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USING GESTURES: INTENTIONAL TEACHING GESTURES AS AN L2 FACILITATIVE TOOL

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Abstract

Gestures used for classroom pedagogical purposes, or Intentional Teaching Gestures (ITG), are often used in second language (L2) programs, however, little is known of their impact on L2 learning. Therefore, this study of students' use of ITG was carried out to address the impact of ITG on L2 learning in a primary school context. The research approach combined a naturalistic inquiry in a case study school with mixed methods to investigate students' use of ITG and patterns of use. This article examines the data relating to students' use of ITG in two oral language tasks. Findings reveal that more students used ITG when orally telling a narrative that had been introduced to them with ITG and when viewing ITG. Students used ITG to demonstrate meaning and to support language retrieval and ITG use often preceded oral production. The findings highlight the cognitive role of ITG in language recall and as the primary mode of communicating meaning when there is a gesture-word mismatch. Learners' use of ITG provide insights into their stage of language development and their language gaps and are useful as a diagnostic tool for teachers. The findings contribute practical understandings towards language teaching pedagogy and practice.

Keywords: gesture, Intentional Teaching Gestures, language learning, language teaching, second language

Introduction

Learning a second language is a compulsory aspect of primary school education systems throughout Australia, and in many other parts of the world, and a common key aim of these second language programs is to generate student proficiency in the target language. In order to do this, many programs are delivered in the target language in order to increase students' exposure to the language being learned and to provide a context that encourages learners to actively use the language themselves. Amongst a range of teaching strategies to support student learning of the new language is the use of Intentional Teaching Gestures, or ITG. These are gestures that have been designed as a pedagogical tool for the teaching and learning of an additional language in a school context. One ITG is used synchronously with the oral production of each word and the form of the gestures remain consistent. There are systems of Intentional Teaching Gestures that have been developed by method developers and some teachers

have developed their own sets of gestures that they use consistently in their classrooms for a range of pedagogical purposes. Despite the widespread use of ITG in language programs, there is limited empirical evidence of the impact of ITG on students' language learning.

This study was designed to investigate the impact of Intentional Teaching Gestures on the learning of Japanese as an additional language in one private school in Melbourne, Australia. The guiding research questions for this study are: Research question 1: To what extent do students use ITG when Storytelling and doing Story Re-tell? Research question 2: What patterns of gesture use emerge when students tell stories in Japanese?

This article specifically focuses on students' use of ITG and explores students' production of ITG in two different narrative tasks as well as compares students' use of ITG with and without viewing ITG. Patterns of students' use of ITG are also explored alongside their production of Japanese. The aim of this study is to understand the impacts of gesture use by students when learning a new language to provide empirical data in order to make informed choices about teaching methods and to inform teaching pedagogy and practice. Given the widespread use of gestures as a pedagogical tool in second language classrooms, this study is of significance to teachers and learners and offers a rationale for the implementation of Intentional Teaching Gestures into classroom second language programs. Findings reveal the pedagogical implications of students' use of Intentional Teaching Gestures whilst learning L2, including the circumstances of use and patterns of gesture use. The findings can provide evidence to inform teachers' decisions of L2 classroom teaching methods and practical strategies that can be implemented into the classroom to enhance learning.

Literature Review

The role of gestures with second language (L2) learning has been of increasing research interest since the late 1990s. Gesture use by L2 learners has been identified as serving a communicative function together with oral language and as a form of 'mime' helping overcome a lack in L2 vocabulary (Gullberg, 1998; Kendon, 2004; Quinn-Allen, 2000). Second language learners have also been found to use gestures to elicit words, support clarity of communication and signal lexical searches (Gullberg, 2006) performing both a communicative and cognitive function for L2 speakers (Gullberg, 2010).

Gestures have also been found to support L2 comprehension (Mori & Hayashi, 2006), particularly when 'message-carrying gestures' occur with speech (Harris, 2003). Learners often rely on teachers' gestures in second language classrooms to comprehend what they are saying in the target language (Calbris, 1990) and teachers often use gestures to prevent the need to use the first language (L1). Research has shown that students scored higher on L2 comprehension tests when they had viewed gestures (Ludvigsen, 2008) and viewing gestures supported L2 listening comprehension, particularly for the lowest proficiency learners (Sueyoshi & Hardison, 2005).

Gestures accompanying speech have been found to support L2 word learning (Kelly, McDevitt & Esch, 2009; Kushch, Igualada & Prieto, 2018), the learning of L2 expressions (Quinn-Allen, 1995), learning and performing a play (Ulbricht, 2018), and learning and recalling a story (Porter, 2016). Each of these studies, across different languages and contexts, demonstrate a positive impact of gestures on second language learning and contribute towards our understanding of the impact on learners' L2 production.

Learners' use of gestures have been found to support their learning in a range of ways. Information present in learners' gestures can demonstrate their understanding of concepts (Domínguez, 2005) and learners' knowledge of L2 (van Compernolle & Williams, 2011). Learners' use of gestures with language have also been found to support fluency (McCafferty, 2006). These studies explicitly identify the impact of learners' own use of gestures on their learning.

A number of empirical studies have connected gesture research with theories of encoding such as the 'dual encoding theory' (Paivio & Csapo, 1973), which suggests that learning is more effective when presented through at least two modalities, such as through visual and verbal modes. Studies in L1 have found that words presented with gestures are recalled more (Riseborough, 1981) and are strongest when learners perform gestures themselves when learning new words (Engelkamp, 1991) and using gestures then supported the retrieval of words that had been presented with gestures (Woodall & Folger, 1985). It is also suggested that performing gestures influence the way L2 is stored in memory (Wagner Cook & Goldin-Meadow, 2006) and that gesture use leads to better L2 recall, regardless of whether students choose to use gestures or were instructed to gesture (Wagner Cook, Yip & Goldin-Meadow, 2010). This collection of research identifies the role of gesture on lexical retrieval.

The 'Information Packaging Hypothesis' (Kita, 2000) suggests that gesture plays a role in the conceptual packaging of information for speech and as a mode for thinking (Kita, 2000). Second language speakers often use gestures as a planning tool for the language that they are about to produce (Gullberg, 1998) and this shows that gesture production has an internal function for L2 speakers. This suggestion has been supported with empirical evidence from L2 learning contexts, where gestures have been shown to support learners' mental processing and construction of L2 speech (Kim, 2010; Negueruela & Lantolf, 2008). The view that gestures are part of the thinking and speaking process (McNeill, 1992) sees gestures as integral to meaning making and communication.

The theory of 'embodied cognition' (Glenberg, 1997) also provides a theoretical underpinning for the study of gesture. It suggests that physical actions play a role in cognitive processing and that language and action are encoded in memory together (Glenberg, 1997; Kaschak & Glenberg, 2000). Gesture has also specifically been connected with the theory of embodied cognition (Barsalou, 2008). It is suggested that language connected with gesture leads to stronger memory traces and this is done when learners gesture during language encoding which makes a connection between the gestures and the words (Engelkamp, 1991). This process is claimed to 'lighten the load' of cognitive processing (Goldin-Meadow, Nusbaum, Kelly & Wagner, 2001). These theories suggest that embodied encoding through gestures with language lead to stronger memory traces and learning than just hearing or saying language.

The research discussed demonstrates a positive impact of gestures for language learning, however, much of it has focused on spontaneoous naturally occurring gestures or culturally specific gestures and not a system of intentional teaching gestures that were designed as a classroom pedagogical tool. Therefore the specific impact of ITG that are widely used across L2 programs still needs to be more fully understood. So the focus of the current study on the impact of ITG on Japanese second language learning aims to add to this field of research.

Method

Participants

The participants of the study were 170 primary school students across ten classes learning Japanese as an additional language as part of their compulsory education. The students were from a girls' Independent school in Melbourne Australia. The school was selected for the study because the students had not been exposed to Intentional Teaching Gestures prior to the study which provided a context from which to investigate the implementation of Intentional Teaching Gestures. Additionally, the teacher of Japanese was interested in participating in the study to find out about the impact of ITG in their teaching context. The study involved one teacher of Japanese that taught all of the primary school classes through the medium of Japanese. The teacher is the only teacher of Japanese in the primary school.

Ethics approval was granted from The University of Melbourne Ethics Committee to carry out the study. The College Principal and Head of Junior School also gave written approval for the research to be conducted at the school, and consent forms were collected from the parents of the student participants and from the teacher of Japanese.

Research Approach

The study is a naturalistic inquiry within a case study school (Stake, 1995; Yin, 2009, 2012) reflecting ecological validity of classroom-based research. A mixed methods design was employed to address the individual research questions according to their specific focus (Teddlie & Tashakkori, 2011). The integration of quantitative and qualitative data allows for the varied research questions to be addressed. The first research question, To what extent do students use ITG when Storytelling and doing Story Re-tell? sought to discover quantifiable differences in ITG use by students in each narrative task. The second research question, What patterns of gesture use emerge when students tell stories in Japanese? sought to find out about students' use of ITG, and a thematic analysis of transcription data provided qualitative evidence for this aspect of the study.

Data Collection Method

Data collection involved two narrative tasks, 'Storytelling' and 'Story Re-tell', that were used to elicit students' oral language and investigate their gesture use. Storytelling involved students in telling an original story. Students were provided with a collection of magnetic picture cards that they could use as stimulus to create a story with. The cards also included blank cards that could be used to represent any additional language that students wanted to use. Students constructed stories visually with the picture cards and were given time to rehearse their stories individually before orally presenting them. This was done at two time periods of the research, five weeks apart.

Story Re-tell involved re-telling a known story six weeks after learning the story in class. Two stories were used, one each school term over two school terms and students participated in one of these tasks depending on the class they were in. For Story Re-tell, students were provided with a textless picture book, and were given time to look through the book to remind themselves of the story and rehearse the story individually. Then students presented the Story Re-tell. Following the Story Re-tell with the textless picture book, students were asked to do an additional Story Re-tell of the same story, the second time looking at the textless picture book whilst also viewing the researcher perform the ITG for the story, as had been done when the students had learned the story in class.

Data Analysis

Each narrative was video recorded, and each word, part-word or utterance that each student produced, and each ITG they produced was transcribed. This data enabled the quantity of ITG produced by students to be determined for each story task for each student and provided transcription data (language and gestures) for thematic analysis of patterns of students' gesture use.

Findings and Discussion

Students' use of ITG

The data presented in this section is of students' ITG use when undertaking story tasks after learning Japanese with ITG and addresses research question 1, To what extent do students use ITG when Storytelling and doing Story Re-tell? Students' use of ITG was determined by counting the number of students in each year level who used ITG for each story task, Storytelling and Story Re-tell, each school term. Table 1 presents the number of students in each year level who used ITG across two stages of Storytelling in each school term.

Table 1. Number of students using ITG when Storytelling

	Number of students using ITG when Storytelling at stage 1	**Number of students using ITG when Storytelling at stage 2**
Prep	Term 1:1 student out of 12 = 8.3%	Term 1: 0 out of 10 students = 0%
	Term 2: 0 out of 14 students = 0%	Term 2: 0 out of 14 students = 0%
Year 1	Term 1: 3 students out of 17 = 17.6%	Term 1: 3 out of 17 students = 17.6%
	Term 2: 1 student out of 19 = 5.2%	Term 2: 0 out of 18 students = 0%
Year 2	Term 1: 1 student out of 17 = 5.9%	Term 1: 3 out of 15 students = 20%
	Term 2: 0 out of 16 students = 0%	Term 2: 2 out of 14 students = 14.3%
Year 3	Term 1: 2 students out of 21 = 9.5%	Term 1: 1 out of 20 students = 5%
	Term 2: 0 out of 14 students = 0%	Term 2: 0 out of 12 students = 0%
Year 4	Term 1: 1 student out of 20 = 5%	Term 1: 0 out of 20 students = 0%
	Term 2: 1 student out of 16 = 6.3%	Term 2: 2 out of 17 students = 11.8%

The data shows that the percentage of students who used ITG when Storytelling ranges from 0% to 20% between year levels and school terms whilst the actual number of students using ITG ranges from 0 to 3 students from each year level each term. Overall, a very small number of students used ITG when Storytelling in Japanese.

Table 2 presents the number of students who used ITG during the two Story Re-tell tasks; Story Re-tell with the textless picture book and Story Re-tell with the textless picture book whilst viewing ITG.

Table 2. Number of students using ITG when doing Story Re-tell

	Number of students using ITG when doing Story Re-tell (with book)	**Number of students using ITG when doing Story Re-tell (with book whilst viewing ITG)**
Prep	Term 1: 3 out of 11 students = 27.3%	Term 1: 5 out of 11 students = 45.5%
	Term 2: 3 out of 13 students = 23.1%	Term 2: 8 out of 13 students = 61.5%
Year 1	Term 1: 7 out of 14 students = 50%	Term 1: 12 out of 14 students = 85.7%
	Term 2: 6 out of 18 students = 33.3%	Term 2: 13 out of 18 students = 72.2%
Year 2	Term 1: 5 out of 16 students = 31%	Term 1: 7 out of 16 students = 43.8%
	Term 2: 3 out of 14 students = 21%	Term 2: 9 out of 14 students = 64.3%
Year 3	Term 1: 11 out of 19 students = 57.9%	Term 1: 15 out of 19 students = 78.9%
	Term 2: 5 out of 13 students = 38.5%	Term 2: 6 out of 13 students = 46.2%
Year 4	Term 1: 5 out of 17 students = 29.4%	Term 1: 9 out of 17 students = 52.9%

Term 2: 9 out of 16 students = 56.3%	Term 2: 10 out of 16 students = 62.5%

The data shows that between 21% and 57.9% of students across all year levels used ITG during the Story Re-tell with the book (left column). Actual numbers of students ranged from 3 to 11 students in each class for this task. For the second Story Re-tell task where students re-told a familiar story whilst viewing the book and the researcher performing ITG (right column), between 43.8% and 85.7% of students across all year levels produced ITG. This represented between 5 and 15 students from each class. These findings show that more students produced ITG themselves in the Story Re-tell tasks compared with Storytelling, with the greatest quantity of gestures being produced by students during the Story Re-tell whilst viewing ITG task. This indicates that the viewing of ITG appears to generate an increase in students' own ITG use.

Previous findings using this broader data set showed that the quantity of oral language that students could produce in Japanese increased when doing Story Re-tell and the greatest quantity of oral language was produced by students when doing Story Re-tell whilst *viewing* ITG (Wilks-Smith, 2022). The current findings now add that students' *use of* ITG increased markedly during Story Re-tell and particularly so when viewing ITG. This suggests an association between viewing and using ITG as well as an association between increased use of ITG by students and increased oral language output.

When interpreting this data a number of points should be considered. It is possible that Story Re-tell elicited more gesture use by students because this task involved the re-telling of a known story that was introduced to students with ITG, so the recollection of the story may have also involved the recollection of the gestures. By contrast, Storytelling involved students' own construction of original stories. When considering the two Story Re-tell tasks, it needs to be noted that the greatest use of ITG by students occurred when they were viewing the researcher perform ITG so some gesture use may have been stimulated by copied gesture production. Despite this, no oral language cues were provided to students so regardless of whether students' ITG use was self-initiated or copied, students' oral production increased whilst their use of ITG increased.

Story Re-tell recreates the learning experience of students when they were first exposed to the story, the new language and ITG. It is possible then that by reactivating the original learning experience, eliciting visual and embodied memory, that more gestures, and more Japanese, was recalled. The second Story Re-tell which included students' viewing the researcher perform ITG may have provided an additional memory cue that further stimulated students' use of ITG and Japanese.

It is possible that performing a second Story Re-tell led to students recalling more of the story and more gestures due to a practice effect, however, the video recordings of students' stories showed that their production of Japanese strongly connected with their viewing of the researcher's ITG and therefore related to their viewing and use of ITG rather than to doing the task a second time.

Patterns of ITG use

This section presents the data relating to the patterns of gesture use by students when doing Story Re-tell and addresses research question 2, What patterns of gesture use emerge when students tell stories in Japanese? The first of two themes involving students' use of ITG is 'use of ITG without a word'.

Use of ITG without a word

Within this theme, there were five different ways that were identified in which students used ITG themselves without accompanying the gesture with a word.

1. ITG without a word expressing the meaning of a word
2. ITG without a word providing additional information
3. ITG without a word preceding production of a word
4. ITG without a word giving emphasis to the word
5. ITG without a word highlighting when students are having difficulty with that aspect of language.

The following formatting style in Table 3 was designed to provide as much information as possible about students' oral language, including what the student said in Japanese, and in English if English was used, as well as when they used ITG. This key will support interpretations of the results that follow.

Table 3. Key to interpret 'Students' use of ITG' excerpts

(E)	A word with an (E) next to it indicates that the word was said in English and was therefore transcribed in English.
あおむし	Highlighted words show that the appropriate ITG was performed as the word was said.
(あおむし)	Highlighted words in brackets show the appropriate ITG was performed without verbalising the corresponding word.
あおむし(＝ちょうちょ)	An = sign means that the ITG was performed whilst saying a non-corresponding, incorrect word.

The first way that students used ITG without a word was when an ITG was unaccompanied by either a Japanese or English word but expressed meaning. The following excerpt in Table 4 depicts this.

Table 4 . 'Students' use of ITG (without a word) expressing meaning' excerpt

Two-k-13 SR-T2+ (ITG)
(Year 2 student doing Story Re-tell while viewing ITG)

あおむし　は　（おなか）が　いたい　です。
Translation:
The caterpillar had a sore (stomach).

Table 4 is an excerpt from the transcription of a Year 2 student's Story Re-tell while viewing ITG. It shows that the student used an ITG to express おなか 'onaka', stomach, without saying a word in either English or Japanese. The student's use of ITG demonstrates their intended meaning and knowledge of this aspect of the story, provides additional meaning to the student's telling of the story and allows the story to proceed without interruption due to an unknown Japanese word. It also avoids a switch from Japanese to English. Such a use of ITG demonstrates to the teacher that the student intends to communicate this meaning but cannot recall the L2 word and therefore indicates the student's 'point of readiness'. In this way, ITG provides a diagnostic function for the teacher, revealing the learner's current learning state, or point of readiness, that can be used to inform future teaching.

The next excerpt in Table 5 shows when ITG without a word provides additional information. The following excerpt shows this occurring when ITG is used in place of a single word within an utterance.

Table 5. 'Students' use of ITG providing additional information' excerpt

One-s-04 SR-T5+ (ITG) **(Year 1 student doing Story Re-tell while viewing ITG)** でも、 おいしい おむすび は ころころころりん す… を （あな の なか）に はいりました。 *Translation:* *But, the delicious rice ball wen… rolling, rolling and entered (inside the hole).*

Table 5 is an excerpt from a Year 1 student's story showing an additional phrase, あな の なか 'ana no naka', meaning 'inside the hole', being inserted into the utterance through the use of ITG. Without this information, a listener would not know where the rice ball had entered. This use of ITG supplies supplementary information to the re-tell, giving a more thorough account of that part of the story. The student's use of ITG demonstrated that they knew these details of the story and had the knowledge of Japanese syntax to insert this phrase into the correct place in the utterance. This sort of demonstration of students' language knowledge provides the teacher with important information about what they know and what they need to learn in Japanese.

The following excerpt in Table 6 shows use of ITG without a word preceding production of a word.

Table 6. 'Students' use of ITG preceding production of a word' excerpt

One-t-07 SR-T2 (ITG) **(Year 1 student doing Story Re-tell)** あおむし は five (五) 五 オレンジュ を たべました。 *Translation:* *The caterpillar ate five(E) (five) five oranges.*

This excerpt shows that a Year 1 student first produced the word 'five' in English, followed by the ITG of the number five and then produced the Japanese word for five. In this excerpt, we can see the following sequence of English, ITG, and then Japanese. This suggests that the use of ITG may play a role in recalling the word in Japanese. This is of value to second language teachers as there may be merit in encouraging students to use ITG to support L2 recall. It also shows that close observation of students' use of ITG can serve as an indicator of gaps in target language and can assist teachers to provide targetted teaching to support students' learning.

Another ITG without word use involves giving emphasis to a word. The following excerpt in Table 7 shows this.

Table 7 . 'Students' use of ITG giving emphasis' excerpt

Two-c-16 SR-T5+ (ITG) **(Year 2 student doing Story Re-tell while viewing ITG)** (でも) おむすび は ころりん すっ を … は。 *Translation:* *(But) the rice ball rolling down… 'o' 'wa'..*

In this excerpt, a Year 2 student used only one ITG 'でも', 'but', throughout her whole story. The impact of this strategic use of ITG made a strong point of 'But…' in the story, and therefore gave emphasis to this aspect of the story, through use of ITG. The section of the story which precedes the excerpt involves the man preparing to eat a delicious rice ball. The student's emphasis of 'but' via ITG shows that what follows is unexpected and significant to the story.

A further type of wordless ITG use involves ITG highlighting an area of difficulty, as shown in the following excerpt in Table 8.

Table 8. 'Students' use of ITG highlighting an area of difficulty' excerpt

Four-c-02 SR-T5+ (ITG) **(Year 4 student doing Story Re-tell while viewing ITG)** （ペコペコ　です）。 *Translation:* *(He's hungry).*

The excerpt in Table 8 shows that the Year 4 student produced the 'he's hungry' concept through the use of ITG without saying anything in Japanese or English. This suggests the student did not recall the relevant words in Japanese but did recall the story meaning. The use of ITG in this instance shows how failure to acquire or recall target language vocabulary for concepts understood can be compensated by ITG use, without a switch to English. As a pedagogical device, ITG draws the teacher's attention to this use of ITG as an indication of students' target language gaps. Such use of ITG also identifies students' individual point of readiness indicative of the student reaching a point in which they are ready to learn the new target language word.

The presentation of data now turns to focus on the second theme, gesture and word mismatch.

Gesture and word mismatch

The second theme, gesture and word mismatch, identifies a mismatch in meaning between the simultaneous production of an ITG and a target language word. This mismatch of ITG and a word was found to arise in five different ways:

1. words with different meanings
2. words which share the same ITG
3. particles
4. verb tenses
5. words preceding the correct word.

The first excerpt in Table 9 presents the first of these ways, students' ITG and word mismatch between words with different meanings.

Table 9. 'Mismatch of words with different meanings' excerpt

Four-a-04 SR-T2+ (ITG) **(Year 4 student doing Story Re-tell while viewing ITG)** げんき（＝おいしい）おいしい　です。 *Translation:* *Feeling well (=delicious). It is delicious.*

Table 9 is an excerpt from the transcription of a Year 4 student's Story Re-tell showing that the student said "it's feeling well…" (a single word in Japanese, 'genki') while producing the ITG for 'delicious' and then added "…it's delicious". Whether the student intended to say 'feeling well', or 'delicious' was unclear from the mismatch, however, the subsequent addition of "it's delicious" clarified that the meaning communicated via ITG was the intended meaning. As also shown in the previous theme, the use of ITG preceded the production of the intended word that then resulted in the student producing the correct word and completing the utterance. This suggests that meaning is often first learned through the observation of ITG and is a predictor of later oral production. With a mismatch, it is difficult to determine if a students' intended meaning is held in the word or the gesture, however, the subsequent production of a word that was first produced in ITG, indicates that the intended meaning is often held in the ITG. Mismatches of this kind can inform teachers of student learning needs and point of readiness. Teachers need to particularly attend to students' use of ITG because the gestures are conveyers of meaning, and since meaning can be portrayed through ITG prior to its verbalisation, as in cases of ITG-word mismatch, it is important to understand that the ITG is usually the more accurate source of the speaker's intended meaning.

Another way that mismatches of ITG and word occurred were where two words share the same ITG. The following excerpt in Table 10 demonstrates this.

Table 10. 'Mismatch of words which share the same ITG' excerpt

Three-s-22 SR-T5+ (ITG) **(Year 3 student doing Story Re-tell while viewing ITG)** ねずみ　は　おじいさん　に　きん（＝おかね）を　あげました。 *Translation:* *The mouse gave gold (=money)to the old man.*

The excerpt in Table 10 shows a Year 3 student's mismatch between saying "gold" and using the ITG for 'money' when re-telling the traditional Japanese story of 'The Rolling Rice Ball', in which the mice gave the old man money. Both gold and money, as well as Friday, 'money day', are expressed with an identical ITG, but the words are not at all interchangeable. The excerpt shows that the student used the correct ITG for 'money', in accordance with the story, and demonstrated knowledge of that part of the story, even though the incorrect word was stated. The root of the meaning which the ITG symbolises is the same for 'gold', 'money' and 'Friday'. This shared meaning is an important feature of Japanese, however, this example of gesture-word mismatch shows how easily these words could be confused by students when they share the same ITG. This highlights the need for each ITG to be unique and relate to one single word.

A further mismatch of ITG and word involves Japanese particles. The following excerpt in Table 11 demonstrates this.

Table 11. 'Mismatch of particles' excerpt

Two-k-01 SR-T2+ (ITG) **(Year 2 student doing Story Re-tell while viewing ITG)** あおむし　は　chrysalis-oo　が(で) sleep-oo を　たべました。 *Translation:*

The caterpillar ate a sleep (in) the chrysalis.

This excerpt shows an ITG-word mismatch of Japanese particles. One particle was said while a different one was demonstrated with ITG. Such a mismatch may indicate the student's uncertainty about which particle to use and has pedagogical value for teacher-insight into individual students' point of readiness and current level of language ability, in this excerpt specifically with Japanese particles.

The mismatch of ITG and word was also identified between the verb tense verbalised and the ITG demonstrated. The following excerpt in Table 12 illustrates this.

Table 12. 'Mismatch of verb tenses' excerpt

Prep-g-08 SR-T5+ (ITG) **(Prep student doing Story Re-tell while viewing ITG)** ころりん　（あな）に(＝の)　に　はいりましょう(＝ました)。 *Translation:* *Rolling in(='s) (hole) entering(=ed) in.*

Table 12 identifies that a mismatch occurred between a Prep student's verbalisation of 'entering' while using ITG for 'entered'. This may indicate the student's uncertainty about whether the action in the story was proceeding or past, or may identify the student's developing knowledge of verb tenses in Japanese. The correct tense for this part of the story is past tense, 'entered', that the student produced using ITG, so, interestingly, this demonstrates again that the meaning portrayed with ITG was the correct and intended meaning.

The final instance of mismatch was when a students' word preceded the correct word being produced. The following excerpt in Table 13 demonstrates this.

Table 13. 'Mismatch of words preceding the correct word' excerpt

Three-w-04 SR-T2+ (ITG) **(Year 3 student doing Story Re-tell while viewing ITG)** ペコ（＝まだ）… あお…ペコペコ（＝まだ）です（＝ペコ）。 *Translation:* *Hung (=still)… cater…it is(=hungr..) hungry (=still).*

The excerpt in Table 13 identifies that the student could express their intended meaning in Japanese, however, produced a number of ITG-word mismatches and had difficulty producing a clear utterance. Following several ITG-word mismatches, the student was later able to successfully produce both ITG and words synchronously saying まだまだ　ペコペコ　です。, meaning 'He was still hungry'. Following this, the student said the phrase again using ITG for the first two of the three words and then later gestured all three words while saying the same phrase. The final time the phrase occurred in the student's story, they said the utterance correctly without any use of ITG. ITG was used when the student was grappling with producing the required target language and their use of ITG gradually dropped as the learner was able to produce the utterance. This demonstrates the role of ITG as a support for L2 retrieval and production, particularly during moments of difficulty. These findings will now be discussed and related to the literature.

Discussion

The data showed that when students were individually telling their self-created stories, in the Storytelling task, between zero and 20 percent of students used ITG. When doing Story Re-tell of a familiar story however, significantly more students used ITG. When doing Story Re-tell whilst looking at the textless picture book, between 21 and 57.9% of students used ITG. Then when doing Story Re-tell again, whilst both looking at the textless picture book and the researcher's production of ITG, between 43.8 and 85.7% of students used ITG. This shows a difference in students' use of ITG between the two tasks, Storytelling and Story Re-tell. It is possible that this difference occurred because Story Re-tell involved students in re-telling a known story that was introduced to them with ITG and therefore may have evoked students' memory of the ITG and influenced their own production of ITG. In this way, the language encoding environment with the increased level of input with ITG matched the retrieval environment and facilitated students' own use of ITG. This relates to Krauss's 'Lexical Access Theory' (1998) which identifies the role of gestures in supporting speakers to retrieve language and the 'Lexical Retrieval Hypothesis' (Rauscher, Krauss & Chen, 1996) which identifies the role of gestures as helping speakers retrieve language needed during speech production.

The findings from the current study also show that a much greater production of ITG occurred when students viewed the researchers' ITG in addition to viewing the book. It is likely that the viewing of ITG in this task would have stimulated students' own production of ITG, however, despite students' use of ITG potentially being copied production of ITG, no oral language prompts were provided to students. A previous study with this broader data explored students' viewing of ITG during Story Re-tell and found that students' production of Japanese increased when viewing ITG (Wilks-Smith, 2022), so the current data focusing on students' use of ITG now extends from that and highlights the correlation between students' increased use of ITG and increased production of Japanese when viewing ITG. These findings relate to previous research that found that when children use gestures, they could recall more L2 words (Sueyoshi & Hardison, 2005; Kelly, McDevitt & Esch, 2009) and the quantity of language that they produced also increased (Sauer LeBarton, 2010). Research has also found that children who were told to gesture recalled more information than children who were not told to gesture (Stevanoni & Salmon, 2005) and more detailed story descriptions could be verbalised when using gestures (Rauscher et al., 1996). The findings from the current study expand on this collection of literature with specific evidence of the impact of ITG use by primary school students when learning Japanese as an additional language.

Two themes of data related to the patterns of students' ITG use when doing Story Re-tell, specifically, the ways in which they used ITG without accompanying their gesture with a word, and ways in which they produced a mismatch of ITG and word. Within the first theme, there were five ways in which students produced ITG without a word; ITG without a word expressing the meaning of a word, providing additional information, preceding production of a word, giving emphasis to a word, and highlighting when students are having difficulty with that aspect of language. The current study found that students used ITG without a word to express meaning that they could not express verbally in Japanese. When students produced ITG without a word it showed that they knew where to say the word in the utterance, according to the conventions of Japanese, even when they did not know or recall the word. When students' oral production is not at the same level as their receptive understanding, ITG

can be used to signal understanding and communicate meaning. This use of ITG demonstrates students' 'point of readiness', providing an insight into their language skills and areas of need. Such use of ITG reveals when students need a word and are ready to learn it, and this allows language teachers to provide words that students need at the precise time of need. The finding that ITG can be used to express meaning connects with previous research that found that early L1 speech is supplemented with gestures to communicate more meaning (Ozcaliskan & Goldin-Meadow, 2005) and that gestures can support communication when verbal skills are not sufficient (Kidd & Holler, 2009). Previous research in L2 contexts found that gestures can be used to express meaning that cannot be expressed verbally in the additional language (Gregersen, Olivares-Cuhat & Storm, 2009). The finding that students' use of ITG without a word often preceded their production of a target language word connects with a range of literature from first language acquisition research. In early first language development children use gestures prior to oral language (Goodwyn, Acredolo & Brown, 2000) and the gestures are seen as a predictor of soon-to-emerge speech (Calbris, 2011; Iverson & Goldin-Meadow, 2005; Ozcaliskan & Goldin-Meadow, 2005). Primary school-aged students also use gestures in L1 oral narratives and explanations to support their developing linguistic skills (Alamillo, Colletta & Guidetti, 2013). Information expressed using gestures without speech can indicate when a learner is "on the verge" of their next stage of learning development (Goldin-Meadow & Wagner, 2005).

The findings of the current study also showed that students used ITG without a word to add emphasis to their narrative such as by putting stress on an element of meaning. It also identified that students' use of ITG can signal their L2 difficulties. This finding adds to previous research that found that gesture use can overcome limited oral language ability (Gullberg, 1998) and support L2 proficiency (Gullberg & McCafferty, 2008). The current findings expand on this by identifying that ITG was used whilst students were having L2 production difficulties but decreased in use when the language of need was recalled. This type of gesture use identifies ITG as providing an internal scaffolding function for students when needed that is then discarded when it is no longer needed.

The second theme involved five kinds of mismatch of ITG and word; between words with different meanings, words which share the same ITG, particles, verb tenses, and words preceding the correct word. These gesture-word mismatches can indicate students' language knowledge, aspects of difficulty and their individual 'point of readiness'. When teachers are perceptive to students' ITG use, they can use the information contained in the gestures to provide differentiated instruction to these students. This highlights the potential role of gesture-speech mismatches as a diagnostic tool for teachers. These findings follow from earlier research that identified that when students' gestures and speech do not match, they would benefit from additional teaching support (Breckinridge Church & Goldin-Meadow, 1986) and add specific details about the knowledge that can be gained from students' ITG use. Of particular note, the findings identified that when there is an ITG and word mismatch, the meaning intended by speakers appears in ITG. This shows how important it is for teachers to attend to learners' gestures because meaning is not only held in the gestures, but can hold meaning when there are gesture-speech mismatches. Students' deployment of ITG, in gesture-speech mismatches, supports subsequent oral production and this adds to the growing evidence that gestures play a cogntive role in L2 oral production.

Pedagogical Implications

There are a number of pedagogical implications deriving from this study. Firstly, the knowledge that ITG production by students can support them to express meaning, particularly in circumstances when their oral language capabilities in the target language are limited, shows the pedagogical value for students in using ITG as an important mode of communication. Therefore, it is recommended that teachers encourage L2 learners to use ITG. Also, because students' use of ITG increased when they viewed ITG, it would be worthwhile for teachers of languages to use gestures themselves as an additional source of meaning for students and as a strategy to cue students' oral language.

Another important practical implication of the findings refers to the diagnostic contribution of ITG. Students' use of ITG provides an insight into the cognitive process of learning L2 and is a window into their current L2 knowledge and 'point of readiness'. Observations of students' deployment of ITG can show what students know and what they are having difficulty with, and this provides useful diagnostic information for teachers to tailor their teaching to specific student needs at their precise time of need. Insights can inform future teaching strategies including points of individual intervention.

The benefits of viewing and using ITG should be shared with students so that they are informed to make learning decisions about their own use of ITG. Students' knowledge of the benefits of viewing ITG could encourage their in-class focus on teachers' ITG as a language cue and support. Knowledge of the benefits of ITG use could encourage students' own use of ITG to support them to communicate meaning when they are struggling verbally, as a cognitive tool for language production and to support retrieval.

Conclusion

This article reported on data relating to learners' use of Intentional Teaching Gestures (ITG) when learning Japanese as a second language in a primary school context. Findings showed that students produced more ITG when doing a Story Re-tell of a known story compared with creating their own original stories (Storytelling) in Japanese. It is suggested that students were more likely to use ITG when doing Story Re-tell because the story was introduced to learners with ITG and therefore evoked learners' memories of the gestures. This suggests that exposure to the target language with ITG may play a cognitive role in L2 memory and recall. A further difference was found when comparing the two Story Re-tell tasks; with and without viewing ITG. When students viewed ITG during Story Re-tell, they produced more ITG themselves. This finding is particularly important when related to the previous findings with this broader data set that showed students' increased oral language production when doing Story Re-tell (compared with Storytelling) and when viewing ITG when doing Story Re-tell (Wilks-Smith, 2022), because it now shows that students' use of ITG increased alongside increases in Japanese L2 production. It is therefore recommended that teachers use ITG to support learners' L2 memory and recall and that they encourage students to also use ITG to support their own target language production.

A number of patterns of student ITG use were identified relating to the ways in which they used ITG without a word, and ways in which they produced a mismatch of ITG and word. These patterns of use showed that ITG was used by students to communicate meaning not expressed in speech, to provide additional information, and to give emphasis to a narrative. Students' use of ITG without a word often preceded the verbal production of a word and therefore offers teachers insight into students'

stage of language development which is useful to inform future teaching practice. ITG deployment without a word and a mismatch of ITG-word signals points of language difficulty, also providing important diagnostic information for teachers that can be used to address individual language learning needs. Teachers are therefore recommended to observe students' ITG use to maximise it's potential to inform teaching pedagogy and practice.

The overall findings highlight the pedagogical role of ITG as a language teaching and learning tool, in particular, the importance of students' own production of ITG to facilitate the language learning process. A limitation of the research is that it was conducted in only one school, with only female primary school learners, with L2 Japanese, with one system of ITG and using only two types of oral narrative tasks. Although the findings provide valuable information for the teacher of Japanese in the school, and may also be relevant for other language teachers using ITG, the results cannot be assumed to be transferrable to other teaching contexts, so further research is recommended to explore the impact of ITG more broadly.

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