

Does pedagogical metamorphosis exist? Exploring the practices of primary school teachers at different stages of their careers

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Abstract

Research has highlighted the advantages of specific practices for enhancing student learning. However, the adoption of these practices varies among teachers. This disparity raises fundamental questions: Why do certain teachers use these practices while others do not? Does the use of these practices depend on the career stage of the teachers? This paper analyses the practices adopted by teachers at different career stages. We used a mixed-methods approach, combining a questionnaire ($n=300$) and three focus group discussions ($n=13$). The results revealed significant variability in the use of pedagogical practices among novice, experienced and senior teachers. Experienced and senior teachers demonstrate a deeper understanding of adapting teaching methods to student needs, establishing clear objectives and providing feedback. However, certain practices, such as metacognition, remain underused at all career stages. The study highlights the need for professional development concerning these practices, while emphasising the challenge of their implementation.

KEYWORDS

pedagogical practices, teacher professional development, teaching career stages, teaching practices

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Key insights

What is the main issue that the paper addresses?

This paper investigates why certain teachers use teaching practices while others do not, and whether the use of these practices depends on the career stage of the teachers.

What are the main insights that the paper provides?

The results reveal significant variability in the use of pedagogical practices among novice, experienced and senior teachers.

INTRODUCTION

Education is the foundational pillar of modern society, and at the heart of this educational endeavour are teachers. Research (e.g., Darling-Hammond et al., 2017; Hattie, 2003) has underscored the invaluable role of teachers in promoting student learning. However, the linchpin of their educational effectiveness is their pedagogical practices (Coe et al., 2014; Lopez-Agudo & Marcenaro-Gutierrez, 2017; Marzano, 2001). The term 'effectiveness' has a long-standing history in educational research and has become commonly used to refer to the effect of education on students' learning (Reynolds et al., 2014). According to Stronge et al. (2011), 'Effectiveness is an elusive concept to define when we consider the complex task of teaching and the multitude of contexts in which teachers work' (p. 339). They conducted a study aiming to examine the classroom practices of effective teachers compared to those of less effective teachers. Their findings revealed that (1) teachers do indeed have a measurable impact on student learning and (2) teacher effectiveness in terms of student outcomes stems from a combination of pedagogical approaches, strategies, organisational skills and high behavioural expectations of students.

Since that study by Stronge et al. (2011), numerous studies have demonstrated that certain practices yield advantages for student learning (e.g., Colognesi, 2023; Ko et al., 2014; Reynolds et al., 2014) and also contribute to reducing educational inequalities (Atlay et al., 2019; Deunk et al., 2018; Dietrichson et al., 2017, 2021). Notably, clarity of learning objectives, expert use of instructional materials, adaptive teaching, teacher feedback, metacognition, peer and self-assessment, variation in teaching methods and links between courses and disciplines (Ko et al., 2014) have been considered. However, their adoption varies significantly among teachers. This discrepancy in the adoption of well-established pedagogical practices highlighted in the research raises a fundamental question: Why do some teachers integrate them into their teaching while others do not? And does the use of certain practices depend on experience, that is, the career stage of the teachers themselves? While some researchers have argued that teachers centre their concerns on different aspects over the course of their careers (e.g., Fuller, 1969; Wheeler, 1992), or that their practices evolve with their professional development throughout their careers (Darling-Hammond et al., 2017; Guskey, 2002), we still lack cross-phase perspectives on this evolution (Raduan & Na, 2020). We also know very little about factors that contribute to or hinder this evolution, and more generally, the reasons why teachers do or do not use certain pedagogical practices. As

Reynolds et al. (2014) stated, research must focus on teachers and address teachers' perceptions and attitudes towards teaching practices in order to understand what levers can be used to improve teaching.

To find out, we adopted a mixed-methods approach. The first part, quantitative and questionnaire-based, was carried out with 300 primary school teachers and aimed to draw up an inventory of the frequency of implementation of pedagogical practices recommended for advancing student learning in the literature (see Section "Research-recommended teaching practices" for a detailed explanation of these). The second part, qualitative and using focus groups with teachers at different career stages who had completed the questionnaire, was conducted to provide more precise information to understand what leads them to use or not use certain pedagogical practices. Our study took place in French-speaking Belgium, at a time when initial and continuing teacher training was undergoing radical change (Derobertmeasure et al., 2020). This will enable designers to identify (1) high-priority practices and (2) difficulties highlighted by teachers.

Teachers' career stages and concerns over time

Since Berliner (2004), it has been recognised that teaching is a complex form of expertise that goes beyond the simple transmission of knowledge. Over the course of their careers, teachers develop expertise related to a range of skills, knowledge and abilities that enable them to navigate the complex and dynamic environment of the classroom. Indeed, Day et al. (2006) showed that teachers' career stages are critical moderating influences on their effectiveness. Much research exists on the developmental stages of teachers, following both linear and non-linear models. Raduan and Na (2020) critically analysed this scholarship, and proposed an updated and inclusive model. In their synthesis model, the authors identified three career stages: low-grade teacher, higher-grade teacher and senior teacher. In the current study, we have labelled these stages as novice, experienced and senior teacher.

The first stage, that of a low-grade or novice teacher, lasts from 1 to 4 years (Raduan & Na, 2020). Mukamurera (2014) explained that teachers go through a rather critical stage at the beginning of their career and seek to implement what they have learned in pre-service training, while trying to meet the challenges imposed by the field. Early career teachers are in 'survival' mode and have 'reality shock' that prevents them from applying all of their knowledge (Voss & Kunter, 2019). Based on the work of Durand (1996), Blondeau (2023) explained that due to deep uncertainty about the effects of the practices they implement, novices focus on finding comfort zones, as they do not want to undermine their identity. To this end, they are primarily concerned with behaviour management aspects over those related to learning. They focus on establishing their authority, maintaining classroom discipline and ensuring a climate of safety (Serres et al., 2013). Secondly, they carry out instructional planning, to which they tend to attach themselves as a prescription (Derobertmeasure, 2012), considering its realisation almost as a goal in itself.

Perez-Roux (2012) added that the beginning teacher is in search of benchmarks for becoming a professional. It is only when they have passed beyond the initial stage of professional induction, which is difficult for them, that they can then consider the needs of the students and try different practices. That is why, in general, novices have difficulties with adaptive teaching, planning of instruction and classroom management (Mukamurera, 2014). Interestingly, most research on teacher professional development and teacher practices has focused on beginning teachers (Kyndt et al., 2016). This is understandable considering the critical attrition situation that educational systems are facing worldwide. Nevertheless, the consequence is that we know very little about practices implemented by mid-career and late-career teachers (Booth et al., 2021; Bressman et al., 2018).

Berliner (2004) explained that 'A reasonable answer to the question of how long it takes to acquire high levels of skill as a teacher might be 5–7 years, if one works hard at it' (p. 14). This second stage, higher-grade or experienced teacher, is when the teacher is considered to be competent (Raduan & Na, 2020). At this stage, teachers are able to step back from their practice: for example, they are able to decentralise their practice, to make more appropriate pedagogical choices and to pay attention to individual needs within the classroom (Mukamurera, 2014). Blondeau (2023) and Durand (1996) explained that these teachers have tested model situations, routines and problem-solving strategies that are considered effective. This knowledge enables them to develop and implement relevant strategies to put into action, so that the course of events very often conforms to their anticipation.

Then, after 8 years of teaching, comes the senior teacher stage. As teachers progress into the senior teacher stage following 8 years of experience, they exhibit a notable enhancement of their pedagogical skills. Research by Raduan and Na (2020) highlighted that teachers in this phase display a heightened ability to engage in skilled teaching practices at an accelerated pace. This suggests that the years of cumulative experience enable them to navigate classroom dynamics and content delivery with greater expertise. With a foundation of practical know-how gained over time, senior teachers are better equipped to swiftly recognise students' learning needs and adapt their teaching methods accordingly. Moreover, the stage after 8 years of teaching is often marked by a significant improvement in classroom management skills (Ingersoll & Strong, 2011). Teachers at this juncture tend to possess greater mastery of managing classroom dynamics and behaviour. Through years of trial and error, they develop effective techniques to establish a positive learning environment and prevent disruptions. Consequently, these seasoned educators are capable of efficiently addressing challenges that may arise during lessons, thereby maintaining a productive classroom atmosphere conducive to learning. In addition, they demonstrate an increased ability to adapt their teaching to the diverse needs of students, which novice teachers lack (Colognesi & Gouin, 2022). It is also worth noting that at some point during this period, often after 15 years in the profession, teachers' career development can have a vertical trajectory, where they may want to move to other positions (researcher, supervisor, principal). Studies have shown that senior teachers were more accurate in their observations, anticipated outcomes and viewed situations more holistically than others (Berliner, 2001). It is also worth noting that late-career teachers are described in some work as disengaged and burnt-out (Brouhier et al., 2023; Rolls & Plauborg, 2009). Indeed, it has been shown that some experienced teachers with over 20 years' experience have poorer teaching performance than might be expected (Torenbeek & Peters, 2017).

These stage-related transformations can be viewed from the perspective of professional development and influence the way teachers act in the classroom and their choice of pedagogical practices, even if 'not every teacher necessarily goes through each of the stages outlined, nor at the pace described by the authors' (Derobertmasure, 2012, p. 93). Some studies have also shown that different states of professional development can coexist during the same stage of a teacher's career (Day & Gu, 2010; Day et al., 2006). Coppe et al. (2024) suggested that adopting a whole-career perspective on teachers' professional development—in other words, situating teachers' professional development over time—can highlight differences and similarities between teachers in different stages of their careers.

Research-recommended teaching practices

While the idea that there is a set of recommended teachers' pedagogical practices having good research evidence underpinning them is acceptable, it is important to remain aware of the limitations of this perspective. These limitations include the debates surrounding

evidence-based education, as for example the difficulty of randomised controlled trials in real-world school settings, the fidelity of interventions and the validity of the conclusions when there are often differences between a study setting and the school setting (Biesta, 2010).

Nevertheless, several authors have set out to identify pedagogical practices that can maximise students' chances of learning. For example, Hattie (2009) brought together the results of over 800 meta-analyses dealing with factors influencing school performance. He examined various variables such as teaching methods and pedagogical strategies, as well as teacher and student characteristics. EEF (2021) offers toolkits based on existing evidence that 'present over 40 approaches to improving teaching and learning'. For the purposes of this study, we have chosen to rely on the summary provided in the report by Ko et al. (2014). In particular, we selected their summary because it offers a short list of practices that resemble preferred pedagogical practices in our own context (Barbier & Colognesi, 2023a). Based on exploration of the literature as well as evidence derived from the analysis of inspection reports, Ko et al. (2014) identified a set of beneficial practices that should be incorporated into (almost) every lesson in order to realise their benefits. For the current study, we adapted Ko et al.'s (2014, p. 7) list of practices, taking into account more recent or additional elements from the literature. A brief overview of these eight recommended practices is presented below.

1. Be clear about the learning objectives and explain to students what is expected of them and the usefulness of the learning. Indeed, the effectiveness of teaching practices is increased if the learning objectives are clear and become teachers' primary concern (Hattie, 2003; Ko et al., 2014; Van den Hurk et al., 2016).
2. Use existing instructional materials expertly. Teachers gain efficiency when they do not try to invent everything themselves (Ko et al., 2014). Available resources allow teachers to save preparation time and focus on the pedagogical aspects. In this regard, textbooks are a source of information that help teachers know the content, but also allow them to select elements adapted to their students or modify elements in order to make the content more readily accessible by their students (Coppe et al., 2018; Leroyer, 2013).
3. Know one's students and adapt interventions. Teacher behaviour in relation to student achievement and teacher support for students have been shown to be major determinants of student success at school (Maulana et al., 2017). Support means being able to adapt interventions according to the diversity of students' needs and reactions (Allal, 2020; Colognesi & Gouin, 2022; Hattie, 2003). However, this has been shown to be complex for teachers (Loughland & Alonzo, 2019), especially for beginning teachers, who are more focused on themselves as teachers. They are concerned with meeting the demands of the institution (Confait & Lee, 2015).
4. Provide regular feedback to students. Feedback has been identified as one of the most powerful levers for learning (Dietrichson et al., 2017; EEF, 2021; Hattie, 2003; Hattie & Timperley, 2007; Lipnevich & Panadero, 2021). Whether given individually or collectively, orally or in writing, feedback to students directs their learning, as well as encouraging them and highlighting their efforts (Colognesi et al., 2023).
5. Teach students metacognitive strategies and give them opportunities to master them. Metacognitive strategies assist students to have control of and regulate their knowledge, strategies and learning (Allix et al., 2023; EEF, 2021; Veenman, 2012). It has been shown that introducing metacognition time into lessons not only improves academic achievement (Berger & Büchel, 2013; Colognesi et al., 2020), but also has a positive effect on feelings of self-efficacy (Colognesi et al., 2019). Nevertheless, there is a need to help students develop their metacognitive strategies (Demorsy et al., 2023). Overall, however, it has been found that few teachers considered metacognition in their practices (Braund, 2019;

Depaepe et al., 2015), due to a variety of mistaken beliefs (for a synthesis, see Barbier & Colognesi, 2023b).

6. Incorporate peer and self-assessment. Peer and self-assessment improve academic performance compared to no assessment and teacher assessment (Double et al., 2020). Assessments serve learning, or in other words, assessments should be *for* learning (Earl, 2003). Ko et al. (2014) explained that assessment is effective when students are directly involved in assessing the status of their learning. Self-assessment, co-assessment or peer assessment (Allal, 2020) allow students to be involved in the assessment process.
7. Know the content of the curriculum and methods for teaching it. This practice includes several aspects (Ko et al., 2014). First, the teacher needs to know the curriculum in order to plan lessons over time. Second, the teacher must vary the pedagogical approaches used according to the disciplinary content. The important thing is to make students cognitively active (Tricot, 2017). Third, the teacher must think about creating interactions in the classroom. It has been shown that interludes of interaction and oral work improve the classroom climate and reduce behavioural problems (EEF, 2021).
8. Make connections between courses and disciplines. Ko et al. (2014) asserted that connections between courses and different disciplinary topics increase student learning. Dufour and Maingain (2016) argued that these connections give meaning to learning. First, connecting information from one lesson to another leads students to make connections between new concepts and those already assimilated. Second, by enabling students to see the coherence and relevance of different lessons, courses become more integrated, which facilitates overall understanding of the content. Third, making connections between disciplines helps students see the relevance and usefulness of skills in different contexts.

METHOD

To achieve our research objectives, an exploratory sequential mixed-methods design (Creswell & Plano Clark, 2011) was adopted. More precisely, we followed a QUAN → QUAL (equal-status sequential) design (Johnson & Christensen, 2017). In this design, the QUAN and QUAL phases occur sequentially. The procedures in the second phase depend on the previous phase. Thus, quantitative data were collected and analysed first. The aim was to obtain empirical evidence on the reported implementation of recommended practices across career stages. The associated research questions were as follows: How often do primary school teachers use teaching practices that are recognised as effective for student learning? Does this frequency vary according to career stage? The quantitative results were used to prepare for the qualitative part that followed, which was carried out to provide insights into the quantitative results (Creswell & Plano Clark, 2011; Johnson & Christensen, 2017). The research question associated with this qualitative part was: What are the reasons why teachers at different career stages use or do not use these practices?

To answer our research questions, we chose to look at teachers' self-reported practices. This gave us access to the representations, intentions, choices and decisions of individuals (Lefebvre et al., 2008).

Quantitative methods

Data collection and participants

An online questionnaire was distributed via social networks and with the help of the members of a collaborative group regrouping teacher trainers and researchers (GCEO; see

Wiertz et al., 2020). Teachers were invited to participate voluntarily and were informed that by participating they agreed that their answers would be processed anonymously for research purposes. A total of 300 people responded to the online questionnaire. All participants were elementary school teachers from French-speaking Belgium. These are 'general primary school teachers', who teach a wide range of curriculum subjects. They can teach pupils between 6 and 12 years old, as primary education covers 6 years. The group comprised 19.3% men, 79.7% women and 0.5% non-gendered. All regions of French-speaking Belgium were represented in the sample. Their average age was 36.

We divided them into three groups based on their years of experience, following the systematic literature review by Raduan and Na (2020) on the stages of a teacher's career, as described in our theoretical framework. There were 75 novice participants (25%) with 1–4 years of experience; 52 experienced participants (17%) with between 5 and 7 years of experience; and 172 senior participants (57%) with 8 or more years of experience.

This study conformed with internationally accepted ethical guidelines and the ethical code of the Belgian Science Policy Office.

Data analysis

To gain insight into teachers' self-reported teaching practices and how they may vary over the course of a career, we used a validated questionnaire developed in French by Fagnant and Burton (2009). The original scale presents 40 items measuring several teaching practices. From these, we selected the items and dimensions that we felt corresponded to the teaching practices promoted in the literature, as described in the theoretical framework. The selected practices are listed in Table 1, with examples of items. They come from Ko et al.'s (2014) synthesis of useful pedagogical practices for improving student learning.

The adapted survey was validated with members of the collaborative research to ensure the comprehensibility of the items, and the alignment of the items with the intended practice. The questionnaire has two parts. The first part presents questions collecting general and demographic information about the participants. The second part presents 29 items related to teaching practices. Multiple items refer to the same practice (three to five items per practice). Confirmatory factor analyses were conducted with Jamovi software (based on Lavaan R packages for factor analysis; Rosseel, 2012) to test that the data fit the eight dimensions of practice. CFI (comparative fit index), TLI (Tucker–Lewis index), SRMR (standardised root mean square residual) and RMSEA (root mean square error of approximation) were used to evaluate the fit. CFI and TLI ranging from 0.90 to 0.95 are considered acceptable to good; SRMR and RMSEA ranging from 0.08 to 0.06 are considered acceptable to good (Iacobucci, 2010). All indices showed an acceptable to good fit (CFI=0.92; TLI=0.90; SRMR=0.06; RMSEA=0.07). McDonald's omega was computed (Table 1) to check dimension reliability (Dunn et al., 2014). All McDonald's omegas were good except that for the evaluation process dimension ($\omega=0.61$), which can be considered satisfactory, in that reliability indices are sensitive to the number of items (Panayides, 2013) and this dimension was represented by only three items.

More specifically, the questionnaire was divided into eight parts, as presented in Table 1.

Analyses reported in the results section were conducted using SPSS software. Overall means were computed for each practice. A MANOVA (multiple analysis of variance) was conducted on these means, with career stage as the grouping variable ([1, 4]: novices; [4, 7]: experienced; [8, →]: senior) in order to compare the use of these practices across career stages. Tukey post-hoc tests provided between-group differences information.

TABLE 1 Dimensions addressed in the questionnaire.

Practices	Number of items and omega	Examples: Response modalities were 1 (never) to 5 (for every lesson)
Be clear about the learning objectives and explain to students what is expected of them and the usefulness of the learning.	3 items $\omega=0.93$	At the beginning of the learning sequence, you make sure to explain what is expected of the students.
Use existing instructional materials expertly.	3 items $\omega=0.89$	You rely on some existing resources to prepare your lesson sequences (books, manuals, websites, colleagues, etc.).
Know students and adapt interventions.	4 items $\omega=0.86$	You offer students tasks adapted to student's difficulties.
Provide regular feedback to students.	4 items $\omega=0.72$	When students have completed their work, you provide individual feedback on the status of their learning.
Teach students metacognitive strategies and give them opportunities to master them.	4 items $\omega=0.87$	You teach students to be aware of the effectiveness of a strategy and to modify it accordingly.
Incorporate peer and self-assessment.	3 items $\omega=0.61$	You give students the responsibility to correct or self-assess after a task.
Know the content of the curriculum and methods for teaching it.	5 items $\omega=0.90$	When preparing your lessons, you are sure to adjust your learning strategies according to the teaching objective.
Make connections between courses and disciplines.	3 items $\omega=0.81$	You explain to students the links between the various learning activities.

Qualitative methods

Data collection and participants

Three focus group discussions were conducted to interpret the quantitative data (Vaughn et al., 1996). The focus groups were chosen specifically to capture ideas that would have been more complicated to perceive in individual interviews. In order to get teachers to talk about their practices, it seemed to us that interaction was the ideal way of getting them to express their points of view (Kitzinger, 1994; Stewart et al., 2007) and quickly identify consensus and disagreement within each group (Baribeau & Germain, 2010).

Each focus group discussion included five steps. First, participants were informed of the steps involved, the anonymity of their response, the need to be sincere, the importance of not speaking at the same time in order to give everyone the opportunity to express themselves and the purpose of the discussion. At this point, each participant's agreement to record the discussion was confirmed. Second, teachers were given some time to write on a piece of paper 'three practices that work best for what purpose and that they use regularly' in order of frequency of use. Third, the discussion began with a quick round of personal and professional information. Fourth, they were given the opportunity to initiate the discussion by explaining what they rated in their top three. For each practice named by a participant, others were invited to respond to provide their opinions. Fifth, once all participants had expressed their opinions on the practices they wanted to talk about, follow-up questions were asked. These follow-ups were used to understand how frequently any practices we had listed (associated with the questionnaire) that had not yet been naturally addressed in the discussion were implemented. These prompts were phrased in a way that elicited strong reactions of agreement or disagreement.

Focus group participants were selected on the basis of their participation in the questionnaire and their stage of teaching experience. Three groups were created: novice, experienced and senior. All participants were volunteers. Each group was made up of four or five participants, following the recommendations of Kitzinger et al. (2004), who consider that a focus group should generally be made up of four to eight people. Table 2 provides details about these participants.

Data analysis

Each focus group discussion lasted approximately 45 min. All of the discussions were transcribed. This amounted to a total of 69 pages for the three focus groups (41,437 words; 220,066 characters). Content analysis was applied to the data collected (Miles & Huberman, 1994). Categories were designated a priori, as they were the recommended practices presented above (Ko et al., 2014). We worked in two stages. First, we coded where participants mentioned a particular practice, and how often they said they used it. This information was recorded in a summary table. For this purpose, we were able to determine for each practice how often it was used: regularly, partially or rarely, not at all. The information was explicitly mentioned by the teachers during discussions, given that each teacher began by sharing their ‘top three’ most useful practices, which they said they implemented on a daily basis. The others reacted quite naturally throughout the discussion, explaining how often they implemented each of the practices discussed. If a participant failed to react, the researcher would invite them to take a position. Since the objective was to record what teachers said they did and how often, the notion of importance was

TABLE 2 Details of focus group participants.

	Pseudonym	Gender	Age	Years of teaching	Teaching assignment	Additional diploma
Focus Group 1	Nicole	Female	<30	1	P3	—
	Naomi	Female	<30	3	P1–P2	—
	Nadia	Female	<30	3	P3	—
	Nelly	Female	<30	3	P3	—
	Nola	Female	<30	3	P3	Master's in educational sciences
Focus Group 2	Eve	Female	<30	5	P5	—
	Elodie	Female	<30	5	P3	—
	Emily	Female	<30	6	P5	Master's in educational sciences
	Ethan	Male	<30	6	P2	Master's in educational sciences
Focus Group 3	Stephanie	Female	30–40	10	P3	—
	Steve	Male	30–40	16	P6	—
	Sophie	Female	30–40	16	P5	—
	Sue	Female	30–40	18	P6	—

Note: P1: Primary 1 (6–7 years old), P2: Primary 2 (7–8 years old), etc. Teachers' pseudonyms refer to teaching career stage. First letter N indicates a novice teacher, first letter E indicates an experienced teacher, first letter S indicates a senior teacher.

not taken into account in this coding. So, for example, if a teacher found a practice very important, but said they did not implement it, the practice was coded as 'not implemented'. Second, we also coded the reasons teachers gave for using a practice (or not). This was done by two researchers, in discussion, to strengthen the reliability of the analysis (Strauss & Corbin, 1990).

Below, we present the quantitative and qualitative results in turn. These are then combined in a synthesis section that shows the links between the two parts of the study.

FINDINGS

Quantitative results

The results of the MANOVA and Tukey post-hoc tests showed significant differences between the career stages for six of the eight teaching practices. The results and differences between the three career stages are illustrated in Figure 1, for each type of practice. Complete results of the MANOVA and post-hoc tests can be found in Appendix A.

Overall, the use of some practices differed significantly between career stages. We can see a trend for teachers to say they use the investigated practices more often later on in their career, with a strong tendency for novice teachers to use the practices less often than more experienced teachers.

More specifically, using instructional material expertly and making links between lessons were the practices that teachers said they used most often, without significant differences between the career stages. Other than for these two practices, senior teachers rated the frequency of their use of the investigated practices higher than did novice teachers, experienced teachers or both. Knowing the curriculum and varying teaching methods was used less often by novice teachers compared to both experienced and senior teachers (novice vs. experienced/senior: $p < 0.001$). Adaptive teaching and giving clear lesson objectives both showed a statistically significant difference between senior teachers and

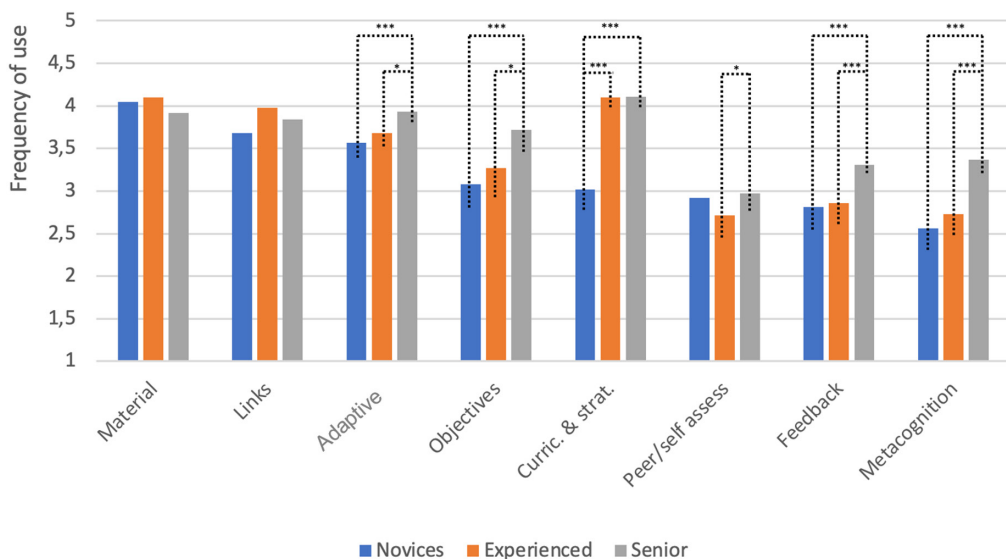


FIGURE 1 Results of the post-hoc tests for the MANOVA ($N = 300$). * $p < 0.05$, *** $p < 0.001$; 1 = never, 2 = rarely, 3 = for certain lessons, 4 = for most lessons, 5 = for every lesson; n novices = 75, n experienced = 52, n senior = 172.

the earlier career stages (novice vs. senior: $p < 0.001$; experienced vs. senior: $p < 0.05$). Giving feedback and metacognition presented the same pattern, with significant differences between senior teachers and those in the earlier career stages (novice/experienced vs. senior: $p < 0.001$). Peer and self-assessment showed a significant difference only between experienced and senior teachers ($p < 0.05$). These last three practices (peer and self-assessment, feedback and metacognition) were teaching practices that teachers said they used less.

Qualitative results

Table 3 provides a summary of the results of the analysis performed. The practices are presented in the order of frequency of implementation found in the quantitative part. The colour used refers to the frequency of implementation of each practice. Dark grey means the teacher reported implementing the practice regularly. Light grey means the teacher reported implementing the practice partially or rarely. White means the teacher reported that they do not implement the practice. Details are given in the next section, with exemplary quotes, translated from French, to illustrate the point. This helps with further understanding of the quantitative results, which are revisited for each of the practices. As a reminder, Focus Group 1 included only novice teachers, Focus Group 2 only experienced teachers and Focus Group 3 senior teachers.

Synthesis of quantitative and qualitative results

The results of the two parts of our study, quantitative and qualitative, are combined here. We present the links between the two, practice by practice, listed by frequency of use, illustrating the justifications given by the teachers in their focus groups with verbatim quotations. Appendix B provides a summary of these results.

Use existing instructional materials expertly

As was the case for the majority of the participants responding to the questionnaire, the 13 teachers in the focus groups said that they regularly used existing materials and resources in their teaching. Time savings were mentioned as the main reason for this.

I think it's a time saver, there are lots of great things in books, on the internet. You might as well use them instead of recreating everything yourself each time.

(Ethan)

Eleven out of 13 mentioned that using materials such as textbooks allows them to plan lesson sequences based on the progression planned by the textbook authors. They felt that this makes it possible not to omit any learning content. They said that they feel reassured by doing this.

We have a list of topics and we have an idea of topics that are in the right order. Because there are things that can't be seen after...

(Emily)

TABLE 3 Summary of the qualitative results.

Practices	Focus Group 1 (novice teachers)					Focus Group 2 (experienced teachers)				Focus Group 3 (senior teachers)			
	Nicole	Naomi	Nadia	Nelly	Nola	Eve	Elodie	Emily	Ethan	Stephanie	Steve	Sophie	Sue
Material													
Links													
Adaptiveness													
Objectives													
Curriculum strategy													
Peer/self-assessment													
Feedback													
Metacognition													

Note: The darker the colour, the more frequent the reported use.

Nevertheless, senior teachers suggested two nuances in using existing resources. The first was that they need to take the time to take possession of them, and even try them out several times. The second was that they felt it is sometimes necessary to adapt their materials or create them themselves based on their experience, what they know about the students and the subject being taught.

It saves time, yes, as long as you can make it your own.

(Stephanie)

For example, if I were to repeat an exercise from last year, I wouldn't be able to repeat it as is, because the group is not the same. So, I'm going to have to rework it anyway, depending on the group that is in front of me this year.

(Sophie)

Make connections between courses and disciplines

All of the participants mentioned that for them, it is important to make connections between lessons and between learning. This was consistent with the questionnaire results. First, the participants stated that they systematically revisit previous activities, asking the students to recall where they had already seen the topic (in a previous lesson/subject/year, for example). In particular, they all said that when students completed exercises, they made links with the times when the topics/skills had been worked on.

I think we actually do it without realising it, necessarily at the beginning of the lesson, or later in the learning process. But there's always a point where we're going to explain the connections...

(Nadia)

When you propose exercises to get them used to it and to make the links a little bit, you won't especially come with an explanation like this one, asking where we have already seen these things, when and how.

(Eve)

Second, all the participants also noted that it is important for them to work by theme or by project in order to encourage direct links between the topics/disciplines and thus make the students want to engage in the task.

It's the 'desire to come to school' and to do projects, things that link everything together, that finally, like a vegetable garden project, make them want to do it.

(Stephanie)

Third, for the participants, it also seemed important to create links with the real, everyday life of the students.

I link it to everyday life: in math when we work on units of measurement, when you talk to them about kW or other units, they don't realise. Then, you ask them to look at their house, to go and see the electric meter, to turn on all the lights in the house and see how fast it turns and then to turn off everything and see that it slows down. It speaks to them, we talk about it the next day at school.

(Steve)

Knowing students and adapting interventions

The quantitative results showed a significant difference between novice/experienced and senior teachers. In the focus group discussions, the novice and experienced teachers said that in order to adapt, they modify the type or quantity of exercises or have the material available or not for some students.

I ask, who hasn't finished? I pass through them and maybe cross out two exercises.

(Nadia)

I allow some people to take the material or draw on a draft sheet if they need to.

(Ethan)

They said that they know it is important to do this so that students can move at their own pace. They also said that they do not do it as regularly as they would like. They justified this because of 'Lack of time' (Emily) or because there are 'Too many students!' (Eve).

On the other hand, the five senior teachers explicitly spoke of 'differentiation'. For them, it means intervening at any time according to what they observe in their students and it also means developing individual work plans according to the students' profiles. For them, this is something they said they do very regularly.

I can tell you that it's a little bit everywhere, at all times, as often as possible. In the exercises that will be differentiated, in the amount of work given, in the time, in the entry into a topic. There I think about the profile of the students and to give different instructions, different help so that each child can find himself and succeed in the task.

(Sue)

I also do the individual work plan. So, they can choose... It's common to all the students a little bit, but they can progress as they want in the work of the day.

(Sophie)

They explained that they are already thinking about students' difficulties when planning lessons, based on what they have already experienced when teaching this or that topic. They prepare help for the students in advance, planning for different approaches. And they pointed out that this was learned and has come with time. They mentioned that it was not so easy at the beginning of their career and that they acquired these skills over time.

It's really over time as the years go by, in this area you will bring a little touch of differentiation, then another.

(Steve)

Be clear about the learning objectives and explain to students what is expected of them and the usefulness of the learning

As with the previous practice, the results of the questionnaires revealed differences between the novice/experienced and senior groups, which emerged in the focus group discussions

as well. Indeed, in the novice focus group, four out of five said that they never state the objectives and the meaning of the learning to the students. They justified this by saying that they are not convinced of the usefulness of doing this, or because they think that the students will find it out on their own.

Never do, and I know it's super important to do it.

(Nicole)

I feel like it doesn't change anything.

(Nola)

One novice and the four experienced teachers mentioned that they think about doing it, but not in a systematic way. They explained that it depends on the type of learning. They think about doing it for learning for which the meaning is not obvious to the students.

I don't think I do it often. It's true that sometimes when I do it, so they know what I expect of them or what they need to pay attention to. I think it's interesting. In class, I don't do it that often.

(Ethan)

On the other hand, the four senior teachers mentioned that for them, it is necessary to tell the students the objectives systematically so that students commit themselves to the assigned tasks and visualise the expected outcomes.

I always try to explain what it's for. Because if you don't know what it's for and when it's going to be used, you don't engage.

(Stephanie)

Know the content of the curriculum and methods for teaching it

Echoing the results of the questionnaires, the more seasoned participants in Focus Groups 2 and 3 said that they varied their teaching approaches more regularly and easily. For the five novices, it seemed complex to use approaches such as small group work, explicit teaching or discovery learning. They preferred more frontal approaches and question-and-answer modes, because they feel more secure with those.

I find that nothing works better than... often explaining to them, 'tac tac tac', it's done like that.

(Nadia)

I do a lot of frontal work, but I know that it doesn't have to last for hours.

(Nola)

Thus, they avoided group work, explaining this by the noise and difficulty of class management that it represents. One of the novices did say that she has innovated by setting up workshops where the students can work independently. However, she spoke directly of the stress this causes her in terms of group management and learning management.

This year, I put in workshops/autonomy centres. So, in fact, we have six workshops in the class with a theme, a subject. For example, we have writing, reading,

and so on. [...] It is me who imposes the workshop where they must go. [...] But at this level, we are not yet optimal. They are noisy and some do not work at all.
(Nelly)

And while all participants considered oral questions to be important to promote student attention and check on learning, for experienced and senior teachers, creating interactions seemed essential. In particular, this creates a cooperative classroom climate.

It's important to interact. To keep their attention, that they are active, that they can re-verbalise something, that they can research what they have seen before, to see if they have followed well. It's pretty much all day long.
(Ethan)

It's a bit related to the classroom atmosphere, it's cooperative work and encouraging these moments of exchange.
(Eve)

It's clear that you have to question them all. But, in general, I'll always go after the ones who are more in trouble.
(Steve)

Discovery and explicit teaching approaches were more often implemented by experienced and senior participants. They explained that it is necessary to feel comfortable with these approaches, to be convinced of them and to be able to respond to what the students will say and do.

There is often a challenge that you launch and then you put them in search of the solution to the challenge.
(Steve)

And while the five novices tried to provide time for students to work independently, they said that they feel it is important to control what students do during this time. This no longer seemed to be the case for the other teachers, who said they trust their students. They stated that they provide support on a case-by-case basis.

I feel that I'm not being supervised, that I'm being left alone. As a result, things quickly get out of hand and it's true that as a teacher, I think we have to be aware of this.
(Naomi)

You know which students you should keep an eye on and which ones you can leave alone, while giving them a little look from time to time, too.
(Steve)

Incorporate peer and self-assessment

Participants all said that they did little or no involvement of students in the assessment process. This corresponds to the results of the questionnaire. They said that it is complicated to

do so because of the number of students, but also because they do not always know how to get the student to participate in their own assessment.

Doing it with 24 students is too complicated.

(Naomi)

However, eight teachers (from all three groups) said that they sometimes ask students to correct each other or to correct their own work. Some said that they did this mainly to make their lives easier, to reduce the time spent on correcting. Others saw a benefit for the students. But these eight participants specified that it is not a habit.

By making them correct themselves, they really realise that there are things that are not right.

(Eve)

Sometimes, for certain tests, rather than me correcting them, they correct their sheet and we explain, etc. I find that sometimes super rich. Or they correct someone else's paper, in which case they are often even more attentive than when it's their own.

(Sophie)

Regarding self-correction, some participants mentioned that they do not do it much because they feel that some students do not know how to do it correctly and that they miss their mistakes.

There are always students who will do it seriously, who will correct themselves by following the steps as you asked. And others, who will put themselves right when they have got it wrong, who will go and put the answer when they have not looked for it, etc.

(Steve)

Provide regular feedback to students

Overall, both novices and experienced teachers expressed discomfort with giving feedback to their students. This can also be seen in the results of the questionnaires, where these two groups of teachers responded in the same way, unlike the senior teachers. They reported that they rarely give feedback, or when they do, it is general feedback given to the whole class, not personalised feedback.

What I did was that we reviewed the question and then I corrected them by saying 'Be careful, you confused it with... And, be careful'. And that, I found that interesting, but, to do that every time, I find that it is complicated...

(Nola)

They justified this with three main arguments. First, they said that if they start giving feedback to some students, it takes time, and they also risk losing control of the group.

If you want to really do something individualised, and personalised, like, you know, 'Here, look what you didn't do', it's not manageable with 20 students.

(Nicole)

If I give feedback to some people, other students must wait, because they always get everything right... It stresses me out knowing that they're waiting.
(Naomi)

Second, for them, feedback is given at the request of the students. And they said that few students ask for it.

It is always the same students who come to ask for feedback.
(Nelly)

Third, they said that giving oral feedback is time-consuming and that written feedback is not necessarily understandable because of the age of the students, or they feel that students do not read the feedback.

I try to put comments in the evaluations, telling myself that they will see it, but I'm not even sure they read it.
(Nola)

Other than the assessments that come home from time to time, on the worksheets, I actually feel like it's useless because they don't look at them.
(Ethan)

On the other hand, senior teachers said that they use feedback very regularly, either orally or in writing, because they see it as beneficial to student learning. They also said that over time, they have found ways to do this effectively while being comfortable with group management.

Go through a very quick feedback when they are doing exercises. This can be done by allowing questions when they are working, being available, making quick corrections... That's it, not waiting a long time after the instruction because the feedback is less effective.
(Sophie)

Personally, I give direct feedback if I see that the student is the only one or that there are only two in the class who make that mistake, if you start to see in... five or six students that the mistake is coming back, you're going to give feedback, obviously...
(Sue)

Teaching students metacognitive strategies and giving them opportunities to master them

As the quantitative results showed, metacognitive strategy instruction was not implemented with the same frequency by our participants in the three groups. In the focus group discussions, novices reported that they do not implement it, or do so very rarely. The experienced teachers rarely do it and only two senior teachers said they do it occasionally. This infrequent use or non-use was explained by the participants as due to three reasons: lack of time, lack of knowledge about how to implement this practice, or because they feel the students are too young for it. Therefore, they do not think that this practice is useful for them.

I am preoccupied with the lesson, with all the things I have to say, to ask. I don't think about asking students to express what they feel, what they do. Even though it's something I saw in my initial teacher training.

(Naomi)

For sure, metacognition could be interesting. But I have 7-year-old students, they don't know how to respond to that kind of thing.

(Ethan)

Sometimes, for math, I ask to share the students' strategies. But for other subjects it's something I don't do.

(Emily)

It's clear that it's something we don't do enough of... For lack of time, yes.

(Steve)

DISCUSSION AND CONCLUSION

The findings of this study provide valuable insights into the recommended teaching practices that teachers report adopting at different career stages. Indeed, it is clear from our mixed-methods study that teachers reported not systematically implementing all of the investigated recommended practices (Ko et al., 2014). In fact, while some practices were implemented on a regular basis, other practices were either implemented with greater experience or remained complex to implement for all teachers, regardless of their career stage.

The quantitative results revealed significant differences in the reported use of various teaching practices among novice, experienced and senior teachers. The MANOVA and Tukey post-hoc tests demonstrated significant differences in six out of the eight teaching practices examined across career stages. Notably, a trend emerged where teachers tended to use the investigated practices more frequently as they progressed in their careers. In particular, senior teachers appeared to employ these practices more frequently compared to novice and experienced teachers. Among the identified practices, using instructional materials expertly and making connections between courses and disciplines stand out as practices consistently mentioned as used across all career stages. In contrast, adaptive teaching, giving clear learning objectives, knowing the curriculum and employing varying teaching strategies were more pronounced in senior teachers. Evaluation processes, providing feedback and teaching metacognitive strategies appeared to be less frequently employed across all career stages.

The qualitative analysis sheds light on the reasons behind the quantitative findings, providing a more nuanced understanding of the teaching practices. The qualitative data emphasised the importance of using existing instructional materials, with senior teachers recognising the need to adapt them based on student needs. Making connections between subjects and lessons was highlighted as a strategy to enhance student engagement and real-world relevance. Additionally, the qualitative results underscore the significance of knowing students and adapting interventions to their pace and needs, a practice that senior teachers excel at through differentiation.

The qualitative data also revealed divergent practices in terms of clarifying learning objectives. While senior teachers reported giving priority to explicitly stating learning goals to enhance student commitment, novice and experienced teachers tended to neglect this practice, often assuming students will understand the objectives independently.

The discussion of teaching strategies emphasised the progression from the frontal teaching approaches preferred by novice teachers to the more interactive and cooperative methods favoured by experienced and senior teachers. The latter groups acknowledged the value of interactions, differentiation and varying teaching approaches based on individual and group dynamics.

Regarding feedback and metacognitive strategies, the qualitative data supports the quantitative findings of their underutilisation. Novice and experienced teachers identified challenges in providing personalised feedback due to time constraints, classroom management concerns and students' limited interest in feedback. Senior teachers, on the other hand, said that they find ways to integrate regular feedback effectively, recognising its positive impact on student learning. Use of metacognitive strategies appeared less prominently across the career stages, often due to teachers' perceptions of student readiness and their own time limitations.

In terms of practices that develop over the career stages, it appears that over the course of a career, practices—or the rationale for using them—change according to the concerns of the teachers, as Wheeler (1992) mentioned. Indeed, novice teachers said they were focused on their comfort and seemed to implement only those practices that reassured them, allowing them not to lose or indeed to save time, or that did not complicate classroom management. For example, they reported using textbooks because these offer secure planning for them, so they are sure not to forget anything, as has already been shown elsewhere concerning teachers' use of existing materials (Coppe et al., 2018; Leroyer, 2013). Novices also reported a preference for frontal teaching or planned additional exercises for faster students, or fewer for slower ones to facilitate classroom management. This refers to the fact that even when the beginners mentioned adapting their teaching, they did not do so with a view to differentiating for students, but rather to make it more comfortable for themselves. These aspects also refer to the period of induction when novice teachers are looking for reference points for themselves, to make themselves into professionals (Mukamurera, 2014; Perez-Roux, 2012). Thus, in this period of surviving the shock of professional reality (Voss & Kunter, 2019), adopting student-oriented practices remains complex for them (Loughland & Alonzo, 2019). At the opposite end of the spectrum, more experienced teachers use these practices for the benefit of students' learning and their individual needs (Mukamurera, 2014). They also perceive more meaning in doing so (Raduan & Na, 2020).

Regarding the practices least often reported as implemented by teachers—metacognition, feedback and student involvement in the assessment process—common factors seem to emerge from the justifications practitioners gave for not implementing these. First, they seemed to say that they do not necessarily believe in these practices. They believe that they are not accessible to all students and also believe that it is not useful to implement them. This echoes studies that have shown that teachers' beliefs determine their instructional choices (Braund, 2019; Hanin et al., 2022; Safrudiannur & Rott, 2021; Voss & Kunter, 2019). Second, they stated that they are not sufficiently trained to implement them and are not sure how to do so. An associated hypothesis, which could explain the lack of implementation of these three practices—even though they are recognised as effective in the literature—is that the teachers did not benefit from them themselves when they were students. We know that teachers rely mostly on their practical experiences and their personal history to guide their professional actions (Altet et al., 2013).

Limitations and suggestions for future research

This study is not without its limitations. The first is that the data were collected from self-reported practices. Thus, we cannot verify if what was reported was actually happening in

classrooms. Second, participant teachers were selected by their completion of an online form. This means that they were self-selected into the survey, which may result in some kind of self-selection bias. This may over-represent or under-represent the results of certain practices and for certain teacher profiles. Third, the fact of having selected a set of practices, following the synthesis by Ko et al. (2014), may have obscured the use of certain other practices. For example, classroom management is included in the dimension related to curriculum knowledge and teaching strategies. It could be argued that this is an important practice that could be considered by itself or in relation to providing a good learning environment for students (Kyriakides et al., 2013). Fourth, less frequent use of some practices by our participants, especially in the case of novices, was often related to the perceived lack of training. Initial teacher training programmes have several differences across national contexts (Bauer & Prenzel, 2012). Thus, our results may differ in other national contexts. Fifth, the dynamics within focus groups present a risk of group-think, where the pursuit of consensus may lead some participants to suppress their alternative viewpoints. This can reduce the variation in participant responses (Touré, 2010). To mitigate this, we followed recommendations—such as the fact that people did not know each other, or having several groups instead of one (Kitzinger et al., 2004). Additionally, we established rules for speaking within the group. This included clarifying the purpose of the focus group to participants and, when necessary, the moderator intervened to guarantee that every participant had the opportunity to share their views (Luke & Goodrich, 2019). Despite these precautions, it would be interesting to conduct individual interviews afterwards to obtain a personal point of view (Hopkins, 2007).

Practical implications

This research allowed us to highlight some practices that are least often implemented by teachers. In relation to this, it would be misleading, in our opinion, to propose increasing the amount of pre-service work on all practices. Our results showed that once teachers are no longer in the novice stage, the use of certain practices develops. This probably means that they integrated these practices during their training and put them aside while getting their bearings in their first years of work (Perez-Roux, 2012); these practices emerge later when concerns related to self, comfort and the like have passed.

On the other hand, it seems necessary to focus on practices that are not well implemented, whatever the career stage. Indeed, it seems that this is where training should be reinforced: on aspects related to metacognition, feedback and student involvement in the assessment process. There is a double challenge here. On the one hand, theoretical and practical input should be provided to teachers, both in pre-service and in-service training, since they say they lack it. On the other hand, teachers' beliefs need to be adapted. It has been shown that teachers entering training believe that their most important task is to transmit knowledge (Vosniadou et al., 2021). It is therefore a matter of getting (future) professionals to believe in these practices and in the possibility of integrating them into their classrooms, but also to believe that these practices have positive effects on student learning, as shown in the research.

Conclusion

In conclusion, this study illuminates the varying teaching practices adopted by teachers at different career stages. The findings underscore the shift towards more sophisticated and student-centred approaches as teachers gain experience. Senior teachers demonstrate a deeper understanding of adapting teaching methods to diverse student needs, establishing

clear learning objectives and providing regular feedback. Ultimately, this research contributes to the ongoing dialogue on enhancing teaching quality across the trajectory of teachers' careers. Indeed, certain practices remained little used by teachers, regardless of their stage of professional development: metacognition, feedback and student involvement in the assessment process. This is therefore a challenge for pre-service and in-service training to address.

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CONFLICT OF INTEREST STATEMENT

There is no conflict of interest to declare.

DATA AVAILABILITY STATEMENT

Research data are not shared.

ETHICS STATEMENT

We complied with all ethical conditions and obtained the agreement of the participants.

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APPENDIX A

Results of the MANOVA (<i>N</i> = 255)				
Practices	<i>F</i>	df	<i>p</i>	
Material	3.59	2	0.029	
Links	2.86	2	0.059	
Adaptive	8.97	2	<0.001	
Objectives	11.33	2	<0.001	
Curriculum	47.88	2	<0.001	
Evaluation process	3.00	2	0.051	
Feedback	15.31	2	<0.001	
Metacognition	25.53	2	<0.001	
Results of the post-hoc test (<i>N</i> = 255)				
Recommended practices	Career stages	1	2	3
Material	1	—	0.94	0.11
	2		—	0.06
	3			—
Links	1	—	0.05	0.27
	2		—	0.41
	3			—
Adaptive	1	—	0.06	<0.001
	2		—	0.04
	3			—
Objectives	1	—	0.59	<0.001
	2		—	0.2
	3			—
Curriculum	1	—	<0.001	<0.001
	2		—	0.99
	3			—

APPENDIX A (Continued)

Results of the post-hoc test (N=255)				
Recommended practices	Career stages	1	2	3
Evaluation process	1	—	0.211	0.82
	2		—	0.04
	3			—
Feedback	1	—	0.95	<0.001
	2		—	<0.001
	3			—
Metacognition	1	—	0.56	<0.001
	2		—	<0.001
	3			—

APPENDIX B

Practice	Quantitative results	Qualitative results	Example quote
Use existing instructional materials expertly.	Teachers say they regularly use existing materials and resources in their teaching.	The use of materials such as textbooks enables us to plan lesson sequences based on the progression envisaged by the textbook authors. It saves time, but for senior teachers, the key is to make the materials their own.	<i>We have a list of topics and we have an idea of topics that are in the right order. Because there are things that can't be seen after... (Emily)</i> <i>It saves time, yes, as long as you can make it your own. (Stephanie)</i>
Make connections between courses and disciplines.	It was important for teachers to make links often between courses and between learning.	Reminders of what has been seen previously help to make links between courses. Thematic and project work helps to make links between disciplines and to give them meaning, as well as making links between learning topics and everyday life.	<i>I think we actually do it without realising it, necessarily at the beginning of the lesson, or later in the learning process. But there's always a point where we're going to explain the connections... (Nadia)</i>
Know students and adapt interventions.	Significant difference between novice/ experienced and senior teachers.	To adapt, teachers modify the type or quantity of exercises, or the availability or non-availability of materials for certain students. Only senior teachers think about students' difficulties when planning their lessons, based on what they have already experienced. They prepare help for students in advance. In the classroom, they can intervene at any time, depending on what they observe in their students and their profile.	<i>I ask, who hasn't finished? I pass through them and maybe cross out two exercises. (Nadia)</i> <i>It's really over time as the years go by, in this area you will bring a little touch of differentiation, then another. (Steve)</i>

(Continues)

APPENDIX B (Continued)

Practice	Quantitative results	Qualitative results	Example quote
Be clear about the learning objectives and explain to students what is expected of them and the usefulness of the learning.	Significant difference between novice/ experienced and senior teachers	Novices and experienced teachers do not state the objectives and meaning of learning to students at all, or not very often. Some are not convinced of their usefulness. Others know it is important but do not do it. They figure the students will discover them on their own. For senior teachers, it is necessary to systematically explain objectives to students so that they commit to the tasks assigned and visualise the expected results.	<i>Never do, and I know it's super important to do it.</i> (Nicole) <i>I always try to explain what it's for. Because if you don't know what it's for and when it's going to be used, you don't engage.</i> (Stephanie)
Know the content of the curriculum and methods for teaching it.	Experienced and senior teachers vary their teaching approaches more regularly and more easily.	For novices, using approaches such as small-group work, explicit teaching or discovery learning is complex. They prefer more frontal approaches and question-and-answer moments, because they feel safer with these and it makes classroom management easier for them. Experienced and senior teachers insist on the importance of interaction, as it helps create a climate of cooperation in the classroom.	<i>I do a lot of frontal work, but I know that it doesn't have to last for hours.</i> (Nola) <i>It's a bit related to the classroom atmosphere, it's cooperative work and encouraging these moments of exchange.</i> (Eve)
Incorporate peer and self-assessment.	Peer and self-assessment presented a significant difference only between experienced and senior teachers. It is not often used.	Teachers do not know how to involve students in their own assessment. They also think that peer or self-assessment is complicated to set up because of the number of students involved. Very rarely, they ask students to correct each other or themselves, so as to reduce the time spent on correction and to help students detect their own mistakes.	<i>Doing it with 24 students is too complicated.</i> (Naomi) <i>By making them correct themselves, they really realise that there are things that are not right.</i> (Eve)

APPENDIX B (Continued)

Practice	Quantitative results	Qualitative results	Example quote
Provide regular feedback to students.	Novice and experienced teachers rarely gave feedback, unlike experienced teachers.	The justifications are that it takes time, especially for oral feedback; they risk losing control of the group, few students ask for feedback and written feedback is not necessarily understandable because of the age of the students or their interest. Senior teachers stated that they used feedback very regularly, either orally or in writing, because they considered it beneficial to student learning	<i>If you want to really do something individualised, and personalised, like, you know, 'Here, look what you didn't do', it's not manageable with 20 students. (Nicole)</i> <i>Go through a very quick feedback when they are doing exercises. This can be done by allowing questions when they are working, being available, making quick corrections... That's it, not waiting a long time after the instruction because the feedback is less effective. (Sophie)</i>
Teach students metacognitive strategies and give them opportunities to master them.	Metacognition presented a significant difference only between experienced and senior teachers. It is not often used.	Regardless of career stage, metacognition is not called upon by teachers, or only very occasionally. The reasons given were: lack of time, lack of knowledge about how to implement this practice, or the fact that they felt the pupils were too young for it.	<i>I am preoccupied with the lesson, with all the things I have to say, to ask. I don't think about asking students to express what they feel, what they do. Even though it's something I saw in my initial teacher training. (Naomi)</i> <i>It's clear that it's something we don't do enough of... For lack of time, yes. (Steve)</i>