This review prompts those of us in (physical education) teacher education to consider the importance of connecting with teachers in schools given that (physical education) teachers require ongoing assistance and support to reconstruct their thinking about assessment, their assessment conceptions

and assessment practices. Indeed, changing the assessment discourse from an over-reliance on the word ‘assessment’ to using ‘learning-oriented assessment’ or ‘assessment supporting learning’ may be somewhat successful in emphasizing to teachers that learning leads the teaching-learning process, i.e., assessment is a support to improving learning.

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### **III. EMPIRICAL STUDIES**

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### **3.1. Providing Physical Education Preservice Teachers with Opportunities to Interrogate their Conceptions and Practices of Assessment**

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## **Providing Physical Education Preservice Teachers with Opportunities to Interrogate their Conceptions and Practices of Assessment**

### **Abstract**

This study enacted and supported a scaffolding process to improve preservice teachers' (PSTs') assessment literacy as they experienced school placement. It is crucial to create opportunities that enhance PSTs' understanding of assessment literacy, helping them to reconsider conceptions previously developed as school students (socialisation experiences) and to gain an appreciation for the benefits assessment affords students in their learning. Assessment literate teachers can enact appropriate assessment practices that can improve students' learning and the teaching-learning process while providing opportunities for students to regulate their learning. Eight physical education PSTs working with the same university supervisor took part in the study. Data were collected through individual and focus group interviews, post-seminar reflections and testimonial surveys, researcher's field notes, and PSTs' school placement reports. This study highlighted that supportive, practical and critical participatory approaches are crucial to encourage PSTs to question and change their assessment conceptions, and to improve their assessment literacy. Results also showed that, despite struggling to avoid practicing what they experienced as school students (i.e. socialisation experiences), PSTs can alter their assessment understanding and practices to incorporate assessment for learning principles. Teacher educators are encouraged to consider how they can best acknowledge and address the pre-conceived assessment conceptions PSTs bring into these programmes.

**Keywords:** Assessment literacy, occupational socialisation theory, teacher education programmes, socioconstructivism

### **Introduction**

Education literature has shifted over the years from a focus on teachers to students and from a focus on teaching to learning (Hay et al., 2015). The discussion around teacher- and learner-centred paradigms encourages us to rethink the purpose and process of assessment, leading to an increase in research on assessment as a support for learning

(AIESEP, 2020). The intention of this body of research has been to understand assessment literacy in relation to (a) teachers' implementation of assessment practices, (b) the impact of those practices on students' learning, (c) the inclusion of students as active regulators of their learning and (d) the consideration of assessment as a situated practice, socioculturally constructed and highly influenced by teachers' identity (Looney et al., 2018; Pastore and Andrade, 2019).

Despite the efforts of teacher education programmes to change ingrained conceptions preservice teachers (PSTs) bring to these programmes, there is consistent research that PSTs hold on, or revert, to the conceptions they experienced as school students (Richards et al., 2014). Some advocate for changes in the teaching of assessment if the goal is to increase PSTs' assessment literacy (Brevik et al., 2017). Research shows that if teachers are not exposed to alternative assessment practices, they maintain a traditional orientation to assessment (DeLuca et al., 2018) and PSTs rely on summative assessment given this was what they had been exposed to as school students (Mjåtveit and Giske, 2020).

Considering PSTs' low assessment literacy levels and struggle to not replicate what they experienced as school students, it is necessary to establish appropriate and explicit opportunities that encourage PSTs to interrogate their conceptions about, and practices of, assessment and learning. In response to this, this study enacted and supported a scaffolding process to improve assessment literacy aligned with PSTs' school placement.

### **Assessment literacy**

Key aspects that are regularly aligned with a teacher being assessment literate include (a) being able to select assessment methods that effectively demonstrate students' learning, (b) reflecting on the validity, quality, purpose and use of assessment to effectively embed it within curriculum and pedagogy and (c) making assessment (criteria and results) available to students, allowing them to participate actively in their learning process (Pastore and Andrade, 2019). Hay and Penney (2013) defined that, to be assessment literate, teachers have to master four interconnected components: (a) assessment comprehension, focused on knowing and understanding 'what', 'why', 'when' and 'how' to assess better; (b) assessment application, focused on knowing how to plan and enact appropriate, meaningful and relevant assessment successfully, involving students actively in their learning and assessment process; (c) assessment interpretation, focused on the

analysis and use of data gathered from assessment practices, and considering the negotiation of social relations of assessment; and (d) critical engagement with assessment, focused on being conscious about the impact or consequences of assessment, challenging the ‘naturalness’ of practices, performances and outcomes of assessment.

As a consequence of the discussion around learning paradigms (Pastore and Andrade, 2019), ‘assessment literacy’ continues to be constructed in multiple ways. While there is some consensus around the key aspects necessary to consider a teacher as being assessment literate, it is important to acknowledge that the different emphasis given to the term ‘assessment’ also impacts the analysis of teachers’ assessment literacy. For example, while the concepts of validity and quality are commonly used with respect to assessment, their intended meaning and associated comprehension are different dependent on the specific purpose of assessment. Assessment application reflects an understanding of the teaching-learning process and learning theories (Allal, 2020). Assessment literacy is no longer only about implementing assessment practices but also about how to interpret and analyse the impact of assessment practices in students’ learning and engage students in their own assessment (DinanThompson and Penney, 2015).

Assessment literate teachers are essential to effective and quality assessment. Using assessment for learning (AfL) requires a teacher to be assessment literate. AfL implies more than changing assessment techniques (Moura et al., 2021), i.e. embedding assessment within curriculum and pedagogy, using assessment to improve teachers’ decisions and students’ learning and including students in assessment. In AfL, it is intended to have students well-informed about the learning process and able to regulate their learning.

Increasing the use of AfL purposes (in physical education) requires investment in (preservice) teachers’ assessment literacy and is also a necessity for teachers entering classrooms (AIESEP, 2020). Pastore and Andrade (2019) report that teachers are not ready to successfully embed assessment in their teaching due to (a) teacher education ineffectiveness in changing their thinking as PSTs, (b) difficulties in transforming assessment practices acquired in teacher education to specific school contexts and (c) a limited amount of research identifying successful approaches to enhance teachers’ assessment literacy. PSTs tend to enter teacher education programmes relying solely on summative assessment because of their education (DeLuca et al., 2018).

Improving PSTs' assessment literacy in this scenario is therefore challenging to Physical Education Teacher Education (PETE) programmes, given that PSTs may find it difficult to consider, understand and enact assessment that promotes students' learning (Starck et al., 2018; Tolgfors et al., 2021).

DeLuca et al. (2018) advocate for research exploring how teachers perceive assessment and how they enact it, acknowledging the lack of research on the latter. The scarcity of empirical research has been identified by the same author as well as the limited impact of teacher education on PSTs' assessment literacy (DeLuca and Klinger, 2010). Macken et al. (2020) identified the absence of empirical studies of PSTs enacting AfL in primary physical education.

Although assessment literacy as a concept has become common, some researchers have expanded the concept to 'assessment identity' to capture the experiences and personal, social, and contextual aspects that affect teachers' beliefs (Looney et al., 2018). Teachers' enactment of assessment not only demonstrates what teachers do, but also who teachers are and what they have experienced (socialisation of teachers). Teachers' use of assessment is affected by the context they work in and their previous exposure to assessment. Opportunities to obtain a deeper understanding of teachers' assessment literacy are crucial to appreciate the realities of possessing, and enacting, assessment literacy for the benefit of students. Alternatively, teachers' identity changes throughout their career and is influenced by the contexts in which they work (Looney et al., 2018). This occurrence, as well as considering assessment a situated and social practice (Hay and Penney, 2013) reliant on teachers' experiences, suggests that it may be possible to improve (preservice) teachers' assessment literacy and reinforces the need to consider teachers' socialisation.

### **Occupational socialisation theory (OST)**

Teachers' and PSTs' disposition towards assessment and, in turn, assessment literacy is affected by their prior experiences and is captured through occupational socialisation theory (OST) (Richards et al., 2014). OST, defined as the influences of the environment on the socialisation of teachers, is represented by a three-phase process: acculturation, professional socialisation, and organisational socialisation (Lawson, 1986). The fluidity

of the impact of each phase on an individual's socialisation is commonly accepted (Starck et al., 2018).

Acculturation covers the period from birth to entering a teacher education programme. PSTs develop conceptions of education throughout these years, in a process described as the 'apprenticeship of observation' (Lortie, 1975). The influence of this phase is significant given the well-documented difficulties faced by teacher education programmes in changing PSTs' conceptions (Starck et al., 2018).

Professional socialisation aligns with the period spent in a teacher education programme. PSTs enter teacher education programmes with a preference for summative assessment due to their aligned previous exposure as school students (Mjåtveit and Giske, 2020). For this reason, and considering that socialisation is a dialogical process, teacher education programmes struggle to successfully change PSTs' long-term subjective theories.

Organisational socialisation aligns with teachers entering the teaching profession. Transition to school can be challenging for beginner teachers, especially when graduating from teacher education programmes with innovative practices and then teaching in schools that favour traditional approaches (Richards et al., 2014).

OST aids our understanding of why PSTs find it difficult to consider assessment as anything other than what they experienced as school students and, in turn, how best to interpret and engage critically with assessment data to promote students' learning (DinanThompson and Penney, 2015). Often, PSTs' teaching replicates the practices of their previous schoolteachers rather than what they have been exposed to, and encouraged to practice, in teacher education programmes (Richards et al., 2014).

Studies that have examined teachers' conceptions of assessment also show that conceptions and experiences cannot be dissociated, with many teachers associating assessment with summative grading purposes (Darmody et al., 2020). Indeed, research suggests that previous experiences in assessment dominate (preservice) teachers' thinking in comparison with anything they had been taught about assessment (Looney et al., 2018). One such example is reported by Mjåtveit and Giske (2020) who acknowledged that PSTs reverted to, and relied on, traditional assessment approaches rather than using AfL practices as advocated in the teacher education programme. Pastore (2020) also reported no differences in understanding and practical aspects of assessment (literacy) between

PSTs who participated in an assessment course in their teacher education programme and those who did not.

OST alerts us to the importance of teacher education programmes considering PSTs' previous conceptions of assessment to better develop PSTs' assessment literacy (DeLuca et al., 2018). Given PSTs' low levels of assessment literacy, it is expected that PSTs will continue to struggle to transfer what they learned in PETE programmes to embedding assessment in their practice as schoolteachers (Moura et al., 2021). This is likely to result in PSTs abandoning the assessment-related pedagogical principles learned throughout their teacher education programmes and replicating assessment practices they experienced as school students (Starck et al., 2018).

### **Teacher education programmes and assessment**

Assessment can be challenging for (physical education) teachers, and teacher education programmes have been struggling to change PSTs' previous assessment conceptions on assessment and, subsequently, improve PSTs' assessment literacy (Looney et al., 2018). Summative assessment practices (as a means of assessing PSTs) also dominate teacher education programmes (Starck et al., 2018), reinforcing assessment preconceptions brought by PSTs to these programmes. Assessment courses, when they take place, appear disconnected from practical aspects of the classroom (Brevik et al., 2017) and provide few experiences to learn about educational assessment concepts and practices (Pastore and Andrade, 2019). Macken et al. (2020) mention the uncertainties about the most relevant knowledge to include in assessment courses and how best PSTs learn to assess. Brevik et al. (2017) suggest that the formal school placement experience as part of a teacher education programme provides an opportunity for PSTs to experience assessment practices in a 'real context'. Relying solely on cooperating teachers to educate PSTs' use of assessment practices could be problematic given that cooperating teachers tend to possess low levels of assessment literacy (DeLuca and Klinger, 2010).

To strive towards shared understandings among all involved in school placement, there is a need for an intensive, and closer, relationship between universities and schools (MacPhail and Lawson, 2020). That would promote engagement with assessment and develop both cooperating teachers' and PSTs' assessment literacy (DinanThompson and Penney, 2015). Macken et al. (2020) found that, with the appropriate support, PSTs can

gain more from the school placement by developing their knowledge about assessment and, in turn, becoming assessment literate teachers.

Improving PSTs' assessment literacy will most likely require the reconfiguration of PETE programmes. Loughran (2014) advocates for a 'pedagogy of teacher education' and considers teacher education programmes as fulfilling two main roles, teaching content and teaching PSTs how to teach (i.e. how to put content into practice). Regarding the latter, explicit assessment courses should be framed around practice-based teaching (Brevik et al., 2017) with the goal of improving PSTs' assessment literacy. Preferably, practical approaches to assessment should address the four components of assessment literacy defined by Hay and Penney (2013). Practical approaches that challenge PSTs' knowledge, beliefs and experiences are necessary. This provides PSTs with opportunities to develop skills and an ability to reflect and examine enacting assessment practices (Starck et al., 2018; Tolgfors et al., 2021). This may contribute to improving PSTs' assessment literacy. Providing PSTs with opportunities to work with school students as part of their PETE programme (e.g. experiencing student peer assessment) may also enhance their assessment literacy.

Exposing PSTs to 'real' assessment practices is essential to engage PSTs in reflections about their understandings and the challenges of enacting assessment (Macken et al., 2020). The same authors argue that these opportunities are needed to counterbalance the negative impact of the 'apprenticeship of observation' while helping PSTs actively reconstruct their understandings and practices as teachers (and assessors). Assessment conceptions are complex, have a dynamic relationship between theoretical and practical knowledge and are sociocultural in structure (Looney et al., 2018). This reinforces the importance of PSTs having the opportunity to enact assessment practices and reflect on the impact of such practices on students' learning.

It is essential that teacher education programmes provide PSTs with the appropriate support to demonstrate assessment literacy successfully in practice (Pastore and Andrade, 2019); however, there appears to be a lack of studies exploring collaborative practice approaches to improving PSTs' assessment literacy. Based on what has been discussed above, this study enacted and supported a scaffolding process to improve PSTs' assessment literacy as they experienced school placement. This study addresses the following research questions: (a) How does creating explicit opportunities that support

PSTs interrogating their own conceptions about, and practices of, assessment and learning, help PSTs in their assessment literacy?; (b) In what way do PSTs' previous experiences as school students influence their assessment literacy and their capacity to learn different approaches to assessment?; and (c) How are PSTs challenged to change their understanding of assessment and to not revert to assessment practices they experienced as students?

### **Methodology**

This study used critical participatory action research (Kemmis et al., 2014), where participants were co-constructors of their knowledge, actively reflecting on their understanding of assessment and related practices. Critical participatory action research aims to address the theory and practice gap by encouraging practitioners to act as theorists and researchers of their own practices (Kemmis et al., 2014). It is not intended to have participants implementing researchers' theories. Knowledge is co-constructed by all involved with participants researching, and enacting, what they consider appropriate to their practices. The methodology considers practitioners as the most important resource to change practices, encouraging them to reflect on their practices individually (with themselves) and collectively (with others). One of the challenges/limitations of critical participatory action research is its heightened dependency on participants' contributions. The 'key element' of our critical participatory action research was to encourage participants to interrogate, analyse and reflect on what they learned and taught. To transform current practices, participants must investigate and question their practices, identifying what can be improved and how to improve it.

### *Participants and context*

Eight PSTs from a two-year physical education master's programme from a public Portuguese university took part in the study. The first year of the programme takes place at the university. Assessment is taught in the curricular unit 'General Sports Didactics' as theoretical content (mentioning different types of assessment but without opportunities for practical examples or implementation). The focus is on the content to be assessed and on assessing students' performance. In this course, assessment is taught as a component of the teaching-learning process as are, for example, teaching models and feedback. Little

is done during this unit in providing knowledge and skills, and supporting PSTs, to improve their assessment literacy and enact AfL in their school placement. In relation to another curricular unit, 'Specific Didactics of Sport', the focus is on teaching how to assess technical-tactical content. During the second year of the programme, PSTs work with their university supervisors on Mondays at the university and with their cooperating teachers, from Tuesday to Friday, in schools (school placement) for the entire academic year (September to June). After successfully completing this master's degree, PSTs become qualified to teach physical education in primary and secondary schools.

To be eligible for this study, PSTs had to be (a) supervised by the university supervisor who acted as facilitator for this study and (b) undertaking school placement in schools where cooperating teachers were interested in being involved in the study and had already been collaborating with the university for more than 10 years. From the 15 PSTs who met these criteria, eight were purposively selected (Patton, 2002) with respect to their predisposition to accept challenges, availability for undertaking study-related requests, interest in joining the pedagogical study, and commitment to the study. Each PST signed an informed consent form to participate in the study. The study's purpose and design were explained to each PST, and it was made clear that they could opt to leave the study at any time without any consequences. The study was granted ethical approval by the university in which the research was conducted. PSTs received a pseudonym to protect their identity.

The eight PSTs (five women and three men) had no professional experience as teachers and were aged between 22 and 27 years. Six of the PSTs had completed their undergraduate programme in physical education and sport at the same university (north of the country) in which they were undertaking the master's programme and this study.

### *Study design*

The study had three action research cycles over a six-month period and on every Monday PSTs attended the university campus to work with their university supervisor.

Each seminar took place at the university with the researcher, the PSTs' supervisor, and the eight PSTs in attendance. In an attempt to improve PSTs' assessment literacy, the researcher and the PSTs' supervisor facilitated the seminars and encouraged PSTs to interrogate their own beliefs, understandings and practices of assessment. Aware that each teaching context is different, the facilitators encouraged PSTs to consider their own

ways of enacting assessment throughout seminars and school placement. The facilitators sought to create a positive environment where PSTs would feel comfortable and safe to share their assessment perspectives and thoughts and act as co-constructors of their learning about assessment. Learning goals for each seminar were shared with PSTs at the start of each session.

During the seminars, the PSTs' supervisor was primarily focused on engaging PSTs in conversation about the relationship between assessment and learning (Moura et al., 2021), while the researcher focused on scaffolding activities for PSTs during seminar tasks (e.g. planning). The purposes and strategies of the seminars are detailed in Figure 1. The first two months were primarily focused on directing PSTs to reflect on their current conceptions of assessment and the relationship between teaching, learning and assessment (Hay et al., 2015). During months three and four, facilitators encouraged PSTs to reflect on how they plan for, and integrate, assessment in the teaching-learning process, and why and when they use assessment effectively (AIESEP, 2020). During months five and six PSTs were encouraged to reflect on how, why and when to involve students in the teaching, learning and assessment process (Tolgfors, 2018).

### *Data collection*

Figure 2 captures the three cycles and instruments used to capture and analyse PSTs' developments in assessment literacy. Individual and focus groups interviews, testimonial surveys, post-seminar reflections and school placement reports collected complementary data on PSTs' (previous and ongoing) assessment understandings and practices, and valued their involvement in the seminars and the study. In analysing the school placement reports, the researcher identified unprompted references related to 'assessment', 'learning' and 'students' involvement'. Researcher field notes captured the differences between what PSTs reported they did and what they were observed doing. Triangulating data across the different data sources improved trustworthiness (Patton, 2002).

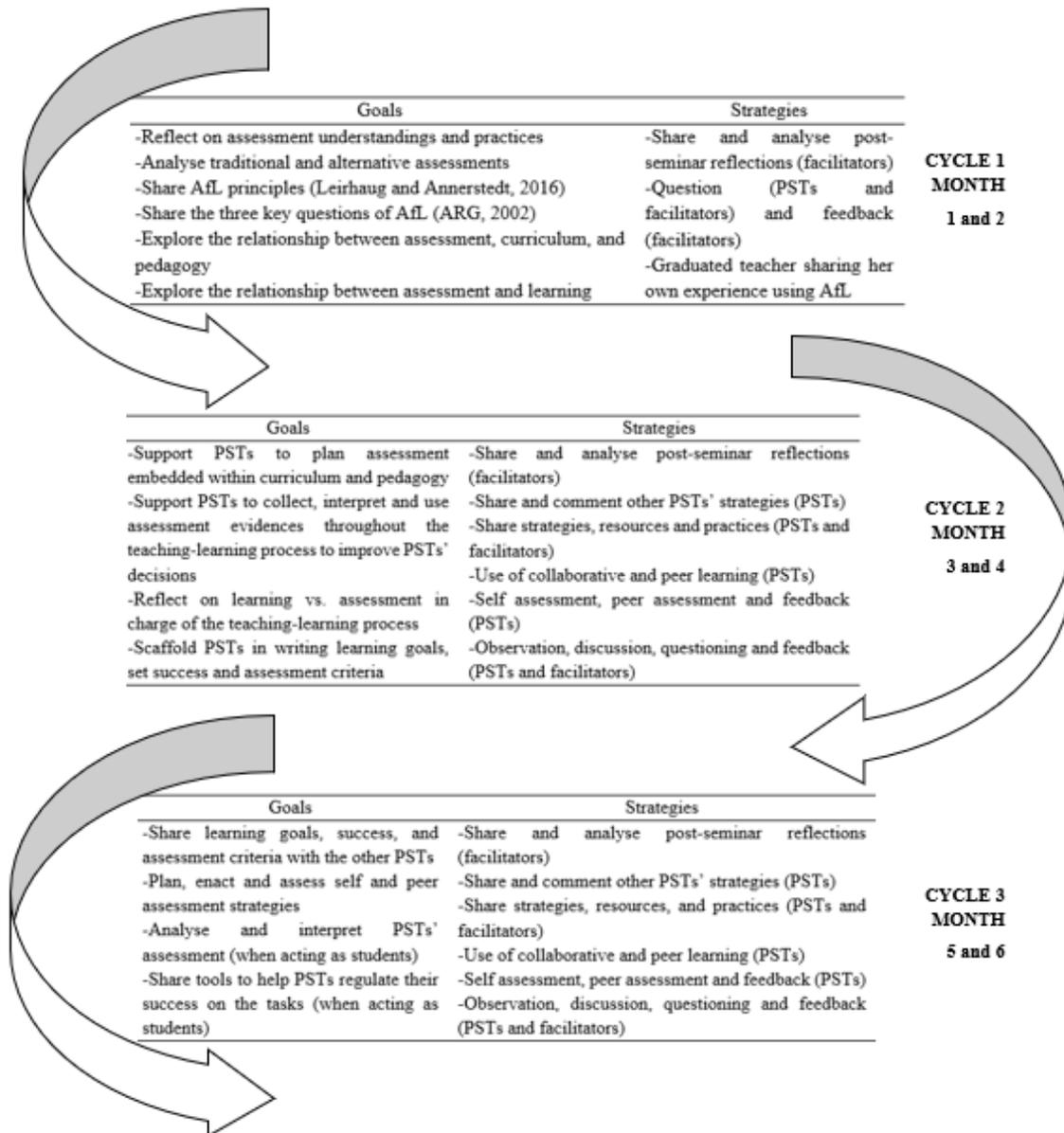


Figure 1. Seminar sessions.

*Individual interviews.* Two semi-structured individual interviews with each PST took place in a quiet room at the university. Each interview lasted on average 20 minutes and intended to capture PSTs' perceptions and understanding of assessment before the beginning of the study and after the first cycle. Examples of questions posed in the first interview included "What are your thoughts on assessment and learning?" and "What do you think is important when planning assessment? And when implementing?". The second interview included questions such as "How do you articulate the relationship between assessment and learning?" and "In what way can assessment support learning?".

Instrument	Cycle 1				Cycle 2				Cycle 3				After study			
	Month 1		Month 2		Month 3		Month 4		Month 5		Month 6					
	1	2	3	4	1	2	3	4	1	2	3	4		1	2	3
Individual interview 1	X															
Seminars 1 and 2 – interrogate PSTs’ (pre)conceptions about assessment		X	X													
Post-seminar reflections			X													
Seminars 3 and 4 – interrogate PSTs’ (pre)conceptions about assessment				X	X											
Individual interview 2						X										
Seminars 5 and 6 - assessment embedded in the teaching-learning process							X	X								
Post-seminar reflections							X	X								
Seminars 7 and 8 - assessment embedded in the teaching-learning process								X	X							
Post-seminar reflections								X	X							
Focus group 1									X							
Seminars 9 and 10 – students’ participation in the assessment process										X		X				
Post-seminar reflections											X	X				
Seminars 11 and 12 – students’ participation in the assessment process													X	X		
Focus group 2															X	X
Testimonial survey																X
PSTs’ school placement report																X
Researcher’s field notes	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Figure 2. Study design.

*Focus group interviews.* The researcher and the PSTs’ supervisor facilitated the two focus groups with all eight PSTs. These occurred during the university seminars, and each lasted on average 70 minutes. The intention was to explore (a) how collaboration in the seminars supported PSTs to deal with problems and dilemmas while learning and planning for assessment and (b) the meaning and value attributed by PSTs to the seminars. Examples of questions posed included “What concerns do you have to help students progress in their learning?”, “Considering the aspects discussed in seminars, what was the most relevant/the one you would like to highlight?” and “What did you try (or would like to try) to incorporate into your practices?”.

Individual and focus group interviews were audio recorded and transcribed verbatim before being returned to PSTs to read and approve final transcripts.

*Post-seminar reflections.* At the end of each seminar, facilitators invited PSTs to formally write responses to two or three questions. The questions focused on the most relevant aspect learned at the session and the associated perceived challenges in enacting such aspects in practice. PSTs’ responses to the questions each week were revisited at the next seminar meeting to encourage discussion and share perspectives. While the questions

## Interrogating conceptions and practices of assessment

were prepared by the facilitators prior to each seminar, the questions would change dependent on the nature of the conversation that ensued throughout the seminar. PSTs were also afforded the opportunity to discuss any related aspects that they considered were important and had not been prompted by the facilitators.

*Researcher's field notes.* The researcher maintained written reflections (memo writing) (Patton, 2002) throughout the three cycles of the study to capture developments in PSTs' assessment knowledge and thinking, to note instances where PSTs faced challenges and difficulties they could not solve on their own and to improve the quality of future seminars. Nine reflections in total (each approximately 700 words) were written throughout the process.

*Testimonial survey.* After completing the seminars, each PST received a survey by email. While stated open questions intended to prompt PSTs' reflection, PSTs could choose to reflect without directly answering each of the eight questions. Formal questions focused on how PSTs planned and enacted assessment, how they provided feedback to students to move their learning forward and how they included students in the process. PSTs were also asked for feedback on the effectiveness of being involved in weekly seminars in contributing to their learning about assessment and suggestions on how to improve the effectiveness of the seminars. All PSTs completed the survey, with six choosing to answer the posed questions and two choosing open reflection. Regardless of what option was chosen, each reflection was approximately five pages long.

*School placement report.* PSTs complete a school placement report at the end of their programme to capture their teaching experience. There is a specific section in the report that encourages PSTs to describe the experience of planning and enacting the teaching-learning and assessment process. Given that the report required PSTs to note their most relevant and valued school placement experiences, the report provided additional information on PSTs' understanding of assessment to those collected during university seminars. Each report included examples of annual planning, teaching units, lesson plans, reflections, log diary, characterisation of school placement, school context and PSTs' students, and instances of practitioner study throughout school placement.

All data collection and analysis took place in Portuguese. Data were translated to English for dissemination purposes.

### *Analysis procedures*

A deductive-inductive analysis procedure was used across all data, moving back and forth between the aim of the study (enact and support a scaffolding process to improve assessment literacy aligned with PSTs' school placement), the data, assessment literacy framework and OST. Data analysis used a three-component flow process: data condensation, data display and conclusion drawing/verification (Miles et al., 2014), with the researcher oscillating between the three components.

Data analysis began after the initial PSTs' interviews and informed the researcher on the design of the first seminars in cycle one. Data were constantly triangulated and informed the other methods. For example, the second individual interview, focus group one, post-seminar reflections and researcher's field notes supported the design of following seminars and respective cycles. Seminars provided complementary data to individual and focus group interviews, post-seminar reflections and field notes. These different sources offered valuable data to one another. Analysis of the testimonial survey and school placement reports took place at the end of the study. All data were analysed as soon as possible after collection.

Data collected from the different methods were first read and examined incident by incident, highlighting meaningful extracts on the text. The codification process (data condensation) started with two of the authors re-reading these data using assessment literacy, OST and AfL as sensitive concepts (Charmaz, 2006). Initial codes deduced from the theoretical frameworks or from data were refined in a second coding stage through a constant comparison process, which included aggregating codes by proximity (Figure 3). For example, the codes focus on activities and not on students' learning and focus on the teacher were aggregated into a broader code of planning without considering students' needs. The data condensation process by coding led to the creation of charts capturing the most relevant themes (data display).

The final phase of analysis involved data triangulation across the different methods, taking into consideration the data, assessment literacy and OST. Triangulation allowed the identification of the main ideas within and across the codes at the second coding stage.

For example, ideas aggregated under the code seminars' contributions to change perspectives indicate the contribution of seminars on PSTs' understandings, planning and enactment of assessment. The analysis resulted in the themes presented in Figure 3.

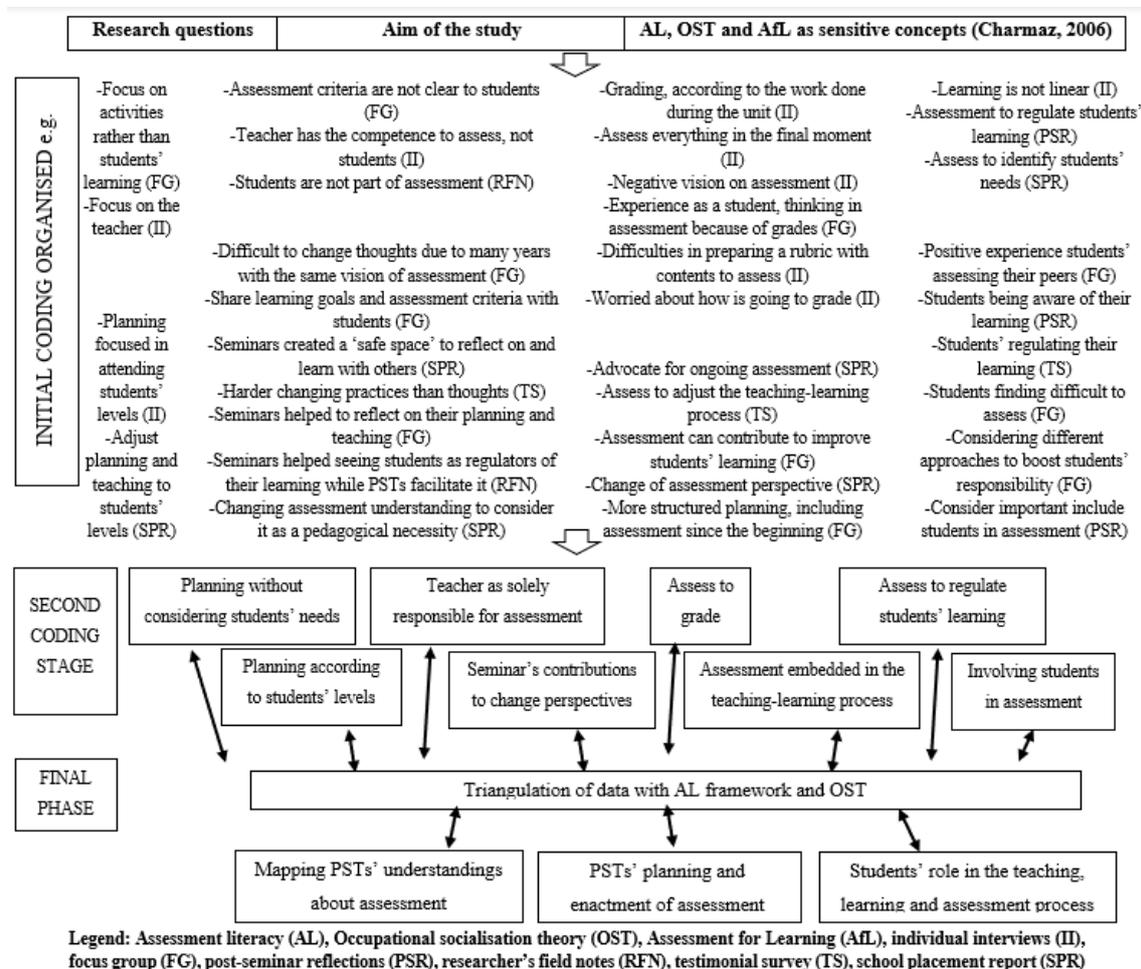


Figure 3. Data analysis.

## Results

The Results section is presented considering the three themes identified on data analysis: (a) mapping PSTs' understandings about assessment; (b) PSTs' planning and enactment of assessment; and (c) students' role in the teaching, learning and assessment process.

### *Mapping PSTs' understandings about assessment*

At the beginning of the study, PSTs considered assessment for grading students' performance and as a teacher's exclusive responsibility. This highlights the

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preconceptions PSTs brought to this study with respect to their experience of summative assessment and specifically assessing to finalise a grade:

When I heard the word ‘assessment’, several words came to my mind such as pressure, comparison, classification, grades. (Ricardo, Post-Seminar Reflections cycle 1)

While it was evident that PSTs’ previous experiences and limited appreciation of assessment were challenged throughout the seminars, there were indications that six of the eight PSTs reverted (especially during the first action research cycle) to a reliance on assessment they had experienced as school students:

For years and years, all our life as [school] students, assessment was a moment, mainly the final moment. I am already thinking different [about assessment], but unconsciously my thinking reverts to my experience as a [school] student. (Tatiana, Individual Interview 2)

Conscious of PSTs’ limited assessment understandings, seminar discussions explored alternative assessments and supported PSTs in interrogating their conceptions. Experiences shared through seminars allowed PSTs to consider how embedding assessment within the teaching-learning process can enhance learning:

The discussions we had in seminars made me question many things I had taken for granted, as for example, assessment is [only] the moment to evaluate/grade. Now I can see that assessment can contribute to learning if brought into the learning process. (João, School Placement Report referring to cycle 1)

While the remaining two PSTs started to move away from reproducing assessment practices they had experienced as school students, it remained difficult for them to explain how assessment could be embedded in the teaching-learning process. As the study continued, PSTs’ assessment literacy improved. This was evident with the PSTs’ understanding that embedding assessment in the teaching-learning process would improve their teaching and students’ learning:

Now, I feel I am seeing assessment with ‘different eyes’ [referring to seminar 6]. I consider assessment as a continuous and systematic process of collecting evidence and a good principle to decision-making as it allows you to adjust the teaching and planning strategies to match students’ needs. Assessment

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gives answers about the success of teachers' teaching. If students are not learning, we must change something or understand why they are not learning. (Francisca, Focus Group 1)

At the end of their school placement, PSTs reported that they started to consider that embedding assessment into the learning process implied selecting learning activities aligned with learning goals, outcomes and assessment criteria. This represents a significant shift when compared to the beginning of the study:

Now I see that I changed from a linear to an embedded and aligned perspective of assessment with curriculum and pedagogy. When planning a learning activity, we have to consider the learning goal(s). These learning goals are relevant, related to the outcomes and assessment criteria. The activities that we select need to support students to achieve the goals and allow them to know if they are achieving them. (Maria, School Placement Report)

### *PSTs' planning and enactment of assessment*

At the start of the study, PSTs' thoughts about planning for assessment were reliant on assessing to grade, being solely concerned with creating a rubric that captured all the content that had to be assessed:

I think it is important to have a grid [rubric] to grade students. This would be our guide, with the content and criteria defined by teachers that need to be observed, to guarantee that all students are assessed in the same way. (Joana, Individual Interview 1)

PSTs considered assessment as an 'add-on' to the teaching-learning process. Subsequently, viewing teaching, learning and assessment as separate entities resulted in misalignment between the different lessons of the teaching unit and uncertainty about what they expected their students to learn:

PSTs are incapable of answering [after our first planning attempts in seminars] when asked about what they want their students to achieve at the end of the unit. This highlights their difficulties to create a 'big picture' of what they want their students to learn [learning goal/s] and what is necessary to do to help them achieve it. Most of the PSTs (five) tend to create learning situations and then define a goal to that task, but all of them find it difficult to establish progressions that connect the different lessons of the unit. (Researcher's Field Notes)

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PSTs reported that discussions during university seminars helped them define learning goals and how best to embed assessment in the teaching-learning process. During cycle 2 of the study, PSTs experienced more structured planning after understanding the importance of determining what they wanted their students to achieve:

My planning changed a lot since the beginning [of the study]. Things are now much more structured. We have a better and precise guide of what we want students to achieve. In this second phase, assessment was part of the process from the beginning while in the first phase we talked only about assessment one week before the specific class. (Ricardo, Focus Group 1)

All PSTs acknowledged that the seminars had encouraged them to become more literate about assessment, enhanced by the creation of a safe space where they could share experiences, learn from each other and reflect on what they were sharing and hearing:

I did not consider seminars as lessons, but as moments to share knowledge, experiences, learning, reflections, challenges, happiness, outbursts and support on tough days. Sharing strategies and tools was crucial to understand that we did things differently, but that does not mean that was wrong. It was just different ways to plan and enact the learning process. This helped me to reflect and be critical. (Maria, School Placement Report)

The acknowledgement that students do not always learn what the teacher intends them to learn, helped PSTs understand the importance of embedding assessment into the teaching-learning process and involving students in the analysis of their learning:

One of the most important things I learned from assessment in relation to students' learning is that students do not always learn what is taught. This showed me the importance of enacting assessment through the process, because we have to check continuously if students are learning what they are supposed to. (Filipa, Testimonial survey)

Even with PSTs acknowledging the importance of involving students in the analysis of their learning, some students failed to achieve learning goals, because students are all different. During the third cycle, six of the eight PSTs' planning allowed for more differentiation with a view to addressing the different needs of students:

I changed how I plan and conduct lessons. In the first phase, I was only focused on what I wanted students to do. Appropriate or not, I had everyone doing the same. Now [second phase] I consider

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students' different levels. For example, in gymnastics I have students divided by levels. Some are doing 'forward rolls' on a mat, others are doing it with the aid of a 'slope' [to make it easier] and others have help from a peer. During the activity I check if all students are engaged at a challenging and achievable level. (Manuel, Focus Group 2)

### *Students' role in the teaching, learning and assessment process*

At the beginning of the study, all PSTs reported that, as students at school, they had never been involved in discussions around assessment practices and decisions. When asked about their thoughts on students' role in assessment, PSTs referred back to the importance of teachers having responsibility for assessment:

I never considered the students' role [in assessment]. During the master's, teacher educators talked about that, but I did not know how and why I should include students in assessment. For me, assessment is the teacher's responsibility. (Manuel, Individual Interview 1)

However, seminars had a valuable contribution in changing perspectives. All PSTs began reflecting in the seminars on the extent to which the sharing of learning goals and assessment criteria with students could enhance the focus on learning:

Seminars made me reflect on the use of assessment. Now, I consider that when students understand what they are supposed to learn and how to have success, they can work towards it and know if they are achieving it. In an ideal situation, they can understand their level, what they need to improve, what they improved on and how far they are from their goal. (Maria, Focus Group 1)

PSTs admitted that their perspective on assessment changed throughout the study and specifically in terms of students' involvement, beginning to support peer- and self-assessment as an important aspect of students' learning:

My perspective about assessment changed a lot. At the beginning of the year, my perspective about assessment was totally focused on giving students a final grade. Then, I started considering assessment as much more than just grading students. It is about involving students in the process, so they can be aware of their difficulties, potentialities, and progress. That is why it was important to share learning goals and assessment criteria. Now, I consider it more about having students participating in the process. Having students regulating their own learning, assessing peers and trying to help them take initiative. (João, Testimonial survey)

In summary, PSTs' thinking was highly influenced by their previous experiences as school students. This led PSTs to initially understand and enact assessment solely for grading purposes. PSTs' low levels of assessment literacy limited their perspectives on the potential of assessment, which raised several challenges when trying to change their understandings and, subsequently, their practices. Despite the difficulties, PSTs were able to gradually improve their assessment literacy, evident by not giving up on embedding assessment in the teaching-learning process and, predominantly through the support provided by the seminars, including students in the assessment process.

### **Discussion**

At the beginning of the study, PSTs conveyed a low level of assessment literacy. This was not surprising given that their assessment experiences as students align with Lortie's (1975) notion of the 'apprenticeship of observation'. These PSTs conveyed similar dispositions to other PSTs who enter teacher education programmes with a strong reliance on understanding assessment as being solely summative (Mjåtveit and Giske, 2020), an add-on to instruction (Hay et al., 2015) and a teacher's exclusive responsibility (Tolgfors, 2018).

Previous experiences as passive students when they were at school led PSTs to develop an idea of teaching, learning and assessment as the sole responsibility of the teacher which proved difficult to change. Being active learners during seminars helped PSTs to question, discuss and reflect on the usefulness of teacher- vs student-centred approaches and to improve their assessment comprehension, specifically in terms of 'why' and 'when' to assess. Enacting (their thoughts on) assessment in seminars was crucial to PSTs exploring assessment and developing their assessment literacy. Understanding that not everything taught is learned demands teachers to change assessment application and the way they comprehend teaching (Allal, 2020). That is, moving the focus from teaching to learning and from teachers to students, which was evident as the seminars continued throughout the study. This is a salient aspect of teachers' improvement of their assessment literacy, especially in relation to the assessment comprehension component (Hay and Penney, 2013) and a first step to considering enacting AfL in their practices.

Appreciating that PSTs tend to resist new ideas when these differ from those experienced during the acculturation phase (Richards et al., 2014; Starck et al., 2018),

there were indications that the seminars had created a safe space for PSTs to consider alternative assessment practices that they would not previously have considered enacting. However, this is not to say that PSTs did not struggle with developing their assessment literacy and particularly with respect to assessment literacy components: application, interpretation and critical engagement with assessment.

PSTs' previous conceptions of assessment (from acculturation and professional socialisation phases) continued to affect their assessment application and interpretation even after there were indications of an initial improvement in their assessment comprehension. On some occasions, PSTs believed that they had improved their assessment comprehension, but these changes were not evident in practice. This represents a superficial understanding of assessment (DinanThompson and Penney, 2015).

We suggest that the cyclical nature of the seminars and school placement resulted in PSTs being continually pushed to not revert to their previous socialisation experiences and embrace the opportunity to discuss and interrogate alternative assessment practices. This provided them with opportunities to apply and reflect on the effectiveness of such practices before going into the school placement. There was clear evidence that PSTs' assessment comprehension and application had improved with respect to the use of assessment as a support for learning and the involvement of students in the assessment process. Another major change was the consideration of the impact of assessment on their students' learning. In the first phase of changes the focus was solely on being able to use assessment throughout the teaching-learning process. This represents a shift from a superficial understanding of assessment (DinanThompson and Penney, 2015) towards a consideration of interpretation and critical engagement with assessment (Hay and Penney, 2013).

Working with PSTs throughout their school placement provided an opportunity for PSTs to develop their assessment literacy in 'real' contexts, challenging the negative impact of their 'apprenticeship of observation'. This also helped PSTs actively reconstruct their understanding, planning and enactment of assessment (for learning) practices. Similar to the work of Macken et al. (2020), results show that PSTs can better develop their assessment literacy during the school placement when supported to do so. The cyclical nature of seminars and school placement supported the positive impact of

practical approaches to teaching (Brevik et al., 2017), encouraging PSTs to put what they were discussing in seminars into practice (Allal, 2020; Loughran, 2014). The cyclical nature of the study allowed PSTs the opportunity to engage with different purposes and to reflect on assessment practices (Starck et al., 2018).

There is a need for further studies to explore similar meaningful infrastructures that support PSTs' improvement of assessment literacy. Such studies should consider the longevity of assessment practices that are developed in a bid to establish the extent to which such assessment practices become embedded in day-to-day practice without the need for formal support structures.

### **Conclusion**

PSTs' experiences as students have a significant impact on their understanding of assessment. Previous experiences result in low levels of assessment literacy and challenge PSTs' learning of alternative assessment practices. Considering the difficulties PSTs face to improve their assessment literacy (and not replicating what they experienced as students) this study reinforces the crucial use of engaging, practical, supportive and co-constructed scaffolding approaches with PSTs to interrogate and change assessment conceptions developed during the acculturation phase. The environment created during seminars helped PSTs to feel safe to share, question, debate, discuss and reflect on their assessment thoughts and practices. PSTs developed a more critical stance about why and when to assess, through an increasing emphasis on learning and students.

While it is acknowledged that changing conceptions does not necessarily result in changed practices (Brevik et al., 2017), this study has conveyed the importance of exposing PSTs to practical experiences in real contexts, capturing and addressing PSTs' continuous engagement with assessment in an attempt to support and develop their assessment literacy. Exploring and considering PSTs' assessment understandings on entering teacher education programmes is a key starting point if we are to support PSTs in challenging, and ultimately changing, them (Pastore, 2020; Starck et al., 2018).

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### **3.2. Enhancing the enactment of assessment for learning principles during school placement: Preservice teachers as practitioner researchers within a learning community**

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**Enhancing the enactment of Assessment for Learning principles during school placement: Preservice teachers as practitioner researchers within a learning community**

**Abstract:**

This study aims to examine how Preservice Teachers (PSTs) struggle to change their practices by incorporating Assessment for Learning (AfL) and acting as practitioner researchers. It draws on qualitative data triangulation of different sources inquiring the practice of eight PSTs and the interaction within learning community supported by the researcher, university supervisor and cooperating teachers. Despite belonging to the same learning community and consider their changes in AfL understanding, PSTs struggle differently on embedding assessment in the teaching-learning process, including students, and improving dialogical feedback. Teacher education programmes are prompted to consider how best to support PSTs enacting AfL practices.

**Keywords:** Practitioner-research; Learning Community; Assessment for Learning; School Placement; Preservice Teachers

**Introduction**

Teachers tend to struggle and resist changing their assessment practices (DeLuca et al., 2018), even more so when considering Assessment for Learning (AfL) given that AfL introduces multiple assessment practices (Authors, 2021). These multiple practices include using evidence from assessment to improve students' decisions and address their needs, having them regulate and actively construct their own learning (Baird et al., 2017;

Coombs et al., 2018). While there is an acknowledgement that embedding AfL in the teaching-learning process is challenging for (preservice) teachers (Birenbaum et al., 2015), little has been done to consider practical ways to support Preservice Teachers (PSTs) to overcome such a challenge (Brevik, Blikstad-Balas, & Engelién, 2017; Kleij, Cumming, & Looney, 2018). Supporting teachers' use of AfL is considered a key aspect to the success of AfL implementation (Qin & Yi, 2021; Schildkamp et al., 2020) given that PSTs are, unsurprisingly, influenced by practicing teachers' beliefs and intentions (Shannon, Smith, & Dana, 2016; Yan et al., 2021).

The opportunity to belong to a learning community that supports members of the community to persevere when facing problems and encourages and enriches exposure to different perspectives and experiences, may positively influence learning. In this scenario, learning is the process of becoming part of a community with learning activities being considered as 'context-related' (Sfard, 1998). The identity of individuals is related to being part of a greater entity – 'participation metaphor', more than what PSTs possess and learn – 'acquisition metaphor' (Sfard, 1998).

In a learning community, the learning acquired needs to be considered carefully. This is because that, while members of the community may have similar experiences, the individual characteristics of learning community members will introduce a level of nuance to the learning experiences and acquisition for each individual. Therefore, creating a willingness for (preservice) teachers to reflect on, and be constructively critical about, their AfL practices is essential to increasing the likelihood of being more successful using AfL (Heitink et al., 2016). Conscious that encouraging (preservice) teachers to reflect solely on their knowledge can lead them to a 'closed circle of information', it is desirable to encourage (preservice) teachers to consider their

knowledge and practices in the context of the wider literature, and researching their practices in an attempt to improve and transform them (Heissenberger & Maticsek-Jauk, 2020).

### **The challenges of enacting assessment for learning**

The use of AfL (i.e., assessment embedded in the teaching-learning process) requires changes to the more traditional teaching-learning process, i.e., using assessment evidence to support students' learning, using student-centred approaches with the students themselves having an active role in the learning process (Authors, 2019; Coombs et al., 2018). AfL is any assessment carried out primarily with the intention of promoting students' learning (William, 2011, 2018). Socio-constructivist learning theories (Vygotsky, 1978) support students acting as co-constructors of their own learning and inform the main intention of AfL. Five key principles underpin AfL: (1) clarifying and sharing learning intentions and criteria for success; (2) engineering effective classroom discussions, questions, and learning tasks that elicit evidence of learning; (3) providing feedback that moves learners forward; (4) activating students as instructional resources for one another; and (5) activating students as the owners of their own learning (William & Thompson, 2007, p. 64).

The use of AfL to improve student's learning has occasioned new challenges to teacher's practices (Allal, 2020; Salom, 2019). The response of teachers to such challenges is important, as there is evidence that each different enaction of AfL produces dissimilar effects on students' learning (Schildkamp et al., 2020; William, 2018). While each AfL principle aligns with several assessment techniques, the underlying principles are summed up as 'tight but loose' (William & Leahy, 2015), which allow teachers to

enact AfL in what they consider the most appropriate way for their specific context. (Preservice) teachers using AfL must therefore be critical and reflective about which strategies they use, the impact they have on their students' learning, and how to better use assessment evidence to improve said learning (Heitink et al., 2016).

Considering the challenges and changes in the teaching-learning process demanded by the enactment of AfL, there are suggestions that the AfL support offered to (preservice) teachers has been insufficient and/or inadequate (Kleij et al., 2018; Authors, 2021). Often, this support has been characterised as too theoretical, with a limited direct relationship to teachers' classroom challenges and a lack of follow-up/continuous support with teachers on their AfL practices (Brevik et al., 2017; Kleij et al., 2018). We suggest that developing PSTs' agency and research skills as well as creating a supportive learning community are viable and desirable initiatives in a bid to support and maintain PSTs' enactment with AfL.

### **Practitioner research**

Schools and universities have differing visions and scope with respect to research activity. Research is not necessarily viewed in schools as a support to the improvement of teachers' practices (Henning, Petker, & Petersen, 2015). As such, schools generally concern themselves solely with the practical application while the theoretical components are left to university teacher education programmes (Admiraal et al., 2017). This dual understanding of theory/research and practice/teaching was evident in one study wherein only one cohort of PSTs across numerous countries conveyed a familiarity with research skills and the capacity to reflect about their teaching (Henning et al., 2015).

As university supervisors facilitate PST's access to literature, the onus should be on the PSTs to subsequently transform their practices through undertaking independent research (Heissenberger & Matischek-Jauk, 2020; Hilton & Hilton, 2017). Practitioner research can be considered as one means of research that can support such a professional development (Rutten, 2021). PSTs' investigation of their practices through action research practices has noted benefits to their professional development (Ulvik & Riese, 2016), with a warning that in order to develop an inquiring perspective PSTs require time and space.

Practitioner research is commonly considered a 'transformative approach' that empowers PSTs lacking agency, criticism, and ability to reflect (Henning et al., 2015). In practitioner research, (preservice) teachers are responsible for constructing knowledge as a consequence of the systematic analysis of their own practices and continually questioning their own thinking (Heissenberger & Matischek-Jauk, 2020).

While studies explicitly using the keywords "PSTs" and "practitioners' researchers" are uncommon in the literature, some empirical studies do highlight the benefits on PSTs' current (as PSTs) and future (as teachers) learning when involved in practitioner research. Some PSTs have acknowledged the importance of practitioner research approaches on their work as teachers while other PSTs have considered that action-research helped them to improve their skill set and mindset in teaching and learning (Davis, Clayton, & Broome, 2018; Smith & Sela, 2005). There is evidence that having PSTs researching their own practices leads them to identify and solve problems, improve their teaching, and cast a critical and reflective view on the teaching-learning process (Kennedy-Clark et al., 2018). PSTs researching their practices has also been recorded as resulting in a positive impact in developing PSTs' critical thinking, leading to improved data analysis of

classroom evidence, and an meaningful learning as future teachers (Yuan, Yang, & Stapleton, 2020).

Given that most studies focus only on describing the characteristics of PSTs acting as practitioner researchers, there is a need to advocate for an increase of studies that provide empirical evidence of changes on PSTs' thinking and teaching through involvement in practitioner research (Rutten, 2021). Helping PSTs become researchers of their own practices is challenging and, therefore, support and collaboration - which can happen through learning communities and bring universities closer to schools - are considered essential (Darling-Hammond, 2006; Ribaeus, Enochsson, & Hultman, 2020).

### **Learning community**

Smith and Sela (2005) highlighted the importance of teachers' support to help PSTs surpass difficulties they might experience when undertaking school placement. Such difficulties can include PSTs being exposed to specific approaches to teaching in the school with which they were previously unfamiliar and/or receiving no support from school teachers when enacting teaching practices uncommon in schools (Qin & Yi, 2021; Ribaeus et al., 2020). It has been reported that belonging to a learning community and being supported by a mentor facilitated PSTs' learning (Schulze, 2009). Listening, participating and interacting with other PSTs has been found to help PSTs' learning, as well as fostering the growth of the learning community (Authors, 2014). Further evidence suggests that PSTs considered research collaboration and mentor support important to start valuing (action) research and developing their skills as researchers (Davis et al., 2018; Skerrett & Williamson, 2015).

In the aforementioned studies, learning communities were a consistently important contribution to PSTs' development of agency, encouraging them to be more critical and reflective about their learning. The interaction between learning communities and PSTs proved to be mutually beneficial, with the former progressing as a result of the latter's learning. For this reason, learning communities may be beneficial in a school placement context to support PSTs' practices while promoting mentors'/teachers' professional development (Authors, 2017; Skerrett & Williamson, 2015). Subsequently, it is envisaged that learning communities are not effective but themselves, i.e., to be effective, teachers and PSTs need to learn how best to work with each other (Skerrett & Williamson, 2015).

In a learning community, learning happens in interaction between mentors-mentees-mentees (Cardoso et al., 2014) which implies learning from different members of the community (Alves et al., 2017; Skerrett & Williamson, 2015). The degree of PSTs' success in enacting any pedagogical approach is related to the alignment between mentors' beliefs and PSTs' practices (Qin & Yi, 2021). Referring back to the focus of the study presented here, the expectation would be that PSTs use AfL more effectively when they receive the appropriate support from a learning community.

### **Aim and research questions**

This study aims to explore how much the involvement of PSTs in a learning community that includes PSTs, a researcher, a university supervisor and cooperating teachers, enhances PSTs research of their own practices in enacting AfL during school placement.

This study addresses the following research questions: 1) How supportive is a learning community in facilitating PSTs' thinking, planning and practices of AfL?; 2) In what ways PSTs researching their own practices can support them to reflect on their school

placement practices; and 3) How PSTs as active constructors of their learning can contribute to changes in their thinking and practices throughout school placement?

### **Methodology**

This study used a practitioner research approach (Heissenberger & Matischek-Jauk, 2020; Shannon et al., 2016) which affords participants the opportunity to research and reflect on their practices. This approach aims to narrow the theory-practice gap, empowering PSTs to research and transform their own practices, as well as address their teaching needs.

### **Participants and context**

Eight PSTs from a two-year Physical Education Master's degree programme from a Portuguese Public University took part in the study. Upon successful completion of this Master's degree, PSTs are qualified to teach physical education in primary and secondary schools. The first year of the programme takes place at the university and focuses on three main areas: Sports Sciences, Education Sciences, and Didactics. Assessment is a theoretical topic integrated in the 'Sports General Didactics' module and focuses mainly on assessment content and assessing students' performance. PSTs have some practical experiences of assessment in the 'Sports Specifics Didactics' courses, with a focus on teaching how to assess technical-tactical content of different sports. During the second year of the programme, PSTs spend the majority of their time on school placement (from Tuesday to Friday) with their cooperating teacher. On Mondays, PSTs attend the university to meet with their supervisor (mornings) and have a Sports Science course (afternoon).

During school placement, PSTs are placed in groups of three or four in primary and post-primary schools. Each Preservice Teacher (PST) is responsible for teaching one of the cooperating teacher's classes during the entire year and at least, one teaching unit in a class at a different educational level. The cooperating teacher will be surveying the PSTs performance throughout the year. The university supervisor observes three lessons throughout the whole year and carries the most weight in supporting PSTs' school placement report. On completing the school placement, PSTs provide a written school placement report that captures their school teaching experience. PSTs are then asked to present and defend this document publicly in the university. This presentation determines the success, or lack thereof, of their school placement.

The eight PSTs were purposively selected (Patton, 2002) according to (i) their commitment, predisposition and interest in joining the pedagogical project, (ii) being supervised by the same university supervisor, and (iii) undertaking school placement in schools where cooperating teachers were interested in being involved in the project and had already been collaborating with the university for more than 10 years. These PSTs (five women and three men) had no professional experience as teachers. They varied in coaching experience (coaching individual and collective sports), with two PSTs having more than four years of coaching experience each. One PST had no experience as a coach. Six of the PSTs had completed their undergraduate programme at the same university as the Master's programme.

All participants (i.e., PSTs, cooperating teachers, students in the classes taught by PSTs and the same students' parents) signed an informed consent form to participate in the study. The study purpose and design were explained to all participants, and they were clearly told they could choose to leave the study at any time without any consequences.

University and school authorities in which the research was conducted granted ethical approval to the study. A numeric code (e.g., PST1, PST2) was assigned to each PST to preserve anonymity.

**Study design**

This intervention study was comprised three cycles taking place over a four-month period (Table 1) with PSTs attending university seminars on Mondays and undergoing school placement from Tuesday to Friday. The first cycle was intended to understand how PSTs share learning objectives with their students, identify aligned learning tasks and share success criteria. The second cycle focused on PSTs providing feedback to their students. The third cycle focused on students’ use of, and involvement in, assessment tasks. Each PST was formally observed three times by the researcher.

**Table 1. Study design.**

<b>Phase</b>	<b>Month - Week</b>	<b>Activity/Instrument</b>
Pre-intervention	November - Week 2 and 4	Seminars – interrogate PSTs’ (pre)conceptions about assessment
	December - Week 2 and 4	
Cycle 1	Month 1 - Week 2 and 4	Seminars - assessment embedded on the teaching-learning process
	Month 1 - Week 3 and 4	Participant observation 1
	Month 1 - Week 3 and 4	Field notes
Cycle 2	Month 2 - Week 1 and 3	Seminars - assessment embedded on the teaching-learning process
	Month 2 - Week 2 and 3	Participant observation 2
	Month 2 - Week 2 and 3	Field notes
	Month 2 - Week 4	Focus Group Interview 1
Cycle 3	Month 3 and 4 - Week 1 and 3	Seminars – students’ participation in the assessment process
	Month 4 - Week 2 and 3	Participant observation 3
	Month 4 - Week 2 and 3	Field notes
	Month 4 - Week 4	Focus Group Interview 2
Post-intervention		PSTs’ testimony
		PSTs’ school placement report

Seminars allowed the learning community of the researcher, university supervisor, four cooperating teachers and eight PSTs, to meet every two weeks and share practices, experiences, planning and reflections had throughout the PSTs’ school placement teaching (Table 2). Seminars cognizant of the AfL principles as the framework to support PSTs’ practices were organised. On some occasions, the researcher and PSTs’ university supervisor (acting as facilitators) provided PSTs with material for discussion, appreciating that the specific choice of a mediating process tends to produce different outcomes to other mediating processes (Sandoval, 2014). In this case, the mediating processes intended to create a ‘space’ (learning community) where PSTs felt safe to learn, interact and share, acting as active constructors of their own learning and researchers of their own practices (practitioner researchers). The learning community developed itself throughout the process with the increasing feeling of belonging to it, feeling comfortable to share their ideas and experiences, and PSTs understanding the community was created for supporting them.

**Table 2. Seminar structure – goals and strategies.**

Goals	Strategies
<ul style="list-style-type: none"> <li>- The relationship between assessment and learning</li> <li>- The relationship between assessment, pedagogy and curriculum</li> <li>- Assessment for Learning key principles</li> <li>- Teacher and students’ role in the teaching-learning process and assessment processes</li> </ul>	<ul style="list-style-type: none"> <li>Observation</li> <li>Reflection</li> <li>Facilitation</li> <li>Focus group dynamic</li> <li>Exchange of Feedbacks</li> <li>Co-construction</li> <li>Questioning</li> <li>Discussion</li> </ul>

**Data collection**

*Focus group interviews*

Two focus groups took place at the end of cycle two and three. The eight PSTs were involved in both focus groups, with the researcher and PSTs’ university supervisor acting

as facilitators of the discussion. Given that the goal of the focus groups were to capture PSTs' changes to, and construction of, knowledge cooperating teachers did not attend the focus group. Researcher and university supervisor were on the focus group, but their intervention was minimal, being there just to facilitate the discussion. Each focus group lasted, on average, 70 minutes with both exploring (i) how interaction in the learning community supported PSTs to overcome problems and constraints while planning and enacting AfL, and (ii) the meaning and value attributed to the learning community by PSTs. Examples of questions posed include, "What concerns do you have with respect to helping students progress in their learning?", "How do you design assessment tasks?" and "How has the learning community supported your practices?". Interviews were audio recorded and transcribed verbatim before being returned to PSTs to read and approve the accuracy of their respective transcripts.

### *Researcher observation and field notes*

The researcher collected field notes each time he observed a PST teaching in school to capture said PSTs' enactment of AfL. After each observation, the researcher and PST considered the strengths and aspects to improve with respect to the use of AfL and students' learning. The researcher shared the observation sheet and lesson plan form (both with comments) with PSTs the day after the observation.

The observation sheet format had been created by the researcher and PSTs' university supervisor. There was an agreement from all involved in the study that the observation sheet was open to changes, when appropriate, at any stage. The observation sheet filled by the researcher comprised three main areas - planning, organization/management, and students' involvement in the learning process. These areas were assessed using a Likert

scale (1 (unreached) to 4 (fully achieved) and a ‘not applicable’ option. There was also space to write qualitative comments on the use of AfL principles (Wiliam & Thompson, 2007), with three comment boxes for prompting suggestions on how to improve the use of AfL, the degree of students’ achievement of the learning goals, and the role of students and PST in the lesson.

### *Testimonial survey*

Upon completion of the study, a survey with eight open-ended questions was emailed to each PST. None of the eight questions actually required a direct answer, the prompted reflection being their main purpose. Survey questions focused on (i) how PSTs planned and enacted AfL, (ii) how they provided feedback to students to move their learning forward, and (iii) how they included students in the process. PSTs were also asked for feedback on how their involvement in a learning community contributed to their learning about AfL and for suggestions on improving the effectiveness of the learning community. All PSTs completed the survey, with six choosing to answer the specific questions that were posed and two choosing to reflect freely. Regardless of what option PSTs chose, returned survey responses were approximately five pages long.

### *School placement report*

PSTs complete a school placement report at the end of their second year of the Master’s to capture their teaching experience during school placement. A specific section in the report prompts PSTs to describe the experience of planning and enacting the teaching-learning and assessment process. It was anticipated that the report would capture additional information about PSTs’ understanding of assessment that may have been

overlooked during the school placement. Each substantial report included contextualisation of school context, PSTs' students, examples of annual planning, teaching units, lesson plans, reflections, a log diary, and involvement in the practitioner research study carried out throughout school placement.

### **Data analysis**

A deductive-inductive analysis procedure was used across all data, moving back and forth between the aim of the study, the data, and AfL principles. Data analysis used a three component flow process: data condensation, data display, and conclusion drawing/verification (Miles, Huberman, & Saldaña, 2014), with the researcher oscillating between the three components.

Data analysis began after the first observation conducted by the researcher, which informed the design of the following seminars. Data was constantly triangulated across the different sources used to inform one another. For example, participant observation and field notes provided data useful (e.g., material to discuss) to seminars and focus group interviews. Similarly, seminars and focus group interviews provided valuable data in and of themselves as well as with respect to participant observation and field notes (e.g., compare what they say with what they do). Analysis of survey testimonies and school placement reports took place at the end of the study.

Data collected from different methods were first read and examined incident by incident, highlighting each relevant extract in the text. In the codification process (data condensation), these data were re-read by two of the authors. Initial codes, underpinned on the theoretical framework or generated from the data, were refined and merged by proximity in a second coding stage through a constant comparison process. For example,

in relation to the use of the AfL principle, “providing feedback that moves learners forward”, the codes ‘too vague feedback’ and ‘description of students’ performance, without providing information to improvement’ were aggregated into a broader code of ‘ineffective feedback’ (e.g., Table 3 and 4). Data condensation and data display interacted with one another which resulted in the creation of charts capturing the most relevant themes (data display).

The final phase of analysis involved data triangulation across the different sources, taking into consideration the data, AfL principles, practitioner research and learning community. For example, comparing AfL principles with the enactment of AfL in the lessons observed by the researcher, together with the ideas imparted in seminars and focus group interview discussions. The analysis led to the following themes: i) teaching and learning as an aligned process; ii) facilitating students’ understanding of the teaching-learning process; iii) moving from transmission towards dialogical feedback; and iv) the process of including students as assessors.

In analysing the PSTs’ school placement reports the researcher looked for unprompted references related to ‘assessment’, ‘learning’, and ‘teacher (PST) and students’ role in the teaching-learning process’.

**Table 3. Example of the start of the codification process.**

Sources	Data condensation and data display interaction	
Focus Group (FG)	<b>Initial codes (example)</b>	<b>Codes (example)</b>
	Describing what students are doing wrong, without providing ‘directions’ on what students should do different to improve	Description of students’ performance, without providing information to improvement
	Acknowledging difficulties in providing effective feedback and the need to research what is effective feedback and how to put it in practice	Research of theory and practice to improving quality of feedback
	Recording and listening to their instruction to analyse the feedback	Strategies to analyse PSTs’ feedback
	Appreciating the need to translate teacher feedback into terminology that would encourage a dialogue between PSTs and students	PSTs’ difficulties in feedback led to use of dialogic feedback

	Valuing a teacher’s conversation with students to help them better understand the feedback	Feedback through conversation
Researcher observation and field notes (ROFN)	Difficulties in identifying the problem that prevents students from reaching the learning goal Feedback from the learning task (just talking without exemplifying) or too much time after the ‘occurrence’	Feedback misaligned with students’ needs No demo or timely feedback
Testimonial survey (TS)	Feedback is important to help students learn, but is challenging for PSTs to deliver - importance of the support on the learning community (LC) and researching their practices to help PSTs improve the quality of their feedback Students’ incapacity to understand PSTs’ feedback	Quality feedback is challenging - LC and practitioner researcher role on improving the quality of feedback PSTs’ difficulties in providing feedback
School placement report (SPR)	General feedback without identifying what students need to improve Seminars - Think more about why PSTs do what they do, questioning their planning, instruction, lessons Building dialogue with students, helping students understand the ‘why’ of everything they do in the lesson	Too vague feedback Reflect, think and be critical (seminars) Increasing students’ understanding through dialogic feedback

**Note:** These are examples of codes from one of the result themes.

**Table 4. Second coding stage and data triangulation.**

Codes refined and merged by proximity through constant-comparison process (second coding stage) and data triangulation across the different sources - data, AfL principles, practitioner research and learning community (example)			
	Codes	Data display	Theme
AfL	Providing feedback that moves learners forward		Moving from transmission towards dialogical feedback
FG	Description of students’ performance, without providing information to improvement		
ROFN	Feedback misaligned with students’ needs No demo or timely feedback	Ineffective feedback	
TS	PSTs’ difficulties in providing feedback		
SPR	Too vague feedback		
FG	Research of theory and practice to improving quality of feedback Strategies to analyse their feedback	Importance of researching practices and LC’s support on the improvement of PSTs’ quality feedback	
TS	Quality feedback is challenging - LC and practitioner researcher role on improving the quality of feedback		
SPR	Reflect, think and be critical (seminars)		
FG	PSTs’ difficulties in feedback led to use of dialogic feedback Feedback through conversation	Changing towards dialogical feedback	
SPR	Increasing students’ understanding through dialogic feedback		

**Results**

Results were organised according to themes derived from the data analysis which intends to answer the research questions and track how PSTs' thinking and enactment evolved throughout the process. To direct the reader towards the extent to which AfL was or was not enacted, the phrases 'more aligned with AfL' and 'less aligned with AfL' have been added after quotes.

### **Teaching and learning as an aligned process**

Understanding the importance of adjusting the teaching-learning process to address students' needs and increase their involvement in the teaching-learning process led to PSTs changing their consideration and enactment, of planning:

“In the beginning (of the school placement), I was only focused on curriculum, the content I had to teach. Only after the first two teaching units, also as a consequence of the few improvements showed by students on these units, I reflected about what went wrong during the unit, but was already too late to make any changes. Throughout the process, and everything involved in practice experiences, reflections, and research I read, I started to consider what we did on last lessons and how students reacted to that, how successful they were. I started to give more value to what students learn rather than only the curriculum. All this active learning I had, made me change from a simple perspective when planning (what I had to teach) towards a more complex (what and how to teach to help students learn). The challenges faced while teaching also provoked changes on the way I used to plan” (PST3 School placement report) (less aligned with AfL).

In the beginning, PSTs were solely concerned with their class management skills. However, as a consequence of researching their practices and the learning community support, PSTs slowly began to change their focus and strategies to allocate more importance to the teaching and learning process as well as students' needs. The feeling of needing to deliver the lesson exactly as they had intended dissipated:

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“Many times, I planned and during the lesson I realised students could have success on the task, but I kept them doing what I had planned, because I find it difficult to improvise something in the moment. Later, when reflecting about the first teaching units, I felt that students failed to achieve what was expected as a consequence of my incapacity to change the lessons when necessary. I know that I should have changed (something on the lesson for more effective learning) but during the lessons I am afraid to change to something that may be even more ineffective and consequently lose control of the students” (Focus group1). (less aligned with AfL)

[Dialogue after researcher’s observation] “Researcher: I noticed that you chose not to do the final learning task of the lesson plan (which was more difficult compared to the one, students were doing). Why did you make that decision? PST2: They (students) were already finding it difficult to do the task they were doing. I preferred to change the plan and help them to have some success on that task than just move to the next one, just because it was planned. Although necessary, it is difficult in the middle of the lesson to think of something different that allows students to achieve the goal. I am glad that, in the end, it worked well” (Field notes). (more aligned with AfL)

PSTs reported researching their own practices as central to understanding their teaching. They also noted support from the learning community led them to better understand the role of assessment and the teaching-learning process. This change led PSTs to change the way they previously understood and enacted assessment, as a separate component, to that of an embedded component of the teaching-learning process:

“I (initially) found it difficult to adapt my planning while I was teaching and (consequently) learning tasks were too easy or too difficult and/or students could not understand them (less aligned with AfL). I read literature mentioning that collecting and using evidence from previous lessons is beneficial to planning more effectively. I started to collect evidence and I think it worked. I knew better what students were capable of doing and I tried to adjust the following plan to that” (Focus group1). (more aligned with AfL)

## Enacting Assessment for Learning principles

[There are any changes on the way you plan?] “PST2: In the first teaching units, I planned, taught and assessed at the end what students had learned. (less aligned with AfL) Now, the planning is open to changes throughout the process, considering what students can and cannot do. (more aligned with AfL) PST1: I feel the same. Now, I observe what students fail to do, I listen to them and we work on their weaknesses in the following lessons. (more aligned with AfL) PST4: In my case, when I noticed students were not progressing in their learning, I thought about the methodology and strategies I was using to readjust the teaching-learning process. I had to readapt all of that” (Focus group2). (more aligned with AfL)

### **Facilitating students’ understanding of the teaching-learning process**

In the beginning, PSTs were solely focused on students actively doing tasks. Gradually, however, they started questioning the extent to which a relying solely on being physically active could, to some extent, be to the determinant of students being aware of what they understood about their learning:

[Dialogue after researcher’s observation] “Researcher: How did you view students’ engagement? PST4: Not great... Researcher: Why? What do you mean? PST4: I do not know... Researcher: Is that just your perception or is related with the questions students were doing? PST4: Both, but mainly the questions. Researcher: What did they ask you? PST4: Why they were doing that... how they are going to be assessed... Researcher: I think these are great questions. Have you thought about them before? What did you tell students? PST4: I just told them to do the sequence, be focused on the task I gave them and we would discuss that later. Researcher: Did you? PST4: no... I did not really address their doubts. Researcher: Do you think you should? Would that be important? PST4: yes, because they kept doing the task, but I felt they were doing by doing, not really understanding what they had to do and why. (Field notes). (less aligned with AfL)

Although PSTs came to value sharing learning goals and criteria with students, PSTs struggled on how best to do this:

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“PST1: I still fail to explain to the students what they have to achieve. I only say the aspects (content), and students find it difficult to clearly understand what the goal of the learning task is, what they have to be capable of doing. I questioned them many times to see if they understood what they had to learn and how to do it and it was clear to me that they did not understand. PST8: I have the same problem... Researcher: So, what do you intend to do about that? PST2: I think we all find it difficult to do. It is new for us, something we never did, we have to learn how to do it. (less aligned with AfL) In my case, I recorded my lessons and I listened to them to identify what I said and think how I could improve that. I think that helped me to identify what I share and when I am not clear. PST7: I do the same and it helped me too. I also have been trying to prepare what I am going to say and then I listen back to the recording to see if I did. (Focus group1).

PSTs acknowledged that even if they shared learning goals and criteria with students, there was no guarantee that students would understand or work towards them. Questioning their practice and their students, self-analysing their instruction and sharing experiences with the learning community helped PSTs address such difficulties:

[Dialogue after researcher and university supervisor’s observation] “University supervisor: How was the sharing process? PST6: I think I was able to clearly share learning goals and success criteria of tasks. I even asked for clarity sometimes, and they were familiar with both. Researcher: How do you think they used that information? PST6: I think students knew but I am not completely sure if they could understand it or even if they value it. Cooperating teacher: So, what do you intend to do about that? PST4: I think students knew the goals and criteria but if they cannot understand them, maybe that is useless... Researcher: Thanks, that is a fair point. So, how do you intend to ensure they understand? PST6: Perhaps, observing what they do, try to use a ‘more familiar language’ to students and ask better questions, like explain in their own words or identify what they are doing right and what they could do better” (Field notes). (more aligned with AfL)

“I remember that in the beginning (of the school placement) I was just worried about sharing goals and criteria. But when teaching, I realised that students do not always understand what we say. I

reflected and also your feedback (from the researcher, university supervisor and cooperating teacher) led me to start observing if students are just doing the learning tasks or if they are focused on the goals and criteria I shared, asking students for the necessity for further clarity around my instruction, asking one or two students to explain the expectations in their own words, and also encourage students to check their learning for themselves” (PST7 Testimonial survey). (more aligned with AfL)

### **From transmission towards more dialogical feedback**

While feedback was valued by PSTs, the quality of their own feedback to students was weak. PSTs tended to provide feedback that was too vague, one-directional and misaligned with students’ needs and success criteria:

[Dialogue after researcher’s observation] “Researcher: Do you remember any feedback you gave during the class? PST3: Yes, for example, I asked students to ‘move their legs’ to prevent the ball to hit the floor. Researcher: How did it work? PST3: Not good... The ball kept hitting the floor. Cooperating teacher: What do you think you could have said instead? PST3: I do not know. I thought this would be a ‘familiar language’ to students like some authors tend to say. Researcher: Why do you want them to move their legs? PST3: To hit the ball. Cooperating teacher: They can move their legs and not have the conditions to hit the ball, or the ball can come towards them. (less aligned with AfL) PST3: Maybe I should encourage them to be under the ball to be able to receive it” (Field notes).

[Dialogue after researcher’s observation] “Researcher: What is your feedback based on? PST8: The success criteria I set for each task. I read some articles emphasizing the importance of aligning the feedback with the criteria. (less aligned with AfL) Researcher: What if the student’s difficulty is related to another aspect? PST8: I never thought about that. I guess I should identify the problem and give feedback that helps to address that” (Field notes). (more aligned with AfL)

Aware of their difficulties in providing feedback that develops their students' learning, PSTs recorded and analysed their instruction. This strategy allowed PSTs, with support from the learning community, to compare their feedback with what was stated in the literature as being the hallmarks of quality feedback. This helped PSTs to identify and improve their feedback and, subsequently students' learning:

“Feedback can be so powerful, can make a big difference on students having success on the task. However, providing accurate feedback is so difficult. Even preparing my feedback I knew my feedback was not clear all the time and it could be improved. PSTs from previous years reported such difficulties in their thesis and how recording their lessons helped them with that. I tried (recording) and I have to admit this improved so much the quality of my feedback. I noticed in the first recordings I was general with my feedback comments, or I just reinforced students, saying ‘well done’, ‘do this’. It is reported in the literature that this type of information does not help students improve their learning. (less aligned with AfL) I think my feedback now is more useful feedback because I ask students what the learning goal is, I mention the criteria, and what students should improve on, I give them ‘directions’” (Focus group2). (more aligned with AfL)

Besides the increase in quality on the feedback provided, the greatest gain as pertains to PSTs' change on the understanding and use of feedback was the increasing obtention of the latter through dialogue with students. This change was the result of what was perceived by PSTs as a failure on the students' part to understand the transmitted feedback:

“The other day, after some reading, I was questioning myself, how to use feedback to improve students' learning, but in a way that engages them with that learning, not just follow what we say. I think, building a dialogue with students, for example, why we are doing this exercise? what is this going to result in?, can help students understand better what they are doing, what they have to do to improve and why. This allows us to build a trusting relationship with students, allowing them to

understand that there is a reason for what we do and making that reason clear to them. Some of them may identify something we miss” (Focus group2). (more aligned with AfL)

### **The process of including students as assessors**

In the beginning of the study, PSTs’ lesson plans conveyed a disconnection between (self or peer) assessment and the teaching-learning process. In addition, it was apparent that students’ absence of experience with assessment, not to mention a lack of understanding as to why they were being encouraged to be involved with it resulted in them encountering difficulties, and lacking interest or meaning when using self and peer assessment:

“What I am going to do this week is, some (students) will be playing and others observing and assessing their peers. In the beginning of the year that did not work very well, because students did not know the criteria, they did not know anything. (less aligned with AfL) Now, I spoke about the criteria throughout the unit, about the content, I clarified doubts. So, now they (students) are going to observe their peers and compare their performance with criteria, that is how I am going to include them in assessment” (PST4 School placement report). (more aligned with AfL)

“PST6: (...) when I started using self and peer assessment, most students would not care about it, I could feel it. They would assess because I asked them to, but I cannot say I would trust their assessments. PST4: Throughout the entire year I tried to use self and peer assessment. Several studies report advantages and I considered it could be important for students to understand their performance, their difficulties, but first results were so disappointing... students could not assess... they do not have the knowledge and the capacity to analyse content and apply this to the assessment. They just describe what happened” (Focus group1). (less aligned with AfL)

It was evident that while PSTs recognised the importance of self and peer assessment in the teaching-learning process, they struggled with how to make it meaningful to students. This was addressed once PSTs researched their practices and identified the need of

clarifying to students why they were assessing them and their peers, as well as how gaining a skill set allowing them to assess themselves and their peers could contribute to their, and their peers', learning:

“PST8: In the beginning, students could not assess their peers or themselves. They were slowly getting better doing that. Because of what I read and we talked about (within the learning community), I was more rigorous when introducing these (assessment-related) tasks to them. PST7: I think this is normal. I felt the same. They need time to learn how to do it and to understand why it is important. This is their first time doing that. Even we (PSTs) find it difficult to assess, so imagine how they must feel... PST2: I agree! I felt they gave so much value when I started to explain better why it was important having them assessing themselves and their peers. I think this make such a difference” (Focus group1). (more aligned with AfL)

“PST4: I think throughout the process I became more critical about the way I prepared and used self and peer assessment. I think that influenced students, helping them to be more critical too when doing these tasks. PST2: I think that is an important point. That is why when I ask students to assess, I complete or assess their assessment, ‘I agree with that, but not with this’ or ‘I saw it this way, but that is a fair point’. It is like assessing their assessment. For me, this needs to be done, otherwise students consider that the teacher is not involved, students will assess because you asked, similar to what happened in some of my lessons in the beginning. And this is also important to giving them valuable information about their learning and their assessment. It can, perhaps, even help them improve their assessment skills” (Focus group2). (more aligned with AfL)

PSTs also noted the importance of being constructively critical as to “what” and “how” they use assessment strategies/techniques. Although all PSTs agreed on the benefits of using self and peer assessment to students’ learning, PSTs enacted self and peer assessment differently depending on their contexts:

“Although written evidence could be important, I have tried it several times and I think it does not work with my students. When self and peer assessment is oral, my students interact, give

comment/feedback to others in the moment. When this is written, usually it is more difficult to them to say something and I feel they just write something but without giving too much value to it” (Focus group2). (more aligned with AfL)

“In our group (PSTs and cooperating teacher) we created some questionnaires so students could assess themselves and be aware of their learning. These questionnaires allowed students to self-assess throughout the process so they could see their progress. I also assessed their progress and added comments (in the questionnaire). I think this helped students to see what I thought about their progress, their learning, while they could also compare my assessment with theirs and improve their assessment skills” (PST1 School placement report). (more aligned with AfL)

### **Discussion**

The difficulties shared by PSTs in adapting and adopting AfL in their teaching are not surprising, considering the substantial number of studies reporting the challenges of using AfL (Brevik et al., 2017; Yan et al., 2021). Initial difficulties encountered by the PSTs in this study are clearly related to their initial lack of exposure, and therefore knowledge of, AfL. This led PSTs to an instrumental use of assessment at the expense of what is intended as the essence of AfL. That is, the use of assessment to improve students’ learning (William, 2018) can only happen when assessment is embedded in the teaching-learning process (Allal, 2020; Coombs et al., 2018).

The gap between PSTs’ use of AfL in their practice and the benefits of AfL (as highlighted in the literature), helped PSTs understand the need to investigate their practices, be constructively critical of such practices and reflect on how to improve them. As the study progressed, PSTs’ critical stance extended to research. PSTs began to enhance their exposure to research to improve their teaching, reflecting and being able to recognize that what other researchers do or recommend may not work in specific contexts.

This contributed to improving the limited research skills and increasing their proclivity to reflect on their teaching, two aspects that tend to be problematic for PSTs (Henning et al., 2015).

The critical, reflective and researcher-like stance was supported by being a member of a learning community, where PSTs could share, compare and acknowledge differences between their practices, even within the same school, when using ‘the same assessment ideas’. This reinforced the notion that teachers must find their own ways of putting AfL principles into practice (William & Leahy, 2015). A critical stance towards research and practices helped to PSTs adapt and learn from their teaching, with the learning community acting as a supportive and crucial element in challenging themselves and looking for ways to improve their practices. This underscores the importance of a supportive context in encouraging PSTs not to give up on their initial attempts to change their practice(s) (Ribaeus et al., 2020; Yan et al., 2021).

The learning community built around these PSTs provided them with support on their practices. This was essential to them accepting the difficulties they faced in successfully adopting the principles of AfL (Qin & Yi, 2021; Schildkamp et al., 2020). Positioning PSTs as being responsible for their own learning, and positioning facilitators (the researcher, university supervisor and cooperating teacher) as collaborators, enhanced PSTs’ engagement with the learning community and their own professional development. It was apparent that in encouraging PSTs to consider data from their own practices that this matched a key aspect of practitioner research literature (teachers improving their own practices) (Heissenberger & Matischek-Jauk, 2020; Hilton & Hilton, 2017).

Researching their own practices helped PSTs better understand the teaching-learning process, be more accepting of changes to their practices, and become more constructively

critical about their teaching and research. It was evident that the PSTs became more self-critical throughout the study as a consequence of their involvement in researching, teaching and belonging to a learning community. This, in turn, encouraged a move from PSTs considering assessment as an 'add-on' towards AfL as a more dialogical process (Baird et al., 2017). Initially, PSTs tended to solely describe the events that happened in their classes and it was not until further on in the study that they became more concerned in reflecting about the impact of their teaching on students' learning. The 'safe space' and facilitators involved in the learning community provided support and feedback to PSTs throughout the process of debriefing AfL practices experienced during school placement. Creating this 'safe' and supportive environment seems to be a key aspect to support learning, facilitate interactions and dialogue (Sølvik & Glenna, 2022).

Although learning communities may positively influence learning experience, acquisition of learning is dependent on the individual (Sfard, 1998). This was evident in instances where PSTs believed they had acquired or changed some of their perspectives but found difficulty in enacting changes. Despite being part of the same learning community, PSTs had different learning acquisitions as result of their individual characteristics and background. However, PSTs learned to become part of the community, with their involvement in the community, being essential to develop it. The different contexts in which PSTs worked, and subsequent challenges, helped PSTs understand the importance of being practitioner researchers and reflect about what they learn and do. Indeed, there is a need for more studies that capture the extent to which PSTs' involvement in practitioner research results in changes to their practice (Rutten, 2021).

### **Conclusion**

Encouraging PSTs to position themselves as practitioner researchers and active constructors of their learning was essential in helping PSTs explore and understand the ways in which AfL is effectively enacted in a bid to improve the teaching-learning process and students' learning. Researching their own practices developed PSTs' teaching, with PSTs becoming more critical about what they do and appreciating that what works in one context may not work in another. Exposure to the differing contexts was heightened and supported through a learning community that included the main stakeholders involved in the PSTs' school placement. The learning community challenged the PSTs to consider ambitious assessment practices that would focus on improving students' learning, resulting in supporting PSTs to move away from an over-reliance on envisaging sole responsibility and control as a PSTs in a lesson.

Given the importance of school placement as an opportunity for PSTs to enact assessment practices, it is vitally important that they are supported in this endeavour. The establishment of a learning community that includes all those involved in support the school placement experience, provides a space in which PSTs can share their experiences, encourage PSTs to research their practices as well as learn from others on how best they might consider changing practices to heighten students' learning experiences. While belonging to a learning community had a significant impact on PSTs' experiential learning, it did not mean that this resulted in learning acquisitions.

PSTs valued being involved in a learning community and the learning that resulted from their involvement. However, in some cases, while PSTs believed they had acquired, or changed, some of their perspectives it became evident that they were not always able to enact the changes. Learning community members experienced different learning

acquisitions due to what they learned being dependent on their individual characteristics and experiences and the PSTs' capacity and engagement as active constructors of their learning. Therefore, teacher education programmes need to seriously consider how best to provide a supportive infrastructure that captures the impact of such learning communities on PSTs' practices and, in turn, students' learning experiences. Teacher education programmes and learning communities need to consider how best to encourage and support PSTs to research their practices.

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### **3.3. Encouraging students to co-construct, co- and self-regulate their learning within a cooperative learning environment in physical education**

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**Second round of major revisions in ‘Journal of Teaching in Physical Education’**

**Encouraging students to co-construct, co- and self-regulate their learning within a cooperative learning environment in physical education**

**Abstract:**

Improving students' learning is dependent on students' participation, meaningfulness, and value of the teaching-learning process. This study explores students' learning experiences when undertaking the role of co-constructors, co- and self-regulators in a cooperative learning environment. The study included 110 school students aged between 15 and 18 years from four physical education preservice teachers' classes. Data were collected through student focus group interviews, a post-teaching units survey, students' class reflections, and the researcher's field notes. Data reports that i) having access to learning goals and assessment criteria was essential for the co-construction, co- and self-regulation processes; ii) there is a positive reciprocal relationship between students' involvement in co-construction, co- and self-regulation; and iii) co-construction, co- and self-regulation were strengthened by students' involvement in cooperative learning and vice-versa.

**Keywords:** Co-constructed learning; Co-regulated learning; Self-regulated learning; Cooperative learning; Assessment 'for' and 'as' learning; School students.

**Introduction**

It is common in traditional physical education practices that the teaching-learning process is constructed solely (and without the involvement of students) by teachers, i.e., teachers

plan, define what is taught and assessed, and determine how it is to be delivered. Similarly, classroom practices can have regulation processes which are primarily teacher- (and not student) centred (Allal, 2020). These types of teaching-learning processes convey the message that such processes are linear, unidirectional, and that assessment is an add-on to the teaching-learning process (Moura et al., 2021). Subsequently, students are expected to follow the teachers' directions, with no opportunity to think differently, find alternative solutions to a task or question 'why'.

Alternatively, there is the belief that learning is not a linear process where everything taught is learned and where assessment, when used meaningfully, can improve students' learning. This line of thought supports the belief that learning is more meaningful and powerful when students are involved in the teaching-learning process individually and as a collective (Barrientos-Hernán et al., 2019; Leirhaug & Annerstedt, 2016).

Students' involvement in teaching-learning process decisions requires a clear process for students. Students can be involved through co-construction, co- and self-regulation processes, and cooperative learning. Students participating in the construction (i.e. co-constructors) of their learning can allow them to take decisions in the teaching-learning process, negotiate what they learn, as well as being aware of what, how and why they are learning (MacPhail et al., 2013; Tolgfors, 2018). For example, a student or a group deciding which activities they will carry on the class to reach the learning goal defined by or with the teacher. In addition, students participating in the regulation (i.e. co- and self-regulators) of learning increases students' responsibility and autonomy while providing them with information on the progress in relation to the learning goals (Allal, 2020; Tolgfors, 2019). For example, identifying something they or their peers have to

improve to reach the goal. Students can also be involved in cooperative learning environments which might help students gain from each other's knowledge.

Although co-construction, cooperative learning, and co- and self-regulation can be meaningful to students' learning (Graça et al., 2019; Tolgfors, 2019) as well as important processes for engaging students in physical education classes, they are not without challenges for teachers and students. With respect to understanding more about students' role in the teaching-learning process, researchers advocate for studies with students co-constructing, co- and/or self-regulating (Tolgfors, 2019), using self and/or peer assessment in school physical education (Barrientos-Hernán et al., 2019), and cooperating with peers to learn (Dyson & Casey, 2016).

In this specific study, any reference to theoretical framework considers co-construction, co- and self-regulation processes, and cooperative learning. The focus is the experience of school students undertaking the role of co-constructors, co- and self-regulators in a cooperative learning environment regardless of the teaching unit (i.e. sport taught) for believing that any content can be taught with these processes. Any reference to 'the teaching-learning process' throughout this paper, except when describing the traditional practices, considers assessment as an embedded component of this process, aligned with curriculum and pedagogy.

### **Co-construction, co- and self-regulation**

The understanding of assessment as a bridge between teaching and learning, and the consideration of students as regulators of their learning, extends the discussion of assessment being related only to the summative outcome of learning to an assessment 'for' and 'as' learning that captures the process of learning (Batista et al., 2019; Hay et

al., 2015). Assessment ‘for’ and ‘as’ learning encourages and supports students and teachers to work collaboratively, with students participating in the construction and regulation of their learning (Graça et al., 2019; Kniffin & Baert, 2015).

In co-constructed, co-, and self-regulated processes, students’ learning drives the process. Learning the content is not the most important outcome but rather the ability of students to construct and regulate their process, i.e., understand where they are, where they are going (learning goals) and what they have to do to get there. Involving students (individually and with their peers) in these processes require teachers to ensure learning goals and assessment criteria are explicit to students as well as adapting the teaching and assessment to students’ learning and needs (Graça et al., 2019; Hay & Penney, 2013; Leirhaug & Annerstedt, 2016). It is expected that students who are aware of learning goals and assessment criteria can understand the ‘what’, ‘how’ and ‘why’ of learning and keep track of their learning process, being able to identify the best strategies to achieve their goals (Haerens et al., 2019; MacPhail et al., 2013; Redelius & Hay, 2012).

Students constructing and regulating their own learning heightens their awareness of the process, and strategies which hinder or increase their capacity to learn (Fletcher, 2016) as well as developing important skills for lifelong learning (Oates, 2019). Students pursuing their goals and regulating learning tend to be more motivated and autonomous (Goudas et al., 2017). In these processes, the teacher becomes a facilitator and supporter of students’ learning (Tolgfors, 2019). For example, in a collective game, prompt students to think about their, and peers’, decisions, after they make the decision (co- or self-regulation), rather than the teacher telling them what decision to make (co-constructing after co- or self-regulation). Such processes empower students, allowing them to understand and be accountable for their, and peers’, learning (Enright & O’Sullivan, 2010;

Kniffin & Baert, 2015; Tolgfors, 2019). Having this responsibility in the learning process (constructing and regulating) also creates student ownership in relation to the importance of their own contribution for achieving learning (Enriquez & Oliver, 2022; Shilcutt et al., 2021). This is an important step in engaging students and developing their willingness to participate (Enright & O'Sullivan, 2010).

Involvement in co-construction can guide students' learning process, providing directions on what to focus on and value with respect to learning. Co-construction may be more focused on the 'how' and linked to pedagogy and curriculum. Involvement in regulation processes enable an opportunity for students to reflect on and assess their learning (Barrientos-Hernán et al., 2019; Chng & Lund, 2018). Co- and self-regulation may be more focused on the 'what', the process of assessing to collect evidence. Self and peer assessment are considered regulation techniques (Barrientos-Hernán et al., 2019; DeLuca et al., 2013). The way in which these practices are enacted need to be adjusted to the context, e.g., the age and ability of students.

Students participating in construction processes may find it easier to regulate their learning (Tolgfors, 2019). On the other hand, students participating in regulation processes make better decisions when constructing their learning process (Liu et al., 2020; Panadero et al., 2018) i.e., they make informed decisions to adjust the process to be more effective. Therefore, students may struggle doing one and not the other in a similar way to struggling if asked to work on their own and/or with peers.

Students' involvement in the co-construction, co- and self- regulation appears essential in a cooperative learning environment. While cooperative learning environments have the potential to enhance the involvement of students in the teaching-learning process, it appears that no studies have explicitly addressed this relationship.

### **Cooperative learning**

Cooperative learning has a positive influence on students' learning, including (i) enhancing lifelong learning as a social and interpersonal skill, (ii) accepting constructive criticism and problem solving as a result of empowering students to be responsible for their and peers' learning, and (iii) working with others in a positive, respectful and trust environment for the achievement of a group's goals (Bjørke & Moen, 2020; Dyson et al., 2020; Engels & Freund, 2020). When working as a group, the involvement of every member is important when group success requires all members to succeed, i.e. group goals are achieved (Dyson & Casey, 2016; Engels & Freund, 2020).

Cooperative learning has five key elements: positive interdependence, individual accountability, promotive face-to-face interaction, group processing, and interpersonal and small-group skills. These are considered as guidelines teachers must follow to successfully implement cooperative learning (Dyson & Casey, 2016; Johnson & Johnson, 2009). Positive interdependence is regarded as the importance of every member's contribution in the success of the group. Individuals cannot succeed unless all members in the group do. Individual accountability is linked to the responsibility of each member to fulfil their part of the responsibilities, show they have learned something throughout the process, and understand all the material necessary to the group success. Promotive face-to-face interaction relates to the support, feedback, and encouragement students must provide to each other for the success of the group. Group processing refers to the way the group operates, i.e. assessing their work as a group, identifying what is working and what needs to be improved. These reflections and discussions are student-centred and learning-driven by the group of students who belong to the group rather than the teacher.

Interpersonal and small-group skills are developed by participating in cooperative tasks that may allow students to develop lifelong and social skills e.g. listening, be critical and constructive, taking decisions together, respecting and accepting others and their opinions, leading, conflict management, and following others. These five elements are organised under the same assumptions as the co-construction, co- and self-regulation learning processes. Similar to these processes, teacher act as a facilitator in cooperative learning.

On some occasions, while students are working together, they are not practicing cooperative learning, limiting the potential positive influence on students' learning (Dyson & Grineski, 2001). The advice is that teachers take small steps when starting to implement cooperative learning (Dyson & Casey, 2016). The more comprehensive a teachers' knowledge about cooperative learning is, the more effective support students will receive (Casey & Goodyear, 2015). Even with all students having the same learning goal, the learning process each group experience can be completely different from other groups, as a consequence of each group options, interactions, and ways of work.

Although the literature on the positive influence of cooperative learning on students' learning is substantial, it is recommended more studies examining the influence of cooperative learning in physical education (Casey & Goodyear, 2015). Bores-García et al. (2020) vouch for more research on hybridisation between cooperative learning and other pedagogical models.

Considering all this theoretical framework, this study intends to explore the experience of students undertaking the role of co-constructors, co- and self-regulators in a cooperative learning environment. This study also addresses the following research questions: i) How do students assume a more central role in the teaching-learning

process?; ii) How do students use assessment to co-construct, co- and self-regulate their learning, and how do these processes influence each other?; and iii) How do students perceive their learning experiences when involved in a cooperative learning environment?

### **Methodology**

#### **Study design**

The four PSTs worked with 110 students for a full academic year (10 months of school placement) during the second year of their two-year master's degree programme for physical education teacher education in a Portuguese university. Although PSTs were teachers of the classes involved in the study, this is a qualitative exploratory study focused on the experiences of school students when involved in processes of co-constructed, cooperative, co- and self-regulated learning. The study lasted over a four-month intense period at the end of the school placement (Table 1).

Group and individual meetings engaged and supported PSTs, with PSTs recording every second block of weekly class time to help the researcher track the progress of students' involvement in the teaching-learning processes. The researcher (who acted as participant observer) was fully involved in the organisation of the teaching units, planning and analysis of PSTs' classes.

All data was continuously collected throughout the process, except for students' focus group which only happened at the end of the study. This allowed all students to have already experienced co-construction, cooperative, co- and self-regulation learning in their classes when joining the focus group.

#### **Table 1. Study design.**

Month - Week	Activity/Instrument
Month 1 - Week 3 and 4	Participant observation one
Month 1 - Week 3 and 4	Field notes + class reflections one + students' class reflections
Month 2 - Week 2 and 3	Participant observation two
Month 2 - Week 2 and 3	Field notes + class reflections two + students' class reflections
Month 4 - Week 2 and 3	Participant observation three
Month 4 - Week 2 and 3	Field notes + class reflections three + students' class reflections
	Post-teaching unit survey
Throughout the process	Individual meetings every Monday (alternately, two PSTs per week) Group meetings every second Monday (twice a month)
Post-study	Students' Focus Group Interview

Considering it was intended to increase students' role in the teaching-learning process, it was important to identify PSTs' and students' role before and throughout the study to understand any differences arising over the study duration to the teaching-learning process (Table 2).

**Table 2. Intended changes for PSTs' and students' role.**

	Pre-intervention	----->	Intended changes
PSTs' role	PSTs set learning tasks		PSTs allow students to set some learning tasks
	PSTs share contents and information about the organisation of the task		PSTs share learning goals and assessment criteria
	PSTs want to control everything in the lesson		PSTs allow students to take over some decisions
	PSTs as unique decision-makers		PSTs act as facilitators/mentors, allowing students to control their learning during some moments of the teaching-learning process
	PSTs do not consider students' opinions in relation to teaching decisions		PSTs consider students' opinions in relation to teaching decisions
	PSTs regulate students' learning		
	Students' role	Students follow PSTs' decisions	
Students' responsibilities are directly solely by PSTs			Students are involved in the teaching-learning process decisions
Students work individually or in groups but without intentional cooperation			Students assume responsibilities (co-construction, co-, and self-regulation of learning) within their groups
Students are not involved in the regulation of learning			Students working individually or in group, co- and self-regulate, and exchange feedbacks to contribute for group achievement of learning goals
			Students regulating learning

Each preservice teacher taught five teaching units throughout the study. All four PSTs taught badminton, dance, gymnastics, and volleyball. Two PSTs taught handball while the other two taught judo. In each of the five-teaching units, PSTs provided a portfolio to the students with some general information about the sport (e.g. rules, content name of some techniques and tactics), the different learning goals that they had to achieve, and assessment criteria. Students were responsible for deciding what they would do in the class (i.e. selecting learning tasks) and how their group would work (e.g. all doing the same or using differentiated learning tasks). PSTs were facilitators of the process, helping students with everything they needed rather than telling students what to do.

The teaching-learning process students experienced intended to provide them with opportunities to i) developing lifelong learning, working together, helping, and teaching each other; ii) being involved in the decisions about the teaching-learning process, setting learning tasks; iii) regulating learning; and iv) having responsibility for their group achievement of goals. Therefore, the focus was to explore students' involvement in co-constructed, co- and self-regulated processes in a cooperative learning environment regardless the teaching unit.

### **Participants and context**

One hundred and ten school students from four classes and two schools participated in the study. All the schools had been cooperating with the university with respect to hosting pre-service teachers for more than 10 years. All students are in the last three years of mandatory education at secondary school in Portugal and are aged between 15 and 18 years. Students from one school have two classes of 90 minutes of physical education per week and students from the other have two classes of 120 minutes per week. Schools are

from the same region, both have students from different social backgrounds, are state-funded and work under the same designs. Students began physical education in their first year of primary school and from fifth year onwards, physical education programmes encompassed individual and team sports, e.g., athletics, dance, judo, gymnastics, games, orienteering, and swimming. The focus of the physical education programme tends to be on the cognitive, motor, and socio affective domains of physical education, with minimal involvement in co-constructed, cooperative, co- and self-regulated learning. The questionnaire (required by schools) completed by students at the beginning of the school year reported that half of the students are involved in different sports (football, basketball, volleyball, dance, gymnastics, swimming, martial arts) in their free time.

School students were a convenience sample (Patton, 2002), selected on the basis that they were students of four preservice teachers (PSTs) involved in a project. To be eligible for the project, PSTs had to be (i) supervised by the university supervisor who acted as facilitator for this study, and (ii) undertaking school placement in schools where cooperating teachers were interested in being involved in the study and had already been collaborating with the university for more than 10 years.

Participants directly or indirectly implicated in this study (i.e., students and parents) signed an informed consent form confirming their voluntary participation. The researcher explained to all participants the study purpose and design and made clear that participants could leave the study at any stage without repercussion. University and school authorities in which the research took place granted ethical approval for the study. Pseudonyms were assigned to maintain students' anonymity. Individual classes are identified to convey the extent to which students experienced different processes within the same class.

### **Data collection**

#### *Students focus group interviews*

One focus group interview in each of the four PSTs' classes took place online for 40 minutes on average. In each class, six students (24 students in total) were purposively selected for diversity by PSTs considering their differing characteristics (related to confidence to communicate, interest in physical education and disposition to teamwork). PSTs spent the whole year with students so had a great knowledge of who students were. All students voluntarily participated in the interviews. The researcher and the university supervisor facilitated the four focus group interviews. The interviews intended to capture students' perspectives, value and meaning given to their role in the teaching-learning process, and its influence on their learning. Questions included: "How would you describe the experience of working together? What advantages arose from working together? What challenges did you face from working together?"; "To what extent did identifying the individual and group's difficulties help the group in working together in future classes?"; "How informative were the (assessment) records on your learning and how did assessing your and peers' learning influence future learning?". The researcher and university supervisor discussed the interview scripts, and a third person (an expert in the area) assessed and validated the questions. To validate the questions, the expert analysed if the questions could capture the information intended, and he also provided feedback on clarity and scope of the proposed questions. Interview questions were based on the theoretical framework of the study. Each interview was audio recorded and subsequently transcribed, resulting in a Word document totalling 65 pages.

#### *Post-teaching units survey*

## Students as co-constructors and co-regulators

At the end of each teaching unit (five per PST), PSTs invited their students to formally answer a short survey consisting of six open questions. At the end of the first two teaching units, the surveys were completed individually as students were primarily working on their own. For the remaining units, given that students were working in groups, students responded individually to three of the questions and responded as a group to the remaining three questions. Questions focused on determining the importance students conceived in i) being involved in teaching-learning decisions; ii) co- and self-regulate learning; and iii) working in a group. Individual questions included, “How do you felt about having the opportunity to make decisions in the teaching-learning process”; “To what extent did knowing the learning goals and assessment criteria help?”; and “What importance, if any, do you acknowledge in assessing your own and peers’ learning?”. Group questions included, “What were your greatest challenges (excluding sports technique or tactics) throughout the unit?”; “If you were to be part of this unit again, what would you do differently and/or want the teacher to do differently?”; and “What do you think you gained and lost from experiencing the unit as you did (your role, taking decisions, regulating learning, working in group)?”. Questions were prepared by the researcher and PSTs prior to the last class of each unit to allow for any nuances that had arisen based on the specific unit. Questions were then approved by the cooperating teacher and university supervisor. All students completed the questions for each unit which resulted in a Word document totalling 30 pages.

### *Researcher field notes*

The researcher collected field notes each time he observed PSTs’ classes to understand i) PSTs’ and students’ role in the teaching-learning process, ii) students’ involvement in the

regulation of learning; iii) how students employ assessment and learning tasks, and iv) how students work in groups and co-construct their learning process. This resulted in a total of 26 pages of observations from 12 observations (i.e. three observations for each PST).

### Students' *class reflections*

On days when the researcher was observing, he made time at the end of the class to talk with a group of six students. The group of students selected (from the 110 who took part) was always different. All students voluntarily agreed to share what they think and feel about i) their role during the unit; ii) their level of involvement in the decisions related to the teaching-learning process; iii) their involvement in the regulation of their and peers' learning; iv) evidence collected or feedback received by peers or PST; v) the learning goals and criteria; and vi) their work with peers. Students were also provided with the opportunity to discuss any related aspects they considered important to the study and had not had an opportunity to share. Class reflections with students were audio recorded and transcribed, resulting in a total of 28 pages.

### **Data analysis**

A deductive-inductive analysis procedure was used across all data, moving back and forth between the aim of the study (i.e. to explore students' learning experiences when undertaking the role of co-constructors, co- and self-regulators of their learning in a cooperative learning environment) and the data. Data analysis used a three component flow process: data condensation, data display, and conclusion drawing/verification (Miles et al., 2014), with the researcher oscillating between the three components.

Data analysis began with the characterisation of the PSTs' and students' role, and the teaching-learning process which informed the preparation of first individual and group meetings with PSTs. Data were continually considered across the different sources, to allow data to inform all data sources. For example, data collected on participant observation and reported in field notes, on post-teaching unit surveys, and on class reflections yield valuable data to all PSTs' individual and group meetings, and vice-versa. This allowed for the triangulation of the different data sources, ensuring trustworthiness, reliability and findings based on participants' responses rather than any potential bias.

Data collected from different methods were read and examined incident by incident, highlighting relevant extracts in the text, and using co-constructed, cooperative, co-, and self-regulated learning as sensitive concepts (Charmaz, 2006). Data were re-read by two authors to start the codification process (data condensation). Initial codes modelled by the theoretical framework, or generated from data, were refined and clustered by similarity in a second coding stage through a constant comparison process. For example, in relation to cooperative learning work, the codes exemplify or explain slowly to peers and assess and give feedback on peers' performance, according to assessment criteria were aggregated into a broader code of examples of students supporting each other. The creation of charts capturing the most relevant themes (data display) resulted from data condensation and data display interacting with one another.

The final phase of analysis involved data triangulation across the different sources, considering co-constructed, cooperative, co-, and self-regulated learning. For example, comparing the use of the theoretical framework concepts (observed in the lessons by the researcher) with ideas discussed in student focus group interviews. The analysis led to the following themes: i) empowering the role of the student in the teaching-learning process;

ii) embedding assessment in the teaching-learning process; and iii) from working in groups to working collaboratively.

### **Results**

#### **Empowering the role of the student in the teaching-learning process**

There was an awareness from students that at the start, teaching-learning decisions were exclusively directed by PSTs. As the study progressed, there was a move to include students in making decisions by providing them opportunities to share their thoughts:

I felt a difference in terms of being heard in class decisions. In the first two units [month one and first two weeks of month two], the teacher would not ask us our opinion about the class, or if we had any problems or difficulties. During these units, the teacher asked what we thought about the exercises, how we found it, how we felt. On some occasions, when exercises were too easy or too difficult, we told the teacher and the teacher adjusted it. (Maria, Class2, Post-teaching unit survey)

Students intentionally increased their participation in teaching-learning decisions by exercising their autonomy when encouraged by PSTs to co-construct their learning process. For example, one PST provided students with a portfolio that included different techniques for Judo they could explore throughout the class:

I remember that in the start [of the study], the teacher decided what we were going to do. We only had to do it. On the second month [third unit], for example, in Judo, the teacher divided the class in groups of two, and gave us a document with techniques. We discussed, chose, and did the techniques in the order we wanted, and we gave feedback to each other. (Francisca, Class4, focus group)

Another PST challenged their students to create a choreography in dance in their third teaching unit. Students highlighted in the survey that this opportunity was challenging but fruitful in engaging them throughout the unit:

## Students as co-constructors and co-regulators

The way we worked on this unit [month three] was so different from all the others so far. I had never had the opportunity to create a choreography with my colleagues, but I am glad it happened. This was challenging, but worth given that this was our choreography and we wanted to be as good as possible. We all came motivated to the classes. (Manuela, Class2, Post-teaching unit survey)

Another PST constructed a context where students were responsible for creating their planning throughout the entire teaching unit and one of the assessment components:

In Badminton, we [students] decided with the teacher, that we would be responsible for creating a sequence of shots that would be evaluated at the end of the unit. We had to create a sequence respecting some guidelines which were accepted by all [PST and students]. (João, Class3, focus group)

Students acknowledged that an awareness of learning goals and assessment criteria was essential for them to be able to co-construct their learning process after the third unit:

Learning goals and the criteria were our horizon in terms of defining what to do in the classes. We took our decisions based on that and later also based on what we collected during the process. (Marta, Class3, class reflections two)

### **Embedding assessment in the teaching-learning process**

Students admitted that they required time to appreciate the value of involvement in the regulation of learning. On their first attempts (first two units), students admitted they had not gained anything from assessing learning. Students considered it essential to be aware of learning goals and assessment criteria and assumed that they changed their perspective on assessment because of their role as co-constructors of their learning, i.e. making decisions on their teaching-learning process during the second month:

## Students as co-constructors and co-regulators

The first time the teacher asked us to assess I could not understand why we had to, and I think we gained nothing from assessing myself or my peers. But now, it makes more sense because we know what we are supposed to achieve, what is important for us to do to achieve it. We are responsible for building our learning process, define what we are going to do during the classes. We understand how we are doing it and what we have to do better. (António, Class I, class reflections two)

The researcher noted differences between the three participant observations of PSTs' lessons in relation to how students regulated their learning. On the first month it was noticeable that students had difficulties in understanding why they were assessing. On the following observations, the why of assessment was made clear to students, with students appearing more autonomous in the third observation (month four). The researcher surmised that the increase of autonomy in regulating learning was a consequence of students becoming more familiar with assessing, learning goals, assessment criteria, and their role as co-constructors:

In the first observation, students did not understand the criteria on the form, and you [PST] were not explaining these criteria and why students were assessing. (...) On observation two and three, students were more engaged with assessment, and this time (observation three) students look more able to regulate their and peers' learning. Now, students are involved in the co-construction of their process, they understand the learning goals and assessment criteria, and they understand the importance of regulating their and peers' learning. (Researcher field notes3)

Just as students could better regulate their work as a result of being involved in the co-construction of their learning, students could make more informed decisions on the co-construction of their process as consequence of being involved in the regulation of their and peers' learning:

I think using assessment to know at what level we are at was important, especially now, when we have more autonomy, we decide what we are going to do, according to the goals we have. Identifying

## Students as co-constructors and co-regulators

our level, strengths and difficulties helps us to define what we are going to do next, and change when we are failing to do something or when it is too easy. (Ricardo, Class3, class reflections three)

Students used self and peer assessment techniques to regulate their learning and students differed between their preference for oral or written assessment techniques:

Sometimes in the beginning, the teacher used to ask us to share our opinion about our or peers' performance, but most of the students were afraid to share their thoughts, because they were shy or did not feel comfortable to talk in front of everyone. On other situations, we had to write. We said to the teacher we preferred to write rather than oral assessment. From that point on, we mostly did written assessments. (Bernardo, Class1, focus group)

I prefer oral assessment rather than writing. I also think it is better for everyone, because we say to the person in the moment, face-to-face, so we must be 'more honest'. We also give a chance to the other to respond and a chance for the teacher to agree or disagree with our point. (Euarda, Class4, class reflections two)

The decision regarding the use of oral or written assessment throughout the units was made by the PSTs and students. After establishing students' opinions, the PSTs chose the preference of the students, allowing the students to regulate their own learning. When reflecting on the fourth unit, students considered it easier to regulate peers' learning when they were more familiar with peers' preferred way of learning, peers' current level of ability in the task and peer's goal:

When we [students] started working more in groups, like in this unit [unit four], it become easier for us to check if our peers were learning, because we spend more time working with them, we knew their difficulties, strengths, and goals, and how to help them. It was more difficult to assess when the teacher asked us to assess other groups or in the first unit when we were all doing the same and suddenly the teacher asked us to assess someone. (Alberto, Class3, Post-teaching unit survey)

### **From working in groups to working collaboratively**

While students shared that they were used to working with peers, this familiarity did not extend to working in groups which resulted in challenges of enacting all cooperative learning elements:

One of the biggest challenges we faced was working together. We were used to play with others, but with this teacher working together [in class] was different and more challenging. On this unit [third], the teacher wanted us to make decisions, to find agreements, to check out our and our peers' learning, to share feedbacks, to help each other achieve what is intended. (Francisca, Class4, Post-teaching unit survey)

The dynamics of the groups differed. Some groups were more successful in contributing to each other's learning while others struggled to collaborate with each other or exchange feedback:

Some groups of students have not understood what working collaboratively means. Students are in groups, but they do not help or provide feedback to peers. On the other hand, in other groups, students are helping each other, working on their difficulties to make sure the group succeed. (Researcher field notes1)

Accepting feedback depends on the person. Some thanked [us] and try to improve when we told them what to. Others think they know everything and do not accept [our feedback]. (Telma, Class2, focus group)

Students had to learn how to work together, support each other, provide, and in return accept, constructive feedback (the promotive face-to-face interaction element):

Students working together should share feedback with their peers, helping them. When students shared feedback, sometimes it was evident that the peer does not agree or does not accept it. It is

## Students as co-constructors and co-regulators

also true that sometimes the person who gives feedback is 'too friendly', e.g. you done well, or they could be more constructive (Researcher field notes1)

Being involved in the regulation of their learning helped students understand the importance they could serve each other in identifying what needs to be improved and what they had to do as a group to help everyone overcome their difficulties and heighten the group success (positive interdependence and group processing). This also helped each student feel more responsible for the group success (individual accountability), be more constructively critical and eager to help others (interpersonal and small-group skills):

Assessing ourselves helped us to grow, to understand what we needed to improve. Assessing our peers allows us to understand the strengths and weaknesses of each one. This let us know how we could help our peers and how they could help us. (Fábio, Class1, focus group)

There was a person in our group who missed a class. When she returned on the next class, the choreography had changed, and she was unable to do it. We had to adjust, and that resulted in a new version that I consider so much better. Her struggle united the group, made us help each other, everyone bringing their best version, feeling responsible for the group success. That was a lifelong learning experience I will not forget. (José, Class4, Post-teaching unit survey)

Similarly, being involved in the construction of their learning process helped students engage in the learning process by being focused on what they must achieve and the best way to do it. Taking the lead also helped students to be creative, work with others, and learn how to take and accept decisions (group processing and interpersonal and small-group skills):

Having the responsibility of making decisions like selecting the activities, choosing the title and music for our dance, allows us to be creative, because all groups had different ideas. We worked but it was fun and engaging. Working with others was challenging, deciding who is going to do what,

## Students as co-constructors and co-regulators

being responsible for our learning, but worth it and meaningful. (Rute, Class4, class reflections three)

Considering students were co-responsible for their learning process, students who are involved in sports outside the school that were the same of some teaching units, were able to use their knowledge and experience to help their colleagues (positive interdependence):

Considering we had more autonomy and we worked together, I was able to help my colleagues in gymnastics while they helped me for example in handball. I practice gymnastics, so I know some techniques that makes the movement easier to those who are in an initial level. Despite teacher's help I also tried to give some tips to help my colleagues. (Manuela, Class4, focus group)

Interestingly, even though students undertook a unit of acrobatic gymnastics with the same goal of having students create a sequence, students used different strategies to work towards achieving the goal (group processing). Some groups of students chose a 'try-discuss' approach while others a 'discuss-try' approach, dependent on the preference of the collective group they worked with (individual accountability):

In my group, we tried every gymnastic move the teacher presented to us and even others we considered it could be interesting to include. After doing all of them, we decided which ones we did better and then we created the sequence with those moves, but other groups used other approaches. (João, Class3, focus group).

### **Discussion**

This study prompted an interest in developing students as co-constructors, co- and self-regulators in a cooperative learning environment to understand the influence on their learning. Initially, students found it difficult to assume these roles given it was unusual for them to be involved in teaching-learning decisions and to be asked to regulate their

and peers' learning. These difficulties were expected due to the stepped challenge it represents for students (Fletcher, 2016; Oates, 2019) and the lack of exposure and experience students have had to these processes (Double et al., 2020; Liu et al., 2020). At the start of the study, students struggled with the cooperative learning environment. Again, this was expected and consistent with Dyson and Casey's (2016) recommendation for teachers to take small steps when starting to implement cooperative learning.

Therefore, the stepped approach taken by students and PSTs in this study towards involvement in cooperative learning was necessary to prevent students from giving up. Although, for example, students had previous experiences working with peers, they had not necessarily been provided with opportunities to consider the role of cooperation in learning. Subsequently, students acknowledged that they needed to learn how to work more effectively as a group. While students were used to doing activities in a team, this tended to be done without exchanging feedback, without helping each other and without taking decisions in the teaching-learning process and regulating their and peers' learning (positive interdependence, individual accountability, promotive face-to-face interaction). Making small steps over time has been identified as crucial factors to a successful implementation of cooperative learning strategies (Bjørke & Moen, 2020; Dyson & Casey, 2016). Although we cannot assume that these students developed social and interpersonal skills by being involved in cooperative learning (Bjørke & Moen, 2020; Dyson et al., 2020; Engels & Freund, 2020), authors of this study believe the students improved their ability to, and experience of, work with others, make decision, communicate, and manage conflicts within a group.

Regardless of having a similar level of encouragement and support from PSTs, students in, and within, the four classes had different experiences working in a cooperative

learning environment. Some groups understood and/or conveyed more effectively than others the importance of all members' contributions to the group success. This limited the potential of cooperative learning elements like positive interdependence, individual accountability, and promotive face-to-face interaction given that groups could not succeed unless all members in the group did (Dyson & Casey, 2016). While some students had more confidence and initiative to contribute, others were more passive which, on some occasions, resulted in a reduced level of responsibility to their, and the groups', learning. This means that in some moments, individual accountability failed (Johnson & Johnson, 2009). Black et al. (2004) noted that accepting peer feedback is a learning process that students need to experience and learn which may explain why some groups of students found it more difficult than others to provide and/or accept peers' feedback.

Let students making decisions (e.g. students determining when it was best for them to move from one level to another) increased their responsibility and allowed their learning and needs to direct the teaching-learning process. This outcome is identified as one of the benefits of engaging students in co-construction, co- and self-regulation processes (Fletcher, 2016, 2018; Graça et al., 2019). Involving students in these processes is challenging but enriching for students and teachers (Lorente-Catalán & Kirk, 2014). Having responsibility as decision-makers (involvement in construction and regulation) in the teaching-learning process develops commitment and accountability, as was reported by the participants in an earlier study (Enright and O'Sullivan, 2010, p. 216).

Students consistently acknowledged the importance of knowing the learning goals and assessment criteria to be able to being involved in the construction and regulation of learning within a cooperative learning environment. This aligns with those who advocate for the need to clarify this information to students if a transparent learning process is

intended (e.g. Graça et al., 2019; Haerens et al., 2019; Redelius & Hay, 2012). Students in this study considered their involvement in the co-construction process facilitated the regulation of their, and peers', learning. Simultaneously, collecting ongoing evidence about what they were doing increased their capacity to co-construct their learning process. It was clear that students believed neither co-construction nor co- and self-regulation would be possible without understanding the specific learning goals and assessment criteria. Co-construction, co- and self-regulation processes were strengthened by involvement in cooperative learning because students could be supported by the shared and familiar 'language' of their peers. Similar to Enright and O'Sullivan's (2010) study, students were more willing to participate as a consequence of taking the lead in their learning process.

Opportunity to be involved in the co-construction, co- and self-regulation of their teaching-learning process encouraged students to use their knowledge for the benefit of others (positive interdependence, individual accountability, promotive face-to-face interaction, and interpersonal and small-group skills). This resembles the study of Enriquez and Oliver (2022) where working collaboratively allowed students opportunities to learn from each other. This was particularly important for the students who played/practiced the sport being taught outside the school. These opportunities for decision-making allowed them to develop leadership, ownership, and feeling engaged while helping others. Students in Shilcutt et al.'s (2021) study also sought opportunities to take the lead and be involved in decisions related to the teaching-learning process. Co- and self-regulation were particularly important for the cooperative learning element 'group processing' for allowing students to be more capable of assessing their process and work as a group.

Students differing preferences on the use of oral assessment or written assessment aligns with literature that supports that differing assessment techniques are viable as long as they provide meaningful and worthwhile information about students' learning (Leirhaug & Annerstedt, 2016; MacPhail et al., 2013). Collaborative work and the chance to be involved in teaching-learning process decisions encouraged students to be creative, learn from others and seek different ways of achieving their group goals. This is consistent with the idea that collaboration is an important aspect when enacting approaches centred on students' active involvement (Enriquez and Oliver, 2022).

### **Conclusions**

Involving students meaningfully in the teaching-learning process can be challenging for students who require time and support to learn how to co-construct, co- and self-regulate learning. Being involved in these processes can be challenging at the start but are worth addressing given the gains it can have on students' involvement and learning. Students need to know the learning goals and assessment criteria to be involved in co-constructed, co- and self-regulated processes. Being involved in co- and self-regulation helped students to make better decisions to co-construct their learning based on the information collected. Being involved in the co-construction of their and peers' learning helped students to better keep track of what they were doing, facilitating the co- and self-regulation of learning.

In this study, students acting as co-constructors, co- and self-regulators of their learning benefited from involvement in a cooperative learning environment. Students considered it easier to regulate their peers' learning when they spend more time working together and highlighted the opportunity to learn from each other. Students considered that co-

construction, co- and self-regulation processes had a positive influence on the five elements of cooperative learning, improving students' ability to, and experience of, work with others, make decision, communicate, and manage conflicts within a group. Similar to co-construction, co- and self-regulation, students had to learn how to cooperate with the peers to be able to achieve more meaningful learning for all.

Authors of this study believe that complementing co-construction, cooperative, co- and self-regulation learning achieved the goal of the four processes, i.e. empowering students on the teaching-learning process to improve their learning, while promoting a meaningful process to them. More co-construction, cooperative, co- and self-regulation learning studies that capture different contexts and age groups, as well as experienced teachers rather than PSTs, are needed to more fully explore the relationship between the learning processes for, and between, students and teachers.

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### **3.4. Student's perspectives about their learning profile before and after Covid-19**

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## **Student's perspectives about their learning profile before and after Covid-19**

### **Abstract**

Changes on education paradigms affected the understanding of how individuals learn. The emergence of Covid-19 created an unprecedented disruption in education systems. This study intends to analyse students' perspectives about learning before and after Covid-19 by using two cohorts of different students from the same five schools. Participated in October 2019 (first application), 369 students and in November 2022 (second application), 294. There are students from two education cycles: grades 7-9 and 10-12. Effective Lifelong Learning Inventory was used to understand how students self-assess their learning profile, descriptive and inferential statistics were used to analyse data and detect differences in learning profiles. Findings show that students' learning profiles changed from the first to the second application in both grades, with students scoring themselves worse in almost all dimensions. Students in grades 7-9 seem to have been more affected by Covid-19 (means were statistically significant in six of the seven dimensions) when compared with students in grades 10-12 (three in seven).

**Keywords:** grades 7-9; grades 10-12; learning power; learning dispositions; effective lifelong learning inventory; covid-19.

Percepción de los alumnos sobre su perfil de aprendizaje antes y después del Covid-19

### **Resumen**

Los cambios en los paradigmas educativos han afectado la comprensión de cómo los individuos aprenden. La aparición del Covid-19 ha creado una disrupción sin precedentes en los sistemas educativos. Este estudio intenta analizar las percepciones del alumnado sobre su perfil de aprendizaje antes y después del Covid-19, usando dos cohortes diferentes de alumnos de cinco escuelas. Participaron en octubre de 2019 (primera aplicación) 369 alumnos, y en noviembre de 2022 (segunda aplicación) 294 alumnos. Son alumnos de dos ciclos educativos: años 7-9 y 10-12. El cuestionario Effective Lifelong Learning Inventory fue administrado para entender cómo los estudiantes autoevalúan su perfil de aprendizaje. Estadística descriptiva e inferencial fueron calculadas para analizar

los datos y detectar posibles diferencias en los perfiles de aprendizaje. Los resultados muestran que los perfiles de aprendizajes han cambiado entre la primera y la segunda aplicación en los dos ciclos, puntuándose los estudiantes peor en casi todas las dimensiones. Los alumnos de 7-9 parecen haber sido los más afectados por el Covid-19 (las medias eran estadísticamente significativas en seis de las siete dimensiones) al ser comparados con los estudiantes de 10-12 (tres de siete).

**Palabras-clave:** año 7-9; año 10-12; poder de aprendizaje; disposiciones de aprendizaje; effective lifelong learning inventory; covid-19.

## **Introduction**

Any educational system should work to improve students' learning (Tannehill, 2017). In a primary perspective, learning is the process of acquiring something new, that was not previously on the possession of the individual. The understanding of how individuals acquire learning has been changing throughout the years, by questioning the views of learning as directly and fully derived from the conception of teaching circumscribed to a transmission from a teacher to a student (Allal, 2020; Baird et al., 2017; Swaffield, 2008). Learning changed from being understood as a unidirectional process to a bidirectional one where students can learn from each other, and teacher can also learn from them. In addition to that, the acknowledgement that learning is not a result from a linear process like 'filling a vase' gained attention, but rather a (scaffolded) construction within a relational activity influenced by the context, students' characteristics, and interests (Broadfoot, 2017; Graça, 2015). In light of this understanding, learning theories as socio constructivism uphold that learners have an active role in their learning (Allal, 2020; Fletcher, 2018), i.e., teaching others, learn with and from others, and regulating their learning (self-regulation, for example, by using self-assessment).

Related to the change of the traditional understanding of learning as a transmission of knowledge is the need of preparing students for the 21<sup>st</sup> century, by providing them with resources (many times called as soft skills), which is believed will be useful on their future (OECD, 2019; Siarova et al., 2017). The process of training these soft skills tends to require students to have a more active role in the teaching-learning process, by being involved or responsible for taking some decisions. For example, engaging students in

their teaching-learning process, in constructing and/or regulating their learning, in making them aware of what is valued and they are supposed to learn, provide students with opportunities for making decisions, accepting responsibilities, becoming critical about what they and others do, taking initiative rather than waiting for others to teach or do for them (Fletcher, 2016; Tolgfors, 2019). In this way, students are expected to gain from schools, while learning contents, the disposition to learn how to learn and the capability to transfer it and be successfully in their life (Crick, 2007; Siarova et al., 2017).

Requiring a proactive role can be uncomfortable for many students, but helpful in a fast-changing world in which ‘adapting’ seems the ‘watchword’. Promoting autonomy, creativity, self-awareness, and space for students to be active participants in their learning may be not only challenging for education systems and teachers, but also imperative to meet the demands of ‘this new world’ (Crick, 2007; OECD, 2019). So, education has to be rethought if transformation on schools and learning are intended (Jefferson & Anderson, 2022). If those challenges were not enough, the emergence of a pandemic would raise new ones and expose weaknesses even more.

### **Covid-19 pandemic impact on school students**

The emergence of Covid-19 pandemic created a large disruption in the education system of almost all countries and territories (Pokhrel & Chhetri, 2021). Due to the fast increase of number of people contracting the virus, governments across the world took several measures, trying to control the transmission of the infection. These measures included physically closing schools, moving classes to online modes, avoiding contacts and gatherings during lockdown (Haser et al., 2022; Pokhrel & Chhetri, 2021; Walters et al., 2022). This forced teachers, students, parents, and everyone else to adjust to ‘a new way of living’ without being ready for that. Different strategies, like asynchronous and/or synchronous lessons, TV broadcasting classes (live or recorded), online platforms and apps were used across all countries, trying to keep students’ access to educative contents and learning opportunities (Reimers & Schleicher, 2020). However, this does not mean that all students had equal opportunities to learn or that these strategies were effective in promoting students’ learning (Haser et al., 2022).

Online teaching, although necessary, was in most of the cases reported by parents and students as of poor quality and unsatisfactory to improve students’ learning (Cui et al.,

2021; Thorell et al., 2022; Walters et al., 2022). This can be, in some cases, due to the lost hours (e.g. missing online classes) or opportunities for learning, students had (Andrew et al., 2020). Most of parents on the study of Thorell et al. (2022) claimed to feel almost left on their own to help their children with learning homework's. However, these authors also identified that teachers' support and contact with children and parents was different across the countries. Online classes not only had an impact on students' academic success, but also affected their behaviours, learning experiences and skills like ability to focus and learn, motivation, involvement in the activities and having pleasure in learning (Balayar & Langlais, 2022; Walters et al., 2022).

The transition to online environments had different impacts on students. Those more in-need of school, more at-risk, with less means of access (McKendall et al., 2021) as well as those more dependent on teachers, more passive learners, less autonomous, without self-study and self-regulation skills (Tomasik et al., 2020; Yang, 2020) suffered more seriously. Then, students' profile and characteristics like ability to change and adapt became a key resource for students to be succeed and go through all the difficulties they faced throughout those learning environments (Martin et al., 2021). The extent of students' learning losses is still unknown and will most likely have a long-term effect on students' profile and life (Andrew et al., 2020; McKendall et al., 2021; Tomasik et al., 2020).

Attending to this scenario, this study intends to analyse students' perspectives about learning and compare cohorts at the same grade levels before and after Covid-19 pandemic by using the Effective Lifelong Learning Inventory (ELLI) questionnaire (Crick et al., 2004). Authors of this study believe that Covid-19 may have had an impact on students' learning perspectives and profile, considering the change from face-to-face to online teaching, from being physically with others to being at home and almost on their own, and from being more dependent (to need) to be more independent.

Although several studies report Covid-19 had a negative impact on students' learning (Cui et al., 2021; Thorell et al., 2022; Walters et al., 2022), at the best of our knowledge, few studies explored if Covid-19 had a different impact in grades 7-9 and 10-12. Therefore, this study addresses the following research questions:

RQ 1) In what extent Covid-19 pandemic affected students' learning perspectives?

RQ 2) Are the learning perspectives of students in grades 7-9 and 10-12 affected in the same way?

## **Methods**

### **Participants**

Participated on this study, 663 students of 30 classes from five schools chosen for convenience in the area of main Porto, Portugal (Patton, 2002). There are students from two education cycles: twelve classes in 3<sup>rd</sup> Cycle of Basic Education (grades 7-9; 13-15 years old) and eighteen classes in Secondary education (grades 10-12; 16-18 years old). In two distinct moments, students from those five schools were invited to answer to the ELLI questionnaire (Crick et al., 2004) The first application took place in October 2019 (before Covid-19) and the second application was in November 2022 (after Covid-19). On the first application, 369 students of six classes in grades 7-9 and nine classes in grades 10-12 filled the questionnaire, and a different cohort of 294 students of six classes in grades 7-9 and nine classes in grades 10-12 did it on the second application, as shown in Table 1.

Participants directly or indirectly involved in this study (i.e., students and person responsible for them) signed an informed consent form authorising students' voluntary participation. The researcher explained the questionnaire purpose and the possibility to not join or to leave the study at any time, without any consequence. School authorities in which the research took place and university to which the researcher belongs granted ethical approval to the study.

### **Instrument**

The ELLI questionnaire was developed with the intention of creating a tool to identify the factors that influence lifelong learning and for using subsequently as a self-assessment instrument for learners (Crick et al., 2004). ELLI questionnaire was tested with considerable cohorts of students across a range of ages and proved to be robust when subjected to factor analytic studies (Crick et al., 2004).

This questionnaire has a high potential to understand the learning power and its influence on learners' attitude towards (improving) their learning. According to Chambers and Williams (2018, p. 5), "a person's Learning Power determines, even dictates, their propensity for change, and directs those behaviours that influence and underpin performance throughout life". Aspiring that learners become responsible for their learning, aware of their learning and their capacities, this questionnaire intends to be a support for that, by allowing students to self-assess in which level they are.

The questionnaire is composed by 74 questions in which students must rate themselves on a Likert scale of four choices: 0-25, 26-50, 51-75, 76-100, going from 'almost never' to 'nearly always'. Answers illustrate how students see themselves in seven dimensions: critical curiosity (CC), learning relationships (LR), meaning making (MM), creativity (C), strategic awareness (SA), resilience (R), and changing and learning (CaL) (Chambers & Williams, 2018; Williams, 2018). The number of questions that belong to each dimension is not necessarily the same, e.g. eight questions are related to critical curiosity, 10 to learning relationships, 10 to meaning making, nine to creativity, 12 to strategic awareness, 20 to resilience, and five to changing and learning. These dimensions allow to distinguish students' profile, active from passive learners, more from less autonomous and/or engaged learners (Table 2). These dimensions are seen more like attitudes or dispositions to learn how to learn rather than capabilities or skills (Chambers & Williams, 2018). Although learners may be more familiar or having some dimensions more developed than others, it is believed that dimensions can all be found and improved in each learner, with the appropriate support in the right context (Chambers & Williams, 2018; Williams, 2018).

### **Validation content to Portuguese**

To be able to use the questionnaire, researcher contacted by email those who created it. A written authorisation was given and both parties agreed in the use and sharing of results. The researcher started the content validation process to Portuguese language by translating the questionnaire to Portuguese. Later, a researcher's supervisor also translated the questionnaire to Portuguese without looking to researcher's translation. Another researcher's supervisor compared the two translations and translated,

considering both translations and her own opinion. Researcher and these two supervisors met for discussing and get a 'final version' at this stage. After finding agreement, researcher submitted the Portuguese version to a Portuguese expert in the English idiom to translate the Portuguese version to English without having access to the original version of the questionnaire. After the Portuguese-English translation, the researcher submitted the original version and the new English version to his native English speaker supervisor to compare both versions. Nine phrases were identified as having a different meaning. These nine phrases - one from the critical curiosity, two from learning relationships, one from creativity, two from strategic awareness, and three from resilience dimensions - were submitted again to the whole process of translation, discussion, retroversion, and comparison of English versions. After being approved this new version, the questionnaire in the Portuguese language was applied in a class of 28 students with ages between 14-16 years old to query if questions were clear to students. Students pointed a missing word in two questions – one from creativity and another from resilience - which were edited to ratify the content validation.

### **Data collection**

The questionnaire was applied during the entire months of October 2019 and November of 2022. The researcher explained the questionnaire and its purpose to students from all classes before they fill it. Students filled the questionnaire online in google forms in a quiet room only with the presence of the researcher and other three or four colleagues from their class. On average, every class took approximately 90 minutes to complete the questionnaire.

Researcher ensured anonymity to all students who joined the study. To ensure the maximum of confidentiality, no personal information, of any kind, was collected about students. All students received different codes, e.g., 1AGT1-1, 1ASPA-1, ....

### **Data analysis**

The first step of analysis was looking into potential differences in classes profiles per education cycle on the first and second application of the questionnaire, by considering all dimensions together. For that, means of all classes in the seven dimensions were

calculated and grouped by education cycle and moment of application, in Microsoft Excel and used to create four 'radar charts'.

The second step led to the analysis per education cycle of how students rated themselves in every dimension individually on the first and second application of the questionnaire. Students' scores were grouped in three distinct levels on each dimension: low (means of answers less than or equal to 50), moderate (means between 50 and 75), or high (means above 75) level. To identify in which level students were, a formula was created in Microsoft Excel  $=SE(Cell\ number \leq 50; "1"; SE(E(Cell\ number > 50; Cell\ number \leq 75); "2"; SE(Cell\ number > 75; "3"))$  to allow counting how students' answers are distributed among each dimension, i.e. if students means is 50 or less, they get the number one; if is between 50 and 75, they get the number two; and if is over 75, they get the number three. These values (one, two and three) were then used to calculate the relative frequency of answers per dimension. This led to the creation of four 'bar charts' with the distribution of answers per dimension in grades 7-9 and 10-12 and moments of application.

Later, data were exported to SPSS 27 to proceed the analysis and identifying if differences on means were statistically significant. For that, normality of data distribution was tested and proved to have a normal distribution by looking into values of skewness and kurtosis, varying between -1 and 1 (Marôco, 2010), histogram, Q-Q plot and boxplot graphs. Means and standard deviation were then considered. Inferential tests were applied with t test of independent samples being run to analyse if means were statistically significant in the different dimensions from the first to the second application in grades 7-9 and 10-12. The level of statistical significance was established at  $p \leq 0.05$ . Accuracy for data entry on Excel and SPSS was checked by two researcher's supervisors and was noticed to be over 99.9%

## **Results**

### **Student's learning Profile**

All means decreased from the first to the second application of questionnaire in grades 7-9 and 10-12, except from Resilience in grades 7-9 and Creativity in grades 10-12, which indicates Covid-19 lockdown may have had an impact on students' learning perspectives (RQ1).

In terms of moment of application, it is possible to acknowledge that the students' profiles per grade level (Figure 1 and 2) differ the most from each other in grades 7-9. The differences of profiles between grade levels in each moment was higher in the 2<sup>nd</sup> application.

Looking into the 'bar charts' (Figures 3 and 4), it is possible to identify that a higher percentage of students reported having low levels of a dimension in the second application when compared to the first. The major differences on students who rated themselves poorly are found on critical curiosity, meaning making, creativity, strategic awareness, and changing and learning in grades 7-9, and resilience in grades 10-12. There is also a considerable reduction on the number of students who have means above 75 on the second application when compared to the first, for example, on the dimension's critical curiosity, learning relationships, meaning making, strategic awareness and changing and learning in grades 7-9, and critical curiosity, learning relationships and meaning making in grades 10-12. There is also a decrease on the number of students who rated themselves between 50 and 75 on the dimension resilience in grades 10-12. In an opposite direction, the percentages of students who scored themselves between 50 and 75 is substantial higher on the second moment, particularly on the dimensions learning relationships, strategic awareness and changing and learning in grades 7-9 and learning relationships and meaning making in grades 10-12.

### **Students' learning perspectives by grade**

Looking into research questions, it is possible to realise that Covid-19 lockdown had an impact on students' learning perspectives (RQ1) both in grades 7-9 and 10-12, although differently (RQ2). Differences were statistically significant in all dimensions in grades 7-9, except for resilience (Table 3). On the other hand, in grades 10-12, means are only statistically significant in the critical curiosity, learning relationships and meaning making dimensions (Table 4).

## **Discussion**

Findings suggest that Covid-19 may have had an impact on students' perspectives about learning. This impact seems to be bigger in grades 7-9, where the differences are significant in all dimensions, except for resilience, while in grades 10-12 differences are only significant in three dimensions (critical curiosity, learning relationships, and meaning making). One possible reason for students in grades 10-12 having, apparently, suffered less with Covid-19 could be related with the fact of being older students, i.e. students on those grades tend to be more autonomous and independent learners (Eccles & Roeser, 2009). In fact, students' characteristics like being more dependent on teachers, more passive learners, less autonomous, without self-study and self-regulation skills was considered to be one of the reasons for students suffering more impact (learning losses) with Covid-19 (Tomasik et al., 2020; Yang, 2020).

Although several studies report the negative impact of Covid-19 on students' learning (Cui et al., 2021; Thorell et al., 2022; Walters et al., 2022), few studies seem to have compared the impact of Covid-19 in grades 7-9 and 10-12. In this study, the impact of Covid-19 was visible in both grades when looking, for example, into the 'bar charts', considering that a higher percentage of students reported having low levels of a dimension in the second application in comparison with the first as well as less students scoring themselves in higher levels. However, the impact is more prominent on students in grades 7-9. Contrarily, the study of Steinmayr et al. (2021) identified students' learning outcomes was less affected in grades 7-9. However, a linear comparison cannot be established, considering the different methodological approaches of the studies. On our study, students' learning outcomes are not assessed.

Critical curiosity, learning relationships and meaning making were the dimensions more affected in both grades. This can be linked to mental health issues raised with the emergence of Covid-19 (Walters et al., 2022). The insecurities and uncertainties brought by Covid-19 may have led students to 'leave education to second plan', being less predisposed, worried, and curious to learn new things (critical curiosity) and/or associate new with previous knowledge (meaning making). Simultaneously, having online classes, being at home, and socially distanced from colleagues may have prevented or limited

students of working with peers, and having to work more on their own (learning relationships).

Although almost all means decreased in both grades from the first to the second application, one dimension in each grade, resilience in 7-9 and creativity in 10-12, increased. Authors of this study believe that the (brutal) impact Covid-19 had on students in grades 7-9 as well as the less support from teachers and/or colleagues led them to become more resilient and go through things by themselves. On the other hand, the increase of creativity in grades 10-12 may be related with more chances to work in autonomy, independently, and without close teachers' guidance which created opportunities to find different solutions. Having more time on their own, without being guided to follow some path may have flourished students' different thinking, something that have been advocated for school (teachers) to promote (Crick, 2007; OECD, 2019).

It is important to acknowledge that students' perspectives about themselves can be more or less accurate, especially because there is a tendency for students to rate themselves higher than what they really are (Burson et al., 2006). This is likely to have happened on this study with some students on both moments of application, however, there are no way of knowing in which cases it happened. On the other hand, when applying the questionnaire, the researcher alerted students that this questionnaire was not for their teachers which may have taken pressure for some 'students' shoulders' and prevented others to see it as something with influence on their grades, leading them to be fairer with their self-assessment. This relates with Brown et al. (2015)'s belief about self-assessment being more accurate or having more chances of reducing inaccuracy when is private and not used for grading purposes.

Students more used to self-regulation process (e.g. self-assessment) or who received training tend to find easier to self-assess themselves (their learning profile) and be more accurate (Carroll, 2020; Thawabieh, 2017). Although on this study, students only filled the questionnaire once, it is fair to say that students in grade 10-12 are more likely to have experienced self-assessment processes (e.g. in their classes) before participating in this study, and subsequently, being more accurate. On the other hand, on the study of Ng and Earl (2008), they found that students who over-estimated their self-assessment were also the ones who learned more, were more positive and were more focused in learning which led the authors to question if accuracy should be the focus.

There is a need for further studies to explore how Covid affected or changed students' learning profile and perspectives, by using instruments that can capture other dimensions. Such studies should also consider how has education adapted to changes on students' learning profiles after Covid-19.

## **Conclusions**

This study intended to analyse students' perspectives about learning before and after Covid-19 pandemic by using two cohorts of different students from the same five schools. Learning profiles changed, according to the moment of application and grades. The profiles that differ the most from each other are the 1<sup>st</sup> and 2<sup>nd</sup> application in grades 7-9 and the 2<sup>nd</sup> application of grades 7-9 and grades 10-12. Students on the first moment scored themselves higher than on the second. On the second moment, there was a higher percentage of students scoring themselves worse in almost all dimensions.

Findings show means decreasing in almost all dimensions from the first to the second application, except for 'resilience' in grades 7-9 and 'creativity' in grades 10-12. Students' learning perspectives showed to have been significantly affected by Covid-19, mainly in grades 7-9 with six of the seven dimensions with statistically significant differences. The impact was smaller in grades 10-12 with only three of the seven dimensions (critical curiosity, learning relationships and meaning making) being statistically different. The fact of older students being more autonomous was an important aspect to suffer less with Covid-19, and may be related with the fewer impact of Covid-19 lockdown in grades 10-12.

Means in 'resilience' in grades 7-9 and 'creativity' in grades 10-12 increased from the first to the second application. Authors of this study believe this can also be related with Covid-19 lockdown. Being more alone, having less support from teachers and/or colleagues could have led students to become more resilient. On the other hand, being on their own may have led students to have more opportunities to think freely without being limited for someone's feedback or directions.

## **Limitations**

The ELLI questionnaire can only measure students' perspective in relation to any of the seven dimensions, but cannot determine how accurate students' self-assessment are.

Considering students tend to value themselves higher than reality (Burson et al., 2006), results always have to be read carefully. Students' performance, literacy levels, experience, and training seem to influence the accuracy of students' self-assessment. The ideal situation would be having the same students filling the questionnaire on both occasions. However, this cross-sectional study also allows us to have an idea of how Covid-19 lockdown might have affected students' learning perspectives.

The number of questions (74) may be overwhelming for some students, which may lead them to start filling the last questions without too much attention or criteria. Filling the questionnaire during class time can also have influenced some to take longer and others to do it faster. Last but not least, the fact of not being administered by one of the staff trained to use ELLI questionnaire can also have influenced the predisposition to fill and/or understanding of the questionnaire.

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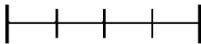
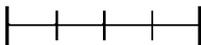
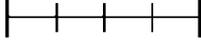
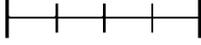
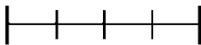
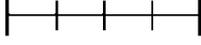
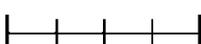
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## Tables & Figures

**Table 1.** *Number of participants by moment of application.*

	First application (October 2019)	Second application (November 2022)	Total
Grades 7-9	128	95	223
Grades 10-12	241	199	440
Total students	369	294	663

**Table 2.** *Characterisation of the dimensions.*

<b>Critical Curiosity</b>		
Someone who is passive, wait for others to teach something, and finds questions unpleasant	Poles 	Someone who is proactive, questions, wants to know more and investigates deeper than the surface
<b>Learning Relationships</b>		
Inability to work alone and/or being over-dependent on others	Poles 	Someone's abilities to learn with and from others, but also on their own. Knows what is best and how to take the best of both situations
<b>Meaning making</b>		
A learner who accumulates new information without understanding 'the big picture' and how this new learning fits on what they already knew	Poles 	A learner who links new and previous knowledge, connecting differences sources of knowledge and try to integrate those new ideas in their opinions
<b>Creativity</b>		
Someone who struggle to be original, think differently, see different perspectives, and is rule bounded	Poles 	A person who thinks and acts 'outside the box', who is innovative, find different solutions for being open to their imagination
<b>Strategic Awareness</b>		
A learner who considers the learning process as something they cannot control, facing learning as a mere task they have to do, without any intention of trying to understand it	Poles 	A learner who likes to understand and feel control of their learning process to be able to perform better, plan and apply different strategies to find out what works best for their learning
<b>Resilience</b>		
A learner who is not very resilient feels insecure and unable to deal with challenges, struggles when the going gets tough and/or they make mistakes, remaining stuck on negative emotions	Poles 	Someone who can overcome difficulties, frustrations, and fears, move away from their comfort zone and face challenges with a positive attitude
<b>Changing and Learning</b>		
A learner who is static, disinterested, does not believe on their ability to change, and does not take responsibilities for their learning	Poles 	A learner who has a positive attitude towards new learning, using new learning and knowledge to change the way they

live, improving their mind and viewing learning as a lifelong process

Source: Adapted from Chambers and Williams (2018, pp. 8-14) and Williams (2018, pp. 16-30)

**Table 3.** *N, means, standard deviation, Sig, and confidence Interval (CI) – grades 7-9.*

		Grades 7-9			95% CI of the Diff	
		n	mean (SD)	p	Lower	Upper
<b>CC</b>	Before	128	77.93 (10.34)	0.003*	1.84	9.09
	After	95	72.47 (15.51)			
<b>LR</b>	Before	128	80.00 (11.01)	0.001*	4.67	10.85
	After	95	72.24 (12.30)			
<b>MM</b>	Before	128	76.23 (9.88)	0.014*	0.83	7.26
	After	95	72.18 (13.40)			
<b>C</b>	Before	128	73.83 (9.66)	0.030*	0.37	6.99
	After	95	70.15 (14.06)			
<b>SA</b>	Before	128	75.96 (10.51)	0.001*	2.34	9.10
	After	95	70.24 (14.02)			
<b>R</b>	Before	128	61.90 (10.76)	0.601	-3.85	2.23
	After	95	62.71 (12.17)			
<b>CaL</b>	Before	128	82.03 (12.01)	0.003*	2.08	9.88
	After	95	76.05 (16.22)			

\* Statistically significant differences when  $p \leq 0.05$

**Table 4.** *N, means, standard deviation, Sig, and confidence Interval (CI) – grades 10-12.*

		Grades 10-12			95% CI of the Diff	
		n	mean (SD)	p	Lower	Upper
<b>CC</b>	Before	241	76.47 (10.29)	0.010*	0.64	4.74
	After	199	73.78 (11.38)			
<b>LR</b>	Before	241	80.93 (10.91)	0.002*	1.21	5.56
	After	199	77.55 (12.05)			
<b>MM</b>	Before	241	78.82 (10.17)	0.013*	0.53	4.54
	After	199	76.28 (11.02)			
<b>C</b>	Before	241	72.57 (11.33)	0.452	-2.98	1.33
	After	199	73.40 (11.62)			
<b>SA</b>	Before	241	73.47 (10.82)	0.124	-0.46	3.78
	After	199	71.81 (11.75)			
<b>R</b>	Before	241	58.02 (9.52)	0.632	-1.39	2.29
	After	199	57.57 (10.12)			
<b>CaL</b>	Before	241	83.07 (11.20)	0.687	-1.77	2.69
	After	199	82.61 (12.58)			

\* Statistically significant differences when  $p \leq 0.05$



Figure 1. Profile 1<sup>st</sup> and 2<sup>nd</sup> application in Grades 7-9.



Figure 2. Profile 1<sup>st</sup> and 2<sup>nd</sup> application in Grades 10-12.

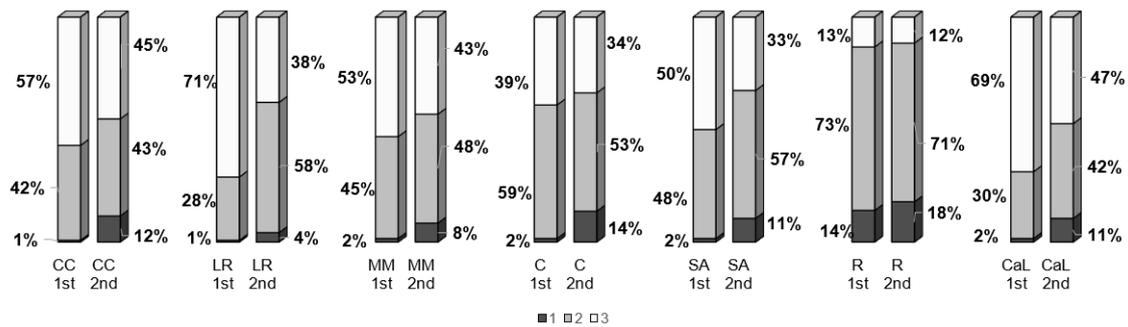


Figure 3. First and second application in grades 7-9. Students who scored themselves  $\leq 50$  are in dark grey,  $50 < x \leq 75$  are in grey and above 75 are in light grey.

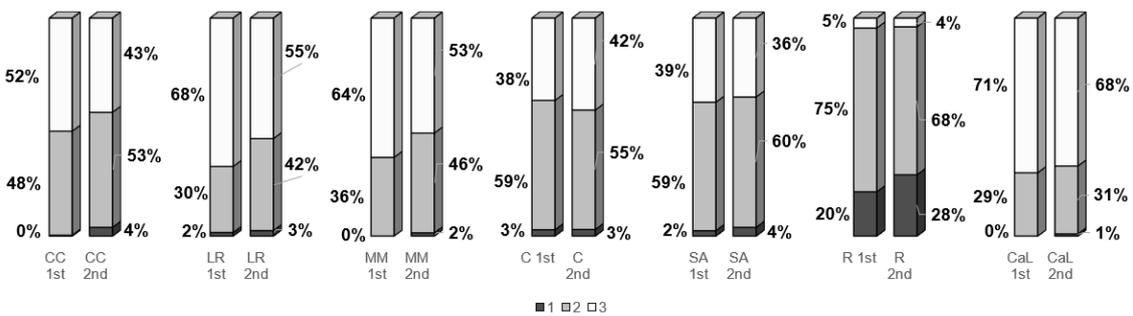


Figure 4. First and second application in grades 10-12. Students who scored themselves  $\leq 50$  are in dark grey,  $50 < x \leq 75$  are in grey and above 75 are in light grey.

## **IV. FINAL CONSIDERATIONS**

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## 4.1. Final considerations

The present investigation is related to a research problem identified in social and educational science literature regarding the instructional alignment and embedment of assessment in curriculum and pedagogy, and a movement, in the realm of educational reforms, towards AfL (Leirhaug & Annerstedt, 2016; MacPhail et al., 2018). This challenge is shared among all educational levels (elementary, middle, and high school), and teaching subjects but has not yet gotten 'so much room' in practice, considering the scarcity of empirical studies and the potential benefits highlighted in literature for students' learning. By the time (in 2018) the PhD project was submitted to the 'Fundação para a Ciência e a Tecnologia', the increasing movement towards AfL went unnoticed by Portuguese educationists and policymakers. However, this changed throughout the process with the creation of decree-laws 54/2018 and 55/2018. One of the goals of these new law decrees intended to consider one of the concerns claimed by the time the PhD project was written – 'assessment priority remains on determining grades, aptitude or achievement, without any special concern in fostering learning'.

Teachers in general are quite resistant to change practices (Kirk, 2010; Slingerland et al., 2017), especially the assessment ones, that tend to be considered really challenging (López-Pastor et al., 2013). Teachers tend to maintain a traditional orientation to assessment if they do not have contact with alternative assessment practices (Coombs et al., 2018; DeLuca et al., 2018) while PSTs tend to rely on assessment they experienced as students (Looney et al., 2018; Mjåtveit & Giske, 2020). The contexts in which teachers work or worked and PSTs studied have a great impact on teachers' conceptions and practices of assessment (Richards et al., 2014). This may be one of the reasons why some researchers advocate for an analysis of PSTs' conceptions of assessment when they join teacher education programmes (DeLuca et al., 2018; Starck et al., 2018).

Aware of the challenges to enact AfL in (preservice) teachers' practices, the necessary reconfiguration of understanding, planning and enactment, and the need to break through the vicious circle that assessment practices are tangled in,

the project has envisioned the creation of a training course (called seminars) with fifteen PSTs, five cooperating teachers, one researcher and one teacher educator from university. The project intended to create conditions to help PSTs (and cooperating teachers) interrogate and reconstruct their conceptions and practices of assessment. It also intended to have PSTs to try out some instruments and/or strategies (developed/adapted by themselves) and practical experiences with AfL before they start using it in their school placement. It was also expected to support PSTs throughout the whole process to help them deal with and overcome the challenges of enacting AfL in their classes throughout their school placement, to improve their assessment literacy and their students' learning.

The intent of this research was to inform and consider future AfL practices in school physical education and PETE programmes. This thesis intended to examine how physical education PSTs learned to use AfL principles in their teaching during a year-long school placement, and the consequent impact on their students' learning. To do this the research addressed three specific goals: 1) to explore the value and meanings the participants (PSTs, cooperating teachers and students) ascribe to the use of AfL in physical education teaching; 2) to analyse the problems and dilemmas of learning to implement AfL principles in physical education teaching in the context of preservice school placement; and 3) to examine the impact of the use of AfL on students' perceptions, patterns of participation, learning involvement, and achievement. This one school-year action-research study resulted in five papers aligned, informing each other, and moving in the same direction in terms of providing contributions to the discussion on assessment in physical education and PETE.

Firstly, it provided a literary review of the current literature on AfL in physical education and PETE (Moura et al., 2021), informing the following papers (empirical) about key aspects that may enable or hinder the use of AfL in (preservice) teachers' practices and students' learning. It helped to identify the need to i) consider teachers and PSTs' previous exposure to assessment and the subsequent impact on (preservice) teachers' conceptions and practices of assessment; ii) improve teachers and PSTs' assessment literacy by

reconstructing understandings; iii) create learning communities to aid physical education (preservice) teachers to implement AfL in their practices; and iv) change PETE programmes to provide PSTs with more (practical) opportunities of improving their assessment literacy and experience AfL as teachers and as students. It also aided to characterise what AfL is, how it relates to the change of education paradigms regarding learning theories, how this affects the alignment of curriculum, assessment and pedagogy, and students' participation in the teaching-learning process.

Knowing that assessment is usually used for grading students who have few or no participation in this process (Hay et al., 2015; MacPhail et al., 2018) and considering the difficulties PSTs face to enact AfL in their practices (Moura et al., 2020), the training programme (seminars) created for improving PSTs' assessment literacy was necessary, important, and valued by PSTs. They consider these programmes supported them while enacting AfL in their practices, to de- and re-construct their conceptions and practices of assessment, to reconsider the alignment between assessment, curriculum, and pedagogy, to reconfigure teacher and students' role, by putting students in the centre of the teaching-learning process. Seminars were used as a platform to engage PSTs in reflections, discussions, sharing of thoughts, tools, and practices, exchanging feedbacks and resources, as well as self and peer assessing learning. Everyone's opinion was valued, encouraged to participate and being introspective, which helped to find common understandings and create a 'safe space' for everyone to feel free to contribute, to express their feelings and thoughts. The basis of the project was working with others rather than working on others, because everyone's contribution matters.

PSTs on this project had the opportunity to work with 'real' students while enacting AfL throughout their PETE, more specifically in their school placement. We believed those opportunities helped PSTs to counterbalance the negative impact of 'apprenticeship of observation' developed as students and to actively reconstruct their identity as teachers (and assessors). PSTs saw their enactment of AfL as challenging because they were just learning about it and for being so different compared to what they experienced as students. However, PSTs

acknowledged that being involved in this project enriched them professionally and personally, encouraged them to be more critical, reflexive, and to be a more autonomous learner as well as practitioner researcher.

Although the process showed improvements in PSTs' assessment literacy throughout the entire process, it is important to acknowledge that this was not a linear process of learning acquisition. On some occasions, PSTs may consider they had understood and learned something, but they struggled or failed to enact it in their practices. For example, PSTs understood that the teaching-learning process had to be clear and understandable for students which required them to share learning goals and assessment criteria with their students, however, when they started using AfL they tended to share contents or failed to share goals, putting the emphasis on the learning task rather than the goal. This example reinforces the idea that, for PSTs, it was harder to change practices than understandings. However, others showed some incoherencies on their discourses, by referring they advocated for AfL but then failing to explain how to align assessment, curriculum, and pedagogy. For example, stating that assessment should serve the purpose of promoting students' learning, but ending up being focused on students' grades or explaining a process in which assessment evidence fails to be used to adjust the teaching-learning process to attend students' needs. This represents a superficial understanding of assessment (DinanThompson & Penney, 2015). However, other PSTs showed to have a coherent discourse and practices that match it.

Even with all PSTs involved in the same training programme, the level of acquisitions and improvements in assessment literacy was different for the different PSTs. In any case, all PSTs valued the support they received by the researcher, cooperating teachers, and teacher educator for considering it helped them to not give up on their attempts for ambitious teaching. Having the support of these different stakeholders also helped them to receive feedback from different lenses which contributed to bridging the gap between theory and practice. On the other hand, the opportunity to share and hear experiences from PSTs in their and other schools was important to learn from others, to understand

that strategies have to be adapted to the context and those in it, and to realise that it was not just them struggling when enacting AfL (or any ambitious practice). Cooperating teachers who took part in this project were already alert to AfL, however, they would not feel comfortable and confident to enact it in their practices, especially on their own. For that reason, cooperating teachers also valued this opportunity to be involved in a project that allowed them to interrogate their conceptions and practices of assessment as well as the opportunity to experience the enactment of AfL in PSTs' practices.

In AfL, the view about the teaching-learning process should change from "what I am going to teach and what are the pupils going to do?" towards "how am I going to teach this and what are the pupils going to learn?" (Black et al., 2004, p. 19). The answer to these latter questions is in the learning goals and success criteria that must be set and shared with students at the beginning of the teaching-learning process (Leirhaug & MacPhail, 2015; Ní Chróinín & Cosgrave, 2013). In relation to assessment, teachers should ask themselves 'how to assess to improve students' learning' (Scanlon et al., 2022). The answer to the question 'what am I going to assess' can be 'automatically' answered if learning goals are well-established, clear, and understandable for students (Graça et al., 2019; Scanlon et al., 2022).

Being concerned only with 'what' to teach and assess is no longer enough. Encouraging teachers to reflect about the 'how' and why of their decisions may bring clarity to the teaching-learning processes, increasing students' learning (AIESEP, 2020; Hay & Penney, 2013; Tolgfors, 2018). PSTs throughout this formative project interrogated themselves in relation to different aspects and developed a critical stance regarding how and why to assess – "how to embed assessment in the teaching-learning process", "how am I going to assess to collect evidence to improve students' learning?", "why is that relevant for students to learn?", "why is it relevant to know if students have learned?"; and how and why involve students in the teaching, learning and assessment process – "how can I involve students in assessment?", "why is it important to share learning goals and assessment criteria?" or "why is it important to have students regulating their and/or peers' learning?".

Considering AfL requires teachers to change the way they are used to thinking, to planning and to enacting assessment in their practices and to engage students in the teaching-learning process (Batista et al., 2019; Brink & Bartz, 2017; Moura et al., 2021), PSTs were encouraged to assume a practitioner researcher role. (Preservice) Teachers who act as practitioner researchers tend to consider it as an extra value in terms of their professional development and transformation of their practices (Kennedy-Clark et al., 2018; Yuan et al., 2020). PSTs on this project had to learn how to become practitioner researchers as well as being active participants in the training programme. However, some PSTs felt more comfortable with this active role in the training programme than others did (e.g. sharing, discussing, providing contributions). This was mostly associated with PST' profile, mainly their predisposition, autonomy, maturity, and commitment to the project and their school placement. The disposition of PSTs to assume this active role was like that of their students when PSTs tried to increase students' role in the teaching-learning process.

PSTs' profile and the students they worked with ended up having a great influence on the different experiences PSTs had when enacting AfL. Some PSTs were more successful than others in engaging their students to be active co-constructors and co-regulators of their learning and working as a group. Regardless the success students had, all of them had to learn how to have an active role in the teaching-learning process and work in group. One finding that was particularly interesting to observe was that co-construction and co-regulation enhanced the cooperative learning and vice-versa.

Most PSTs' students seem to have valued having an active role in their learning when compared with the beginning of the school placement where PSTs were only responsible for the decisions and students' learning. At the time, students felt they were just doing tasks while when actively involved in the teaching-learning process, students could see more meaning and value in their learning. The impact on learning was also positive with school students reporting the sharing of learning goals and assessment criteria as crucial to them answering the three key questions of AfL – 'where am I know?', 'what am I supposed to learn?', and 'what is the best way to learn this?' (Graça et al., 2019; William &

Thompson, 2007). Knowing learning goals and assessment criteria also helped school students to better co-construct and co-regulate their learning and work as a group. The opportunity to be involved in the decisions of the teaching-learning process also changed school students' perspectives about learning in physical education. This changed from a subject where there are no learning goals to a subject where students give meaning to what they learn, because of understanding what they do and for developing some lifelong learning.

In relation to students' perspectives about learning, a complementary study was conducted. This studied students' perspectives about their learning profile by using the 'Effective Lifelong Learning Inventory' questionnaire before and after Covid-19. From the seven dimensions (critical curiosity, learning relationships, meaning making, creativity, strategic awareness, resilience, and changing and learning) analysed in the questionnaire, the means have decreased in all dimensions, except for 'resilience' in grades 7-9 and 'creativity' in grades 10-12. Students in grades 7-9 showed to be more affected by Covid-19, considering there were statistically significant differences in six of the seven dimensions. This is most likely to have happened because younger students tend to be less autonomous or independent.

Finally, this thesis can contribute to work on assessment in PETE during school placement and to endorse reform movements towards changing assessment practices in physical education, toward a more inclusive and equitable quality education. It may also provide contributions to the discussion on assessment in physical education and PETE, by providing practical evidence about the challenges PSTs face to enact AfL in school physical education and the need to reconfigure PETE programmes if improvements on PSTs' assessment literacy are intended. It is necessary to break the vicious circle assessment practices are tangled in, by putting the different stakeholders (teacher educators, researchers, schoolteachers, PSTs) in common spaces, working together to find understandings - everyone's matters. Working with PSTs and cooperating teachers helped both interrogate their conceptions and practices of assessment, improving their assessment literacy and ability to use assessment towards students' learning. Working with school students helped them gain awareness of

their learning, be more engaged in the lessons and find higher value on the learning process. Working with all these participants helped the researcher to grow as individual, teacher, teacher educator and researcher.

Due to the great impact assessment can have on teaching and learning if used for learning purposes, PETE has to answer the challenge of changing the way assessment is taught (AIESEP, 2020; Brevik et al., 2017; MacPhail & Lawson, 2020; Moura et al., 2020), by helping PSTs learning how to assess, assessing. Few studies, particularly longitudinal, have addressed the transition from PETE to school physical education (Backman et al., 2021; Starck et al., 2018) which is relevant considering that it tends to be challenging (Richards et al., 2014). In assessment there is an even bigger tendency for PSTs replicating what they lived as students. Providing PSTs with opportunities for counterbalancing the negative impact of previous socialisation, to interrogate their conceptions and practices of assessment is necessary if this vicious circle of assessment practices is to be broken.

## **4.2. Changing Times and a Time for Change**

The fast-changing world and the 21<sup>st</sup> century issues brought new challenges to education in general, and PETE and physical education in particular (Lawson, 2018). PETE and school physical education need to be reconfigured together and aligned to answer these challenges (Lawson, 2018; MacPhail & Lawson, 2020), promoting assessment for students' learning, underpinned by notions of authenticity, validity, equity and social justice (Graça et al., 2019; Hay & Penney, 2009).

One of the challenges to this reconfiguration is the uncertainty about how and which contents should be taught to future teachers, especially in assessment. These doubts could be a consequence of the lack of research on 'how' assessment is taught in teacher education (Brevik et al., 2017; Scanlon et al., 2022) and practical studies about the transition from PETE to school physical education (Backman et al., 2021; Starck et al., 2018). Not knowing which contents would be more appropriate and/or effective to increase the use of assessment for learning purposes, considering the PSTs' process, interactions with school and

universities, teacher educators from university and school it is possible to point some directions that may have a positive impact in increasing PSTs' assessment literacy:

- 1) Create a 'space' in the curriculum focused on improving PSTs' assessment literacy, providing PSTs with opportunities to interrogate and discuss previous conceptions of assessment, and plan, enact and reflect while using assessment for different purposes. This 'space' should be framed around practice-based teaching and research-informed practice, encouraging PSTs to become practitioner researchers;
- 2) Assess and grade PSTs' ability to teach and assess for learning purposes within PETE programmes, for example in the sport didactics. It is important PSTs go into school placement having already experienced assessing for other purposes than grading. Putting AfL in practice in different didactics could allow multiple opportunities for PSTs to plan and enact assessment embedded and aligned with curriculum and pedagogy, making the teaching-learning process clear and understandable for all by sharing learning goals and success criteria, and engaging students (or peers) on assessing their and peers' learning;
- 3) 'Teaching by example' and 'practice what you preach', i.e. teacher educators using AfL in their practices, placing learning in the centre of the teaching-learning process, allowing students to experience instructional alignment (of curriculum, pedagogy and assessment), engaging PSTs as active learners by constructing and assessing their and peers' learning, by making feedback a dialogue between teacher, student and peers, reflecting with students about their teaching and the strategies they use;
- 4) Consider PETE students as future teachers across all modules of PETE programmes by involving them in decisions about the teaching-learning process and giving them opportunities to act as a teacher;
- 5) Encourage PETE students to become practitioner researchers which is a key aspect to any change of practices and subsequent professional development.

Other challenge is to know how best to support PSTs and teachers to improve their assessment literacy before and in the transition from theory to practice. To be aware that there is no such thing as a single solution to provide an appropriate support, there are five points that could have a positive impact in improving PSTs' assessment literacy:

- 1) Once again, increasing the opportunities of PSTs putting AfL in practice, preferably with 'real' students, even before their school placement;
- 2) Encouraging PSTs and teachers to become practitioner researchers, while supporting them (a researcher and/or teacher educators) along the way. When teachers research their own practices, they tend to find more meaning and value on the data/ knowledge produced;
- 3) Creating learning communities with all stakeholders involved (teacher educators, cooperating teachers, and PSTs) and as active learners, i.e. everyone learning from each other by sharing learning, experiences and difficulties, by making the feedback a dialogue between all, involving everyone in assessing their and their peers' learning. It is important that discussions are linked back to what happen in the specific contexts teachers' work, and facilitator(s) of the learning community observe (preservice) teachers in practice to help them moves their teaching forward;
- 4) Reconfiguring teachers' continuous professional development/trainings to be practice-based teaching and research-informed practice, i.e. follow-up teachers' work in practice, by dialoguing and defining strategies together for improving them, enacting, analysing, reflecting, giving constructive feedback and assessing formatively together their practices, improvements achieved, challenges and difficulties faced;
- 5) Allowing cooperating teachers to have a free space on their calendar (e.g. Monday morning) to have time for collaborative work with teacher educators and PSTs, like for example, action-research projects about assessment practices.

Another challenge is to narrow the gap between universities and schools which has been reported as a need to be addressed (Darling-Hammond, 2006; Ribaeus et al., 2020) to ease the transition from teacher education to school. If this gap is intended to be bridged, 'collaboration' from policymakers is necessary. In an attempt to provide some contributions to bridge the gap, I would consider:

- 1) Aligning assessment in school and teacher education physical education when reconfiguring them;
- 2) Promote the intergenerational dialogue by inviting physical education teachers to share their experiences on PETE programmes, having a non-teaching time assigned for that. This would show teachers their knowledge and expertise are valued and important to educate PSTs;
- 3) Creating space for learning communities with schoolteachers and teacher educators to work together, which would reinforce and value this work without overloading both teachers;
- 4) Teacher educators returning to school every five years until a total amount of five stays, allowing teacher educators to go back to 'reality'. Designated schools would have a free spot every year for a teacher educator.

I would also give some other future directions in this attempt of the research to contribute to work on assessment on teacher education and to endorse reform movements towards changing assessment practices in physical education, toward a more inclusive and equitable quality education. Firstly, I do believe that physical education and PETE need to be oriented towards students' learning. For this reason, the 'flexibility' of AfL in adapting from teaching content to teaching method in the transition (or within the PETE) from PETE to school physical education can be a valid and reliable way to achieve that purpose. More research and support are welcomed, which can happen by using some of the previous considerations, to beginning teachers on their arrival on school after completing their PETE. In my opinion, it would be interesting saving a specific part or spot in conferences and seminars for schoolteachers to share their practices, reinforcing their importance in producing knowledge that could be used in PETE. The idea is, trying once again, to bridge the gap between universities and schools,

emphasising that we all have more to gain if we all work together, learn with, and from, each other (MacPhail & Lawson, 2020). Nóvoa (2009) consider that the complexity of education requires the need for more collaborative work, the need for creating professional ethic based on dialogue between peers and transform practical experiences in professional knowledge.

In terms of future directions for research, I would highlight the need for more research exploring the impact in PETE and school physical education practices of collaboration between different stakeholders (teacher educators, schoolteachers, PSTs, and if possible, even if occasionally, policymakers). More research needs to be done to know how to support teachers and PSTs most effectively in changing their practices. Kennedy (2016) advises that professional development providers cannot just expect their words to change the way teachers teach. More research on how to provide more meaningful and effective professional development may be another area to explore, especially with participants having an active role in the process.

Although it is acknowledged that PETE programmes have to provide more practical experiences for allowing PSTs to develop skills, reflect and examine the way they enact assessment (Starck et al., 2018; Tolgfors et al., 2021), it would be important to have more research attempting to identify how best to improve PSTs' assessment literacy among PETE programmes. More research exploring the process of enactment AfL throughout PETE programmes before or in the school placement would be also welcome. Empirical studies exploring the impact of AfL on students' learning, engagement and motivation are highly recommended and necessary.

### **4.3. Limitations**

As any other research, this thesis had limitations, mainly provoked by the pandemic situation lived since the middle of the second year of my PhD (March 2020). The emergence of covid-19 led to it being impossible to collect more data from school placement after all teaching became online. This limited the collection of data about students' perceptions (mainly 'Effective Lifelong Learning Inventory' questionnaire) which required the reconfiguration of the fifth paper and prevented

us to go a bit further on data collection about students' learning. This setback was minimised, with all participants' agreeing with online focus group interviews. Four focus groups were conducted with 24 students from four different classes (six from each). However, it obviously did not happen in an ideal situation considering everyone had already been affected (in very different ways) by the pandemic and those interviews took place two months after the last face-to-face lesson.

Data analysis from cycle one and two had to be reanalysed in an attempt to collect more evidence from students throughout these two cycles, but data was obviously limited, considering the focus and the need to support PSTs on dealing with their entering in school and reconfiguration of their understanding and practices to use AfL.

Another limitation was the characteristics of PSTs who participated on this study. In fact, one of the challenges/limitations of a critical participatory action-research is its heightened dependency on participants' contribution. For example, with participants who are less proactive, critical, reflexive, autonomous or unfamiliar with active learning environments, it is likely they provide few contributions which will reduce their opportunities to learn. Some of these PSTs did not have these characteristics which may have limited the potential of the critical participatory action-research approach to collect a more meaningful and comprehensive perspective of the phenomenon under study. On the other hand, there were others who had it which allowed the group evolving as a community and as individuals. In fact, half of the PSTs developed their ability to reflect and being critical on their learning (experiences) throughout the process.

#### **4.4. The 'road' as a researcher**

PhD is a long and sinuous road with several up and downs. However, is also an enriching and significative journey. When I started my PhD, I was already aware to the importance of researching (our practices), but I was not ready for how tough this could be. Researching is a science in itself and for that reason, a process that needs to be learned. I improved my ability to look for articles, to read and understand them, to collect and analyse data, to write and present my findings. The process of writing is a huge challenge for different reasons i) fulfil the (high)

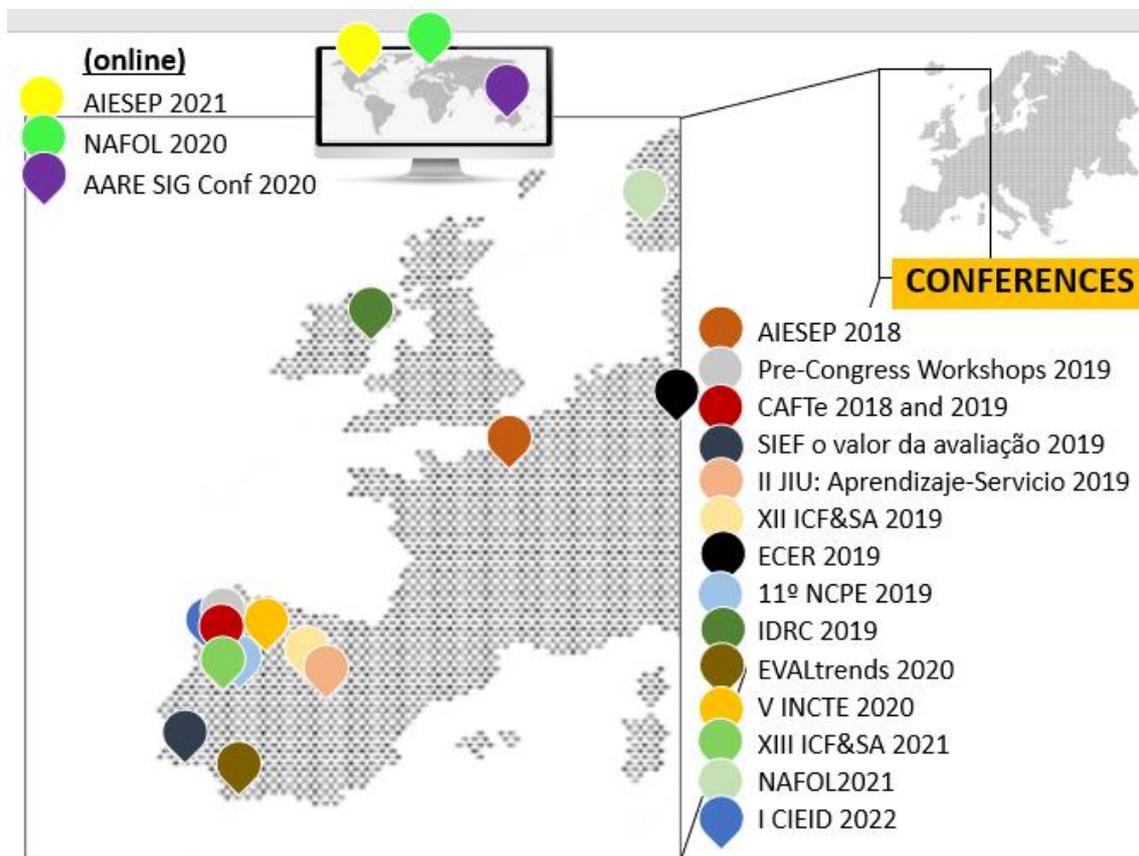
standards of journals; ii) providing contributions to different audiences; iii) follow the academic writing; and iv) writing in a language in which we are not natives. In my case, reading countless papers, trying to understand the logic behind the writing of the paper, the way authors address things on the paper, and of course, my supervisors' feedback helped me with this process.

Another thing I learned is that we need to be cautious about what and how we write, the words we use. Knowledge is in constant evolution and the more we know, the more we realise how much we do not know. We need to be humble and write in a perspective of possibility rather than certainty (which is not always easy). We also need to be careful with the words we use. When writing in Portuguese, there is a tendency for using synonyms to avoid repetition, however, when writing the articles, I got feedback from reviewers about the use of words with different meanings, interchangeably. I was also advised about the selection of words, considering the type of the study, qualitative or quantitative.

Attached to the process of publishing are all the emotions with the back and forth of drafts, submissions, rejections, awaiting, responses, until the (much desired) acceptance. Research has so many setbacks (mainly, emotionally) every time an article is rejected or not considered. This leads us to question ourselves, wondering how capable we are to research and publish. However, it also has the other side. The feeling and happiness of seeing an article being accepted or published is indescribable. The positive feedback or compliments of reviewers on papers also makes us feel immense pride. When trying to publish in the best journals is necessary to be ready for the challenge, for the difficulties, for the failure and, on some occasions, disregard. Even if it feels harsh at the time you get rejected it is important to carry on and acknowledge the level of challenge, the quality and quantity of papers they receive. If experienced researchers are rejected, who are we to not be? Apart from that, even being young in this 'research world', I can already acknowledge that publishing is becoming harder and harder.

When I think of the beginning of the PhD, looking into the number of drafts or the feedback of my supervisors, I understand this has been a long journey but a worthwhile one. All the process makes us grow as a researcher, learn to deal with

the failure, trying to make the best of the comments to improve our paper and ourselves. The way I look at research is similar to the way I look at everything else, I am more prepared now than what I was before but less than tomorrow. I also based my process as a researcher in the idea, so many times advocated for teachers, of action research. Researching is an open process of planning, acting, observing and reflecting that leads us to progress. I was fortunate for having feedback along the way so all I had to do was getting better and better. I was also able to keep track and improve my learning throughout the PhD through the conferences I attended (Figure 1).



**Figure 1.** Conferences attended throughout the PhD.

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