

Conducting Design-Based Research on Metacognitive Strategy Instruction in L2 Listening: Teachers' Perspectives

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Abstract

This article presents the perspectives of teachers who participated in a Design-Based Research (DBR) project aimed at implementing metacognitive strategy instruction (MSI) in L2 listening in English and Dutch. This case study was carried out in French-speaking Belgium. Four focus group interviews involving 16 lower secondary L2 teachers were conducted to investigate their perceptions of the DBR project and of MSI as its product. The findings reveal that teachers appreciated the autonomy DBR afforded them, as it allowed them to customize MSI to fit their classroom ecologies. However, they also expressed a need for clearer objectives and structured support, particularly during the initial stages of the project. Additionally, the teachers perceived the integration of MSI as feasible and beneficial to their students. Nonetheless, concerns about the time-consuming nature of MSI and its incorporation into existing materials were noted as significant challenges. By tapping into teachers' insights, the study gauges the possibilities of DBR as a collaborative approach to bridge the research-practice gap in Applied Second Language Acquisition (ASLA).

Keywords: design-based research; metacognitive strategy instruction; metacognition; L2 listening; applied second language acquisition; research-practice gap; ecological approaches

1. Introduction

As in many fields, including the field of L2 learning and teaching, bridging the theory-practice gap—i.e., the disconnect between research findings

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and classroom application—has been a longstanding challenge (Sato and Loewen 2022). Ideally, one expects research to smoothly translate into applications, leading to the promotion of teaching practices based on its findings (Nassaji 2012). However, there appears to be a consensus within the research community that findings from studies do not easily trickle down to practitioners (Marsden and Kasprowicz 2017; Sato and Loewen 2022), even though teachers seem to be willing to engage in a dialogue with researchers (Sato and Loewen 2019).

Several initiatives aim to facilitate the transfer of research findings into practice by involving teachers in research (Darling-Hammond, Hyler, and Gardner 2017). These include, among others, the introduction of research into initial teacher training (Borg 2010; Colognesi and März 2022), collaborative endeavors with in-service teachers such as Action Research (Burns 2009), or as proposed in this study, Design-Based Research (DBR) (The DBR Collective 2003).

We have chosen to focus on DBR here over other approaches because it allows for both the development of practices that are applicable and tested in authentic contexts and the generation of theory that is contextually informed (Wang and Hannafin 2005). DBR offers an iterative process which addresses ‘real-world’ challenges (Barab and Squire 2004) in ecological ways that consider process, person, context, and time (Vélez-Agosto et al. 2017). This ecological validity is particularly relevant to us as we are interested in Applied Second Language Acquisition (ASLA), which Han (2016) refers to as ‘L2 learning and instruction situated in circumstances with their own set of contingencies and investigated accordingly’ (739). Han positions ASLA as a third and complementary area of inquiry within a broader SLA landscape that already includes Fundamental SLA (FSLA) and Instructed SLA (ISLA). FSLA pursues core questions about how additional languages are acquired, with little concern for immediate pedagogical implications, whereas ISLA experimentally investigates instructional interventions and learning conditions. ASLA extends this continuum: it brings real-life educational concerns “front and center” (739) and situates L2 learning and teaching within authentic contexts shaped by teacher practices, learner participation, curricular constraints, and institutional demands. Rather than calling for a reset of the field, ASLA builds on and extends the knowledge generated through FSLA and ISLA, and therefore contributes to a more comprehensive and contextually grounded understanding of

SLA as a whole. Although the term ASLA is not yet widely used in the field, we argue that DBR provides a concrete and viable means of operationalizing it (Decorte et al., 2025), which this study illustrates.

Initially developed in the 1990s by Collins (1992), further explored by Brown (1992) and later van den Akker (1999), DBR gained recognition through the works of Barab and Squire (2004), Cobb et al. (2003), and Collins, Joseph, and Bielaczyc (2004). This methodology aims to solve ‘problems and issues of everyday practice’ (The Design-Based Research Collective 2003: 5) that pertain to learning and teaching, such as for instance, learner engagement and the integration of technologies in the classroom (Anderson and Shattuck 2012). Despite its affordances, DBR has predominantly been applied as a methodology in Science, Technology, Engineering and Mathematics (STEM) fields. Within L2 contexts, its use has been largely confined to studies on CALL (see, e.g., Reeves and McKenney 2013; Rodríguez and Ballester 2013; Yutdhana 2005).

Given the urgent need to strengthen the research-pedagogy dialogue, we argue that more L2 research employing DBR is necessary. The continued advocacy for DBR (Getenet 2019; McKenney and Reeves 2021) supports its potential in ensuring that teaching practices are not only informed by research but also that research remains connected to real-world classroom experiences. This is particularly relevant to L2 teaching, as Sato and Loewen (2022) argue that bridging the gap between researchers and practitioners requires a bidirectional, effective, and mutually beneficial collaboration. In this context, they identify DBR as a promising methodology for fostering such dialogue. With this shared agency between teachers and researchers in mind, exploring how L2 teachers perceive DBR and its by-product ensures that the methodology remains ecologically valid and responsive to the realities of L2 teaching.

This study specifically seeks to explore how DBR can straddle the divide between research on metacognitive strategies and the L2 teachers who are supposed to teach them in the context of French-speaking Belgium (Fédération Wallonie-Bruxelles; FW-B). The intervention focused on the introduction of Metacognitive Strategy Instruction (MSI) to improve lower-secondary school L2 learners’ listening skills. While the efficacy of MSI in L2 listening has been well-documented, this pedagogical practice remains challenging to integrate for teachers (Barbier and Colognesi 2023; Spruce and Bol 2015; Veenman, Van Hout-Wolters, and Afflerbach 2006; Wilson and Bai 2010), just as it is not always easy

for students to respond effectively to the metacognitive prompts they are given (Demorsy, Hanin, and Colognesi 2023). Decorte et al.'s (2024) study seems to indicate that this also holds true for L2 teachers in the FW-B. Our aim here is thus twofold: firstly, we analyze L2 teachers' perceptions of the DBR project, and secondly, we examine their views of MSI for L2 listening as the by-product of the DBR project.

2. Theoretical background

This section overviews the multifaceted methodology of DBR by detailing its foundational characteristics and practical steps. We begin by defining DBR as a collaborative methodology, anchored in teachers' reality, that aims to translate research into research-informed practice. We continue by presenting a model of DBR proposed by Reeves (2006) and Plomp (2013). Next, we address L2 studies that have employed a DBR methodology. Lastly, we introduce the object of our DBR project, viz. MSI, and detail how it can contribute to the development of listening skills in L2 learning and teaching.

2.1 Design-Based Research (DBR)

Design-Based Research (DBR) is a research methodology that involves collaboration between teachers and researchers to design and refine context-specific interventions that eventually generate new theory (Anderson and Shattuck 2012). As such, DBR has three core principles: firstly, it addresses real-world educational challenges that require an intervention; secondly, it highlights the importance of collaboration; and thirdly, it adopts an iterative approach.

A key model for the structure of a DBR methodology is that of Reeves (2006), designed in the context of technology integration in education. The first step is *analysis of practical problems by researchers and practitioners in collaboration*, which consists of an initial dialogue where the researchers ask the teachers to isolate one or multiple educational challenges they wish to address. As Juuti et al. (2016: 38) explain, 'the situation where a researcher or a teacher does not know how to act is the starting point of the DBR process'. However, this discussion typically determines the course of action, and the teachers' role is therefore central. The researchers' role consists in understanding the teachers' ecology and help them pinpoint an aspect that they deem problematic or could be improved. To help teachers play an active role in DBR, Bungum and

Sanne (2021) recently suggested four conditions: 1) ensuring that the issues tackled resonate with the broader teaching community, 2) allowing both teachers and researchers to democratically decide on the objectives of the project, 3) providing teachers with adequate time and space, and 4) granting teachers autonomy and agency.

The second step, the *development of solutions informed by existing design principles*, includes reviewing the relevant literature and providing a theoretical background for the study. Based on the literature, the researchers propose interventions which can take many forms such as ‘a learning activity, a type of assessment, the introduction of an administrative activity (such as a change in holidays), or a technological intervention [...]’ (Anderson and Shattuck 2012: 16).

During the third stage, the iterative cycles of testing and refinement, the design is tested and gradually tailored collaboratively to the teachers’ specific context. This differs from more traditional research methodologies that follow a linear progression. The iterative process typically comprises several stages once the intervention is designed (The DBR Collective 2003). First, the teachers implement the intervention. Then, the partners analyze the intervention with the aim of improving it. Plomp (2013: 19) refers to this stage as a form of ‘formative evaluation’. After the intervention is refined (which can last multiple cycles), the culmination of this process is a joint reflective ‘(semi-) summative evaluation’, where the whole intervention is analyzed in depth. At that stage, design principles are outlined, as well as recommendations for future implementation. This cyclical approach is not merely procedural; it accentuates the relevance and effectiveness of the interventions but also contributes to the generation of new theoretical knowledge, as each iteration offers opportunities to test and refine both the intervention and the underlying theories (Barab and Squire 2004).

Considering its characteristics and steps, DBR emerges as an ecological methodology to L2 learning and teaching research. As DBR is anchored in the real-world context of the classroom, and draws on teacher-researcher collaboration, it mirrors the complex nature of educational settings (Larsen-Freeman and Cameron 2008). The active participation of teachers in shaping the research agenda and testing the interventions ensures that the solutions developed are deeply rooted in the practical, day-to-day realities of teachers, which strengthens their relevance and sustainability. The iterative nature of DBR sees to it that interventions are

responsive to the immediate needs of teachers and learners while still grounded in empirical evidence.

2.2 Adoption of DBR in L2 research

The characteristics of DBR offer numerous advantages for L2 research. L2 teachers expect research to directly address issues from their specific context (Tavakoli and Howard 2012), a central tenet of DBR. Iterative cycles also allow for the type of long-term collaborations that teachers have been shown to favor (Spada and Lightbown 2022).

However, as evidenced by Tinoca et al.'s (2022) systematic review, few studies employ this methodology in L2 teaching. Those that do mainly center around the effects of the intervention on learners, rather than on teachers. For instance, Hung (2011) conducted a DBR study that gauged the effects of reflective tasks in multimedia environments on 89 English language learners using digital video technology to support language learning. The findings suggested that the refinement of the intervention benefited the language learners. Another study by Egbert, Herman, and Lee (2015) illustrated how DBR allows for the exploration of innovative teaching models, such as flipped classrooms, within ESL teacher education. Hung (2017) also employed this methodology to investigate the effect of a progressively refined flipped classroom approach on university-level students' academic achievement and attitudes towards English learning. The results indicated that the approach can yield significant benefits, and the author encouraged language teachers to use DBR to refine their courses in general. In terms of effects on teachers, Lim and Nguyen (2022) discussed how a DBR approach facilitated an L2 teacher's professional development by reinforcing her ability to design and exploit a multiliteracies-focused lesson plan over the course of 18 months. The study provided some insights into how the teacher perceived this project, but did not delve into it, nor did it provide a detailed assessment of the project from her perspective. Finally, a study by Ko and Lim (2021) investigated the role of DBR in fostering collaborative environments among L2 teachers. Their research developed a mobile app, WikiTalki, designed to improve English-speaking practices in South Korean secondary schools. The app facilitated peer feedback and enabled personalized responses to spoken English exercises, which were found to boost student participation and self-efficacy in speaking English. The study revealed that the DBR approach provided teachers with innovative

methods to face pedagogical challenges and transformed some of their pre-existing beliefs about teaching. These examples demonstrate that, while the application of DBR in L2 education primarily focuses on improving learner outcomes, its potential for advancing teacher development and promoting innovative pedagogical practices is increasingly evident yet understudied.

2.3 Metacognitive Strategy Instruction (MSI) in L2 Listening

The role of metacognition in language learning and teaching is now largely recognized (Haukås, Bjørke, and Dypedahl 2018). The construct of metacognition can broadly be defined as cognition about cognition (Flavell 1979). As such, it is a process that enables learners to become more aware of their own learning processes, evaluate their learning needs, generate strategies to meet these needs, and draw on these strategies to perform tasks. The application of metacognition to L2 learning is generally attributed to Wenden (1987, 1991) who envisioned it as a pathway to learner autonomy.

Metacognition in L2 listening encompasses three fundamental and interdependent components: knowledge, experience, and strategies (Goh and Vandergrift 2022). Knowledge refers to the learner's awareness of their own cognitive processes and the nature of listening tasks, including personal understanding of learning preferences and obstacles (Flavell 1979). Experience relates to the learner's internal reflections and responses during the listening process, which inform future strategy use and knowledge building (Efklides 2006, 2008). Strategies are deliberate actions or techniques used by learners to improve their listening comprehension and learning, tapping into their metacognitive knowledge and experiences to navigate and optimize the way they perform listening tasks.

Within this paradigm, metacognitive strategies require learners to actively engage in regulating their own listening comprehension and learning. These strategies include planning for listening, monitoring comprehension, solving comprehension problems, and evaluating their listening performance (Goh and Vandergrift 2022). To do so, learners need to be aware of such strategies and be taught how and when to use them. In practice, learners are explicitly encouraged to anticipate content before listening (planning), assess their understanding during listening (monitoring), employ strategies such as inferring or deducing meaning

when comprehension issues arise (problem-solving), and reflect on their performance afterward to identify areas for improvement (evaluating) (Graham and Macaro 2008).

The role of MSI in improving listening comprehension skills and positive learning outcomes among L2 learners has long been established (Graham and Macaro 2008; Vandergrift et al. 2006; Vandergrift and Tafaghodtari 2010). In fact, skilled L2 listeners exploit a significantly greater number of metacognitive strategies compared to their less skilled counterparts (Cross 2011). Through MSI, L2 learners can improve their ability to plan, monitor, and evaluate their listening comprehension processes and performance (Goh and Vandergrift 2022). For example, Rahimirad and Shams (2014) noted the beneficial effects of eight 90-minute MSI sessions on the listening performance and metacognitive awareness of EFL students. Maftoon and Fakhri Alamdari (2020) reported similar results among a group of intermediate EFL learners in Iran after a 10-week intervention.

However, the literature also reports ongoing challenges and the need for improvements in implementing MSI in various educational settings. Aponte-de-Hanna (2012) emphasized the necessity for ‘more practice, less testing’, a statement which still seems to hold true today. For example, while explicit instruction is required for learners to become aware of and effectively use strategies (Goh and Vandergrift 2022), a recent study on 8 seasoned EFL teachers in Iran found that those teachers have a propensity to not explicitly teach metacognitive strategies in listening tasks (Bagheri and East 2023). The researchers attribute this to a lack of knowledge regarding the *how* and *why* of MSI. These observations echo more general research in education (see, e.g., Dignath and Büttner 2018; Dignath and Veenman 2021; Spruce and Bol 2015; Wilson and Bai 2010), which supports the idea that MSI is a complex practice to integrate for teachers (regardless of the subject) due for instance to lack of training, time constraints, prioritization of curriculum coverage or belief that MSI is too abstract or difficult to align with specific contents.

3. The present study

Against the backdrop of research on DBR and MSI, we set out to uncover the perspectives of FW-B teachers involved in a two-year DBR project which introduced MSI as a solution to overcome L2 learners’ difficulties with listening comprehension. The lack of L2 learning and teaching

studies employing DBR or addressing teachers' perceptions of DBR and MSI (particularly in the context of L2 listening) suggests that research investigating these areas is needed, especially considering the affordances of DBR and MSI presented above. By tackling L2 teachers' perspectives, the present study seeks to fill this research gap and answer the following research questions:

RQ1: How do L2 teachers perceive the DBR project upon its completion?

RQ2: How do L2 teachers perceive MSI in L2 listening as a teaching practice that stemmed from the DBR project?

3.1 Method

We chose a case study design (Yin 2018), with the DBR project as the case, to obtain a nuanced understanding of the results considering the complex educational and reformative context in French-speaking Belgium. Case studies emphasize the contextualization of findings; they also tie in closely with our goal to understand the unique factors influencing the teachers' experience of the DBR process in their specific contexts.

3.2 Context

This study was set in the FW-B, one of three language communities in Belgium. The FW-B oversees the educational system in the French-speaking part of the country. In the FW-B, students typically choose one foreign language in primary school (English, Dutch, or German) which they are required to keep studying for the first two years of secondary school. Students typically spend 4 hours a week on this subject.

The FW-B has initiated a sustained, longitudinal educational reform to address the persistent educational challenges faced by lower-secondary students (between 12 and 14 years old) across various subjects, including documented struggles among lower-secondary students in foreign language listening and speaking skills (Delvigne et al. 2018). Our study is set in this context as it focuses on a segment of this initiative through a two-year DBR project funded by the FW-B and dedicated to improving L2 learners' listening comprehension through better teacher professional development. L2 in-service teachers traditionally have limited involvement in DBR. Rather, the FW-B offers structured training

programs that include both compulsory and elective sessions. Every year, teachers engage in three days of compulsory training to meet educational requirements, plus up to five days of optional training based on a catalog offer and their personal interests, designed to support their individual career goals (FW-B 2021).

3.3 Participants

The participating teachers ($N=16$) were selected from schools that voluntarily joined the project, with each school offering their lower-secondary English and Dutch teachers the opportunity to participate. Teachers who consented were granted an additional hour per week by the government, synchronized across participants, to facilitate collaboration within their teaching schedules. This study was conducted in compliance with ethical guidelines and was approved by the FW-B. Prior to participation, all teachers involved in the study were provided with detailed information about the project objectives, procedures, and their rights as participants. Informed consent forms were signed by all teachers individually.

While multiple schools participated in the broader project, four were selected for this study, henceforth identified as School A, School B, School C, and School D (see Table 1). The rationale for this choice was that Author 1 had collaborated with those schools specifically during the two cycles of the project. In total, 16 teachers were involved. Nicknames were used in Table 1 to ensure anonymity. The ages of the participants ranged from 23 to 48 years, with a mean age of 35.9 years. All but one of the participants were female. Teaching experience among the participants varied significantly, ranging from 1 to 28 years with a mean experience of 13.21 years. The participants from the four schools were affiliated with institutions that differed in socio-economic status (SES)¹.

¹ In the Belgian education context, SES refers to the social and economic factors that influence students' educational opportunities and outcomes. SES is often determined by a combination of income level, parental education, occupation, and access to resources.

Table 1: Participants by School

School	SES Score	Nickname	Age	Gender	Years of Experience	Language Taught
A	20/20	Emily	28	F	6	English
		Ella	31	F	8	English
		Lily	36	F	14	Dutch
		Victoria	43	F	20	Dutch
		Grace	45	F	21	Dutch
		Evelyn	46	F	23	English
B	16/20	Amelia	23	F	1	Dutch
		Harper	28	F	6	English
		Abigail	45	F	24	English
C	19/20	Sophia	28	F	5	Dutch
		Mia	36	F	15	Dutch
		Isabella	48	F	28	English
D	8/20	James	25	M	3	English
		Olivia	33	F	11	English
		Emma	37	F	15	English
		Ava	43	F	21	Dutch

Note. SES = Socio-Economic Status

One characteristic of DBR is its collaborative nature, which led us to include the researchers as participants, despite not collecting or analyzing their data. The goal here is simply to acknowledge the researchers' role in the DBR process. A total of six researchers, including Authors 1 and 3, were involved in the overall DBR project. Of these, four are also L2 teacher educators, while the remaining two hold degrees in L2 teaching and have some teaching experience.

3.4 DBR steps

The project followed a traditional DBR methodology (Reeves 2006; Plomp 2013), which is depicted in Figure 1. This figure provides a visual timeline of the key phases and actions, as well as the roles of the partners, to make sure that the steps taken are both transparent and replicable.

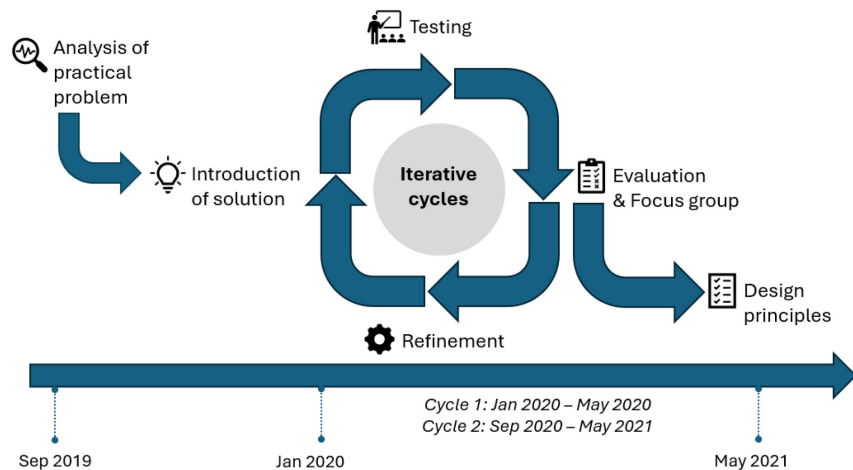


Figure 1. Timeline of the DBR Project on MSI in L2 Listening (authors' original)

The DBR project began in September 2019 with initial engagement sessions between the researchers and four groups of L2 teachers to analyze the specific challenges their students faced in listening comprehension tasks. These sessions were structured as collaborative discussions where teachers shared their experiences, identified recurrent difficulties among students, and expressed their expectations for support. From the outset, the project emphasized a collaborative mindset, with teachers viewed as co-designers rather than passive recipients of an intervention. Researchers clarified that the goal was to develop a practical, adaptable intervention rooted in both research and the realities of their classrooms.

Following these discussions, the researchers conducted a review of the literature to identify potential solutions. MSI was selected as a promising approach which aligned well with the teachers' identified needs. Such needs included, for instance, learners' lack of knowledge on how to approach listening tasks, and their anxiety when performing such tasks. By December 2019, MSI teaching materials had been developed based on curriculum requirements, teacher input, and relevant scientific literature. These materials were framed explicitly as examples or templates, which allowed teachers to adopt or adapt them as needed. This framing sought to balance consistency with flexibility, as teachers would retain agency over their pedagogical decisions while adhering to the core principles of MSI.

The materials comprised various listening tasks that proposed explicit instructions to activate and develop metacognitive strategies, namely planning, monitoring, problem-solving, and assessment. One example of planning strategy instruction, for instance, was to explicitly teach the use of WH-questions as a method to decode task instructions (see Appendix 1), or to encourage students to make predictions about the content of the listening task (see Appendix 2). The monitoring phase encouraged students to stay aware of their progress during the activity, such as checking their understanding in real time, revisiting task instructions when needed, or as in Appendix 2, checking their previous hypotheses. During the problem-solving phase, students were encouraged to use strategies such as inferring meaning from the parts they understood, rather than focusing solely on gaps in comprehension. To foster metacognitive reflection, students also gradually completed a metacognition log (see Appendix 3). This document prompted them to describe how they approached the task during the different metacognitive phases. At the end of the listening task, students filled out the final section of the metacognition log to assess their strategies, identify key takeaways, and determine actions for future improvement.

The testing phase began in January 2020. Teachers integrated the MSI materials into their lesson plans and customized them to align with their specific teaching contexts. To support this implementation, researchers met with teachers twice during the first cycle to discuss their experiences, adaptations, and challenges. Informal communication—via email and brief calls—offered additional opportunities for teachers to seek clarification and share feedback. This cycle concluded in May 2020 with a formative evaluation that included teacher feedback. Suggestions for improvement included revising less-effective activities, eliminating redundant elements, and incorporating new resources to address specific classroom needs. These refinements informed the materials for the next cycle.

The second cycle, launched in September 2020, reintroduced the revised MSI materials to the teachers. This phase provided additional opportunities for testing and adaptation, supported by two further meetings and ongoing informal contact. Teachers were encouraged to continue customizing the intervention while adhering to its core components. The cycle concluded in May 2021 with a summative evaluation that assessed the effectiveness of the MSI intervention and the overall DBR process.

Additionally, focus group discussions were conducted to capture the teachers' experiences with DBR and MSI.

3.5 Data collection

Data was collected through a series of focus group discussions, each conducted in French with the teachers from one school at a time. These sessions were held at the conclusion of the second DBR cycle during the summative evaluation phase. On average, focus groups lasted 43.75 minutes (min=32, max=56). The entire focus group discussions were fully transcribed, resulting in a total of roughly 29,000 words.

The focus groups were semi-structured. The questions were pre-established by the researchers (see Appendix 4) and examined the teachers' perceptions of the DBR project as well as the application of MSI for listening comprehension. This data collection method was chosen for several reasons. First, Nieveen and Folmer (2013) suggest employing focus groups to collect data in the evaluation phases of DBR. Second, Krueger and Casey (2015) put forward the added value of focus groups to collect teachers' opinion; this method allows participants to engage with each other's feelings, perceptions, reactions, and doubts about the object of the researcher's investigation (Flores and Alonso 1995) and, as Dörnyei (2007: 144) explains, 'this within-group interaction can yield high-quality data as it can create a synergistic environment that results in a deep and insightful discussion'. Finally, Kitzinger (1995) stresses the benefits of focus groups with participants who do not appreciate being interviewed alone, or who think they do not have anything to say.

A protocol was designed to be consistent throughout the different focus groups. Each session was divided into six phases, namely greetings and introduction, ground rules, general warm-up questions (see Appendix 4), specific questions (addressing in turn MSI and DBR), conclusion, and acknowledgments. This progression was inspired by Krueger and Casey's (2015) recommendations on how to structure and lead a focus group session. The entire protocol is appended (see Appendix 5).

3.6 Data analysis

Each research question was addressed by analyzing the dataset along their corresponding dimensions: for RQ1, the teachers' perception of the DBR project; and for RQ2, the teachers' perception of MSI. Therefore, we conducted a sequential thematic analysis of each dimension on the focus

group data, following the six phases presented by Braun and Clarke (2012): (1) The researchers first familiarized themselves with the data. (2) They then coded the data without consulting each other. The codes were subsequently compared, discussed, and adjusted upon agreement. This open coding subsequently allowed us to inductively (3) generate, (4) review and (5) define and name four themes for RQ1 and three for RQ2.

For the (6) presentation of results, we selected and translated excerpts that were illustrative of key findings. To obtain an informative representation of the number of teachers mentioning the codes and themes, we also quantified the occurrences of each code and theme in the data. This allowed us to agree on a visual representation of the results for RQ2, which takes all the themes mentioned in the focus group discussions into account.

These steps were carried out by the researchers, who discussed them together to strengthen the reliability of the analysis (Strauss and Corbin 1990).

4. Findings

4.1 L2 Teachers' Perceptions of the DBR project

Four themes related to RQ1 (i.e., the L2 teachers' perceptions of the DBR project) emerged from the transcripts: individual freedom, relation to the researchers, clear objectives, and need for training. Each theme will now be presented separately.

Individual freedom stood out as a central aspect of the DBR project, with 11 out of 16 participating teachers stressing its significance. This theme underscored the teachers' appreciation for autonomy and flexibility, which allowed them to adapt and tailor the intervention to their classroom contexts and schedules. As one of them attested:

‘[I]t’s pretty free too, we can do a little bit what we want, there’s not really any set activity, so you can rework the activities, adapt them to your own taste’ (Amelia).

The teachers’ **relation to the researchers** transpired as another significant theme, with 9 teachers expressing the importance of the quality of the interactions with the researchers. The teachers appreciated feeling comfortable to engage with the researchers. One of the teachers pointed out that ‘it’s also nice to have contact with people who are dynamic and

motivated and who can also enlighten [them]’ (Mia).

This marked the value of establishing trust between teachers and researchers for the collaboration to be successful. Initially, some teachers also had certain preconceptions about researchers.

‘I must admit that at first, I thought ‘researcher’, it’s going to be the theory thingy again, it might be boring’ (Abigail).

The theme of **clear objectives** was mentioned by 9 teachers, putting forward the necessity of well-defined and transparent goals within the DBR project. Teachers need clear objectives to bid a sense of direction and ensure that their efforts are aligned with the project. However, the exploratory nature of DBR and the duration of the two first steps of analysis and design seemed to unsettle teachers as the goals of the intervention were not clear from the start.

‘What I felt when I came into the project in September was that I like it when I do something, to know exactly what the objectives are, what the stages are and so on. And that I felt wasn’t clear enough from the start’ (Lily).

‘Last year I was a bit skeptical, to be honest, because well, it was the beginning for you, it was the beginning for us, we were a bit all over the place’ (Harper).

Lastly, **need for support** was identified as a theme mentioned by 6 teachers. The teachers suggested the provision of more support by the researchers at the onset of the project, in the form of training, on top of being presented with the materials. This would have empowered them with the necessary skills and knowledge to confidently engage in the DBR project from the start.

‘I think I’d have liked a little training, uh, to introduce’ (Victoria).

4.2 L2 teachers’ perceptions of MSI

The focus of our investigation in RQ2 was to examine L2 teachers’ perceptions of MSI as a teaching practice that derived from the DBR process. The analysis revealed three themes for teachers’ perceptions of

MSI: perception of the positive effects on learners, the perception of feasibility of implementation, and the perception of challenges inherent in the implementation.

Figure 2 illustrates these results and outlines the key themes as well as the codes that were identified from the discussions. The figure takes the form of a target, visually divided into three sections, where each represents the proportion of teachers who mentioned specific themes. The size of each section reflects the relative frequency of the theme, with larger sections indicating a higher number of teachers discussing that theme. The positioning of the labels within each section, closer to or farther from the center, indicates the prevalence of each code among the participating teachers. The number of teachers mentioning the category is indicated between brackets.

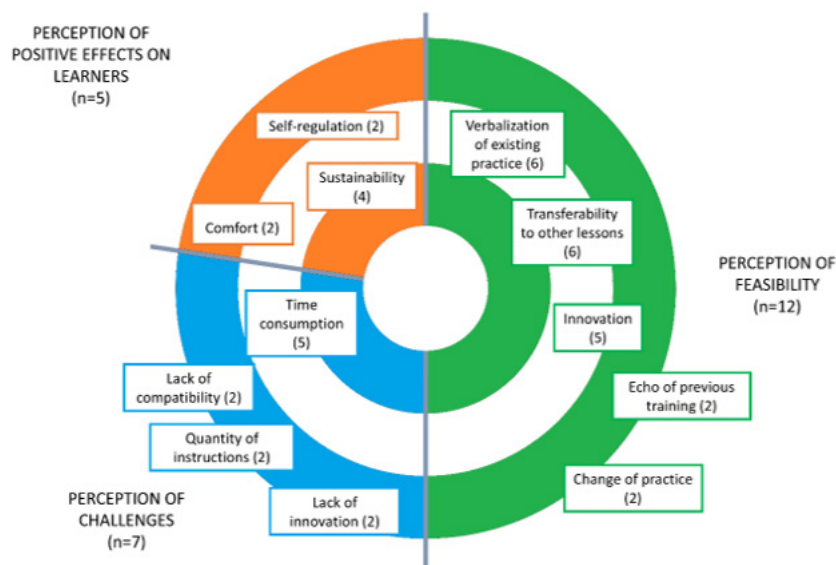


Figure 2: Perceptions of MSI

The theme **perception of feasibility** was prominent in the focus group discussions, as it was mentioned by 12 out of the 16 teachers. Seven codes were identified within this theme to illustrate how the project and MSI made it easy for the teachers to integrate MSI in their practices.

According to 6 teachers, the project allowed them to verbalize existing practices, such as the modeling of strategies. This, in turn, helped them teach strategies more explicitly.

‘In fact, it made it more explicit, to actually name what we do’ (Victoria).

Another teacher also expressed that she did include planning strategies in her lessons, but these were not explicitly labeled or presented as such, which the project made her realize.

‘It’s true that sometimes we did it without really knowing or without really yes, we were anticipating, but it was almost natural to do it in the activity like that’ (Emily).

Six teachers noticed that they naturally transferred what they learned from the project to other lessons, skills, contexts or with other groups of learners.

‘I’ve done [it] spontaneously [...] because here it is, it lends itself to it [...] I noticed that with the 2nd year pupils, I used things I’d seen in the project’ (Victoria).

While the project pertained to listening, a teacher mentioned using the idea of MSI with other skills.

‘We also test it with the other skills’ (Mia).

Another one also suggested employing MSI for remedial teaching:

‘When we’re doing remedial work, we can also put more emphasis on this’ (Evelyn).

While MSI tapped into the teachers’ existing practices, 5 of them pointed to its innovative nature, and noted that, without the project, they might not have discovered this practice and simply followed the book.

‘I’ve discovered a lot by being out in the field, and I’ve discovered

a few new things here with the project, which I'll be able to use in my courses' (Harper).

'Maybe I wouldn't have thought of it if I'd just followed my book' (Amelia).

'It wouldn't have occurred to me before to try and present listening exercises in a different way from the way they were in the book, so in the end we realized that it was great' (Abigail).

The project appeared to echo prior training for 2 teachers.

'It's great because we've had a gentle reminder, or we've rediscovered strategies' (Lily).

Two teachers also noticed that the project altered their practices by raising their awareness of the importance of metacognitive strategies, which they claimed to make time for in their lessons:

'I had the impression that before, I didn't allow myself to devote this time to it, I was really into, "we've got to move on", [...] and now I allow myself this time, I take this time with the students, because it's part of my job' (Sophia).

The theme of **perception of challenges** involved 7 out of the 16 teachers. This theme highlighted the concerns and apprehensions that some teachers had regarding the inclusion of MSI in listening activities.

It appeared that the main downside of MSI according to 5 teachers was its time-consuming nature.

'I don't have time to devote to this every time' (Emma).

For 2 teachers, the quantity of instructions inherent in MSI was to blame.

'The learners were also quickly confused by having so many instructions for a simple listening exercise' (James).

Two teachers found that MSI was not innovative as a practice, which

curbed their interest in it.

‘In fact, what I missed was the innovative aspect’ (Ava).

Finally, 2 teachers noticed that it was not always so effortless to integrate MSI, as the resources provided were not necessarily compatible with their own teaching materials.

‘Sometimes it’s also hard to find a connection with the course because we had a cool activity that was suggested in itself, but it didn’t always fit in at the right moment’ (Grace).

Finally, the theme of **perception of positive effects on learners** was mentioned by 5 out of the 16 participating teachers. The teachers remarked how MSI positively impacted their learners. Within this theme, three codes were identified: sustainability, comfort and self-regulation.

The first code, sustainability, was mentioned by 4 teachers who found that MSI had long lasting benefits for the learners.

‘[the learners] remember some of the things they saw last year, and so it was reassuring and nice to see that’ (Grace).

‘I think that if we start introducing it now, in 5 years’ time we won’t have to do it with the older students’ (Ella).

The comfort code, mentioned by 2 teachers, denoted the positive impact of MSI on students’ confidence. In fact, it appeared that the activities proposed made them feel more comfortable with tasks which generally stress them out.

‘It sets them more at ease’ (Ella).

One teacher suggested teaching metacognitive strategies to beginners after a first listening exercise to alleviate anxiety.

‘As a first exercise, where I’ll see them all panic, saying “Madam, it’s going too fast, I don’t understand”, because I can always see their faces, they’re all like “Oh Madam, it’s going too fast” and

then, after that exercise, start working on the strategies' (Harper).

The self-regulation code corresponded to 2 teachers who noted that their learners managed to exploit specific strategies. In fact, one of them was confident in her learners' ability to self-regulate thanks to strategies.

'They are able to come up with certain strategies on their own' (Grace).

'Once we've set up strategies with the students and they're fairly used to them, I'm not scared for them. [...] I think they're more daring' (Mia).

5. Discussion

This paper set out to explore the perceptions of L2 teachers who participated in a DBR project focused on MSI for enhancing L2 learners' listening comprehension skills in the FW-B. The findings suggest that DBR can facilitate a more fruitful dialogue between researchers and L2 teachers and, to a certain extent, support the integration of MSI in L2 listening.

The themes generated for RQ1 (i.e., How do L2 teachers perceive the DBR project upon its completion?) shed light on critical aspects of successful collaboration from the viewpoint of L2 teachers. First, the significance of **individual freedom** speaks to the autonomy and flexibility that teachers appreciate when applying research findings in their specific classroom contexts, which is a central tenet of DBR (Barab and Squire 2004) and pertains to Bungum and Sanne's (2021) condition of granting teachers' autonomy and responsibility. Second, the **relation to the researchers** theme signals the importance of nurturing a strong relationship between researchers and teachers. These results confirm Bungum and Sanne's (2021) conclusion that a democratic collaboration between teachers and researchers is pivotal, but also that autonomy and responsibility are appreciated. Then, the **clear objectives** theme emerges as a guiding principle and brings forward the value of transparent project goals that provide a sense of direction to the teachers' engagement from the onset. To that end, Nieveen (2013) suggests four principles for the success of a DBR intervention: it is informed by current scientific knowledge (*relevance*); it exhibits a coherent structure (*coherence*); it

balances its objectives with classroom applicability (*practicality*); and produces the expected outcomes (*effectiveness*). Here, the theme of clear objectives ties in closely with the principles of practicality and coherence. However, the exploratory nature of DBR can impede these principles, as objectives are gradually defined. This is particularly exemplified by the teachers' desire to be accompanied by researchers in integrating the new practice in the theme **need for support**, even though this is not a characteristic of DBR.

The results for RQ2 (i.e., How do L2 teachers perceive MSI in L2 listening as a teaching practice that stemmed from the DBR project?) reinforce the necessity for teachers to recognize the feasibility of the intervention in their ecology, but also to witness positive effects on their learners. They also point to aspects that hinder the implementation process.

MSI is commonly portrayed as a complex practice that is unfamiliar to teachers (Spruce and Bol 2015; Wilson and Bai 2010), which leads to its rare inclusion in explicit teaching, as was the case with L2 listening in Bagheri and East's (2023) study. Our results contribute to this discussion by identifying both the enabling factors and the challenges encountered by teachers when they do teach such strategies explicitly. The various codes under the theme **perception of feasibility** bring forth the applicability of the MSI intervention across the various teachers' ecologies: it is perceived as a form of innovation that is easily transferable, as it helped them verbalize existing practices and echoed prior training, which in turn, altered their practices. These results concur with Lim and Nguyen (2021) who concluded that a DBR approach, because of its characteristics, can facilitate the introduction of new practices. However, it is noteworthy that the **perception of challenges** theme indicates a degree of apprehension for some teachers, particularly concerning time constraints, as also pinpointed by Bungum and Sanne (2021), instruction overload, lack of innovation and compatibility with their own materials. Some of the teachers were already familiar with MSI, even if they did not necessarily explicitly label it as such. While some perceived this familiarity as advantageous (verbalization of existing practice, echo of previous training), others viewed it as a drawback (lack of innovation). This illustrates the dilemma of determining the optimal proximity of an intervention to existing teaching practices. Specifically, it challenges us to find a balance between an easily actionable approach, as per Nieveen's (2013) principle of

practicality, and the innovative character of the practice. When it comes to MSI, an argument could be made that knowledge of the existence of strategies does not equate to the ability to teach them explicitly, as evidenced by Bagheri and East's (2023) study. Rather, the novelty lies in making these strategies clear to learners, which teachers are often unable to do.

Through the theme **perception of positive effects on learners**, the teachers commend the effects of MSI on their learners' self-efficacy in listening tasks, which include sustainability, comfort, and self-regulation. These findings once again concur with Nieveen's (2013) principle of effectiveness as the intervention is believed to have produced the expected outcomes. They also add to the broader pedagogical consensus that metacognitive strategies can support L2 listening (Goh and Vandergrift 2022; Graham and Macaro 2008; Vandergrift et al. 2006).

Interestingly, the findings remained consistent across demographic factors such as age, language taught, gender, and socio-economic context. This suggests that DBR's ecological nature allows teachers from diverse backgrounds to engage similarly with the approach. However, further research is needed to confirm this, as different contexts may yield different outcomes.

The ways in which teachers perceived both the DBR project (RQ1) and MSI as a pedagogical intervention (RQ2) indicate that their participation in DBR influenced their teaching practices. The results tie in closely with Self-Determination Theory (Ryan and Deci 2000), which identifies three core needs for motivation that can also apply to teachers (Sparks and Malkus 2015): a feeling of expertise, of control, and of positive relationships. The identified themes in our study indicate that teachers appreciated the flexibility and autonomy offered by DBR (RQ1), which allowed them to integrate MSI into their existing teaching practices rather than following a rigidly prescribed model (feeling of control). Similarly, teachers perceived MSI (RQ2) as transferable because it formalized familiar teaching practices, which reinforced their sense of expertise. Finally, the importance of a strong relationship with researchers fulfilled the need for relatedness.

Put together, the findings from RQ1 and RQ2 also collectively emphasize that while DBR promoted autonomy, clear objectives, and active collaboration, the successful implementation of MSI in L2 listening depended on how well these principles corresponded to teachers' working

conditions, prior knowledge, and perceptions of feasibility. While some teachers expressed a need for more support in implementing MSI (RQ1), others felt that the DBR approach naturally facilitated innovation (RQ2). This confirms that DBR does position teachers as active agents (Bungum and Sanne 2021) as much as it encourages them to experiment with and refine practices in ways that are meaningful in their own contexts.

Given how teachers engaged with DBR and MSI, the findings point to several key implications for the implementation of DBR in L2 teaching contexts. First, the results suggest that DBR's core structure can be maintained without excessive intervention, as its collaborative and iterative nature provides teachers with a natural framework for exploring and refining teaching practices. The study indicates that teachers were able to autonomously adapt MSI to their contexts (RQ2), which reinforces the idea that DBR does not require rigid oversight to be effective.

However, the results for RQ1 show that while DBR aims to integrate innovations within the classroom without disrupting existing practices, some teachers may have preferred a more directive approach. A possible explanation for this could be found in RQ2 and teachers' reactions to MSI, which varied based on their familiarity with its principles. By extension, teachers' prior experience with research collaborations could have influenced their perceptions of DBR. Those familiar with teacher-researcher collaborations might have had specific expectations or adapted more easily to the flexibility of DBR, while others expected more direct guidance. Unfortunately, we did not gather data on this, but we encourage researchers employing DBR to consider teachers' prior research experiences when outlining their collaboration with them.

Whether researchers adjust DBR by offering more support or accept the need for support as an inherent challenge, excessive support risks disrupting teachers' ecologies. Ehrenfeld (2022) notes that teacher professional development unfolds within a complex, interconnected system, where overly prescriptive interventions can disrupt natural adaptation. In DBR, researchers provide general guidelines, refined through teachers' contextualized implementation, which promotes relevance while preserving ecological validity. This approach requires careful balancing between respecting teachers' autonomy and providing sufficient scaffolding to support meaningful pedagogical change within an ecological research framework.

Taken together, these findings position DBR not only as a research methodology but also as training through research (Darling-Hammond, Hyler, and Gardner 2017), particularly when it comes to developing complex teaching practices such as listening skills and metacognition. By engaging in DBR, teachers not only refine their pedagogical approaches but also cultivate a research-informed mindset that strengthens their ability to improve their teaching practices. Moreover, beyond the direct impact on the participating teachers, this approach could foster a ripple effect: teachers trained through DBR can, in turn, support their colleagues, thereby contributing to a broader professional learning community. Put differently, this study offers some evidence that DBR can help bridge the research-practice gap in ASLA.

6. Scope and limitations

This research nevertheless presents several limitations. First, the DBR process consisted of two iterative cycles, and additional cycles would undoubtedly have painted a more fine-grained picture. However, this was not possible due to funding constraints. Another issue is the limited number of participating teachers, which does not allow for more generalization. Then again, the study is qualitative in nature, which means it is designed to generate hypotheses and concepts rather than validate already existing insights (Patton 2015). While the focus groups provided rich data, they also had limitations. Since participants were colleagues, social desirability bias may have influenced responses, with some reluctant to share critical views or diverge from peers (Krueger and Casey 2015). Dominant voices may have shaped discussions, overshadowing quieter participants. To mitigate these effects, future research could perhaps complement focus groups with individual interviews or classroom observations for a more comprehensive understanding of teachers' experiences with DBR and MSI.

These limitations notwithstanding, this study prioritizes L2 teachers' perspectives on DBR, providing practical implications for ASLA researchers who wish to employ this methodology. It also informs the literature on how teachers experience teaching MSI explicitly in listening tasks. Following Aponte-de-Hanna's (2012) call for teachers to practice MSI in L2 listening, we suggest that future research continue to zoom in on teachers' practical applications of MSI.

6. Conclusion

This study contributes to the ongoing debate about the theory-practice gap in L2 learning and teaching research by providing empirical insights into the benefits and challenges of collaborative efforts to bridge it using DBR. Following up on Sato and Loewen (2019), who indicated that teachers are willing to be part of the research-pedagogy dialogue, we examined how teachers voluntarily engaged in a DBR project. Our research highlights the affordances of a DBR methodology to overcome some of the obstacles to constructive dialogue between researchers and teachers to develop evidence-based practices that coincide with the reality of the classroom (Marsden and Kaspruwicz 2017; Sato and Loewen 2019). The data not only underscore the value of collaboration, autonomy, and clear communication but also pinpoint areas that require attention and/or adaptation. This study encourages a shift towards a more collaborative and reflective approach to ASLA research. It thereby opens new avenues for the integration of research findings into language teaching practices and, perhaps more significantly still, of concrete pedagogical suggestions that are known to be difficult to disseminate, such as MSI. As such, it supports the wider effort to improve practices and outcomes in L2 teaching.

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Appendix 1. Planning - decoding task instructions (English translation)

Context

You and your class are taking part in an eTwinning project. The teacher at your partner school in England has sent you a video presenting his school.

Task

- Watch the video
- Note down X pieces of information mentioned by the teacher in the video.
- For each piece of information, specify whether it is similar to or different from your school.

Planning strategy (WH- questions)

Complete the mindmap or table below in French. When possible, use the interrogative words in the diagram to help you understand what is expected of you.



Appendix 2. Using (para)textual elements to predict content (English translation)

First day at school for Jane



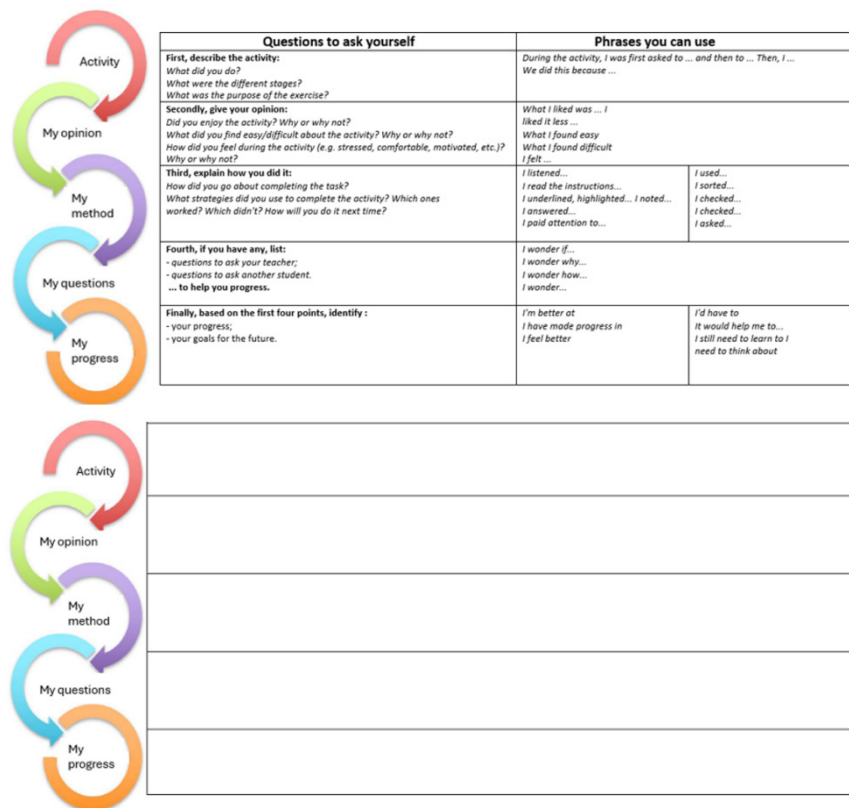
Tasks

1. Based on the title and photos, formulate 3 hypotheses about the content of the conversation you're about to hear.

My hypotheses	Hypotheses confirmed?
1.	Yes/No
2.	Yes/No
3.	Yes/No

2. Based on the title and photos, write down 5 key words you think you might hear in the conversation.
3. Listen and check your hypotheses in exercise 1.

Appendix 3. Metacognition log



The form consists of a circular diagram on the left and a table on the right. The circular diagram has five colored arrows forming a circle, labeled 'Activity' (red), 'My opinion' (green), 'My method' (purple), 'My questions' (blue), and 'My progress' (orange). The table has two main columns: 'Questions to ask yourself' and 'Phrases you can use'. The 'Phrases you can use' column is further divided into three sub-columns for the last two rows.

Questions to ask yourself	Phrases you can use		
First, describe the activity: What did you do? What were the different stages? What was the purpose of the exercise?	During the activity, I was first asked to ... and then to ... Then, I ... We did this because ...		
Secondly, give your opinion: Did you enjoy the activity? Why or why not? What did you find easy/difficult about the activity? Why or why not? How did you feel during the activity (e.g. stressed, comfortable, motivated, etc.)? Why or why not?	What I liked was ... I liked it less ... What I found easy What I found difficult I felt ...		
Third, explain how you did it: How did you go about completing the task? What strategies did you use to complete the activity? Which ones worked? Which didn't? How will you do it next time?	I listened... I read the instructions... I underlined, highlighted... I noted... I answered... I paid attention to...	I used... I sorted... I checked... I checked... I asked...	
Fourth, if you have any, list: - questions to ask your teacher; - questions to ask another student. ... to help you progress.	I wonder if... I wonder why... I wonder how... I wonder...		
Finally, based on the first four points, identify: - your progress; - your goals for the future.	I'm better at I have made progress in I feel better	I'd have to It would help me to... I still need to learn to I need to think about	

Appendix 4. Focus group questions

General Questions

- 1) What language(s) do you teach?
- 2) As part of this project, in which course(s) did you set up the activities?
- 3) If you were asked to continue this project next year, would you be up for it?

Teaching Metacognitive Strategies in L2 Listening

- 1) What did you know about teaching "strategies" in the language course before the project started?
- 2) What was your initial opinion about the instruction of strategies?
- 3) Was it too different from what you usually do, or too similar?
- 4) What do you think about the instruction of strategies, now that the project is over?
- 5) Will you continue to teach the strategies once the project is over?
If so, *why? How? In a similar or different way?*
If not, why not?
- 7) What priority advice(s) would you give to a teacher who would be interested in teaching strategies in their class?
- 8) Did this project make you want to try other things in your class? If so, which ones?

DBR project

- 1) How did you initially feel about collaborating with researchers? Why?
- 2) What do you think about collaboration between researchers and teachers now?
- 3) What do you think were the strengths and weaknesses of this project?
- 4) Would you have liked the project to have gone differently? If so, why?
- 5) Do you think this project has had an impact on your practices?

Appendix 5. Focus group protokol

Objective: To gather qualitative data on teachers' perceptions towards the DBR project, as well as MSI as the product of the project. Location: on site		
Phases	Timing	Description
Phase 1: greetings and introduction (not recorded)	5'	- The moderator welcomes the participants and makes them feel at ease by engaging in casual conversation about the teachers' life: e.g., <i>Are you teaching today? How many hours? ...</i> - The moderator explains the goal of the study. The questions focus on what the teachers feel or think. The research objective is presented as: <i>Assessing the practice of MSI and the teacher-researcher collaboration.</i> - Explain which aspects the questions revolve around. - Ask again if the teachers agree to be recorded.
Phase 2: ground rules (not recorded)	2'	- Participants speak in turns. - There is no right or wrong answers - There is no order in turn-takings - Everyone is allowed to speak if they want to. - The teachers are free to express your opinion. - All of it will be anonymized as mentioned in the inform consent form.
Phase 3: general warm-up questions (recorded)	5'	- The first questions are factual and do not necessitate much reflection. The aim is to make the teachers feel at ease and to divert their attention from the fact that the discussion is recorded.
Phase 4: specific questions on each topic of interest. Short break after each topic has been handled. (recorded)	30'	- Start conversations on the topics of interest by prompting questions. - Fuel the conversation when necessary. - Make sure everyone has the opportunity speak by asking <i>and you, X?</i>
Phase 5: conclusion (recorded)	5'	- Conclude the discussion by asking whether the participants would like to add something that might not have been discussed.
Phase 6: acknowledgments (not recorded)	5'	- Stop the recording. - Thank the group for participating. - Engage in small talk again - Bid the teachers farewell.
Potential caveats: - The same topic should not be covered twice. - If the teachers talk about something that comes next, I either recenter the focus of the conversation if I feel that I haven't heard enough, or I let them continue the discussion on this aspect and skip it later. - I should refrain from intervening in the conversation or giving my opinion to avoid a change in dynamics. - Do not interpret what teachers say or try to reformulate for them. I should rather ask them to expand on what they say (e.g., <i>Can you give an example? ; Would you explain further? ; I'm not sure I understand</i>).		