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Teachers' Voices on Multimodal Input for second or foreign language learning

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Teachers' voices on multimodal input for second or foreign language learning

Abstract

Multimodal input, which combines written, auditory, and/or visual modalities, is pervasive in everyday life and could serve as a source of rich input in language teaching. In recent years, research has determined that vocabulary learning is one of the clear benefits of being exposed to such input. Regrettably, only a handful of studies have investigated whether and how L2 teachers approach multimodal input in teaching. To further contribute to the research-practice dialogue, we examined factors that influence L2 teachers' use of multimodal input in L2 teaching.

This qualitative case study presents an in-depth analysis of interview data derived from 21 practitioners in various L2 teaching contexts globally. Following three rounds of data analysis, 24 factors were identified and are presented in four themes. The results indicate that teachers (1) paid close attention to their students' needs and goals; (2) drew on their own learning and teaching experiences and training supported by research-based practices, (3) relied on sound pedagogical principles and (4) faced a number of contextual challenges relevant to their curricula and teaching contexts.

Introduction

Multimodal input (MMI) can be defined as input that conveys information through different modes (i.e., written, auditory and visual). Some examples of MMI are audiovisual input (dynamic imagery + auditory input) or reading-while-listening activities, which consist of written texts that are presented simultaneously with the corresponding audio. As language users, we constantly engage with MMI in daily life (e.g., TV viewing, videoconferencing). Being able to deal with MMI in a second language (L2) is a crucial

aspect of L2 learning. In this respect, the Douglas Fir Group has defined L2 learning as multimodal learning (2016).

The role of MMI for L2 learning has experienced a renewed interest over the past decade, as evidenced by a growing body of scholarly works (see, for instance, Montero Perez, 2022 for a comprehensive review of audio-visual input and Pellicer-Sánchez, 2022 for a review on multimodal L2 reading and L2 learning), and numerous experimental studies have investigated MMI's potential for various aspects of L2 learning. While a lot of studies have empirically investigated the effectiveness of MMI for L2 learning, a literature review in SLA and CALL journals shows that little is known about teachers' day-to-day use of MMI in L2 teaching. In this respect, there is a gap between research and teaching practice which might hinder "reciprocal exchanges of theoretical issues and pedagogical ideas" (Sato & Loewen, 2022, p. 509). Understanding teachers' perspectives is important given the critical role of teacher cognition and its influence on language classrooms (Borg, 2009; 2015). With a view to promoting research-pedagogy dialogue (cf. Sato & Loewen, 2019a), this qualitative study investigates teachers' reported use and perceptions about MMI. We analyzed 21 semi-structured interviews and identified factors that influence teachers' use of MMI in a variety of teaching contexts globally and across a wide array of L2s. We open this paper with a discussion of the linguistic benefits of multimodal input for L2 learning and previous studies examining teacher's use of SLA with a focus MMI. Then, we provide a rich description of the participants, and a thorough account of data collection and data analysis procedures. We present the results, discuss findings, and put forward a set of preliminary suggestions to start bridging the gap between research-practice in MMI.

Literature review

The linguistic benefits of multimodal input for L2 learning

Two main types of MMI input can be distinguished in research, that is video-based multimodal input and text-based multimodal input. Regarding the effects of dynamic video-based input, it has been shown that it can contribute to (incidental) vocabulary learning, and this has been found for the learning of single words (e.g., Montero Perez, 2020; Peters & Webb, 2018) and formulaic sequences (Puimège & Peters, 2020).

Most studies into the linguistic benefits of video-based input have focused on the role of different types of on-screen text (see Table 1). Regarding captioned video, it has been found that learners' interaction with captions typically results in higher vocabulary gains after video viewing than watching uncaptioned video (e.g., Peters, 2019, Sydorenko, 2010). There is also beginning evidence that having captions is more effective than video only for learning of grammar (e.g., Cintrón-Valentín et al., 2019; Muñoz et al., 2021), pronunciation (Wisniewska & Mora, 2020), pragmatics (Barón & Celaya, 2022), and listening/speech decoding (Mitterer & McQueen, 2009). The superiority of captions (vs. video only) has been attributed to the fact that captions, which provide the L2 transcription of the audio, support L2 learners' speech decoding which may subsequently increase learners' chances to notice difficult or unknown words in the input. Other studies have compared the benefits of captions to L1 subtitles. While L1 subtitles typically result in significantly higher scores on comprehension tests (e.g., Pujadas & Muñoz, 2020), they do not seem to present specific benefits for vocabulary learning (e.g., Peters et al., 2016) and they might even have negative effects on L2 speech perception (Mitterer & McQueen, 2009).

Building on the importance of noticing for L2 learning, studies have also investigated the role of using typographic enhancement (e.g., highlighting, bolding, or underlining specific grammatical structures or words) in captions. However, results about the benefits of enhanced captions are inconclusive. While enhanced captions have the potential to foster L2 vocabulary learning (e.g., Cintrón-Valentín, et al., 2019) and lead to superior gains than captioned or uncaptioned video, their role for L2 grammar learning is less clear-cut (e.g., Cintrón-Valentín, et al., 2019; Lee & Révész, 2020).

Regarding research concerning static written input, the primary areas of focus have centered around reading-while-listening activities and text accompanied by multimodal annotations. In the realm of research on reading-while-listening activities, these have been found to result in better input comprehension and higher vocabulary learning gains than reading-only activities (Webb & Chang, 2015; 2022), and low-level learners are more likely to incidentally acquire vocabulary from such activities (Webb & Chang, 2012). Reading-while-listening also results in greater comprehension than reading only, which provides L2 learners with more time to focus on new words (Webb & Chang, 2012).

Similarly, researchers have extensively studied annotations or glosses containing word-meaning information in various formats, such as text, sound, and/or pictures (e.g., Boers et al., 2017; Warren et al., 2018). They have found that annotations can influence not only second language (L2) comprehension but also other aspects of L2 development, including L2 word learning.

Table 1

Frequently studied types of multimodal input

Text or video-based input	Term used in literature	Description of type of multimodal input
Dynamic video-based input	Video	Dynamic imagery and auditory input
	Video with on-screen text in L1, i.e., subtitled video	Dynamic imagery, auditory input and corresponding on-screen text which presents a translation of the input into learners' L1
	Video with on-screen text in L2, i.e., captioned video	Dynamic imagery, auditory input and corresponding on-screen text which presents a verbatim transcription in the L2
	Video with enhanced subtitles	Dynamic imagery, auditory input and corresponding on-screen text which presents a verbatim transcription in the L2 Specific words or structures are presented with typographic enhancement such as bolding, underlining, highlighting
Static written input	Reading-while-listening	Written text with simultaneous presentation of corresponding auditory input
	Text with multimedia annotations	Written text with words/structures that are clickable in order to obtain corresponding imagery/visuals/auditory input which clarify word-related aspects

Teachers' use of SLA research and of multimodal input

Research shows that teachers' beliefs can be strong predictors of classroom practice in language teaching in general (Pajares, 1992; Song & Looi, 2012) and in teaching with technologies in particular (e.g. Cárdenas-Claros & Oyanedel, 2016). Recently,

researchers have focused on the research-practice gap in SLA and therefore there has been considerable interest in examining to what extent teachers rely on research in their daily practices. While on the one hand, teachers believe it is important to align their teaching practices with research findings (e.g., Sato & Loewen, 2019b), they have limited exposure to L2 research (Marsden & Kasprovicz, 2017), are typically constrained by lack of access to research articles (e.g., paywall) or have little time allocated by their employers for professional development (Kartchava & Nassaji, 2021; Sato & Loewen, 2019a). Even when there is access to research articles, “it is impractical for teachers to read technical research reports and devise pedagogical tools based on findings explained using technical language and jargon” (Sato & Loewen, 2019b, p 18). Furthermore, Montgomery and Smith (2015) reported that teachers often “express frustration with how ‘out of touch’ academic articles seem to be with the day-to-day realities of [teaching]” (p. 100). For these reasons, Sato and Loewen (2022) argue that if researchers want to impact classroom practice, they should collaborate with practitioners to develop and implement research programs.

To address recent calls to better understand whether and how practitioners use MMI (cf. Vanderplank, 2016), a limited number of studies have investigated teachers’ use of MMI in L2 teaching¹. Mariotti’s (2015) study of 45 teachers in Europe appears to be the most comprehensive to date. In her study, the teachers, who taught a variety of European languages but primarily English, completed questionnaires that included both Likert-scale and open-ended questions which focused on teachers’ use of MMI. In particular, she examined L1 subtitles (i.e., subtitles), L2 subtitles (i.e., captions), and L1 audio + L2 subtitles (i.e., reversed subtitles) Mariotti reported that the teachers were overall in favor of using MMI as a supplement to regular class activities because students enjoyed them. Additionally, she reported the benefits of using subtitled media, with a particular emphasis on oral comprehension. Regarding subtitle types, the teachers thought that beginners tend to benefit more from L1 subtitles, while advanced learners would benefit from L2 subtitles, which is in line with research findings especially in terms of comprehension. Not surprisingly, Mariotti noted that teachers varied on the frequency

¹ Although books on how to use media in the L2 classroom are available (e.g., Herrero & Vanderschelden, 2019), they do not focus on teachers’ use of these types of input.

with which they used different types of on-screen text and pointed to some influential factors such as students' proficiency levels, teachers' teaching philosophy, ease (or difficulty) of access to materials, time spent creating materials, and teacher training on using media with on-screen text for language learning.

More recently, Kaderoğlu and Esquerré (2021) investigated 63 Turkish EFL teachers' use of MMI with a focus on captioned videos. Using a fit-for-purpose questionnaire, the results of their study indicated that the participants had an overwhelmingly positive attitude towards MMI and found captions most useful for oral comprehension and vocabulary development. The authors noted that teachers' use of MMI was primarily influenced by their own experiences rather than by formal training. In terms of ways of using captions, most teachers stated that they accompany in-class videos with captions, encourage their students to use captions outside of class, and teach them strategies for dealing with captioned materials.

As noted, so far two studies have investigated teachers' perceptions and use of MMI for L2 learning. These studies have primarily relied on survey data and examined specifically the use of video with on-screen text. Little is known about the role of other types of MMI. In addition, to bridge the research-practice gap on MMI use, researchers need to have an in-depth understanding of factors which prevent or promote teachers' use of MMI in the classroom.

Accordingly, in this exploratory qualitative case study we use interview data to get a rich and in-depth understanding of teachers' views about MMI and related practices.

Particularly, we investigated the following research question: What factors influence L2 teachers' use (or lack thereof) of multimodal input in L2 teaching?

Methodology

As our interview questions indicate, based on prior research, we hypothesized that teachers' beliefs (e.g., Pajares, 1992; Song & Looi, 2012) and teaching context (e.g., Cárdenas-Claros & Oyanedel, 2016; Nishino, 2012) could influence teachers' use of MMI. However, given lack of prior research on the topic to make any other predictions, we purposefully asked broad questions to obtain teachers' views. Also, we did not follow any previously established models on teachers' beliefs and practices (e.g., Borg, 2015) because in this study the goal was to capture teachers' voices via bottom-up analysis. We also believe such an emic approach further assists in narrowing the research-practice gap (Sato & Lowen, 2022).

Participants

The cases analyzed here are part of a larger survey study in which 193 participants reported on the frequency of use of various types of MMI and their perceived benefits for language learning. Twenty-one of those participants (16 female, 5 male) voluntarily participated in an optional follow-up interview. They ranged in age from 28 to 69 years ($M = 42$), with teaching experience ranging from 5 to 35 years ($M = 16$). Additional participants' background information (L1, primary language taught, and primary country of teaching) is shown in Table 2. While English predominated (more than half of the participants spoke English as their first language and taught it as a foreign or second language, and about half taught in English-speaking countries), there was also a varied mix of other languages and countries.

Table 2

Distribution of Participants Per Country of Origin, L1, and Target Language Taught (n=21)

Country of origin	USA = 7 participants Belgium, Chile, China = 2 participants each Australia, UK, Egypt, Germany, India, Italy, Russia & Costa Rica = 1 participant each
L1	English = 12 participants Spanish = 3 participants Flemish = 2 participants German, Chinese, Italian, Russian = 1 participant each
Target language taught	English = 14 participants French = 3 participants Spanish, Arabic, Russian, Italian = 1 participant each

Data collection

Upon participants agreeing to do the follow-up interview, interviews were scheduled at the participants' convenience and were conducted through Zoom. We relied on semi-structured interviews to explore reasons behind teachers' use (or lack thereof) of MMI. Also, we aligned with Merriam (2002) who noted that surveys are constrained by what researchers decide to ask about, while interviews can produce more open-ended data.

A total of 21 interviews were conducted because data reached saturation, that is, no novel information was given by new participants (Saunders et al., 2018). One of the researchers conducted 19 interviews in English, while another did two interviews in Dutch at the participants' request. Participants whose L1 was other than English were highly proficient in English. The interview questions elicited information on factors that may influence teachers' reported use and perceptions of MMI (Appendix A).

Data analysis

About 12 hours of interviews were transcribed automatically using otter.ai (<https://otter.ai/>) software and manually checked for accuracy. Given the exploratory

nature of this study, a bottom-up analysis was conducted to give teachers a voice as it pertains to their perceptions and use of MMI and by doing so, to address the research-practice gap. In the bottom-up analyses, themes emerged from the data. Three rounds of data analysis were conducted following guidelines for qualitative inquiry (Miles et al., 2014). After reading the transcribed interviews and doing open coding, data analysis was assisted through Nvivo 12.0 (QSR, 2021). In the second round, a coding protocol was established by two of the researchers. The coding protocol consisted of 37 clusters (e.g. age, proficiency, doing research, reading research) that were later on abstracted into themes. Themes, subthemes, and associated clusters were defined, refined and sample quotes were identified. Then, two additional researchers coded about 20% of the data. Inter-coder reliability was calculated at .96. Triangulation of sources and researchers enhanced the trustworthiness of both results and interpretations. Also, to enhance the dependability of results we report reasons that were noted by four or more participants (e.g., Kutscher & Tuckwiller, 2020).

Findings

This study identified twenty-four clusters that make up the themes and associated sub-themes that explain factors that influence L2 teachers' use (or lack thereof) of multimodal input in L2 teaching.- They are: teachers' attention to student-related factors, teacher-related factors, pedagogical factors, and contextual factors. The themes are not presented in hierarchical order. Analyses show that they complement and, at times, overlap with each other. Clusters are summarized in Tables 3 through to 7. The first column across those tables sets out clusters; column 2 provides a definition; column 3 provides sample data and columns 4 and 5 show number of entries and number of participants accordingly. Complementarily, to aid transparency, sample quotes describe sources. Thus, a quote by P1_L5 corresponds to participant 1, line 5 in the interview.

Theme one: teacher's attention to student-related factors

Four clusters make up teachers' attention to student-related factors: (1) age, (2) proficiency level, (3) learners' interests and preferences, and (4) learning needs.

The first cluster, *age*, was mentioned by five participants 14 times (Table 3). The use of MMI with different *age* groups serves different purposes. P14 and P28, for instance, use MMI with adults to engage, motivate, and help learners expand on their answers, and with children to enhance vocabulary acquisition and to further develop the core content of a lesson. P19 stresses that MMI allows elementary learners to get immersed in the language and P7 recommends adults use MMI in out-of-class activities to complement course content.

The second cluster, *proficiency level*, show that regardless of proficiency level MMI was used by some participants to engage and motivate learners (P8, P9 and P19). Teachers, at times, neglect the use of MMI with low proficiency learners and warn against its use. P7 and P2 reported that media was too advanced on teaching websites such as Youglish as “they sort of pick in the middle of a word or sentence” (L39) and this makes it difficult for students to understand messages. To cater to proficiency level, P3 and P9 follow the “*change the task, not the input*” principle so they adapt the task to their learners’ needs. The length of MMI also influences its use in instructional settings: P13 suggests watching entire movies as out-of-class activities to her advanced learners of Spanish, while with low proficiency learners she works with short video segments in class.

Participants also reported that by using MMI they gauge students’ *interests and preferences*, the third cluster. Teachers acknowledge that they integrate MMI because their students find exposure to MMI not only enjoyable (P14 & P20), entertaining (P7), and fun (P10), and because students “want it” and like working with it (P10, P25), but also because teachers see its pedagogical value to intrinsically ignite interest and motivate learners to do other tasks (P12 & P25), such as discussions and debates that are sparked by videos.

The fourth cluster, *needs*, was mentioned eight times by five participants. They pointed to various ways in which learning needs are addressed through exposure and interaction with MMI. For instance, P5 sees the value of MMI in increasing noticing and drawing learners’ attention to grammar structures and complex aspects of the language such as articles in English. P22 provides context for those students who need that extra

information to make sense of meaning, and P2 compensates for learners' disabilities as in the case of deaf students.

Table 3

Teachers' attention to student-related factors

Cluster name	Definition	Sample data	# of entries	# of participants
Age	The age group of the students that affect the use of MMI	Being at an adult school, I did not have to pay so much attention to content that is PG And if you taught minors, then you can only present PG content. So that made it easier for me. I also didn't need parent consent to go on YouTube, or to let them play computer games or something like that. P14_L25.	14	5
Proficiency level	The (background) knowledge and capability of the student to use the TL that affects the use of MMI	I think the level of the students too I think I would definitely be careful about what to choose if I was teaching students with the lower proficiency I'm not just, I wouldn't want to just throw on a video with no guidance or subtitles But maybe for a more advanced class, you can show them, you know, a current events video or a TED talk video, and it could be a great way to get them to discuss it. P8_L8.	32	18
Interests & preferences	Personal interests and preferences of the students that affect the use of MMI	Um, students really seem to like using digital learning tools And I think everybody just likes learning in an entertaining way So things like film, TV, music books, they're just really motivating media. P7_L8.	15	9
Needs	Learning needs of students that affect the use of MMI	I have the problem sometimes with students that don't notice the articles and so it can be helpful in teaching them how we actually use them when we're talking, can use it for like these cloze fill in the blank, so they listen for it Um, you can use it for pronunciation features, like I was saying earlier, you can use it for so many things. P5_L34.	8	5

Theme two: Teacher-related factors

Three sub-themes were found to explain teacher-related factors: (1) personal experience, (2) training, and (3) work-related factors. In the personal experience subtheme, two clusters were identified: *Language learner* and *levels of comfort with technology* (Table 4).

P13, P28 and P3 use MMI with their students because they were *language learners* themselves and experienced it first-hand, know what it feels like, and are aware of the benefits of interaction with MMI for language learning. P9 was mostly exposed to monomodal input as L2 learner and rarely had the chance to hear real speech. So now she exposes her Russian students to MMI. P7 creates a target language immersion atmosphere for his students with MMI as he is aware of its benefits for language learning. P1 and P22 worked at lengths decoding written words and then moved on to processing auditory stream as language learners, a practice they also employ with MMI materials with their students of English and Arabic respectively. P1, P5, and P9 described using captions on/off to meet their learning purposes and using the same strategy with their students.

The second cluster of personal experiences is *levels of comfort with technology*. Inherently, as MMI relies on technological devices for display, P8, P10, P2 and P12 note their use of MMI in classrooms is partially a result of them feeling comfortable with technology. In fact, some participants described themselves as being early adopters of technologies in the classroom.

Table 4

Teacher-related factors: personal experience

Cluster name	Definition	Sample data	# of entries	# of participants
Language learner	Multimodal input use is affected by the teacher's experience as an L2 learner	So I think for me, it was you know, trying to learn Spanish and then Chinese, I found, so especially Spanish, you know, because my level was higher with that from going to school studying it, I found if I had English subtitles, like my language subtitles, right? It was so distracting. P5_L18.	17	12
Levels of comfort with technology	Teacher's disposition to use multimodal input	So, I typically don't go into something If I have not not mastered it, but have a good grip around it, so that I don't waste time, that the little time that I have with learners waste their time. P10_L2.	7	4

The second subtheme, *training*, is explained by clusters *formal training* and *reading research* (Table 5). *Formal training* was mentioned seven times by four participants. While P25 and P2 explain that MMI use was influenced by attending ELT graduate

programs, P13 recognizes its influence from undergraduate education. Participants also acknowledge that attending educational conferences (P2) or participating in school-bound workshops positively influenced their use of MMI. Participants pointed to *reading research* that influenced their use of MMI in classes. For instance, reading about learning styles and different input types has been crucial for P1; reading about neurolinguistic research and how the brain processes multimodal information influenced P9; and learning about educational and learning theory was important for P19 and P25. P25 praises school-funded initiatives to read and discuss research of hers and her colleagues' interests. Conversely, some participants overlook research because they lack time to read (P23, P1) or they purely do not find research relevant for teaching purposes in their contexts (P1, P14 & P25). For example, P14 and P25 both stated that research is typically conducted in laboratory conditions which often do not translate well into classroom realities (e.g., class size).

Table 5

Teacher-related factors: training

Cluster name	Definition	Sample data	# of entries	# of participants
Formal training	Training undertaken in either undergraduate, graduate or in-service teacher training	We have some funding for professional development And a lot of teachers take advantage of the funding to go to like ORTESOL [Oregon TESOL organization] and go to workshops And so those types of, you know, 45-minute workshops where you try to, you know, dump all your expertise into a classroom full of squirrely teachers, I mean, really is one of the easiest ways for people to get some info. P2_L23.	7	4
Reading research	Knowledge acquired as a result of reading research studies	Because I've read the results of different articles, and they say. Okay, this improves listening comprehension, but you never know if it is the result of reading and listening or, and I haven't seen articles yet, at least, that this tool [captions] has been used, like throughout time. So, they see the results, like at the very end of the whole project in more than one year. P25_L30.	12	9

The third subtheme of teacher-related factors is work-related factors, and it is explained through three clusters: colleagues, doing research and teaching (Table 6).

Analysis shows that talking to *colleagues* about their experience with MMI (P3, P8, P17 & P23), participating in larger projects such as materials curation (P2), and addressing requests from direct colleagues or other media users (P12) influences MMI implementation in language classrooms. Similarly, P13, P12, P14 and P20 reflected on how *doing research* influenced their use of MMI. Interestingly, the research undertaken was not directly related to MMI but touches on key aspects of it. For instance, P14 and colleagues did research on the use of swear words by L2 learners and their findings pointed to students' exposure to MMI. P20 and P12 investigated copyright and licensing issues and how that impacts teaching. The third cluster is *teaching*. P14 and P20 note that the more they have their students interact with MMI, the more benefits they find. Also, P6 describes how she provides media to her learners of Chinese with captions to ensure that students are exposed to the language and get something out of it. P9 noted that exposure to MMI gets students' brains to work as students attend to the multiple channels in which information is presented. P12 considers that MMI makes learning more meaningful to the learners, as some of her French learners may never have a chance to go abroad and order food from a restaurant but playing a computer game is a more relatable activity to them.

Table 6

Teacher-related factors: work-related factors

Cluster name	Definition	Sample data	# of entries	# of participants
Colleagues	Imitated teaching practices that favor teacher's experience and knowledge about MMI	I think most of my experience using technology has been very much influenced by other teachers around me. P8_L19.	7	7
Doing research	Systematic inquiry-based teaching practices that favor teacher's experience and knowledge about MMI	...also from research, because I did a master's in applied Linguistics and ELT. P25_L6.	6	6
Teaching experience	Acquisition of knowledge or skills about MMI gained because of teacher's	And the more I am working with students the more I realize that enrich this experience, this language input or even to start your brain working in	10	9

own teaching practices	language, it's better to use different modalities. So, you can see, you can hear, or you can read. P9_L6.
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Theme three: Pedagogical factors

In our analysis, pedagogical factors signal the decision-making processes undertaken by teachers to use MMI. Pedagogical factors are explained through three clusters: (1) access to MMI (2) purposeful use, and (3) quality of MMI (Table 7).

Participants agree that MMI should be used *purposefully* with L2 learning objectives in mind, not for the sake of using it. P23, P28, P7, and P1, for instance, use it to favor students' engagement, particularly when it comes to the teaching of grammar. P3 uses MMI as a prompt for a discussion topic. Although she believes in the benefits of noticing for language learning, she acknowledges that getting students to focus on what you want them to focus on is the hardest thing to do with MMI because “you can't tell even where they're looking” (L26). P5 does not only need a clear purpose but also to scaffold the whole process for it to work. P10 uses MMI to provide teaching variety as the attention span of his students is limited. P12 and P13 use MMI to find different and innovative ways to use tools, and as pointed out by P13 and P2 to address content and teach students more about the world around them. P22 values authenticity and describes the fact that conversation in standard Arabic is not normally found in media, so that constraints their use, and P28 acknowledges that although a plethora of materials are available on the Internet, they still need to be graded so that students can reap their benefits.

Table 7

Pedagogical factors

Cluster name	Definition	Sample data	# of entries	# of participants
Purposeful use of MMI	Learning potential of the materials that affect MMI use in language classes	I have to make sure that there's a pedagogical purpose...that I can justify for using the multimedia. And I mean, I've had mostly good responses as long as I'm using MMI judiciously and not just like turning on a movie so that I can create homework. Yeah... I think that's the main thing... there has to be a pedagogical purpose. And it just has to be done thoughtfully. P7_L4.	37	17

Access to MMI	Accessibility of MMI materials that affect multimodal input use in language classes	So there are some tools like...that are just built really well for learning. And then they even have, like, worksheets and activities that go along with them. So as a teacher, it's really nice to have that stuff prepared. P7_L31.	13	11
Quality of MMI	Characteristics of the media that affect MMI use in language classes	If you want to watch a video, for example, you can even choose different dialects of English, for example, which is something that I didn't do when I was studying in the early 2000s. P20_L4.	10	5

The second cluster, *access to MMI materials* was described by P17 who notes there is a variety of content and materials for her Italian learners and P2 adds that most of the time such material is free. However, at times P1 and P5 struggle to find materials that suit their students' needs as in the case of P24 who talks about how difficult it is to find semi-authentic materials for his 6th graders. P9 claims not having access to MMI and P13 and P17 complain that they do not have the option to modify those available materials to fit their students' learning needs.

The last cluster that explains pedagogical factors is the *quality of media*. P20 praises the variety of media available for teachers and choose different dialects of English. P7 describes a German TV program that is built well for learning. Also, she describes choosing to either have L2 captions, L1 subtitles, or both and having the possibility to modify them. P14 describes quality of media with regards to the availability and ease of use of video editing tools where after every 30 or 40-second sequence, teachers can introduce questions that learners need to answer before they can carry on watching. P17 even classifies readers so that learners can use them according to their proficiency level.

Theme Four: Contextual factors

Contextual factors or characteristics that are unique to the classroom settings of the participants are described at three levels: (1) micro, (2) meso, and (3) macro-levels.

Clusters: *language skills*, *time availability* and *class size*, explain contextual factors at the micro-level (Table 8).

Table 8

Contextual factors: micro-level

Cluster name	Definition	Sample data	# of entries	# of participants
Language skill	A focus on individual language skills that affect MMI use in language classrooms	so sometimes it's, you know, specific, maybe a piece of sort of very detailed listening, where you're building on skills that you've been working on for a while. And sometimes it's just gist, sometimes it's just an icebreaker. P12_L19.	23	13
Time	Length of preparation and delivery of classes that affect MMI use	So, then you have to take into consideration time constraints, like you're gonna be able to present, I don't know, a two-minute clip at most, three times, and then you have to move on. So what can I do with that very short piece, three times repetition. P13_L15.	10	7
Class size	The number of students in a class that affect MMI use	P6: ...I hope you can figure out a method for me to teach my students because I have a big number of students within my room. R: How many do you have? P6: Usually about 80 to 90. So I try my best to think of a better solution to make them more interested in English. And they can reach a good goal. P6_L55.	4	4

Most participants reported using MMI to address different *language skills* and purposes: to aid listening comprehension processes (P1, P6, P7, P9, P23, P24, & P25), to spark oral discussions (P2, P12), and to enhance pronunciation awareness (P2, P5 & P22). Also, participants see the value of MMI for grammar-focused lessons and for vocabulary learning. For instance, while P5 and P1 see the relevance of using MMI for grammar skills development, P9 uses it to engage learners and P20 to show grammar use in real-life contexts.

Time availability is also problematic for MMI use. P13 questions how much MMI can be fully exploited given time constraints. P14, P23 and P25 describe constraints in finding time to fit MMI in class so they opt for assigning it for out-of-class activities; P5, P17 and P24 describe difficulties regarding time to find and adapt MMI materials.

Class size was mentioned predominantly by teachers who work with large classes. As P6 works with about 90 students, using MMI allows her to get Chinese learners more interested in her lesson. Despite working with 95 students and being aware of the possibilities MMI offers, P19 questions whether using MMI would be enough to address fully students' preferences. P25 describes her successful experience with her 25 highly motivated students, but questions whether using MMI would work the same wonders with 45 students.

Contextual factors at the meso-level are documented through three clusters: *Curriculum policies*, *reliability of technology* and *technological resources* (Table 9).

Table 9

Contextual factors: meso-level

Cluster name	Definition	Sample data	# of entries	# of participants
Curriculum policies	Goals and limitations/objectives and constraints mandated by schools that affect the use of MMI	.. I think, when I'm teaching language learners, the main influence is the curriculum, and what I'm asked to teach. P10_L17.	13	10
Technological resources	(un) availability of technological resources at schools or students owned that affect MMI use	I use videos a lot because they're generally available, pretty easy to search for and useful for the class. And you can often find ones that are at level or targeting the specific type of thing that you want to target. P1_L24.	25	15
Reliability of technology	Quality of technological resources at the school that affect the use of MMI	...When I teach in person, most of my teaching has been in situations and contexts where technology is not readily available. So I have, for the most part, had access to projectors. But I have to set the projector up and I have to bring my laptop and the cables have to connect, and they have to get a long extension cord. And I have made these things as turn key as possible as I possibly can. P3_L6.	6	5

Curriculum policies describe how the use of MMI is constrained or favored by the curriculum. P7 noted that she hardly used any videos because at her school, "they not only had a set curriculum", but she was also concerned that "it wouldn't be a productive use of their time" (L19). P6, P14 and P25 neglected the use of MMI because teachers in

their contexts were expected to prepare students to take international exams, and the materials they were given favor audio-only texts for listening comprehension. Curriculum policies in other contexts can also favor the use of MMI. P8, P10 and P28 noted that previous work posts really encouraged the use of MMI. In fact, they required that teachers had some sort of MMI in every class, so they got used to it.

Not having access to *technological resources* is also problematic for MMI use. P10 notes that even if students have access to computers at school, they lack access to technology outside of class and this constrains use of MMI. At times, teachers do not have access to computers (P7 & P14), -high-quality sound equipment (P8 & P3), Wi-Fi (P19) or the software to adapt and change materials (P5 & P6). At other times, teachers are expected to overcome access restrictions as experienced by P9 when trying to access materials for her Russian lessons. Also, on occasion, teachers struggle with technical aspects (P13) or are required to use older textbooks that do not necessarily have MMI components (P1).

Reliability of technology also affects use of MMI. At times, participants described using “basic things” (P2_L2), because although they have access to computers (P9), audio systems (P14) or even the Internet (P25), they are not the newest (P9), the quality of reproduction is poor (P14), and sometimes the Internet connection does not work (P25). So, for teachers it is tiring to deal with those shortcomings all the time.

Table 10
Contextual factors: macro-level

Cluster name	Definition	Sample data	# of entries	# of participants
COVID 19-related context of teaching	Use of MMI language classes as a result of COVID and remote teaching	I mean for me personally, the way I teach now, and the way I taught pre COVID is not that different because I was using the online learning technology quite a bit already. But I think that for a lot of people, that probably changed [...], I think the only thing that maybe was new post COVID is and I'm going to do this now more in the future, like recording myself reading. P5_L9.	9	5

Culture	Norms of behavior and values accepted for speakers of a language that MMI in language classes	The multilingual background context. So sometimes the videos that we find let's say, funny or engaging for kids, it's not necessarily going to be because of the culture, they're not gonna understand the jokes, or it's not going to have this, it's not going to have the same impacts (for?) the rest of their classmates. P28_L14.	6	6
The context of teaching	Characteristics of the place and mode (F2F; online) that affect MMI in language classes	And then in China, it was a little bit difficult because a lot of things weren't available There's no YouTube, no Netflix. P7_L22.	6	4

With regard to macro-level contextual factors, participants noted that the COVID-related context of teaching likewise affects the use of MMI. As a result of the COVID-19 health crisis, P6 was forced to work with MMI. P2, P5, P10 and P13 only introduced minor changes in their teaching as they were used to working with MMI in classes, so transitioning to remote teaching was not a shock.

Participants stated that *cultural traits* of their students also affected MMI use. P28 explains that a huge consideration when using MMI is the multilingual background of her students and how MMI that can be seen as funny for some cultures may be offensive for others. P17 notes the difficulties of finding MMI materials that are not sexist, racist, and politically correct in other ways because the sensibility about those aspects can be very different from country to country.

For P25 and P9 MMI use depends on the *context of teaching* or where teachers work. Thus, working for private schools assumes more access to MMI if compared to public or subsidized schools. P9 describes that online courses require full access to Internet connection and good equipment, and this is essential for MMI use. P7 describes the limitations imposed by the location of teaching, as in the case of China where there is no access to YouTube or Netflix.

Discussion

This study investigated the factors that influence L2 teachers' use (or lack thereof) of multimodal input in L2 teaching. Interestingly, while researchers have narrowly investigated the different types of MMI, such as captions, subtitles, video, and reading-while-listening, our study found that participants followed a more holistic approach in referring to reasons for using MMI. This choice acknowledges the complex nature of language teaching and suggests that teachers view language teaching as a multifaceted approach that considers the interplay between language skills and is affected by various factors (e.g., Kalaja et al., 2015). This observation also aligns with Sato and Loewen's (2022) view and helps us provide suggestions on how to bridge the research-practice gap on MMI.

Using a bottom-up approach, we identified 24 clusters that explain teachers' reasons for use of MMI in language classrooms globally. These clusters were presented in four themes: student-related, teacher-related, pedagogical, and contextual factors. Identification of these factors brings new light to the literature on the use of MMI in language classrooms where studies mostly favored a research agenda and neglected a pedagogical one.

Teachers' choices in MMI use were highly attuned to their students' characteristics: age, proficiency level, interests and preferences, and learning needs. The most frequently recurring cluster, mentioned by 18 participants 32 times in our data, is proficiency level. This is not surprising as numerous prior studies, including meta-analyses, indicate that proficiency level is a key variable in language learning (e.g., Lee et al., 2015). However, more research specifically targeting proficiency level is needed to understand better how and for what proficiency levels different MMI types are more effective.

In line with previous research on teachers' perceptions in multiple areas of L2 teaching, teachers' prior experiences were important determinants of MMI use (e.g., Kaderoğlu & Esquerré, 2021; Slaughter et al., 2019). Teachers' experiences as *language learners* were mentioned by 12 participants 17 different times. This can be explained by the fact that as language teachers have already spent considerable time as language learners,

they bring in lots of experience to inform their own language teaching practice (e.g., Kaderoğlu & Esquerré, 2021).

We found that MMI use was triggered by teachers' involvement not only in formal training but also from reading research. Mariotti (2015) found that teacher training influenced teachers' use of MMI. Also, although participants in our study see reading research as an opportunity, some of them also see it as a constraint as they do not always have the time or care about reading research which may increase the research-practice divide. This finding aligns with Marsden and Kasproicz (2017) who reported that common barriers to research engagement included practical constraints, such as access, lack of understanding of research and negative perceptions of research as teachers do not see any relevance to teaching.

Work-related factors such as imitating practices from colleagues, doing research and fulfilling requirements to teach with technology were also reported to positively influence the use of MMI. This is in line with Nishino (2012) who noted that teachers' beliefs and practices can be influenced by training and colleagues' histories of success or failure with a new practice or innovation. However, at times, some teachers will simply not use MMI unless they are required to do so.

Pedagogical factors also influenced the use of MMI. For our participants it was not only a matter of using MMI for the sake of using it, but because their affordances met key pedagogical principles. This in turn helped them select MMI that met a lesson objective and was purposeful. Also, we found that our participants used MMI given not only the availability of media, but also the quality of it. Mariotti (2015) also reported that teachers in her study identified the ease of accessing subtitled materials as an influential factor for the use of subtitles.

In line with prior literature indicating that context plays a vital role in how teachers approach instruction in general (e.g., Nishino, 2012) and teaching with technology (Cárdenas-Claros & Oyanedel, 2016), we found that factors at the micro, meso, and macro-levels affect the use of MMI. Time, class size, and language skills remain key factors at the micro-level. Teachers struggle to fit MMI in lessons given the packed curriculum they are required to meet. Also, participants reported not finding the time to

select, adapt and use MMI materials. This finding aligns with Mariotti (2015) and Kartchava and Nassaji (2021) who reported that teachers struggle to create their own materials. Nishino (2012) also found that class size influenced the teachers' decisions about implementation of innovations. To cater to proficiency levels, researchers have relied on traditional lexical complexity measures to classify readers and listening texts (see Révész & Brunfaut, 2013), and recent innovations are exploring video texts used for listening comprehension. In fact, Alghamdi et al. (2021) created AUVANA, a cross-platform to measure video complexity. Perhaps until those technologies become more accessible to the regular language teacher, a way forward for teachers could possibly be to follow "the grade the task not the (multimodal) input" principle, to ensure that learners are exposed to a range of MMI. That is, rather than spending a lot of time finding MMI material at the learners' level, they could provide enough scaffolding for preparing learners for the readily available MMI input that may be beyond the level of their students. Curriculum policies, reliability of technology and (un)availability of technology make up factors at the meso-level. Teachers reported working with MMI within the restrictions of the curriculum which on some occasions is geared towards assessment-based teaching. Also, they mentioned that institutions where use of MMI was a must, forced them to find ways to integrate MMI in their lessons. Availability and reliability of technology are still issues in some contexts and without appropriate technology, MMI use in classrooms becomes a far-fetched idea.

The COVID-19 global health crisis, the context of teaching and students' culture were found to affect the use of MMI at the macro-level. For teachers who were used to working with technologies, the worldwide health emergency did not bring about pedagogical changes, but for others it was an opportunity to explore with MMI (see Yi & Jang, 2020). The need to foster intercultural awareness and understanding also surfaced in our data. Teachers were reluctant to use MMI because at times they did not find the materials culturally appropriate and inclusive. However, these results need to be interpreted with caution because roughly half of the participants were L1 speakers of English and many of them taught English.

Conclusion

This study identified a myriad of factors that affect whether and how teachers use MMI input in a variety of contexts globally. Because of the exploratory nature of the study, we deliberately chose to conduct a bottom-up analysis which painted a broad picture of factors that teachers consider in their selection and use of MMI. In terms of the research-practice gap, the findings showed that teachers are quite attuned to the research-supported broad benefits of MMI (e.g., the support that on-screen text offers for listening comprehension, as well as for vocabulary and grammar learning), and they paid a lot of attention to purposeful use of MMI. While it is encouraging that teachers are well-aware of research on MMI, they mentioned many limitations to following research-supported practices, such as lack of time in class, lack of time for finding appropriate MMI, lack of access to relevant resources. Moreover, we found that teachers are in a weak position, caught between research and centrally planned curricula, and limited budgets. Accordingly, we offer a set of suggestions to start bridging the research-practice with MMI.

1. Introduce key terms and concepts about MMI research during teacher-training programs. P14 and P25 pointed out that familiarizing pre-service teachers with the difference between captions and subtitles, for instance, would help practitioners make better sense of research on MMI.
2. Include clear guidelines on the use of MMI. While the goal is to motivate the use of MMI rather than impose it, guidelines may be necessary. Such guidelines can be provided in practically-oriented volumes and journals.
3. Foster the formation of communities of practice. Teachers in our data learned not only from the training they attended but also from colleagues. So, the formation of communities of practice will ensure MMI will not only depend on personal and individual capacities, but on collaborative work. Including practice-oriented researchers in such communities of practice may further help to narrow the gap (Becker, 2023).
4. Develop both declarative and procedural knowledge about how to use different MMI types in a variety of classroom settings and for different purposes. Such information can be shared at targeted professional development workshops and

webinars as pointed by P2 and P13. In our view, workshops should consider the constraints that teachers face every day. For example, given that limited classroom time is one of the constraints, workshops can focus on what teachers can suggest learners do outside of class.

5. Encourage collaborative work between teachers and textbook publishers. We second P1's suggestion that MMI researchers should work more closely with publishers and textbook writers so that recent research findings are reflected in the resources (i.e., textbooks) that teachers tend to rely on.

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Appendix A: Interview questions

Note: Since the participants had already completed a questionnaire in which different types of MMI input were included and explained, we did not have to do that in the interviews.

1. What do you think about the use of MMI (captions, subtitles, reading-while listening) in language teaching?
2. What do you think your beliefs are influenced by?
3. Does your use of MMI change with any teaching contexts?

Follow-up (if participants aren't offering many details): With possible teaching context differences in mind: How much MMI do you use and what types? How do you use these specifically in your teaching?

4. What do you use MMI for? That is, what are your main objectives for using MMI?
5. What is your use or non-use of MMI influenced by? What are the main factors, if there are such?