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A cross-cultural investigation of L2 notetaking: student habits and perspectives

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ABSTRACT

The importance of notetaking for English for academic purposes (EAP) students and teachers is growing due to a rapid increase in the number of universities offering English as a medium of instruction (EMI) courses around the world (e.g. [Teng, H. C. 2011. "Exploring Note-taking Strategies of EFL Listenerst." *Procedia - Social and Behavioral Sciences* 15: 480–484.]). While there have been several studies on second language (L2) notetaking that focus on the types and styles of notes students take (e.g. [Siegel, J. 2016. "A pedagogic cycle for EFL note-taking." *ELT Journal* 70 (3): 275–286]; [Crawford, M. 2015. "A Study on Note Taking in EFL Listening Instruction." JALT2014 Conference Proceedings, Tokyo, JALT, 416–424]; Tsai and Wu 2010), student perspectives regarding their stated beliefs about and reported habits related to notetaking remain in need of further exploration. This paper reports on an investigation of notetaking from EAP students' perspectives. It presents the results of a cross-cultural survey on the views and habits expressed by Japanese ($n = 256$) and Swedish ($n = 272$) students. Findings from the study demonstrate the similarities and differences between students in the two countries in relation to notetaking in EAP courses.

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Introduction

Japan and Sweden are both contexts where English is used as a second language (L2) and where many university students take courses in which English is the medium of instruction (EMI). EMI lectures are on the rise in several countries around the world, including both Japan (e.g. Murata 2018) and Sweden (Forsberg 2018). To meet the demands of EMI courses, large numbers of L2 English students around the world study on English for Academic Purposes (EAP) courses in preparation for tertiary level content learning via English. Considering the two countries focused on in this paper (Japan and Sweden) in terms of L2 English proficiency, per the 2021 *English Proficiency Index* (2021), Sweden ranked #8 and is in the 'very high proficiency' band, while Japan laboured at #78 in the 'low proficiency' band. This stark difference in general English proficiency level presents an interesting and useful contrast for research into the challenges faced and strategies employed by students in the two countries when learning lecture notetaking in EAP courses in preparation for EMI.

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Many Japanese universities incorporate EMI lectures as part of overseas study preparation for Japanese English as a foreign language (EFL) students, to support those students' English abilities after they return to their home institutions in Japan, to attract overseas students to study in Japan, and to promote internationalisation and globalisation. Per Japanese Ministry of Education (MEXT), the number of universities that offer EMI courses almost doubled from 2005 to 2015 and more than 40 schools now offer degree programmes in English (MEXT 2009, 2017). Sweden has adopted rationale similar to Japan's in relation to increasing EMI programmes, namely elevating the number of exchange students and promoting internationalisation (Söderlundh 2014). According to Forsberg's (2018) report in *Universitets Läraren* [The University Teacher], nearly 30% of college and university courses in Sweden are currently conducted in English, and that number is expected to reach 50% by 2023. As such, EMI lectures are a crucial part of university teaching and learning in both countries.

The present paper reports findings from a cross-cultural survey on notetaking views and habits expressed by EAP students in Japan and Sweden. The survey covered topics related to student views on purposes of and reasons for notetaking; the impact of teachers; student practices during and after notetaking; and the role of technology. Findings demonstrate some similarities and differences between students in the two countries depending on the topic. Implications for improving student notetaking ability in each national context as well as EAP preparatory teaching and EMI in general are discussed in light of the survey results.

Background on notetaking

At their core, notes taken in lectures are essentially 'short condensations of a source material that are generated by writing [or typing] … while simultaneously listening … ' (Piolat, Olive, and Kellogg 2005, 292). Two types of notetaking can be identified, depending on strategies used by the notetaker: generative notetaking, which includes summarising and paraphrasing, and nongenerative (e.g. verbatim copying) (Mueller and Oppenheimer 2014). Purposes for notes can vary widely and are dependent on, among other factors, the individual notetaker, the importance of the information, and any subsequent task for which the notes may be needed. Notes serve as an archive that can be returned to at a later time to review, remind, be integrated into work, and/or be used as a stimulus for creativity. People in different contexts with a range of backgrounds, purposes, working memory capacities, and learning needs will likely generate divergent sets of notes despite listening to the same source text. Different people will also have varying views on the importance of notes themselves.

The act of notetaking involves a complex sequence of cognitive and physical manoeuvres, all taking place under extreme time pressure (e.g. Piolat, Olive, and Kellogg 2005). Specifically, note takers need to listen, comprehend, prioritise the information they hear, decide when and how to write the notes, and finally, to write them (e.g. Siegel 2021a). This complicated sequence becomes more challenging in one's L2 (English, in this case), as listeners face numerous obstacles including variations in speaker accent, degrees of reduction (e.g. linking and blending phonemes, elision, deletion, etc. when speaking), use of discourse markers to signal lecture organisation, and mid-sentence changes (Sheppard et al. 2015). Use of self-repairs and colloquial expressions further add to the complexity, and investigating the ways in which students attempt to comprehend and manage information in lectures represents one way to improve pedagogy (Lau, Cousineau, and Lin 2016). As such, understanding how students view and participate in notetaking when listening to EMI lectures can generate positive effects on pedagogy and student learning.

Previous research has focused on the ways different groups of students take notes. For example, Reddington, Peverly, and Block (2015) examined cognitive and motivational variables related to gender differences in lecture notetaking. Their findings showed that females reproduced significantly more information in lecture notes and written recall activities than their male counterparts. In addition, females in that study performed better than males in terms of handwriting speed and

working memory. In another study (Badger et al. 2001), researchers focused their attention on three groups of students: a traditional group who completed a standard pre-tertiary education in the UK, access students who received extra support with academic writing and research before entering university, and international students who took EAP courses aimed at helping them adapt to UK university academic life. Interview findings demonstrated that considerable variation exists in how students perceive lectures and the actions they take in order to understand and retain information from lectures. This study was comparative in that it investigated how different groups within the same educational context (i.e. UK) view notetaking. The present study builds on such investigations by adopting a cross-cultural perspective and comparing student views from Japan and Sweden and utilising a survey to present a broader picture of student beliefs and habits.

Views and beliefs about notetaking

The majority of research on notetaking has focused on notes themselves and/or tasks related to those notes (e.g. comprehension tests, summary writing, etc.). However, findings from questionnaire and interview studies involving both L1 and L2 notetakers have provided some useful insights into student views and beliefs about notetaking. In the study by Badger et al. (2001) cited above, all 18 interview subjects mentioned product-oriented reasons for notetaking: aiding recall of lecture content, helping to succeed on exams and assignments, and learning in a more general educational sense. Students have also reported both positive and negative effects on concentration when taking notes, with some claiming that the notetaking act helps concentration while others consider it a distraction that impedes focus on the speaker (Badger et al. 2001).

A number of studies have demonstrated that L2 students believe taking notes in English is an important academic skill, both at the high school (e.g. Crawford et al. 2016) and the university level (e.g. Crawford 2015). Students have also expressed the desire for more attention to notetaking in an L2 and for better notetaking skills when listening to English, which is a primary concern for international students studying on EMI courses (e.g. Teng 2011). The survey conducted by Morehead, Dunlosky, and Rawson (2019) provides insights into student notetaking habits but in L1 university contexts, which provides a data set with which to compare L2 student views. Studies such as these have typically examined student perspectives within a single class or cultural context, and therefore the present study builds on these by adopting a cross-cultural perspective.

Impact of teachers

Due to the complexity that arises when simultaneously listening and taking notes, coupled with the cognitive engagement and corresponding physical activity, EAP teachers may be underprepared in terms of systematic pedagogy for that cacophony of skills. As such, students may receive little instruction beyond a simplistic 'take notes' (e.g. Siegel 2021a). In other words, in the typical EAP classroom, the skill of notetaking is not broken down into sub-skills that are achievable to teach and to learn. Much so-called instruction related to notetaking is anecdotal and idiosyncratic, meaning it does not employ a systematic or generalisable framework (e.g. Chaudron, Loschky, and Cook 1994). Furthermore, many English teaching materials for notetaking, along with teacher manuals, are not always sufficient to support teachers and learners (e.g. Hamp-Lyons 1983; Siegel 2021b). Yet, given the rise of EMI, notetaking is clearly a beneficial skill to have, in terms of learning and academic success.

There are also several pedagogic decisions that teachers, either those in preparatory EAP or EMI lecturers themselves, can make that affect student notetaking ability and habits (e.g. Siegel 2019; Kusumoto 2019). EAP teachers may need to consider whether they use commercial textbooks or authentic lecture material when they teach skills for notetaking when listening to academic English. Another decision is whether to impose or promote a single notetaking format or whether to allow for individual student variation and creativity.

EMI lecturers often emphasise the content of their lectures and overlook the importance of language as the delivery system of that content, a delivery system that can be manipulated to facilitate or unintentionally obstruct student learning and the comprehension and recording of information. Flowerdew and Miller's (1996) study of EMI lecturers in Hong Kong revealed that none of the interviewees had any familiarity with language learning literature or how they might adjust their lectures (e.g. clarifying lecture structure, adjusting syntactic and/or lexical choices, incorporating repetition) to benefit student uptake. Earlier research conducted in the UK by Griffiths and Beretta (1991) indicated that a group of native English speaker lecturers made no significant modifications to their rates of speech when lecturing to groups of native English user, high-, and low-proficiency L2 English university students. This potential lack of linguistic awareness on the part of EMI instructors suggests that explicit attention may be warranted and that specific linguistic and pragmatic training may be needed (e.g. Björkman 2010; Ozer 2020). EMI lecturers also need to consider how much visual support is necessary to help L2 English users comprehend and retain information in and from their lectures; therefore, multimodal competency within EMI has also been promoted (e.g. Morell Moll, Fernánadex-Pacheco, and Beltran-Palanques 2020).

Habits while taking notes

When students are taking notes, they face a number of important decisions. They must select the mode of notetaking (e.g. whether to use a computer, pen and paper, or a notetaking application on a tablet). They need to decide, sometimes in an instant, whether to record a note in their L1 or L2. Many students view strategies for overall note structure (e.g. mind mapping, outline format, etc.) as beneficial to organising information (e.g. Teng 2011; Siegel 2016). They also have several options available to them in terms of how they record specific pieces of information: verbatim, abbreviation, pictures, highlighting, underlining, etc.

Another student choice while taking notes is whether to record information verbatim or to paraphrase or summarise in some way. In any lecture setting, there are likely times when verbatim recording is preferred (e.g. when the definition for a new term is introduced) and when paraphrasing is more efficient (e.g. when a lecturer is speedily going through a lengthy explanation). These two approaches relate to the notions of nongenerative and generative notetaking (Mueller and Oppenheimer 2014) mentioned earlier. In some cases, students involved in studies of notetaking have been found to simply copy notes from the blackboard without necessarily processing or interpreting the material effectively (Badger et al. 2001). Students who attempt to simply write or type what their teacher says verbatim, as in transcribing without prioritising and focusing on more important information and leaving out less important information, may be utilising their energy ineffectively. As Dunkel (1988) observes, writing or attempting to write too much in notes can lead to less effective comprehension and information storage.

Habits after taking notes

After the notetaking act is complete and the benefits of the encoding process fade, students need to revisit their notes to solidify learning, review information they may have forgotten, and use their notes for subsequent tasks. These activities are among 'the most natural use of notes', according to Chaudron, Loschky, and Cook (1994, 78). Making effective use of notes after the listening event is crucial to the effectiveness of notes. Crawford et al. (2016) found that about 50% of 408 Japanese university students reviewed notes from their L2 English classes, and about a quarter reorganised and/summarised their notes. According to Badger et al. (2001), the most common activity after notetaking is to re-read the notes. Recent research (e.g. Luo, Kiewra, and Samuelson 2016) has examined different methods for reviewing and revising notes (e.g. alone, with a partner, at certain intervals) and found that the combination of paused review and collaboration with a partner leads to positive revision of notes. Dunkel, Mishra, and Berliner (1989) found that simply taking notes

without later review 'may not facilitate effective English lecture encoding for either native or non-native speakers of English' (545). As such, there is a clear need for review of notes. Simply taking notes and having an external storage available is not ideal. That storage needs to be revisited and utilised effectively through activities such as reorganising, summarising, and reviewing.

Impact of technology

In recent years, technology has begun to play a large role in notetaking. Not only do laptop computers and tablet applications offer potentially time saving and organisational features, but they can be convenient for storing notes in a single, portable place. Student preference for technological support in notetaking compared to the traditional pen and paper method, however, may be misplaced. Mueller and Oppenheimer (2014) reported that while students who took notes longhand wrote fewer total words than their counterparts using laptops, the longhand students had significantly less verbatim-overlap than the laptop students, suggesting a higher level of encoding and cognitive engagement with the material. They found that 'participants using laptops were more inclined to take verbatim notes than participants who wrote longhand, thus hurting learning' (Mueller and Oppenheimer 2014, 8).

These results, however, failed to be replicated in later research by Morehead et al. (2019). Using the same materials and procedures as Mueller and Oppenheimer (2014), Morehead et al.'s (2019) findings were inconclusive, leading the researchers to suggest more research is needed before a clear benefit can be attributed to traditional longhand or digital notetaking. These researchers and others have also highlighted the sometimes negative effects technology can have on academic performance, on-task behaviour, and student satisfaction of lectures.

Technology has also impacted how information is delivered by lecturers. Multi-modal presentation of lecture material often occurs as the lecturer speaks and simultaneously draws student attention to a Powerpoint slideshow or other visual aid (e.g. Siegel and Wang, forthcoming). As noted by Flowerdew and Miller (1997), the integration of spoken and visual input can result in obstacles to effective notetaking, particularly for L2 English users. In other words, an 'information overload' can occur, with L2 listeners confused about where to place their cognitive resources. Another development in technology as it relates to notetaking comes from online teaching or lesson management platforms where teachers can upload handouts or lecture slides following a lecture. In theory, this practice can provide support for students to review or catch up if they missed a class. However, as noted by Flowerdew and Miller (1996), when lecturers provide too much written support in the form of handouts, the results could be a 'negative impact on study habits' (132), as students may revert to rote learning, be inattentive in lectures, and miss out on the benefits of the encoding process. Teachers participating in Crawford et al.'s (2016) study suggested that it is preferable to give students handouts in order to *discourage* notetaking so that students can focus all cognitive attention on listening (i.e. rather than on listening plus notetaking).

Education systems

The following paragraphs provide brief and generalised background into educational practices that relate to information presentation and notetaking in the two countries. It is important to point out that these are generalisations only and are offered for readers unfamiliar with the contexts. These descriptions should be taken as suggestive rather than definitive. They are broad and will vary depending on region, institution and classroom.

Japanese education

From the early years in the Japanese educational system, teachers are generally viewed as the holders of information who deposit it in the minds of students. This group-oriented system is based on a Confucian belief in education. Students are often required to memorise facts and repeat

them on examinations in order to demonstrate uniformity in mastery of content. Rote memorisation and repetition are common from elementary to high school.

Through their use of chalk/white boards, teachers typically make very explicit precisely what information students should write in their notebooks. This could be done using a number of techniques (e.g. underlining, 'starring', using different coloured chalk, etc.), and a teacher's ability to present material in this way is a graded part of teacher education in Japan. There is even a market in Japan for 'how to' books that provide practical guidance on board work for elementary school teachers. Because of this teacher-centered stance, students are seldom expected to make decisions about what to write in their notes or to prioritise the importance of the information presented to them. The teacher dictates what points to record and how to do so, and students copy. As such, when they enter an EMI environment in tertiary education, students may be unprepared to identify which information is important enough to record and to record it effectively.

Swedish education

Swedish education tends to focus on individual student needs and learning. From early on, students play an active role in deciding goals for learning and methods to achieve those goals. An anecdotal example comes from parent-teacher-student conferences in elementary school, where the student is the one who plays the largest role in the discussion (i.e. in contrast to such meetings in other countries where the student is the *object* of the discussion rather than the central participant). Creativity and variety of expression are typically emphasised throughout a Swedish education. Independent projects allow students to design their own approaches to and courses of study within sometimes vague educational frameworks created by the Swedish Ministry of Education.

Teachers do not typically teach notetaking skills, either in L1 Swedish or L2 English classes. This results in a variety of notetaking methods employed by students at the upper secondary school and university levels. Different students will tend to identify different aspects of the same speech as important, so long as they are able to justify their decisions. Teachers may not always dictate correct answers but may prefer to leave space for ambiguity in student interpretation and learning.

To summarise, Japan and Sweden are two distinct EFL environments set within broader educational contexts. Japanese education tends to lean toward collectivism and conformity, whereas Swedish education often promotes independence and individuality. In Japan, significant amounts of class time are teacher-centered, including teachers indicating what notes should be taken. In Sweden, students may have greater options for decision-making, flexibility, and individual responsibility. Further, English plays a large role in Swedish society in general, with ample opportunities to use English in daily life and a large portion of TV shows and other media are readily available in English. In contrast, English plays a significantly lesser role in everyday life in Japan. These distinctions, in addition to the general gap in English proficiency mentioned earlier, make a comparison of the two countries an interesting research focus. They are different at philosophical and practical levels, yet both countries recognise the need for EAP and EMI.

Research questions

Given the importance of notetaking from the student perspective and the lack of pedagogic support for EAP and EMI teachers, understanding student views and habits is crucial. By examining student perspectives on the importance of and factors that influence notetaking, educators can: (1) improve notetaking instruction in EAP courses and (2) attempt to appropriately align EMI lecture organisation and delivery with student preferences, where appropriate. In terms of actual while-notetaking and post-notetaking activities, EAP teachers and EMI lecturers can better understand what exactly students are doing when taking notes and how those notes may be used (or not) after class.

With the importance and complexity of notetaking described above, and the various differences (i.e. linguistic, cultural, educational) that manifest themselves between Japan and Sweden, this study focused on the following research questions:

(1) How are views of notetaking in English lectures similar and different among L2 English students in Japan and Sweden?
(2) What are similarities and differences in notetaking habits between L2 English students in Japan and Sweden?

Methods

In order to address the research questions stated above, the authors collaborated to create an online survey that measured student responses to a number of statements using Likert scales (see Appendix 1). A survey was chosen for its capacity to elicit information related to intended language behaviour and feelings and beliefs about specific L2-related issues (i.e. notetaking) from a large population (Dörnyei and Csizér 2012). Items on the survey were inspired by previous survey research on notetaking as well as more general pedagogic topics (e.g. the role of the teacher, the impact of technology, etc.) applied to notetaking. For items relating to beliefs about and views of notetaking, respondents chose from a rating scale of 1–5 (1 = strongly disagree, 2 = somewhat disagree, 3 = neither agree nor disagree, 4 = somewhat agree, 5 = strongly agree). For items relating to notetaking habits and practices, the following frequency-based options were used: 1 = Never, 2 = Sometimes, 3 = Usually, 4 = Always. The survey content was reviewed for clarity and relevance (e.g. Wagner 2015) by two practicing teachers in both Japan and Sweden and subsequent minor wording revisions were made.

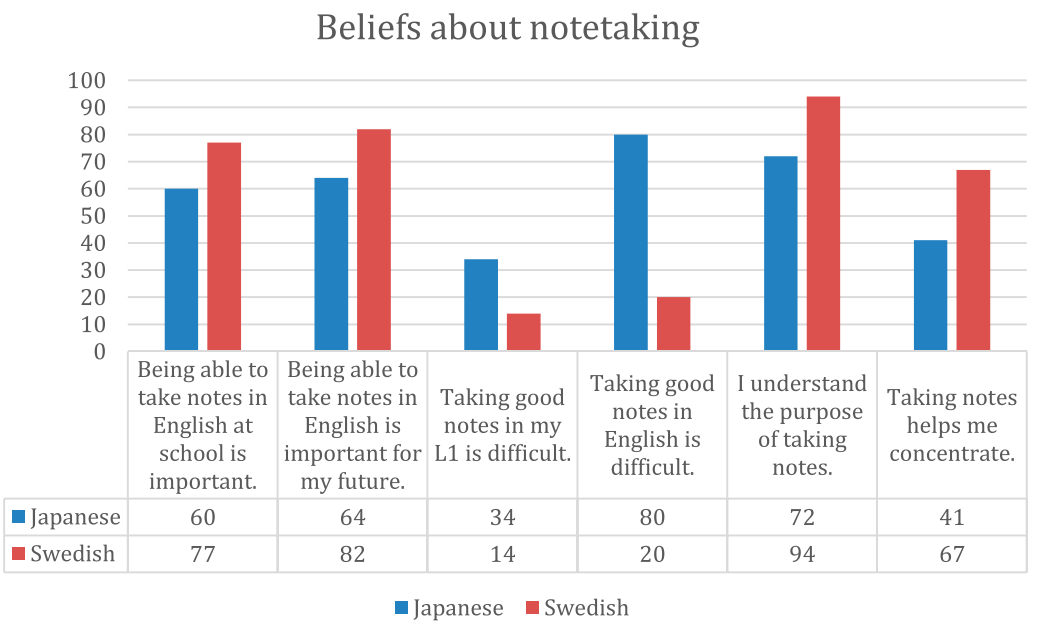
The Japanese respondents ($n = 256$) were first year students at two Japanese universities. They were approximately 18–19 years old and in the A2-B1 range on the Common European Framework for References for languages (CEFR). The Swedish respondents ($n = 272$) were all upper secondary school students from four schools in Sweden. They ranged in age from 16–19 years old and CEFR levels were approximately B1-B2. Despite being at different levels of schooling, these two groups of learners were at roughly the same age and stage in their respective educational systems; that is, they were in EAP courses for late teens intended as preparation for upcoming EMI experiences. It must be noted, however, that motivation may have been an influencing factor, with the Japanese students already accepted to university and the Swedish students still at a pre-tertiary stage. Due to concerns about survey comprehension for the Japanese learners, the survey was translated to Japanese. The Swedish students responded to an English version. The survey was created and distributed using an online survey programme, which also collected results.

For analysis and reporting purposes, the items were grouped into five categories: 1. Views and beliefs about notetaking; 2. Impact of teachers; 3. Habits while taking notes; 4. Habits after taking notes; and 5. Impact of technology. The following results and discussion sections will be organised according to these categories. Statistical analyses in the form of 2×2 chi squared tests of independence were used to compare sets of responses. For the 5-point Likert scale items, the responses *strongly agree* and *agree* were collapsed as 'agree' and *strongly disagree* and *disagree* were combined as 'disagree'. For the 4-point Likert scale questions about frequency of habits, the responses 'never' and 'sometimes' were collapsed and labelled 'less frequently' and 'usually' and 'always' became 'more frequently'. Descriptive and chi square analysis are presented in the following section.

Results

Due to the disparity in numbers of survey respondents (i.e. 256 students in Japan compared to 272 students in Sweden), the results in Figures 1–5 are displayed as percentages of these populations. Figures 1 and 2 report the combined percentages for survey options *somewhat agree* and *strongly agree*. Figures 3–5 report combined percentages for *usually* and *always*.

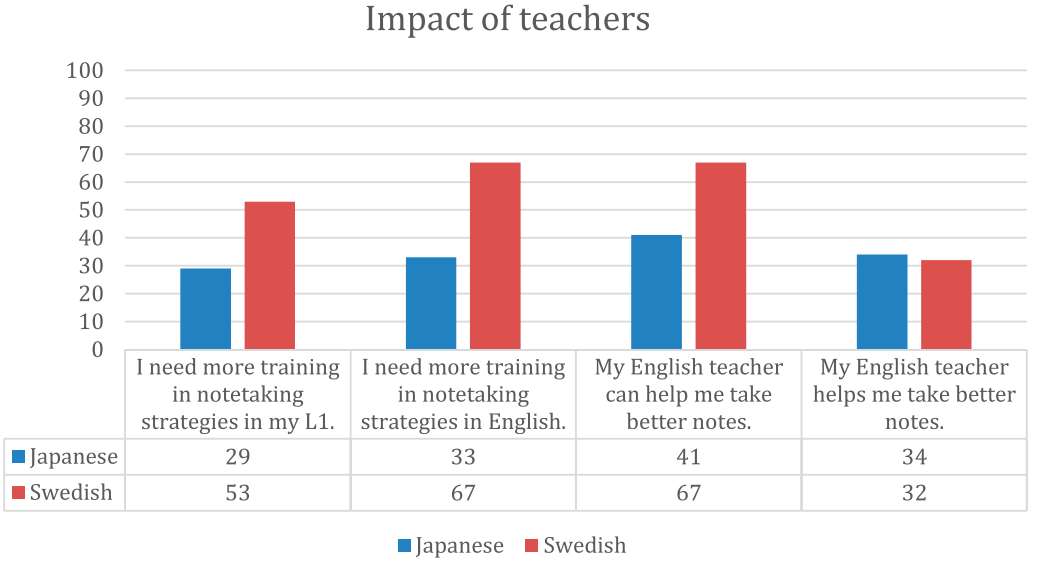
As shown in Figure 1, both groups of students believe notetaking in English is an important skill at school and for their futures. The Swedish respondents were notably higher than the Japanese on



	Being able to take notes in English at school is important.	Being able to take notes in English is important for my future.	Taking good notes in my L1 is difficult.	Taking good notes in English is difficult.	I understand the purpose of taking notes.	Taking notes helps me concentrate.
Japanese	60	64	34	80	72	41
Swedish	77	82	14	20	94	67

Figure 1. Views and beliefs about notetaking.

both items (77% to 60% and 82% to 64%, respectively). Japanese learners tended to feel that notetaking, regardless of whether in the L1 or L2 English, is rather difficult, while far fewer Swedish students reported that notetaking is difficult. The stark contrast of views regarding the difficulty of taking notes in English was clear, with Japanese at 80%, 60% higher than the Swedish students. Higher percentages of Swedish students also reported understanding the purpose for notetaking and that notetaking aids in their concentration than their counterparts in Japan.



	I need more training in notetaking strategies in my L1.	I need more training in notetaking strategies in English.	My English teacher can help me take better notes.	My English teacher helps me take better notes.
Japanese	29	33	41	34
Swedish	53	67	67	32

Figure 2. Impact of teachers.

Table 1. Chi-square results related to views and beliefs about notetaking.

Item	Df	*N*	x^2	*p* value
Being able to take notes in English at school is important.	1	480	8.81	.0029*
Being able to take notes in English is important for my future.	1	427	6.71	.0095*
Taking good notes in my L1 is difficult.	1	387	36.19	.0000*
Taking good notes in English is difficult.	1	398	171.93	.0000*
I understand the purpose for taking notes.	1	453	11.90	.0005*
Taking notes helps me concentrate.	1	360	10.09	.0014*

Note: * = significant at $p < .05$.

As evidenced by the chi-square results presented in Table 1, statistically significant differences were found for all items when comparing 'agree' and 'disagree' responses. On the whole, the Swedish students seem to recognise more positive benefits of notetaking skills in English (e.g. for school and for the future). Moreover, they report understanding the purpose of notetaking and its benefits to concentration more than the Japanese students, who report significantly more difficulty taking notes both in their L1 and L2 English. Based on the relatively high x^2 statistics (36.19 for L1 notetaking and 171.93 for L2 English notetaking), the differences between Japanese and Swedish students' views on these two items were especially strong.

Despite claiming that notetaking was difficult, however, Japanese students did not report as strong a desire for additional training in notetaking as did their Swedish counterparts. Whereas 29% of Japanese respondents want more training for L1 notetaking, more than half of the Swedish students (53%) replied the same, a statistically significant difference as evidenced in the chi-square calculations (see Table 2). Two-thirds of Swedish students (67%) would like more support for notetaking in English compared to only one-third of Japanese, another significant difference. Both groups recognise the potential of English teachers to positively impact their notetaking abilities; however, those numbers decrease noticeably when students are asked if teachers do in fact aid their notetaking ability (from 41% to 32% for Japanese and from 67% to 32% for Swedish). Interestingly, there is no statistical difference between the views of the two groups as to whether English teachers actually contribute to notetaking development, thereby suggesting uniformity in this answer (see Table 2).

One sub-set of survey items focused on student habits while taking notes. As displayed in Figure 3, more than half of respondents in both groups reported that they wrote down what the teacher writes on the board, with Japanese at 71%. In terms of verbatim recording, 39% of Japanese and 19% of Swedish students said they attempt this strategy. Paraphrasing was reportedly twice as common than verbatim recording for Swedish students (40% to 20%), and the two strategies registered a slight difference among the Japanese students (47% for paraphrasing and 39% for verbatim recording). Whereas significant group differences were found related to writing down what the teacher puts on the board and writing exactly what the teacher says (two practices that Japanese students do more than Swedish students), no difference was found related to paraphrasing (see Table 3), thus suggesting paraphrasing is a commonly-adopted strategy among both groups.

Results showed that student interaction with notes after the notetaking act were rather low for both groups (see Figure 4). Only 17% of Japanese and roughly one-fifth of Swedish students reported rereading their notes. For reorganisation of notes, 24% of Swedish students reported to

Table 2. Chi-square results related to the impact of teachers.

Item	df	*N*	x^2	*p* value
I need more training in notetaking in my L1.	1	374	29.21	.0000*
I need more training in notetaking strategies in English.	1	391	41.58	.0000*
My English teacher can help me take better notes.	1	348	17.81	.0000*
My English teacher helps me take better notes.	1	273	.19	.6659

Note: * = significant at $p < .05$.

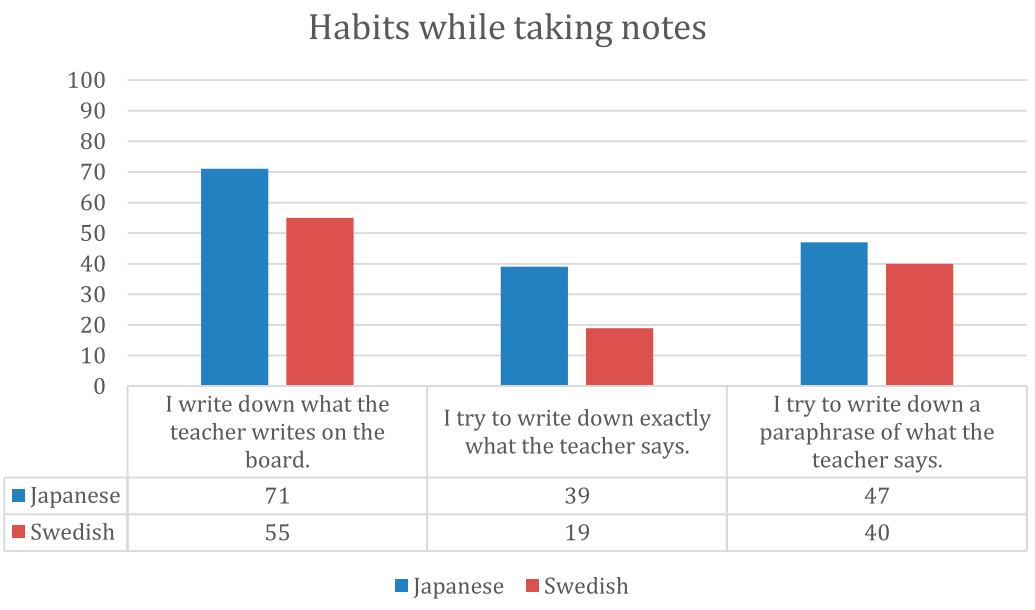


Figure 3. Habits while taking notes.

use this strategy, compared to just 9% of Japanese. Writing summaries also had low scores, less than 10%, for both groups. No group differences were found related to reviewing or summarising notes but when it comes to reorganising notes, Swedish students do so at a significantly higher rate (see Table 4).

The impact of technology on notetaking, displayed in Figure 5, was not expressed to the extent that the availability of mobile devices and software in today's world might suggest. About one-third of Japanese students report that they rely on handouts uploaded to learning platforms, while more than 40% of Swedish students do. More Japanese (64%) than Swedes (40%) claim to take pictures of important information (e.g. slides, written on whiteboard, etc.), a statistically significant difference (see Table 5). In terms of utilising computers or tablets, only nine students of the 256 Japanese reported using these devices, while 45% of the Swedish students said they do, suggesting that Japanese students overwhelmingly prefer pen and paper notetaking to computerised notetaking, another significant finding, one with an high x^2 value (113.46), indicating a very large difference.

The findings presented above will next be discussed in light of previous research and pedagogic implications.

Discussion

The results of the student survey displayed above help to address research questions 1 (views of notetaking) and 2 (habits related to notetaking). Regarding student views, noticeable differences between Japanese and Swedish students are evident. Regarding views and beliefs about notetaking, significant differences between the two groups were demonstrated for all six items (see Figure 1;

Table 3. Chi-square results related to notetaking habits.

Item	df	*N*	x^2	*p* value
I write down what the teacher writes on the board.	1	527	14.53	.0001*
I try to write down exactly what the teacher says.	1	526	23.19	.0000*
I try to write down a paraphrase of what the teacher says.	1	527	2.10	.1469

Note: * = significant at $p < .05$.

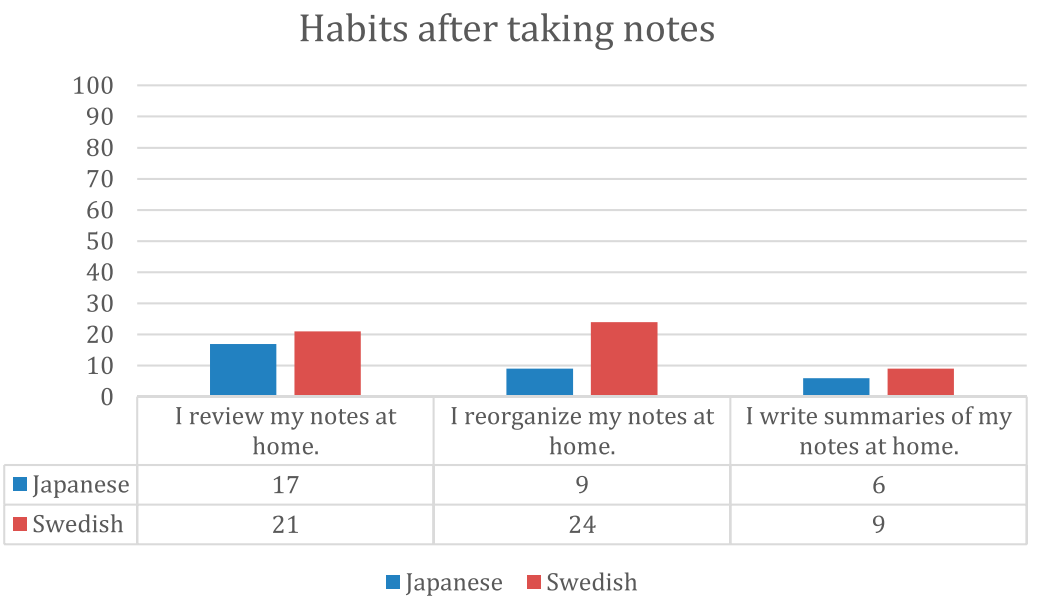


Figure 4. Habits after taking notes.

Table 1). Of note was the fact that Japanese students seem to view notetaking as challenging regardless of the language (i.e. L1 or L2) they are engaged in, whereas the Swedish group seem to have a more optimistic view of notetaking and its future value.

The impact of teacher support-development of notetaking also showed major distinctions between the two groups, with the Swedish students being noticeably more interested in further notetaking training and strategies. This finding may suggest that they would be more open and receptive to explicit notetaking instruction in the classroom, that they recognise the potential importance of notetaking skills, and/or that they may be planning to study via EMI in the future. The one point related to teachers that both groups agreed on was the relatively low levels of explicit teacher engagement (i.e. roughly one-third of both groups believes their English teacher actually helps them development notetaking abilities; see Figure 2; Table 2). This relatively low teacher engagement contrasts with earlier findings by Siegel (2021a), where nearly two-thirds of L2 English students in five other countries (e.g. Cameroon, Indonesia, and Spain) believe their English teachers can and do help them take better notes (59).

In terms of notetaking ease and difficulty, Japanese reported that notetaking was rather difficult regardless of whether they were listening to and/or writing notes in their L1 or L2 English. The fact that these students find notetaking difficult regardless of language stands in contrast to empirically studies such as those by Dunkel (1988), Clerehan (1995) and Wang (2021), who have demonstrated conditions in which the L1 or L2 might be the easier language of notetaking. More than one-third of respondents in the present study stated that taking notes in L1 Japanese is difficult, a finding that may relate to the teacher's role of clearly indicating, through written board work at lower levels of education, which information is important for students. That is, part of the teacher's role is to make

Table 4. Chi-square results related to habits after notetaking.

Item	df	*N*	x^2	*p* value
I review my notes at home.	1	525	1.49	.2212
I reorganise my notes at home.	1	523	20.03	.0000*
I write summaries of my notes at home.	1	513	2.42	.1194

Note: * = significant at $p < .05$.

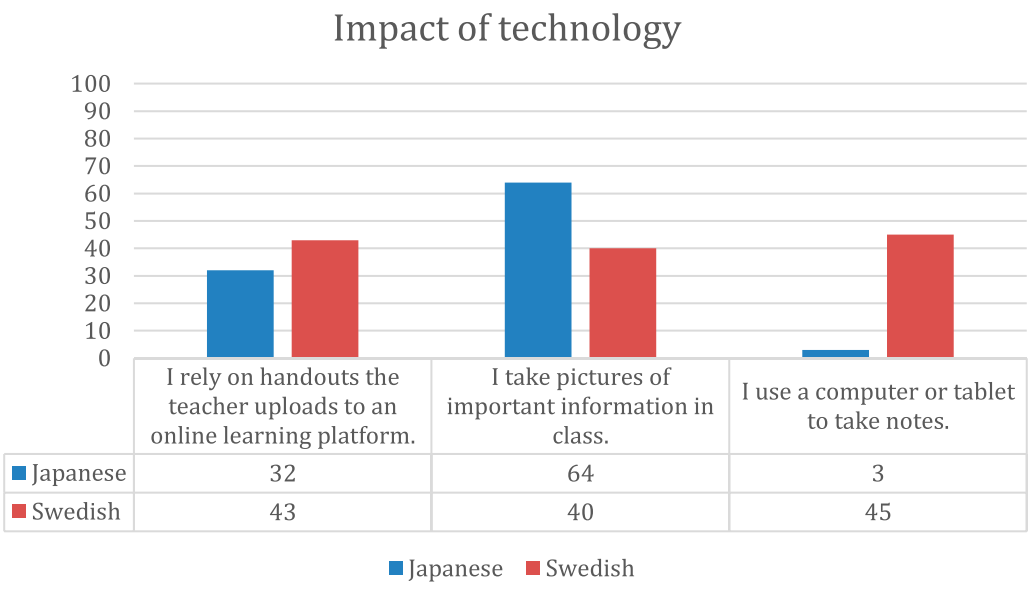


Figure 5. Impact of technology.

Table 5. Chi-squared results for impacts of technology.

Item	df	*N*	x^2	*p* value
I rely on handouts the teacher uploads to an online learning platform.	1	523	14.64	.0001*
I take pictures of important information in class.	1	526	29.48	.0000*
I use a computer or table to take notes	1	514	113.46	.0000*

Note: * = significant at $p < .05$.

decisions and prioritise information for students, a responsibility that could lead to a lack of these abilities in students. These cognitive steps then become more confounding in L2 English, resulting in 80% of respondents stating that notetaking in English is difficult. While the present study did not specify which cognitive elements impede notetaking, or to what extent they do so, these findings relate to İpek's (2018) study of Turkish university EFL students, who reported weaknesses in: separating main ideas from details, writing down only the most important words, and using abbreviations and symbols while listening to academic English (211-213).

A greater number of Swedish than Japanese learners acknowledged that they need more training in notetaking strategies, both in their L1 and L2 English. From the Swedish perspective, this is an interesting finding since relatively low numbers reported difficulty in notetaking (14% in the L1; 20% in L2 English). Thus, they are generally already confident in taking notes and yet more than half still want more strategies in the L1 (53%) and in L2 English (67%). Since the Japanese reported more difficulty in both L1 (37%) and L2 English (83%) notetaking, it would seem logical if they too expressed an overt desire for additional strategies. However, that was not the case with this respondent group. Only around half of the Japanese university students in Crawford et al. (2016) reported learning how to take notes earlier in their education (279), suggesting that space in the curriculum might be available for notetaking. In addition, 71% ($n = 87$) of Japanese university students in Siegel (2016) stated that explicit notetaking instruction would be useful in EMI. Perhaps some of the Japanese respondents in the present study do not intend to study overseas or use English in the workplace or everyday life, and thus, while they find notetaking difficult, it is not a major concern for them.

These results conflict in some ways with Crawford et al.'s (2016) findings that Japanese high school L2 English learners ($n = 48$) want: more time devoted to notetaking in English class

(70%); their teacher to share model notes (81%); and to get advice improving their notes (96%). Likewise, according to Morehead et al.'s (2019) survey of L1 English college students in the US ($n = 577$), 58% wished they had better notetaking skills, inferring that explicit teacher intervention would be welcome.

Turning attention from beliefs about notetaking to notetaking habits, a majority of students in both groups (Japanese = 71%; Swedish = 54%) reported that they write down what the teacher writes on the board, although there is a significant difference between the two. This finding indicates that the teacher's act of selecting information and physically writing it themselves is a key indicator to students that they should record the same information, which could be perceived as an expected finding in many parts of the world. This finding supports that of Crawford et al. (2016), who found that over 90% of Japanese university students take notes of what a teacher writes on the board (279). The higher percentage of Japanese students could be related to: an educational environment in which conformity is often appreciated, the importance of a teacher's board work, and emphasis on rote learning.

Fewer students in both groups try to write down exactly what the teacher says when they take notes, although again a cross-cultural difference is noted (see Figure 3; Table 3). This finding is generally positive in the sense that recording information verbatim typically leads to lower comprehension and less learning (e.g. Mueller and Oppenheimer 2014). Still, per Morehead et al.'s (2019) survey, 30% ($n = 577$) report copying what the teacher writes. Paraphrasing is a more common strategy than verbatim recording for both groups, a finding that acknowledges the theoretical importance of encoding (DiVesta and Gray 1972). The act of paraphrasing allows a listener to process incoming input, identify important elements, recombine those elements, and then record information in faster, easier forms. No statistical difference was detected in relation to paraphrasing, indicating that it is a similar practice in both contexts.

In Morehead et al. (2019), 27% of respondents reported that they try to rephrase the speaker's statements; however, this percentage may not accurately represent practice since the question asked related to organisation of notes in general rather than to encoding strategies specfically. Even when students recognise paraphrasing as beneficial, they may struggle to do it consistently. In İpek (2018), 13% of students (8/61) rated themselves as weak in paraphrasing prior to an explicit notetaking intervention. After the instruction period, 46% (28/61) felt confident in paraphrasing, a finding that points to the potential effectiveness of explicit interventions for increasing student self-perceptions of and confidence in their own notetaking abilities.

Despite the external storage benefit of notes and the notion that they be used to consolidate learning and/or for future tasks, very little engagement with notes after the notetaking event was reported by either group. Less than one quarter of Swedish (21%), and 17% of Japanese, students review their notes at home. Less than 10% of Japanese report reorganising (9%) and summarising (6%) their notes at home, compared to slightly higher 24% and 9%, respectively, for the Swedish group. A significant difference was evident for the reorganising practice, suggesting a clear difference between Japanese and Swedish students in this respect. These findings differ from those of Crawford et al. (2016), who found that of 408 Japanese university students, around 50% reported reviewing notes and a quarter stated that they regularly reorganise or summarise notes. Similarly, 93% of students in Morehead et al.'s (2019) study reported reviewing notes through activities such as rereading, making flashcards, and annotating previously-taken notes. Given the relatively high percentage reported by Morehead et al. (2019), one possible explanation could be the focus on L1 content in that study compared to courses that might focus more on L2 development rather than context exclusively.

It is possible that the location explicitly stated in the survey item for the present study ('at home') may have affected results, as students could review their notes in other places (e.g. in the school cafeteria, on the train, etc.). Adjusting these items to include 'after class' instead of 'at home' may elicit different results. Still, these numbers are low, and a logical goal would be for students to make more effective and frequent use of the notes they take. It is possible that students do

not understand the value of revisiting their notes at a later time, and thus teachers in both contexts may wish to include explicit training in how to review, reorganise and summarise notes after class. Judging by the consistency of these findings for the two countries in focus here, students in other contexts may also benefit from attention to post-lecture use of notes.

Questions related to technology focused on three distinct aspects: handouts uploaded to online learning platforms, camera functions, and laptop computer/tablet notetaking. Students in both groups rely on handouts that teachers upload to online learning platforms. At approximately 30% and 40% for Japanese and Swedish (see Figure 5), respectively, this seems to be a rather common method for students to receive relevant information from their teachers. Morehead et al. (2019), for example, point out that 49% of students take notes on the handouts they receive, and 16% avail themselves of the handouts but do not take further notations on them. At the same time, making handouts available in this way can also have negative impacts on student attendance, attention and engagement with information.

The item about reliance on handouts may be related to the item about photographing information (i.e. slides and/or the board) in class. Sixty four percent of Japanese reported doing this, most likely with their cell phones. If students are able to quickly and easily snap photos of information they believe to be relevant, this action can replace the need for handouts from instructors. Taking photos with a cell phone may not engage learners with information and may bypass the encoding process, but it does create a record of information in a convenient device. While Swedish students do take photos of information, they do so at a significantly less frequent rate. The ways in which this method of capturing information, as opposed to actually taking notes, and its potential effect on depth of processing, encoding, and learning in general are important research avenues to explore.

Over 40% of Swedish students report using technology to type notes in contrast to only 3% of the Japanese students, a significant difference between the two contexts. These findings have pedagogic implications related to method of notetaking. For Japanese, if their reliance is heavily on pen and paper notetaking rather than typing, then instructional practices and strategies for developing notetaking skills need to be aimed at traditional notetaking methods (possibly substantiated with ways to effectively integrate photos with notes on paper). For Swedish students, since the data show that nearly half (45%) use engage in digital notetaking, explicit instruction in both traditional longhand and digital methods may be needed to ensure that students' needs are met. Morehead et al. (2019) found that 55% of respondents use laptops for notetaking compared to only 2% who use tablets. Per Siegel's (2021a) study, a majority of respondents from five countries (76%) believe that longhand notetaking is more efficient compared to only 24% who feel the same about digital notetaking methods.

Possible factors influencing the overall results may relate to one or more of the following: (1) proficiency level (i.e. generally speaking, the Swedish students in this study have higher English proficiency than the Japanese students); (2) age (i.e. the Japanese student group was slightly older (at 18 or 19 years of age) than the Swedish group (16-19 years old)); (3) previous educational experiences; and (4) motivation for foreign languages in general and English in particular.

In order to interpret these findings objectively, it is important to note caveats of survey research. First, all data were self-reported and therefore triangulation and confirmation of responses was not possible. In addition, several types of bias can affect survey data. As Wagner (2015) points out, self-deception bias (when respondents answer in accordance with how they would like to be viewed), prestige bias (responding in ways that will increase their standing in the eyes of teachers and/or researchers), and acquiescence bias (answering in ways they believe researchers want them to) are potential drawbacks of survey research. As such, the results from this study could be strengthened through interviews, class observations, and/or more ethnographic approaches.

Implications and conclusions

In terms of pedagogic implications for EAP and EMI courses, these findings suggest that notetaking is not conceptualised or carried out in universal ways. The skill is multi-faceted with several possible

factors impacting performance and learning. It is not a 'one size fits all' skill and needs to be tailored to context and purpose. For EAP teachers and EMI lecturers, this means recognising and addressing any differences between their students and the contexts in which they will be taking notes (i.e. where the EMI lectures are given and traits that the lecturers are likely to demonstrate). Commercial notetaking textbooks, for instance, may need to be supplemented with cultural information (e.g. differences in lecturing style, speaker habits, etc.).

The linguistic proximity of the L1 to English should also be considered and incorporated into notetaking preparation and practice. In the case of the present study, Swedish is more linguistically similar to English than is Japanese. Such similarities and differences can be emphasised in notetaking instruction. English proficiency levels may also affect the types of notetaking instruction and practice that will likely benefit learners. Various methods of notetaking (e.g. traditional pen and paper, computers, notetaking apps) should be recognised through systematic and explicit pedagogic steps in order to accommodate learners' preferences and ever-evolving technology. Finally, teaching students to blend notetaking methods effectively can lead to more successful integration of traditional and convenient ways of recording information, such as photos from class combined with handwritten notes. By acknowledging these various aspects of notetaking, EAP teachers and EMI lecturers can support students' notetaking and better align their teaching and lecture delivery with student perspectives and habits.

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Appendix 1. The survey

1. Please respond to these statements about note taking habits in English classes at Upper Secondary School. (Never—Sometimes—Usually—Always)
   - I write down what the teacher writes on the board.
   - I try to write down exactly what the teacher says.
   - I try to write down a paraphrase (in other words) of what the teacher says.
   - I use abbreviations when taking notes.
   - I rely on handouts from the teacher and I don't take many notes.
   - I rely on handouts my teacher uploads to our online learning platform.
   - I take pictures of important information in class.
   - I use a computer/tablet to take notes.
   - I underline important points in my notes.
   - I highlight important points in my notes.
   - At home, I review my notes.
   - At home, I reorganise my notes.
   - At home, I make summaries of my notes.
2. Please respond to these statements about your views on note taking. (Strongly disagree—Somewhat disagree—Neither agree nor disagree—Somewhat agree—Strongly agree):
   - Being able to take notes in English well is an important skill to have at school.
   - Being able to take notes in my native language well is an important skill to have at school.
   - Being able to take notes in English well is an important skill to have for my future.
   - Being able to take notes in my native language well is an important skill to have for my future.
   - Taking good notes in my native language is difficult.
   - Taking good notes in English is difficult.
   - I need more training in note taking strategies for taking notes in English.
   - I need more training in note taking strategies for taking notes in Swedish/my native language.
   - My English teacher can help me take better notes.
   - My English teacher helps me take better notes.
3. Which style of taking notes do you prefer?
   - With pen and paper
   - With a computer or tablet
   - I have no preference.