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Differentiated instruction: 'to be, or not to be, that is the question'

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ABSTRACT

Education systems around the world, faces the major challenge of including all children in schools. Differentiated instruction (DI) is proposed as a pedagogical approach that support social, emotional and academic success for all students in the context of heterogeneous classrooms. Although, recent research draws the attention to the inconsistent definitions and practices of DI. In this context, this qualitative study aimed at exploring the Portuguese teachers self-reported typical DI practices in mixed-ability classrooms. The participants were thirty-six teachers from kindergarten to middle school and came from a public-school cluster of five schools. The qualitative analysis carried out indicate a variety of practices under the concept of DI, ranging from practices aimed only at a group of students, based on low ability or special education needs, to practices aimed at building communities of learners. The majority of the self-reported practices described DI as simply giving one assignment to most pupils and fewer or easier activities to students who are struggling with their learning. Implications for initial teacher training and professional development programmes are discussed.

Introduction

In Portugal, particularly since the last education reform in 2018, there has been a great ambition to pursue inclusive schools (Alves 2019). In the practice support manual 'Towards inclusive education' published by the Ministry of Education in 2018 (Pereira et al. 2018), differentiated instruction (DI) is a privileged approach understood as a structuring assumption of a pedagogical action which takes into account all students in relation to the learning tasks, which may be different in terms of their aims and contents, time and way of carrying them out, resources, conditions and support available. Consequently, is expected that all pupils have opportunities to meaningfully participate in the classroom activities with their peers building a sense of an inclusive community.

However, recent studies have drawn the attention to the misconceptions around the concept of DI, for instance, class ability grouping or individualised instruction, emphasising that these conceptions can act as barriers to the development of inclusive practices

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and can contribute to the systematic exclusion of many pupils (Bondie, Dahnke, and Zusho 2019; Graham et al. 2021). Although a change in the legislation was implemented to provide support for all pupils in mainstream classrooms, empirical data depicting the daily practices of DI of regular teachers is still missing.

In this context, we developed a qualitative study with the aim of characterising the teaching practices that teachers mobilise under the concept of DI. The empirical data of this article are based upon regular teachers' descriptions of their daily practices of DI. Knowing how teachers differentiate their instruction is the only way that we can know what is being enact in the name of DI and, consequently, implement mechanisms to support schools and teachers in the journey of developing inclusive educational systems. Teachers reported practices will also tell us how inclusion policies are being operationalised in classrooms daily lives.

Literature review

Differentiated instruction (DI), as a teaching strategy in heterogeneous classrooms, is not a recent concept. Indeed, in December 1953 Educational Leadership dedicated an entire issue to the subject 'The Challenge of Individual Difference'. Nevertheless, recently, mostly as a consequence of the international efforts to develop inclusive educational systems, the concept of DI has gained much attention. In fact, to address pupils' various learning needs teachers must be able to effectively differentiate their teaching practices in the context of heterogeneous classrooms (Pozas et al. 2021).

Considering some misconceptions about the concept of DI, namely class ability grouping or individualised instruction (Bondie, Dahnke, and Zusho 2019; Graham et al. 2021), we underline that differentiated instructional practices must take place in the context of heterogeneous classrooms. Some well-known aspects of heterogeneous classrooms are related to age, academic performance, abilities and readiness, cultural background, language, beliefs, learning preferences and learning styles, motivation, as well as social, methodological, self-regulatory and affective competencies and needs are part of the diversity (Florian and Camedda 2020; Tomlinson 2017).

In this context, DI can be understood as a flexible approach to teaching in which a teacher 'plans and carries out varied approaches to the content, the process, and/or the product in anticipation of or in response to student differences in readiness, interests, and learning needs' (Tomlinson 2017, 10). It is a continuous decision-making process where teachers adjust and adapt instruction to increase students' learning within a learning community (Bondie, Dahnke, and Zusho 2019; Nind et al. 2013).

Complementarily, Farmer et al. (2019) emphasise the importance of combining the child's individual learning strategies in a group work context. This group work context supports teaching strategies that encourage collaboration between children in learning activities which build a sense of an inclusive community. Rather than offer activities for most pupils combined with different experiences for some, the core of DI relies in offering a range of options, which are available to everybody in complex social organisations. Collaborative and cooperative routines appear to be a pedagogical approach that support each pupil in the classroom context (Farmer et al. 2019; Spratt and Florian 2015).

Relying on the work of Vygotsky (1978), cognitive development takes place in the complex social relations that occur in the classrooms (Farmer et al. 2019). Thus, peer

interaction offer unique possibilities for discussion and collaboration. The importance of peers may derive from their availability and from the different levels of status and expertise that they represent (Rogoff 1990, 2003). Neglecting peer power in the context of DI is to neglect what we already know about how young human beings achieve their intellectual competence (Baloche and Brody 2017; Bruner 1996; Rogoff 1990; Vygotsky 1978).

The background provided about DI embodies teaching practices that support inclusive education (Ainscow 2020; UNESCO 2020). In fact, teaching practices that support learning within an inclusive classroom, are those associated with DI strategies (Finkelstein, Sharma, and Furlonger 2021; Lindner et al. 2021). As inclusive education, it is quite clear that DI concerns all children and students within a learning community or classroom (Geel et al. 2019; Lave and Wenger 1991; Spratt and Florian 2015;).

However, as Florian claims, recognising that all children should be educated within an inclusive education system 'has not been smooth sailing' (2019, 692). In fact, some literature reviews and research articles (Ainscow, Booth, and Dyson 2006; Amor et al. 2018; Nilholm and Göransson 2017) have noted different interpretations of inclusive education, ranging from the placement of pupils with special educational needs in regular classrooms (mainstreaming) to focus on creating learning communities. Not surprisingly, most likely alongside the different interpretations of inclusion, recent works also draw attention towards the different conceptions, or misconceptions, of differentiated instruction (Bondie, Dahnke, and Zusho 2019; Graham et al. 2021; Zerai et al. 2021).

Bondie, Dahnke, and Zusho (2019), based in a literature review of twenty-eight U.S.-based research studies conducted between 2001 and 2015, identified the use of inconsistent definitions of differentiation as a key challenge affecting research and practice. In the studies reviewed, differentiated instruction ranged from a flexible approach to teaching in heterogeneous contexts, to a support mechanism for weaker learners or an approach that manages diversity by trying to reduce it through ability grouping (structural differentiation or streaming). However, one major conclusion is that the definition of differentiated instruction highly affects teacher instructional practices. Each approach influenced the purpose and goals of differentiated instruction practices and, consequently, classroom organisation and teacher role (Bondie, Dahnke, and Zusho 2019).

One year later, in a scoping review of research, from 1999 to 2019, Graham et al. (2021) extended the conclusions of Bondie, Dahnke, and Zusho, 'The lack of clarity that we have identified in both the articles excluded and included in this scoping review points to the importance of achieving definitional consistency before any further investigation into the effectiveness of differentiation commences' (2021, 31). Nevertheless, the authors emphasise that the most dominant interpretation of differentiated instruction was the association of differentiation with ability grouping. This is not a recent finding. Already in 2014, Mills and collaborators, found that the Australian teachers conceived DI as ability-grouping and individualisation of assessment and instruction.

Recently, Zerai et al. (2021), through the analysis of seventeen narrative interviews with Eritrean mathematics and science teachers, have reported five different meanings of differentiated instruction. The first two approaches were the most dominant narrative types: (1) a caring orientation, where teachers position themselves as attentive and understanding caregivers; and (2) a flexible pedagogic approach, where teachers modify curriculum objectives, teaching methods and learning activities to address individual students'

diverse needs. In both approaches teachers were mainly concerned with pupils who are experiencing academic failure. For instance, the example given in the caring orientation was about a student who has failed twice in the 7th grade and the example of the flexible pedagogic approach was about a child who was not able to recognise the alphabet. The third approach was from a different nature and represented teachers (3) self-reflective process. These narratives focused on teacher's professional growth, containing forward-looking efforts towards future change. Finally, the last two approaches represent negative images of the possibilities of differentiated instruction. In the fourth approach teachers conceived differentiated instruction (4) as a failed attempt, where teachers position themselves as having limited opportunities to influence students' learning, namely due outside factors, such as poverty, or to pupils' internal problems, such as impairments. In both cases, pupils facing risks of exclusion. In the last approach, differentiated instruction was a (5) demanding approach, mainly viewed as impossible to operationalise, due to teachers' lack of skills or challenging school circumstances, for instance, too many pupils.

The origin of these misperceptions and inconsistencies may be associated with the theoretical roots of differentiated instruction. These roots are linked to research on individual learning differences and in the adaptation of the learning goals and content to the abilities of individual children with special needs by creating separate individualised education programmes for them, as a way to make schools responsive to students with disabilities (Landrum and McDuffie 2010; Nind et al. 2013; Rix 2020). Bearing this in mind, sorting pupils into more and less able and providing them with experiences matched accordingly, is a very well-established response to make learning accessible for a diverse range of abilities and learning styles (Nind et al. 2013). Several negative effects of these approaches are well known and documented (Florian and Beaton 2018; McGillicuddy 2021).

Given these inconsistencies, countries across the world have strengthened DI and inclusive education policies (Ainscow 2020). It is recognised that inclusion and DI will not emerge naturally, but as a result of conscious and reflective actions of schools, communities and teachers (Sandoval, Muñoz, and Márquez 2021). In this sense, it is argued that initial teacher training (Spratt and Florian 2013; Florian and Pantić 2017) and continuous professional development (Florian and Pantić 2017; Vangrieken et al. 2017; Walton et al. 2022) have an important role to play in how well-prepared new teachers and in-service teachers feel for the challenges of diversity in today's classrooms (European Agency for Development in Special Needs Education 2011).

However, practitioners recognise that practice has remained largely unchanged (Gheyssens et al. 2020; Rix 2020). Studies demonstrate that teachers support inclusion at a theoretical level but in practice find it a difficult concept to operationalise (Bondie, Dahnke, and Zusho 2019; Gaitas and Martins 2017). Even though differentiation appears to be a successful theoretical framework, ideas relating to differentiation teaching practices have become ambiguous creating a gap between theory and practice and increasing inequalities in the classroom, which is the opposite result of its intended purpose.

In an attempt to address this gap between educational theory and everyday instructional practice, Pozas, Letzel, and Schneider (2020) propose a taxonomy of differentiated instructional practices divided into six categories: (1) Tiered assignments: qualitative

and/or quantitative variation of materials and tasks according to challenge level, complexity, outcome, process, product, and/or resources; (2) Intentional composition of student working groups: establishing decidedly homogeneous or heterogeneous subgroups based on performance, readiness, interests, etc. according to the work that will be developed; (3) Tutoring systems within the learning group; (4) Staggered non-verbal learning aids: carefully and purposely designed series of learning aids that range in complexity level; (5) Mastery learning: all instructional practices which ensure that all students achieve minimum standards (in combination with higher standards for the more advanced students); (6) Granting autonomy to students: students are responsible for their own learning process and may autonomously decide on the materials to work upon.

Considering the worldwide misperceptions and inconsistencies associated to DI and the depicting data concerning teachers' daily practices of DI, the aim of this research was to characterise teaching practices in mixed-ability classrooms that Portuguese teachers mobilise under the concept of DI.

Methodology

Participants and data collection procedures

The participants in this qualitative study were thirty-six teachers (nine teachers taught in the kindergarten, eleven in primary school and sixteen in middle school – teaching different subjects). Their age ranged from 35 to 64 years-old ($M = 49.83$, $SD = 8.53$) and their teaching experience from 7 to 41 years ($M = 24.78$, $SD = 9.01$ years). Five teachers were male and thirty-one were female.

Teachers came from a public-school cluster of five schools identified as Educational Territory of Priority Intervention (TEIP). Schools were selected intentionally because they serve students from diverse ethnic, cultural, religious and socioeconomic backgrounds, including a large number of families facing poverty. All teachers have a degree in teaching and all have reported that they had attended several in-service training courses on teaching students with diverse needs and inclusive education in the last five years.

Before collecting the data, formal approval was gained from the headteacher. A letter was sent to all teachers in the five schools explaining the aims of the study and arranging a collective meeting with the interested teachers. Hence, teachers volunteered to participate in the study. Additionally, all participants have signed a consent form and received extra information explaining the aims of the study.

In the collective meeting, teachers were asked to anonymously self-report a differentiated instruction strategy that they usually develop in their teaching practices. These concrete activities described real teaching experiences and seemed to be a relevant way of gathering teachers' own meanings of differentiated instruction.

Considering that DI is a hot-topic in education nowadays, particularly enhanced in Portugal with the implementation of the new legal diploma (Decree-Law 54/2018), teachers were invited to anonymously report their practices in order to avoid the pressure of providing socially desirable DI answers.

Data analysis

Teachers' descriptions were analysed through content analysis (Creswell and Creswell 2018). The analysis began with an independently careful reading by the researchers of the reported practices. In an abductive/iterative approach (Tracy 2020), each researcher, independently, has generated several questions and categories to analyse the described teaching practices. Following this moment, jointly, through discussion, and based on Bondie and Zusho (2018) work, researchers have fixed three questions and the respective response categories. The questions and categories used to analyse the reported teaching practices were: (1) Who is in focus? The aim of this question was to describe which students – or groups of students – were differentiated teaching practices targeted at. In this question four categories of answers were considered: A – All pupils – in-side class ability streaming (homogeneous subgroups); B – Students with disabilities or special educational needs; C – All pupils – One-size-fits-all instructional approach; D – All students differentiated (within a learning community). The second generated question was: (2) When is differentiated instruction mobilised? The aim of this question was to analyse in which situations teachers mobilise differentiated instructional strategies. In this question five categories of answers were considered: A – When students cannot do the same activity as the other pupils; B – During formal evaluation; C – In experimental activities; D – In pupils' classroom presentations; and E – In all activities. The third question that was generated was (3) What is the aim of differentiated instructional practices? This question tried to address what teachers want to achieve when they mobilise differentiated instructional strategies. Four categories of answers were considered: A – Achieve a simpler goal; B – Assure student occupation; C – Mastery learning to each pupil; D – Promote the participation of all students.

Finally, each description was independently coded by two researchers. The interrater reliability was Kappa = .81. After independent codification, all disagreements were easily resolved through team discussion.

Results

Teachers' perspectives of differentiated instruction

The presentation of the results is organised according to the questions that were developed. For each question, the frequency of each category and three examples are provided. The examples provided are representative of all the reported practices within each category. In other words, all teachers in the same category had reported quite similar practices.

Table 1. Frequency of pupils targeted by differentiated instruction.

1. Who is in focus?	N
A – All pupils – within class ability grouping – homogeneous subgroups	18
B – Students with disabilities or special educational needs	11
C – All pupils – One-size-fits-all instructional approach	4
D – All students differentiated – within a learning community	3
Total	36

Table 1 shows the frequency of which pupils, or groups of pupils, are targeted by differentiated teaching practices.

As we can see in Table 1, category A is the most frequent category with eighteen teachers reporting differentiated teaching practices based on ability grouping within the class. In other words, teachers sort pupils into more and less able and provide them with experiences matched accordingly. Teachers with practices within this category emphasise that teaching practices should be different particularly according to pupils' ability. For instance, some examples include 'create groups with different reading levels and give them a work according to their reading proficiency' or 'calculation sheets with three levels of difficulty: one group of students uses concrete materials and only has to write the result of an operation with two-digit numbers, another group of students does not use concrete materials but keeps the two-digit numbers and has to present the calculation strategy used, and the third group has to solve an operation with numbers of three or more digits, presenting the resolution strategy without using concrete materials' or 'writing activities accordingly to what pupils can do. For instance, I ask some pupils to copy words, others to organise words to form sentences and, to the most competent, to write a text'.

In category B, eleven teachers, report differentiated teaching practices specifically aimed at pupils with disabilities or special educational needs. As teachers in category A, teachers with practices within category B also emphasise that teaching practices should be differentiated, but only for students with disabilities or special educational needs. Some examples include 'having different reading materials for pupils with disabilities' or 'facilitating resources for pupils with disabilities such as signalling the start, transition or end of an activity with sounds or movements' or 'while I am doing exercises with the rest of the class, I always have specific worksheets for pupils with disabilities.'

In category C, one-size-fits-all instructional approaches are reported by four teachers. Teachers with practices within this category emphasise the importance of standardised and simultaneous teaching, learning and evaluation practices for all pupils. For instance, 'I do all the exercises on the board so that everyone can copy and follow along' or 'after my explanations I always have practical exercises for all students to do. It is important that pupils apply what I have teach' or 'doing simultaneous activities in the students' workbook. I usually ask questions to several pupils and then I invite one pupil at a time to come to the board and write down the correct answer.' Considering that these teachers have not reported differentiated teaching practices they will not be considered in the next questions.

Three teachers have reported teaching practices recognising the idea that all pupils differ and they are committed to develop teaching approaches that account for those differences, in ways that do not stigmatise (category D). For instance, 'having individual work plans for all pupils according to their learning needs. For at least one hour a day, each student has to work on his or her individual work plan. Although it is individual, the students can help each other. Every student has a different plan. At this moment the teacher is also available for all students'. Another example is 'systematic peer assisted learning. There is a table in the room with the contents of the curricula. As students' progress in their learning, they register on this table what they have already mastered. When planning the individual work plan, this allows classmates to ask for help from those who have already mastered a particular content'. Translating in other words: pupils with certain academic

competences are available to help their peers who have not yet achieved those competences. Also, another example is '*grouping pupils according to their interests to develop study projects. Starting with topics that the students want to know, themes for the projects are collectively defined. At the same time, relationships are established between the project themes and the content of the curriculum. These groups put together pupils with different levels of ability but interested in the same topics/contents*'

Table 2 shows the frequency of the situations in which teachers mobilise differentiated teaching practices.

As shown in Table 2, category A is the most represented with thirteen teachers reporting that they differentiate their teaching practices when students cannot do the same activity as most of the pupils. Teachers in this category design activities for most of the students alongside something different for those pupils who experience difficulties. Some examples include '*When all the class is going to write a narrative text, the pupils who cannot write usually will order a set of pictures*' or '*While the class goes to do a maths challenge sheet, I work with a student on a previous sheet that the student has not finished*' or '*When I need to ask pupils to write a text about a specific topic, I usually ask pupils who cannot write to make a copy.*'

Eleven teachers have reported differentiated teaching practices during formal evaluation (category B). For instance, 'On an assessment sheet, I read the text and questions to the students with greater difficulties' or 'Assessment sheets with different structures: multiple choice, questions with gaps, texts of different complexity, shorter sheets, larger font size and more spacing' or 'for students with greater difficulties I apply the evaluation sheets at different times.'

Five teachers have reported DI practices during experimental activities (category C). For instance, 'During the experimental activities there are tasks with different levels of complexity. For instance, while some pupils experiment to see if some materials float in the water (cork, plastic, glass) other pupils try out activities with reagents, for example making a volcano (water, sodium bicarbonate, dishwashing detergent and vinegar), and write down the result' or 'While some students carry out the activities autonomously, following the guidelines with the instructions, others will do it with the teacher' or 'During the experimental activities students with greater difficulties are included in groups with peers without difficulties.'

Two teachers reported that they differentiate their teaching practices in pupils' classroom presentations (category D). Sometimes students make presentations to the other pupils in the classroom. When this happens, pupils are responsible to decide on the materials they want to use according to their preferences. For instance, '*During the presentation of a book, students can choose various ways of presenting. They can make a*

Table 2. Frequency of situations where DI is mobilised.

2. When is mobilised?	N
A – When students cannot do the same activity as the other pupils	13
B – During formal evaluation	11
C – In experimental activities	5
D – Pupils' classroom presentations	2
E – In all activities	1
Total	32

PowerPoint presentation, they can read a little bit from the book, they can show pictures and make some commentaries, they can make a little theatre' or *'There is a daily moment where each student can make a presentation to their classmates on a topic of their choice by choosing how they will do it. They can present a text written by them, a news item, mathematical challenges, drama'* or *'At pre-defined moments, students, on a rotating basis, sign up to present to their peers the learning they have developed during the course of a research project.'*

One teacher has reported DI practices in all the activities and moments. This particular teacher reported 'in our classroom there are always several activities happening. While I am working with a pupil or a group of pupils the other pupils are working autonomously, individually or in small groups (tutoring or peer-assisted), with appropriate materials and instructions that allows them to progress in their work.'

Table 3 shows the frequency of the aims of differentiated instructional practices.

Twenty-four teachers reported situations of DI where the aim was to achieve a simpler goal (category A). For instance, 'In a maths activity to train the division algorithm, students with more difficulties practise division with concrete materials only to understand the concept of division' or 'In a text-writing activity the most struggling students are doing a worksheet on reading cases' or 'While the class is doing training activities on multiplication tables (e.g. 3×2), there are some students working on the equivalent additions (e.g. $2 + 2+2$).'

Five teachers have reported situations of DI where the aim was to assure pupils occupation (category B). Examples are 'During the completion of a worksheet one student with major difficulties is responsible for storing the material in the room' or 'During a collective activity about the verb to be, some students who do not yet understand English have painting activities available' or 'While the class is performing more advanced worksheets on maths content, some pupils can play games on the class computer'.

Two teachers have reported situations where the aim was that each pupil work on the subjects they need the most, in order to progress in their learning (category C). For instance, *'having work moments where pupils plan their work and manage time according to their needs and interests'* and *'allow students to re-work a content they have not yet mastered so well'*.

One teacher has reported one situation where the main goal was to assure the participation of all pupils: 'on a daily basis, in the beginning of the classroom, one pupil makes a classroom presentation about a topic of their interest. After this presentation all the class have to discuss how this topic can be related with the curriculum. All pupils make this presentation, with different scaffolding levels, from the teacher or colleagues, in preparation and presentation'.

Table 3. Frequency of the aims of DI.

3. What is the aim?	N
A – Achieve a simpler goal	24
B – Assuring student occupation	5
C – Mastery learning to each pupil	2
D – Promote the participation of all students	1
Total	32

Relations between categories

As we can see through the analysis of Tables 1–3, and using only the two most frequent categories in each table, we can easily argue that DI is mostly aimed to all pupils in an inside class ability streaming approach (N = 18) or to pupils with disabilities or special educational needs (N = 11), DI is typically mobilised when students cannot do the same activity as the other pupils (N = 13) or during formal evaluations (N = 11), and the aim of DI is generally to achieve a simpler goal (N = 24) or to assure student occupation (N = 5).

Discussion and conclusions

As a consequence of the efforts in many countries to develop inclusive educational systems, the concept of DI has gained much attention. Considering that recent research has called the attention to the inappropriate and inconsistent definitions of DI (Graham et al. 2021), this study had as main purpose to analyse teacher meanings of DI through the analysis of self-reported practices.

As previous research (Bondie, Dahnke, and Zusho 2019; Graham et al. 2021; Zerai et al. 2021) our results indicate a variety of practices under the concept of DI. Teachers' descriptions of DI ranged from practices aimed only at a group of students, considered to be different from most of the pupils, based on low ability or special education needs, to practices aimed at building communities of learners. This result is consistent with the research about which pupils are aimed with inclusive education (Florian 2019), recalling the close relationship between inclusive education and DI.

Despite the wide range of definitions, DI was mostly considered as the instructional adaptations that teachers need to perform so that less able pupils, or pupils with special educational needs, segmented in ability groups or individually, can achieve a simpler goal or be evaluated with simplified or graphically adapted worksheets. DI was typically described as simply giving one assignment to most pupils in the classroom and fewer or easier activities to students who are struggling with their learning and cannot do the same assignments as their peers. In this context, DI is a teaching approach where teachers differentiate the work for some pupils, considered as less able than their peers, along a one-size-fits-all approach which works for most learners (Florian 2019; Nind et al. 2013).

The previous reported practices, beyond denying learning opportunities that only happens in the complexity of social relationships between pupils (Farmer et al. 2019; Finkelstein, Sharma, and Furlonger 2021; Lindner et al. 2021; Vygotsky 1978), can fail in ways that struggling pupils feel different from those who do the assignment designed for the majority (Tomlinson 2017). The negative learning and psychosocial impact of these dynamics are very well documented (McGillicuddy 2021).

The results reported are also consistent with previous research that identify individualisation and ability grouping as the main interpretation of differentiated instruction (Bondie, Dahnke, and Zusho 2019; Graham et al. 2021; Mills et al. 2014;). Pupils' segmentation based in ability is grounded in the idea that students have fixed levels of ability and need to be taught accordingly, ignoring the importance of different levels of status and expertise among peers in knowledge construction (Baloche and Brody 2017; Rogoff

1990). Ability grouping represents incompatible teaching practices with the philosophy supporting DI.

Two factors can explain this misinterpretation: (a) the theoretical roots of differentiated instruction. These roots are extremely connected to the research on individual learning differences and in the adaptation of the learning goals to the abilities of individual children with special needs as a way to make schools responsive to all students (Rix 2020); and (b) the origin of the word differentiation itself. For instance, in the Portuguese dictionary, differentiate is a transitive and pronominal verb that means to make or establish a difference, to discriminate, to distinguish. Nevertheless, mainly focus on individual differences between pupils can be problematic if the work that is established for some is differentiated to such an extent that they do not have opportunities to participate in the classroom community activities (Farmer et al. 2019; Florian and Beaton 2018; Lindner et al. 2021).

Our results also draw attention to the idea expressed by some teachers that differentiated teaching practices serve mainly to keep some students quiet, recalling the old concept of integration (where a student is placed in a regular class without appropriate accommodations or support for learning). This idea undermines the development of equitable education systems and the promotion of equity in schools and represents teaching approaches that are incompatible with the project of inclusive education.

Although teachers were asked to report on DI practices, some teachers have reported one-size-fits-all instructional practices, where whole-class frontal teaching instruction was the preferred strategy to address students' individual needs. These teachers emphasise the importance of standardised and simultaneous teaching, learning and evaluation practices. Probably, as Rix points out 'trapped by a notion that learning is a direct transmission of knowledge' (2020, 297).

Based on our results we are facing the problem that genuine practices of DI are still the exception and not the norm. Most likely because providing DI is considered an imperative but difficult teaching skill which many teachers feel unprepared for (Gaitas and Martins 2017; Geel et al. 2019). The reasons for these difficulties are varied: lack of time for planning; inadequate time blocks; lack of resources and funding; resistance from families; concerns about classification; fear of loss of control; lack of training and professional development. However, one main reason for this difficulty may reside in the attempt teachers make to differentiate their work while maintaining the classic school organisation structure. Traditional grammars of schooling are related to those regular structures and rules that organise the work of instruction in a whole class teaching approach focusing exclusively in subjects, classes, lessons, age-grades and testing (Rix 2020). This reason can be pointed out as a major limitation to the development of the paradigm proposed in the new decree law. Highlighting that a decree law it is not enough to change the complex realities of the education systems.

At school, as in life outside it, heterogeneity is the norm. Therefore, education in the school context must be concerned with it and encourage differentiations which do not imply inequalities between students. DI concerns all pupils and aims to develop communities of learners around shared habits, values, and meanings that require shared ways of thinking, rules, and respecting norms of conduct. Consequently, DI is profoundly engaged in the same pedagogical stance as inclusive education (Gheyssens et al. 2020) which states that diversity exists in any group and should be mobilised to improve

learning and teaching processes under equal conditions. In this context, our results also revealed a small number of teachers that have reported DI practices recognising the idea that all pupils differ and they are committed to develop teaching approaches that account for those differences, in ways that do not stigmatise, emphasising the importance of DI practices for all pupils, considering that they are all different (Florian and Beaton 2018; Pozas, Letzel, and Schneider 2020; Spratt and Florian 2015).

Based on teachers' reported practices, several instructional arrangements were described as supports to meet student heterogeneity in the context of heterogeneous classrooms: (a) Individual work plans for all pupils, where pupils plan their work and manage time according to their needs and interests. All learners need opportunities for individual assignments to review or pursue an interest. Because students start learning with different backgrounds and experiences and then continue learning at different learning paces, it is important that they have different learning tasks (Bondie and Zusho 2018); (b) Systematic peer support, where difference among peers is considered as a resource for learning offering unique possibilities for discussion and collaboration (Baloche and Brody 2017; Rogoff 1990); (c) Pupils classroom presentations, where explicitly connections between the curriculum and pupils' interests and life experiences are established. The inclusion of personal interests and life experiences can engage pupils in learning the curriculum (Spratt and Florian 2015; Tomlinson 2017); (d) Simultaneous and different activities, while some students might autonomously work individually, in pairs or in small groups (peers assisted), other pupils can work directly with teacher support. This complex social organisation is a feature of DI teaching strategies (Lindner et al. 2021; Molbaek 2018; Pozas, Letzel, and Schneider 2020); (e) Different scaffolding levels, where pupils have the help they need, from the teacher and the peers, to participate in the classroom activities and to progress in their learning (Bondie and Zusho 2018; Florian and Beaton 2018); (f) Appropriate materials and resources, according to the activity, challenge level, complexity, outcome, process, product, allow students to autonomously progress in their learning (Pozas, Letzel, and Schneider 2020); (g) Experimental activities, having tasks with different levels of autonomy, complexity and tutoring systems, enable everyone to engage in learning activities (Bondie and Zusho 2018; Pozas, Letzel, and Schneider 2020).

The practices previously described enable teachers to address student heterogeneity allowing individual pupils to receive the additional support or extra help they need in the context of the heterogenous group, without treating them differently from others. These teaching practices represent 'a shift in thinking about teaching and learning that works for most learners along with something different or additional for those who experience difficulties, to an approach to teaching and learning that involves the creation of a rich learning environment characterised by learning opportunities to everyone so that all are able to participate in classroom life' (Florian 2019, 701).

Regarding the limitations of the study, it should be noted the small sample size, and the specific context where these teachers belong – Educational Territory of Priority Intervention (TEIP), is not representative of the teacher's population in Portugal, which precludes any generalisation of the results. However, it is important to highlight that our sample includes teachers from different teaching levels and with different teaching experiences.

Moreover, the collected data does not allow the understanding on how the reported practices are integrated into everyday classroom routines. Hence, it is suggested that future research can include this issue, namely through a more longitudinal approach combined with classroom observations and interviews, providing stronger measures of DI practices. Finally, it should be noted that the present analyses represent a first approach to deepen teachers' daily practices of differentiated instruction.

Despite these limitations, this study provides strong evidence of the gap between the philosophy of DI and its actual implementation, emphasising the definitional inconsistencies and misconceptions around DI, making DI a messy concept. In this context, initial teacher education programmes should be considered, placing the issues of diversity at the centre of the teacher preparation (Florian and Camedda 2020). As Florian (2017, 15) points out 'Initial teacher education has an important role to play in how well-prepared new teachers feel for the challenges of today's classrooms, particularly since issues of disability and special educational needs are increasingly considered part of the larger diversity agenda in Europe.' This involves guaranteeing that all teachers are prepared to teach all students when they leave the university and enter the classroom. Inclusion cannot be accomplished unless all teachers are empowered agents of change, with values, knowledge and attitudes that support every student to succeed (UNESCO 2020).

In Portugal, DI and inclusive education in initial teacher preparation are mainly curricular units with one semester of duration, which is largely insufficient for our teachers to become responsive to the needs of all learners. It is in initial training that future teachers need to deepen their understanding of what it means to teach in ways that are inclusive of all learners, often contradicting their experiences as students. As the biggest challenges for most teachers are their prior values, beliefs and attitudes about diversity, inclusion and DI (Jordan, Schwartz, and McGhie-Richmond 2009; Tomlinson 2017), initial teacher preparation must address these issues in a systematic approach, throughout the entire teacher training programmes, discussing their experiences, their preconceptions and their beliefs.

Also, the ways in which in-service teachers are supported to work in inclusive settings should be considered. Professional development for the implementation of DI should be an active, lifelong learning and engaging process rather than a punctual and passive one and should take account of what those involved already know and can do. Teachers must be supported in developing the belief in the capacity of all pupils to learn and to use DI to include all learners at all times. Otherwise, the results show that the programmes of professional development are not effective in changing teachers' DI competences (Gheyssens et al. 2020).

In this context, it is useful to entertain Lave and Wenger's (1991) notion of communities of practice because learning in communities can play a central role in teachers' professional development. Promoting an inquiry-based learning in a collaborative reflective approach, can support teacher professional learning (Vangrieken et al. 2017; Walton et al. 2022).

Additionally, initial teacher educators should also adopt DI strategies, moving away from the doctrine 'do as I say, not as I do'. In this way, it is possible for future teachers to experience what is asked of them when they enter the teaching profession.

Diversity is a multifaceted concept, and it requires us to consider what we aim to accomplish through education. DI is deeply embedded in a socioconstructivist view of learning and teaching. In this view, learning is conceived as a process of construction, with an intrinsically social, interpersonal and communicative dimension, and teaching as a complex process of structuring and guidance, through different supports where pupils' diversity represents an exclusive and absolutely necessary role as a source of cognitive and social development. Additionally, this view of learning is respectful of differences and recognises that all students bring to school resources that will help them and their peers in their learning development.

DI strategies must seek for a complex organisation, where only the use of social dynamics management strategies can foster classroom communities that support the participation of all students. This complex activity involves teachers' constant mediations through what Vygotsky called the zone of proximal development and cannot be accomplished by the logic of exclusion, whereby differentiated teaching for some pupils is the process by which all are included. In other words, the answer to individual needs should be mainly supported through the modification of whole class strategies.

In summary, teachers' misconceptions about DI can act as real live barriers to the development of inclusive practices and can contribute to the exclusion of many pupils. Hence, conceptions about DI must be explicitly considered in learning and development programmes as a specific area of improvement.

Disclosure statement

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References

Ainscow, M. 2020. "Promoting Inclusion and Equity in Education: Lessons from International Experiences." *Nordic Journal of Studies in Educational Policy* 6 (1): 7–16. doi:10.1080/20020317.2020.1729587.

Ainscow, M., T. Booth, and A. Dyson. 2006. *Improving Schools, Developing Inclusion*. London: Routledge. doi:10.4324/9780203967157

Alves, I. 2019. "International Inspiration and National Aspirations: Inclusive Education in Portugal." *International Journal of Inclusive Education* 23 (7–8): 862–875. doi:10.1080/13603116.2019.1624846.

Amor, A., M. Hagiwara, K. Shogren, J. Thompson, M. Verdugo, K. Burke, and V. Aguayo. 2018. "International Perspectives and Trends in Research on Inclusive Education: A Systematic Review." *International Journal of Inclusive Education* 23 (12): 1277–1295. doi:10.1080/13603116.2018.1445304.

Baloche, L., and C. Brody. 2017. "Cooperative Learning: Exploring Challenges, Crafting Innovations." *Journal of Education for Teaching* 43 (3): 274–283. doi:10.1080/02607476.2017.1319513.

Bondie, R., C. Dahnke, and A. Zusho. 2019. "How Does Changing 'One-Size-Fits-All' to Differentiated Instruction Affect Teaching?" *Review of Research in Education* 43 (1): 336–362. doi:10.3102/0091732X18821130.

Bondie, R., and A. Zusho. 2018. *Differentiated Instruction Made Practical: Engaging the Extremes Through Classroom Routines*. New York, NY: Routledge.

Bruner, J. 1996. *The Culture of Education*. Cambridge, MA: Harvard University Press.

Creswell, J., and J. Creswell. 2018. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Los Angeles: Sage Publications.

European Agency for Development in Special Needs Education. 2011. *Teacher Education for Inclusion Across Europe: A Synthesis of Policy and Practice in 25 Countries*. Østre: European Agency for Development in Special Needs Education.

Farmer, T., J. Hamm, M. Dawes, K. Barko-Alva, and J. Cross. 2019. "Promoting Inclusive Communities in Diverse Classrooms: Teacher Attunement and Social Dynamics Management." *Educational Psychologist* 54 (4): 286–305. doi:10.1080/00461520.2019.1635020.

Finkelstein, S., U. Sharma, and B. Furlonger. 2021. "The Inclusive Practices of Classroom Teachers: A Scoping Review and Thematic Analysis." *International Journal of Inclusive Education* 25 (6): 735–762. doi:10.1080/13603116.2019.1572232.

Florian, L. 2017. "Teacher Education for the Changing Demographics of Schooling: Inclusive Education for Each and Every Learner." In *Teacher Education for the Changing Demographics of Schooling: Issues for Research and Practice*, edited by Lani Florian, and Nataša Pantić, 9–20. Cham: Springer International Publishing. doi:10.1007/978-3-319-54389-5.

Florian, L. 2019. "On the Necessary Co-existence of Special and Inclusive Education." *International Journal of Inclusive Education* 23 (7–8): 691–704. doi:10.1080/13603116.2019.1622801.

Florian, L., and M. Beaton. 2018. "Inclusive Pedagogy in Action: Getting it Right for Every Child." *International Journal of Inclusive Education* 22 (8): 870–884. doi:10.1080/13603116.2017.1412513.

Florian, L., and D. Camedda. 2020. "Enhancing Teacher Education for Inclusion." *European Journal of Teacher Education* 43 (1): 4–8. doi:10.1080/02619768.2020.1707579.

Florian, L., and N. Pantić. 2017. *Teacher Education for the Changing Demographics of Schooling: Issues for Research and Practice*. Cham: Springer International Publishing. doi:10.1007/978-3-319-54389-5_2.

Gaitas, S., and M. A. Martins. 2017. "Teacher Perceived Difficulty in Implementing Differentiated Instructional Strategies in Primary School." *International Journal of Inclusive Education* 21 (5): 544–556. doi:10.1080/13603116.2016.1223180.

Geel, M., T. Keuning, J. Frèrejean, D. Dolmans, J. Merriënboer, and A. Visscher. 2019. "Capturing the Complexity of Differentiated Instruction." *School Effectiveness and School Improvement* 30 (1): 51–67. doi:10.1080/09243453.2018.1539013.

Gheyssens, E., E. Consuegra, N. Engels, and K. Struyven. 2020. "Good Things Come to Those Who Wait: The Importance of Professional Development for the Implementation of Differentiated Instruction." *Frontiers in Education* 5 (96): 1–14. doi:10.3389/feduc.2020.00096.

Graham, L., K. Bruin, C. Lassig, and I. Spandagou. 2021. "A Scoping Review of 20 Years of Research on Differentiation: Investigating Conceptualisation, Characteristics, and Methods Used." *Review of Education* 9 (1): 161–198. doi:10.1002/rev3.3238.

Jordan, A., E. Schwartz, and D. McGhie-Richmond. 2009. "Preparing Teachers for Inclusive Classrooms." *Teaching and Teacher Education* 25 (4): 535–542. doi:10.1016/j.tate.2009.02.010.

Landrum, T., and K. McDuffie. 2010. "*Learning Styles in the Age of Differentiated Instruction.*" *Exceptionality: A Special Education Journal* 18: 6–17. doi:10.1080/09362830903462441.

Lave, J., and E. Wenger. 1991. *Situated Learning: Legitimate Peripheral Participation*. New York: Cambridge University Press. doi:10.1017/CBO9780511815355.

Lindner, K.-T., L. Nusser, K. Gehrer, and S. Schwab. 2021. "Differentiation and Grouping Practices as a Response to Heterogeneity – Teachers' Implementation of Inclusive Teaching Approaches in Regular, Inclusive and Special Classrooms." *Frontiers in Psychology* 12 (September): 1–16. doi:10.3389/fpsyg.2021.676482.

McGillicuddy, D. 2021. "'They Would Make You Feel Stupid' – Ability Grouping, Children's Friendships and Psychosocial Wellbeing in Irish Primary School." *Learning and Instruction* 75: 101492. doi:10.1016/j.learninstruc.2021.101492.

Mills, M., S. Monk, A. Keddie, P. Renshaw, P. Christie, D. Geelan, and C. Gowlett. 2014. "Differentiated Learning: From Policy to Classroom." *Oxford Review of Education* 40 (3): 331–348. doi:10.1080/03054985.2014.911725.

Molbaek, M. 2018. "Inclusive Teaching Strategies–Dimensions and Agendas." *International Journal of Inclusive Education* 22 (10): 1048–1061. doi:10.1080/13603116.2017.1414578.

Nilholm, C., and K. Göransson. 2017. "What is Meant by Inclusion? – An Analysis of High Impact Research in North America and Europe." *European Journal of Special Needs Education* 32 (3): 437–451. doi:10.1080/08856257.2017.1295638.

Nind, M., J. Rix, K. Sheehy, and K. Simmons. 2013. *Curriculum and Pedagogy in Inclusive Education: Values Into Practice*. Abingdon: Routledge. doi:10.4324/9781315018188

Pereira, F., A. Crespo, A. Trindade, A. Cosme, F. Croca, G. Breia, G. Franco, et al. 2018. *Para uma Educação Inclusiva: Manual de Apoio à Prática [Towards Inclusive Education: A Practice Support Manual]*. Lisboa: Ministério da Educação/Direção-Geral da Educação (DGE).

Pozas, M., V. Letzel, K. Lindner, and S. Schwab. 2021. "DI (Differentiated Instruction) Does Matter! The Effects of DI on Secondary School Students' Well-Being, Social Inclusion and Academic Self-Concept." *Frontiers in Education* 6 (729027): 1–11. doi:10.3389/feduc.2021.729027.

Pozas, M., V. Letzel, and C. Schneider. 2020. "Teachers and Differentiated Instruction: Exploring Differentiation Practices to Address Student Diversity." *Journal of Research in Special Educational Needs* 20 (3): 217–230. doi:10.1111/1471-3802.12481.

Rix, J. 2020. "Our Need for Certainty in an Uncertain World: The Difference Between Special Education and Inclusion?" *British Journal of Special Education* 47 (3): 283–307. doi:10.1111/1467-8578.12326.

Rogoff, B. 1990. *Apprenticeship in Thinking: Cognitive Development in Social Context*. New York: Oxford University Press.

Rogoff, B. 2003. *The Cultural Nature of Human Development*. New York: Oxford University Press.

Sandoval, M., Y. Muñoz, and C. Márquez. 2021. "Supporting Schools in Their Journey to Inclusive Education: Review of Guides and Tools." *Support for Learning* 36 (1): 20–42. doi:10.1111/1467-9604.12337.

Spratt, J., and L. Florian. 2013. "Applying the Principles of Inclusive Pedagogy in Initial Teacher Education: From University Based Course to Classroom Action." *Revista de Investigación en Educación* 11 (3): 133–140. https://dialnet.unirioja.es/servlet/articulo?codigo = 4735469.

Spratt, J., and L. Florian. 2015. "Inclusive Pedagogy: From Learning to Action. Supporting Each Individual in the Context of 'Everybody'." *Teaching and Teacher Education* 49: 89–96. doi:10.1016/j.tate.2015.03.006.

Tomlinson, C. 2017. *How to Differentiate Instruction in Academically Diverse Classrooms*. Alexandria, Virginia: ASCD.

Tracy, S. 2020. *Qualitative Research Methods: Collecting Evidence, Crafting Analysis, Communicating Impact*. Hoboken: John Wiley and Sons, Inc.

United Nations [UNESCO]. 2020. *Global Education Monitoring Report 2020: Inclusion and Education: All Means All*. Paris: UNESCO.

Vangrieken, K., C. Meredith, T. Packer, and E. Kyndt. 2017. "Teacher Communities as a Context for Professional Development: A Systematic Review." *Teaching and Teacher Education* 61 (January): 47–59. doi:10.1016/j.tate.2016.10.001.

Vygotsky, L. 1978. *Mind in Society: The Development of Higher Psychological Processes*. Cambridge, MA: Harvard University Press.

Walton, E., S. Carrington, B. Saggers, C. Edwards, and W. Kimani. 2022. "What Matters in Learning Communities for Inclusive Education: A Cross-Case Analysis." *Professional Development in Education* 48 (1): 134–148. doi:10.1080/19415257.2019.1689525.

Zerai, D., S. Eskelä-Haapanen, H. Posti-Ahokas, and T. Vehkakoski. 2021. "The Meanings of Differentiated Instruction in the Narratives of Eritrean Teachers." *Pedagogy, Culture and Society (Advance on-Line Publication)*. doi:10.1080/14681366.2021.1914712.