

# Digital literacy of language learners in two different contexts

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*This article discusses the concept of digital literacy and presents a digital literacy questionnaire containing questions related to the use of digital technologies and the level of digital literacy skills. It also reports the results of two studies that used the digital literacy questionnaire to investigate the digital literacy level of 100 English for academic purposes (EAP) students at a university in Australia and 70 English as a foreign language (EFL) students at a university in Japan and examine factors affecting their use of digital technologies for learning English. The findings of the studies provide some insights into the students' awareness and use of digital technologies and their views of the use of digital tools and resources for language learning. Each group showed a different level of expectations and needs in their digital literacy skills with a different background and experience. It is suggested that the expectations and needs of respondents to the digital literacy questionnaire should be taken into account when the results of the digital literacy questionnaire are presented and interpreted in different contexts.*

**Keywords:** Digital literacy, digital technology, language learners, English for academic purposes, English as a foreign language

## Introduction

The increasing importance of digital literacy is observed in many places (Riddle, 2015) and the wide use of digital technologies for language learning is discussed in many publications (Godwin-Jones, 2016). Along with this, there are demands for language learners to develop digital literacy skills and language learning strategies

in technology-enhanced language learning (TELL) environments. Learner readiness is required for learner success in digital environments (Hubbard, 2013). For the effective implementation of learner training in digital language learning, specifically, it is necessary to identify the level of digital literacy of target language learners and find out factors affecting their use of digital technologies in local contexts.

This article explores the concept of digital literacy and presents a digital literacy questionnaire containing questions related to the use of digital technologies and the level of digital literacy skills. It also reports the results of two studies that aimed to investigate two groups of non-English speaking background (NESB) students' awareness and use of digital technologies and examine the level of their digital literacy. To achieve the aims, the following research questions were addressed: (1) To what extent are the participants aware of digital technologies? (2) What kinds of digital tools do they use and how often do they use them? and (3) What are their attitudes toward the use of digital technologies for language learning?

## Digital literacy: Definitions and elements

Digital literacy has been defined by many researchers and practitioners with similar meanings but slightly different focuses. In Martin's (2005) terms, for example, "digital literacy is the awareness, attitude and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyse and synthesize digital resources, construct new knowledge, create media expressions, and communicate with others, in the context of specific life situations, in order to enable constructive social action; and to reflect upon this process" (pp. 135-136). Similarly, Hague and Payton (2010) state, "To be digitally literate is to have access to a broad range of practices and cultural resources that you are able to apply to digital tools. It is the ability to make and share meaning in different modes and formats; to create, collaborate and communicate effectively and to understand how and when digital technologies can best be used to support these processes" (p. 2). Ferrari (2012) also says, "Being digitally literate implies the ability to understand media (as most medium have been/are being digitalized), to search and being critical about retrievable information (with the widespread of the Internet) and to be able to communicate with others through a variety of digital tools and applications (mobile, Internet)" (p. 16). In addition, Ng (2012) notes, "Digital literacy refers to the multiplicity of literacies associated with the use of digital technologies. These technologies are a subset of electronic technologies that include hardware and software used by individuals for educational, social and/or entertainment purposes in schools and at home" (p. 1066).

With a plural concept, on the other hand, Dudeney, Hockly and Pegrum (2013) see digital literacies as "the individual and social skills needed to effectively interpret, manage, share and create meaning in the growing range of digital communication channels" (p. 2). Jisc, a United Kingdom not-for-profit company supporting higher education, also links digital literacy with a range of capabilities and states: "Digital literacies are those capabilities which fit an individual for living, learning and working in a digital society" (Jisc, 2014). Based on these definitions and the concept of computer literacy in Son, Robb and Charismiadji (2011), Son (2015) provides the following definition: "Digital literacy is the ability to use digital technologies at an adequate level for creation, communication, collaboration, and information search and evaluation in a digital society. It involves the development of knowledge

Table 1. Elements of digital literacy

Eshet-Alkalai (2004)	<p>[Five types of literacy]</p> <ul style="list-style-type: none"> <li>- Photo-visual literacy: the art of reading visual representations</li> <li>- Reproduction literacy: the art of creative recycling of existing materials</li> <li>- Branching literacy: hypermedia and non-linear thinking</li> <li>- Information literacy: the art of scepticism</li> <li>- Socio-emotional literacy</li> </ul>
Calvani, Cartelli, Fini, & Ranieri (2008)	<p>[Dimensions of digital competence]</p> <ul style="list-style-type: none"> <li>- Technological dimension</li> <li>- Cognitive dimension</li> <li>- Ethical dimension</li> <li>- Integration between the three dimensions</li> </ul>
Hague & Payton (2010)	<p>[Components of digital literacy]</p> <ul style="list-style-type: none"> <li>- Functional skills</li> <li>- E-safety</li> <li>- Effective communication</li> <li>- The ability to find and select information</li> <li>- Collaboration</li> <li>- Cultural and social understanding</li> <li>- Critical thinking and evaluation</li> <li>- Creativity</li> </ul>
Ferrari (2013)	<p>[Areas of digital competence]</p> <ul style="list-style-type: none"> <li>- Information</li> <li>- Communication</li> <li>- Content creation</li> <li>- Safety</li> <li>- Problem solving</li> </ul>
Belshaw (2014)	<p>[Elements of digital literacies]</p> <ul style="list-style-type: none"> <li>- Cultural</li> <li>- Cognitive</li> <li>- Constructive</li> <li>- Communicative</li> <li>- Confident</li> <li>- Creative</li> <li>- Critical</li> <li>- Civic</li> </ul>
Jisc (2014)	<p>[Seven elements of digital literacies]</p> <ul style="list-style-type: none"> <li>- Media literacy</li> <li>- Communications and collaboration</li> <li>- Career &amp; identify management</li> <li>- ICT literacy</li> <li>- Learning skills</li> <li>- Digital scholarship</li> <li>- Information literacy</li> </ul>
Son (2015)	<p>[Elements of digital literacy]</p> <ul style="list-style-type: none"> <li>- Information search and evaluation</li> <li>- Creation</li> <li>- Communication</li> <li>- Collaboration</li> <li>- Online safety</li> </ul>

and skills for using digital devices and tools for specific purposes" (para. 1). This definition is adopted in this article.

Digital literacy contains a range of elements. Table 1 shows key elements of digital literacy proposed and discussed by several researchers and practitioners. Among the elements, Son's (2015) five elements (i.e., information search and evaluation; creation; communication; collaboration; and online safety) were reflected and adapted to the Digital Literacy Questionnaire – Language Learners (DLQ-LL) (Son, 2015) that was chosen and used for the two studies reported in this article due to its special consideration for language learners. DLQ-LL consists of five sections: Section I – background; Section II – self-ratings of computing and digital skills; Section III – questions related to the use of digital technologies; Section IV – digital literacy test; and Section V – factors affecting the use of digital technologies for language learning and personal views of the use of digital devices. The questionnaire was administered to a group of English for academic purposes (EAP) students at a university in Australia in Study 1 and a group of English as a foreign language (EFL) students at a university in Japan in Study 2.

## Related studies of digital literacy and learning

The rapid development of digital technologies is widely changing the scenes of computer-assisted language learning (CALL). It is important for language learners and teachers to develop digital literacy skills and strategies to take advantages of the use of digital technologies for language learning in digitally connected environments. Goodwin-Jones (2016) points out the increasing importance of digital literacy and expresses the view that teachers should be "preparing students for a globalized, multilingual world" (p. 5). He supports the need for learner training in the use of technology, which is comprehensively discussed in Hubbard (2013). While learning how to find and use digital tools and resources, language learners need to learn how to use the tools and resources effectively for language learning.

In a survey-based study of digital literacy of 51 undergraduate students at an Australian university, Ng (2012) found that her students were generally able to use unfamiliar technologies with ease but many of them did not use online tools for educational purposes. The results of her study suggest that more opportunities to use educational technologies for meaningful purposes need to be given to digital natives (a term proposed by Prensky, 2001). In a different context, Gui and Argentin (2011) conducted a study of digital skills of 980 third-year high school students in Italy with a test containing survey questions and performance tasks. The test covered three dimensions of digital skills (theoretical knowledge, operational skills and evaluation skills). They found that the students performed better in the operational skills than other dimensions and showed comparatively poor performance in the evaluation skills. The possession of digital skills, particularly the operational skills, was found to be significantly affected by the students' family educational background (parental education) while gender was a significant factor in producing differences only at the level of theoretical knowledge.

On the other hand, Gobel and Kano (2014) investigated 337 first-year Japanese university students' use of digital technology in academic and non-academic settings with a questionnaire consisting of 75 questions concerned with background information, student mobile phone and computer use, student familiarity with software and websites, student activities and learning preferences. They found that their students had a wide access to digital technologies but were limited in their use of certain kinds of technologies. With the students'

self-reported lack of computer use and skills and lack of confidence in computer abilities, they conclude that many students are not ready for digital learning yet and still prefer traditional forms of learning and studying (i.e., paper-based reading materials). They label their students as mobile natives, rather than digital natives, as the students were more competent in communication-related activities using their mobile phones. With a special focus on foreign language learners' perceptions and use of digital tools, Williams, Abraham and Bostelmann (2014) also conducted two surveys with a total of 1250 undergraduate students at a public university in the US and reported that the students did not all agree that they are digital natives and a number of factors such as smartphone ownership, Internet access and platforms can influence the students' digital literacy practices.

## Study 1

### Participants

A total of 100 EAP students (61 male and 39 female; mean age 28, ranging from 18 to 48 years old) at an Australian university participated in the study. They were international students who were enrolled in the university's 10-week on-campus EAP I program (50 students) and EAP II program (50 students). The programs' entry requirements for the English language proficiency were IELTS 5.0 or equivalent for EAP I and IELTS 5.5 or equivalent for EAP II. The programs were designed to help the students prepare to study a formal degree at the university. The students had a variety of different language backgrounds and about 10 years of computer experience on average. Their profile is shown in Table 2.

Table 2. Participant profile (Study 1)

Gender	Male	61 (61%)
	Female	39 (39%)
Average age	28.2 years old (ranging from 18 to 48 years old)	
Native language (mother tongue)	Arabic	33 (33%)
	Chinese	11 (11%)
	Gujarati	9 (9%)
	Parsi (Persian)	4 (4%)
	Dari	3 (3%)
	Japanese	3 (3%)
	Korean	3 (3%)
	Malayalam	3 (3%)
	Pubjabi	3 (3%)
	Other	28 (28%)
Average years of computer experience	9.9 years (ranging from 1 to 27 years)	

Note. N=100.

The digital literacy questionnaire (an English version) was administered to the participants during their class time in each program. When the participants were invited to the study, they were given an explanation of the study and then asked to complete a consent form first. Their participation was voluntary and there was no obligation for them to participate

in the study. Data were anonymous and analysed on the basis of the participants' responses to the questionnaire.

## Results

Almost all participants (98%) stated that they own electronic dictionaries, smartphones, tablet computers and/or laptops. Their responses to the question of who taught how to use the computer in the first place indicate that they learnt mainly from teachers/trainers (46%), family (18%), themselves (16%) or friends (15%). As shown in Table 3, on the other hand, their responses to the question of how to find out new digital technologies indicate that they obtain the information largely from friends (65%), websites (61%), social networks (56%) and/or family (47%).

Table 3. How to find out new digital technologies (Study 1)

How do you find out about new digital technologies?	Friends	65
	Websites	61
	Social networks	56
	Family	47
	Teachers	36
	TVs	35
	Newspapers	26
	Email lists	22
	Books	20
	Magazines	15
	Radios	12
	Blogs	12
	Other	2

Note. N=100; Multiple responses allowed.

Table 4 shows that most participants considered the level of their typing skills as "Acceptable" (31%) or "Good" (38%); web search skills as "Good" (43%) or "Very good" (32%); computer literacy as "Good" (48%) or "Very good" (29%); Internet literacy as "Good" (41%) or "Very good" (36%); and digital literacy as "Good" (42%) or "Very good" (35%). They generally seemed to think that they had a good ability to use digital technologies.

As shown in Table 5 and Table 6, most participants indicated "Yes" to all "Do" questions and "Can" questions, except to the questions related to the possession and creation of personal homepages. They did not seem to have any problem in using the computer for learning purposes (95%) and using mobile apps on digital devices (93%).

Table 7 shows that many participants tended to use word processing programs, email, the World Wide Web, text chatting and electronic dictionaries frequently, whereas they rarely or never used graphics software, databases and concordancers. As shown in Table 8, on the other hand, they tended to rate their skills for using word processing applications, presentation applications, communication applications, social networking services, video sharing sites, web search engines and dictionary apps as "Good" or "Very Good" while rating their skills for using virtual worlds, podcasts and web design applications as "Poor" - "Do Not Know".

Table 4. Self-assessment of computing skills (Study 1)

	Very poor	Poor	Acceptable	Good	Very good
Your own typing skills	4 (4%)	6 (6%)	31 (31%)	<b>38 (38%)</b>	21 (21%)
Your own web search skills	3 (3%)	4 (4%)	18 (18%)	<b>43 (43%)</b>	32 (32%)
Your own computer literacy (the ability to use the computer)	3 (3%)	3 (3%)	17 (17%)	<b>48 (48%)</b>	29 (29%)
Your own Internet literacy (the ability to use the Internet)	1 (1%)	3 (3%)	19 (19%)	<b>41 (41%)</b>	36 (36%)
Your own digital literacy (the ability to use digital technologies)	1 (1%)	3 (3%)	19 (19%)	<b>42 (42%)</b>	35 (35%)

Note. N=100.

Table 5. Responses to “do” questions (Study 1)

	Yes	No
1 Do you understand the basic functions of computer hardware components?	<b>89 (89%)</b>	11 (11%)
2 Do you have a personal homepage or personal profile on the web?	44 (44%)	<b>56 (56%)</b>
3 Do you use keyboard shortcuts?	<b>84 (84%)</b>	16 (16%)
4 Do you use the computer for learning purposes?	<b>95 (95%)</b>	5 (5%)
5 Do you find it easy to learn something by reading it on the computer screen?	<b>80 (80%)</b>	20 (20%)
6 Do you find it easy to learn something by watching it on the computer screen?	<b>93 (93%)</b>	7 (7%)
7 Do you use social networking services?	<b>93 (93%)</b>	7 (7%)
8 Do you have any online friend you have never met in person?	<b>66 (66%)</b>	34 (34%)
9 Do you feel competent in using digital learning resources?	<b>77 (77%)</b>	23 (23%)
10 Do you have mobile apps you use for language learning purposes?	<b>86 (86%)</b>	14 (14%)

Note. N=100.

Table 6. Responses to “can” questions (Study 1)

	Yes	No
1 Can you change computer screen brightness and contrast?	<b>93 (93%)</b>	7 (7%)
2 Can you minimize, maximize and move windows on the computer screen?	<b>91 (91%)</b>	9 (9%)
3 Can you use a ‘search’ command to locate a file?	<b>87 (87%)</b>	13 (13%)
4 Can you scan disks for viruses?	<b>74 (74%)</b>	26 (26%)
5 Can you write files onto a CD, a DVD or a USB drive?	<b>85 (85%)</b>	15 (15%)
6 Can you create and update web pages?	49 (49%)	<b>51 (51%)</b>
7 Can you take and edit digital photos?	<b>84 (84%)</b>	16 (16%)
8 Can you record and edit digital sounds?	<b>68 (68%)</b>	32 (32%)
9 Can you record and edit digital videos?	<b>69 (69%)</b>	31 (31%)
10 Can you download and use apps on digital devices?	<b>93 (93%)</b>	7 (7%)

Note. N=100.

Table 7. Frequency of using computer and internet applications (Study 1)

Working with:	Very frequently	Frequently	Occasionally	Rarely	Very rarely	Never
1 Word processor	30 (30%)	<b>35</b> (35%)	17 (17%)	11 (11%)	2 (2%)	5 (5%)
2 Email	<b>47</b> (47%)	35 (35%)	10 (10%)	5 (5%)	3 (3%)	0 (0%)
3 World Wide Web	<b>49</b> (49%)	19 (19%)	14 (14%)	8 (8%)	4 (4%)	6 (6%)
4 Graphics software	15 (15%)	13 (13%)	17 (17%)	<b>23</b> (23%)	12 (12%)	20 (20%)
5 Database	16 (16%)	16 (16%)	15 (15%)	21 (21%)	9 (9%)	<b>23</b> (23%)
6 Spreadsheet (for data organization)	15 (15%)	14 (14%)	16 (16%)	<b>23</b> (23%)	11 (11%)	21 (21%)
7 Concordancer (for text analysis)	6 (6%)	16 (16%)	16 (16%)	19 (19%)	12 (12%)	<b>31</b> (31%)
8 Language learning software (CD-ROM, DVD)	15 (15%)	<b>23</b> (23%)	21 (21%)	14 (14%)	16 (16%)	11 (11%)
9 Language learning website	<b>29</b> (29%)	26 (26%)	22 (22%)	10 (10%)	6 (6%)	7 (7%)
10 Language learning mobile app	<b>31</b> (31%)	24 (24%)	21 (21%)	8 (8%)	5 (5%)	11 (11%)
11 Blog	12 (12%)	18 (18%)	<b>30</b> (30%)	13 (13%)	10 (10%)	17 (17%)
12 Wiki	19 (19%)	<b>29</b> (29%)	17 (17%)	14 (14%)	7 (7%)	14 (14%)
13 Text chatting	<b>47</b> (47%)	27 (27%)	15 (15%)	5 (5%)	3 (3%)	3 (3%)
14 Voice chatting	<b>35</b> (35%)	19 (19%)	21 (21%)	12 (12%)	5 (5%)	8 (8%)
15 Video conferencing	<b>30</b> (30%)	15 (15%)	15 (15%)	20 (20%)	3 (3%)	17 (17%)
16 Computer game	<b>25</b> (25%)	15 (15%)	14 (14%)	15 (15%)	20 (20%)	11 (11%)
17 Electronic dictionary	<b>53</b> (53%)	29 (29%)	9 (9%)	4 (4%)	2 (2%)	3 (3%)

Note. N=100.



Table 8. Self-ratings of skills for using computer and internet applications (Study 1)

Working with:		Very good	Good	Acceptable	Poor	Very poor	Do not know
1	Word processing applications (e.g., MS Word)	35 (35%)	<b>40</b> (40%)	13 (13%)	5 (5%)	0 (0%)	7 (7%)
2	Spreadsheet applications (e.g., MS Excel)	<b>24</b> (24%)	22 (22%)	32 (32%)	12 (12%)	1 (1%)	9 (9%)
3	Database applications (e.g., MS Access)	16 (16%)	21 (21%)	<b>24</b> (24%)	21 (21%)	3 (3%)	15 (15%)
4	Presentation applications (e.g., MS PowerPoint)	30 (30%)	<b>40</b> (40%)	22 (22%)	3 (3%)	1 (1%)	4 (4%)
5	Communication applications (e.g., Skype)	<b>37</b> (37%)	28 (28%)	23 (23%)	4 (4%)	5 (5%)	4 (4%)
6	Learning management systems (e.g., Moodle)	10 (10%)	15 (15%)	<b>29</b> (29%)	17 (17%)	5 (5%)	24 (24%)
7	Virtual worlds (e.g., Second Life)	10 (10%)	14 (14%)	21 (21%)	19 (19%)	4 (4%)	<b>32</b> (32%)
8	Social networking services (e.g., Facebook)	<b>40</b> (40%)	35 (35%)	16 (16%)	5 (5%)	1 (1%)	3 (3%)
9	Blogs (e.g., Blogger)	12 (12%)	19 (19%)	<b>38</b> (38%)	11 (11%)	6 (6%)	14 (14%)
10	Wikis (e.g., PBworks)	13 (13%)	19 (19%)	<b>34</b> (34%)	13 (13%)	5 (5%)	16 (16%)
11	Podcasts (e.g., Apple Podcasts)	9 (9%)	16 (16%)	24 (24%)	13 (13%)	7 (7%)	<b>31</b> (31%)
12	File sharing sites (e.g., Dropbox)	18 (18%)	<b>22</b> (22%)	19 (19%)	16 (16%)	8 (8%)	17 (17%)
13	Photo sharing sites (e.g., Picasa)	19 (19%)	22 (22%)	<b>26</b> (26%)	12 (12%)	5 (5%)	16 (16%)
14	Video sharing sites (e.g., YouTube)	<b>35</b> (35%)	26 (26%)	22 (22%)	7 (7%)	2 (2%)	8 (8%)
15	Web design applications (e.g., Dreamweaver)	13 (13%)	15 (15%)	22 (22%)	15 (15%)	4 (4%)	<b>31</b> (31%)
16	Web search engines (e.g., Google)	<b>51</b> (51%)	33 (33%)	8 (8%)	3 (3%)	1 (1%)	4 (4%)
17	Dictionary apps (e.g., Dictionary.com)	<b>48</b> (48%)	31 (31%)	16 (16%)	2 (2%)	0 (0%)	3 (3%)

Note. N=100.

Nevertheless, the participants' mean score of the general digital literacy test (Section IV of the DLQ-LL) was only 5.4 out of 10. The easiest question to them (84% correct) was about the storage of digital camera photos while the most difficult question to them (only 25% correct) was about the evaluation of websites (see Table 9). In comparison between the

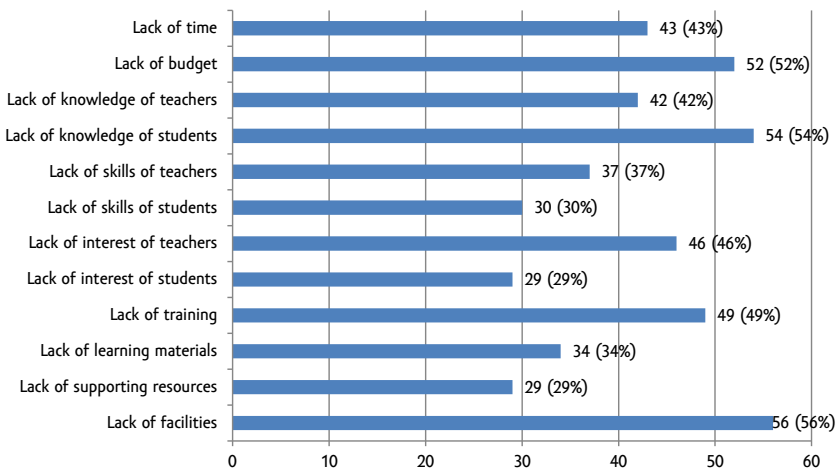
digital literacy test results of EAP I and EAP II groups, specifically, EAP II group ( $M = 6.18, SD = 1.52$ ) scored significantly higher than EAP I group ( $M = 4.64, SD = 2.05$ ):  $t(98) = -4.255, p < .05$ .

Table 9. Results of the Digital Literacy Test (Section IV) (Study 1)

Mean scores	5.4 (out of 10)
The easiest questions	Q2. Where does a digital camera store its pictures?: 84 (84%) correct
The most difficult questions	Q6. Which of the following does not need to be asked when evaluating information provided on websites?: 25 (25%) correct

Note. N=100.

Figure 1 shows that the most common factors affecting their use of digital technologies for language learning include the lack of facilities (56%), lack of knowledge of students (54%), lack of budget (52%) and lack of training (49%).



Notes. N=100; multiple responses allowed

Figure 1. Factors affecting the use of digital technologies for language learning (Study 1).

The participants' attitudes toward the use of digital technologies were highly positive (see Table 10). The mean rating of 4.4 (out of 5) in the first and fifth statements indicates that most participants enjoy using digital devices and are willing to learn more about digital technologies. The mean rating of 4.2 in the second, eighth, ninth and tenth statements also indicates that they feel comfortable using digital devices and agree with the importance of the improvement of their digital fluency, the use of digital tools and resources for the enhancement of their learning and the inclusion of TELL training in language education programs.

Table 10. Mean self-ratings of views and attitudes toward the use of digital technologies (Study 1)

1. I enjoy using digital devices.	4.4
2. I feel comfortable using digital devices.	4.2
3. I am aware of various types of digital devices.	4.0
4. I understand what digital literacy is.	4.0
5. I am willing to learn more about digital technologies.	4.4
6. I feel threatened when others talk about digital technologies.	2.8
7. I feel that I am behind my fellow students in using digital technologies.	3.0
8. I think that it is important for me to improve my digital fluency.	4.2
9. I think that my learning can be enhanced by using digital tools and resources.	4.2
10. I think that training in technology-enhanced language learning should be included in language education programs.	4.2

Notes. N=100; 1 Strongly disagree; 2 Disagree; 3 Uncertain; 4 Agree; 5 Strongly agree

## Study 2

### Participants

Participants in Study 2 were 70 Japanese EFL students (61 male and 7 female; mean age 20, ranging from 18 to 32 years old) in computer science and engineering programs at a public university in Japan. They consisted of 26 second year, 34 third year and 10 fourth year undergraduate students and were all native Japanese speakers. The students had approximately 7 years of computer experience on average. Their profile is shown in Table 11.

Table 11. Participant profile (Study 2)

Gender	Male	61 (87%)
	Female	7 (13%)
Average age	20.2 years old (ranging from 18 to 32 years old)	
Native language (mother tongue)	Japanese	70 (100%)
Average years of computer experience	7.2 years (ranging from 2 to 20 years)	

Note. N=70.

The digital literacy questionnaire (an English version and a translated Japanese version) was administered to the participants during their class time. As in Study 1, the participants were invited to participate in the study voluntarily and asked to complete a consent form first. When the questionnaire was given to them to respond, they were allowed to choose one of the two language versions of the questionnaire. Their responses to the anonymous questionnaire were analysed for the study.

### Results

The results of Study 2 are presented here in the same way as in the results of Study 1. First, all participants (100%) stated that they own electronic dictionaries, smartphones, tablet

computers and/or laptops. Regarding the question of who taught how to use the computer in the first place, the participants indicated that they learnt mainly from family (43%), themselves (36%), teachers/trainers (19%) or friends (7%). Table 12 shows that they find out new digital technologies mainly from websites (83%), friends (56%), social networks (50%) and/or TVs (37%).

Table 12. How to find out new digital technologies (Study 2)

How do you find out about new digital technologies?	Websites	58 (83%)
	Friends	39 (56%)
	Social networks	35 (50%)
	TVs	26 (37%)
	Teachers	19 (27%)
	Books	16 (23%)
	Magazines	15 (21%)
	Family	14 (20%)
	Blogs	8 (11%)
	Newspapers	3 (4%)
	Email lists	1 (1%)
	Radios	0 (0%)
	Other	0 (0%)

Note. N=70; Multiple responses allowed.

In terms of computing skills, most participants considered the level of their typing skills as “Acceptable” (56%) or “Poor” (27%); web search skills as “Acceptable” (63%) or “Good” (16%); computer literacy as “Acceptable” (61%) or “Poor” (20%); Internet literacy as “Acceptable” (69%) or “Good” (19%); and digital literacy as “Acceptable” (61%) or “Poor” (24%). They generally seemed to think that they had an acceptable level of computing skills.

Table 13. Self-assessment of computing skills (Study 2)

	Very poor	Poor	Acceptable	Good	Very good
Your own typing skills	3 (4%)	19 (27%)	<b>39 (56%)</b>	8 (11%)	1 (1%)
Your own web search skills	0 (0%)	8 (11%)	<b>44 (63%)</b>	11 (16%)	7 (10%)
Your own computer literacy (the ability to use the computer)	4 (6%)	14 (20%)	<b>43 (61%)</b>	8 (11%)	1 (1%)
Your own Internet literacy (the ability to use the Internet)	0 (0%)	7 (10%)	<b>48 (69%)</b>	13 (19%)	2 (3%)
Your own digital literacy (the ability to use digital technologies)	4 (6%)	17 (24%)	<b>43 (61%)</b>	4 (6%)	2 (3%)

Note. N=70.

As shown in Table 14 and Table 15, most participants indicated “Yes” to all “Do” questions and “Can” questions, except to the questions related to the possession of personal homepages and language learning apps.

Table 14. Responses to “do” questions (Study 2)

		Yes	No
1	Do you understand the basic functions of computer hardware components?	<b>41</b> (59%)	29 (41%)
2	Do you have a personal homepage or personal profile on the web?	19 (27%)	<b>51</b> (73%)
3	Do you use keyboard shortcuts?	<b>56</b> (80%)	14 (20%)
4	Do you use the computer for learning purposes?	<b>70</b> (100%)	0 (0%)
5	Do you find it easy to learn something by reading it on the computer screen?	<b>68</b> (97%)	2 (3%)
6	Do you find it easy to learn something by watching it on the computer screen?	<b>67</b> (96%)	3 (4%)
7	Do you use social networking services?	<b>61</b> (87%)	9 (13%)
8	Do you have any online friend you have never met in person?	<b>38</b> (54%)	32 (46%)
9	Do you feel competent in using digital learning resources?	<b>49</b> (70%)	21 (30%)
10	Do you have mobile apps you use for language learning purposes?	30 (43%)	<b>40</b> (57%)

Note. N=70.

Table 15. Responses to “can” questions (Study 2)

		Yes	No
1	Can you change computer screen brightness and contrast?	<b>69</b> (99%)	1 (1%)
2	Can you minimize, maximize and move windows on the computer screen?	<b>69</b> (99%)	1 (1%)
3	Can you use a ‘search’ command to locate a file?	<b>62</b> (89%)	8 (11%)
4	Can you scan disks for viruses?	<b>49</b> (70%)	21 (30%)
5	Can you write files onto a CD, a DVD or a USB drive?	<b>61</b> (87%)	9 (13%)
6	Can you create and update web pages?	<b>39</b> (56%)	31 (44%)
7	Can you take and edit digital photos?	<b>53</b> (76%)	17 (24%)
8	Can you record and edit digital sounds?	<b>43</b> (61%)	27 (39%)
9	Can you record and edit digital videos?	<b>39</b> (56%)	31 (44%)
10	Can you download and use apps on digital devices?	<b>63</b> (90%)	7 (10%)

Note. N=70.

Table 16 shows that many participants tended to use email, the World Wide Web and wikis frequently whereas they rarely or never used graphics software, databases, spreadsheets, concordancers, language learning software, language learning apps, blogs, voice chatting and video conferencing. On the other hand, Table 17 shows that they tended to rate their skills for using word processing applications, spreadsheet applications, presentation applications, learning management systems, social network services, wikis, video sharing sites, web search engines and dictionary apps as “Acceptable” or “Good” while rating their skills for using database applications, virtual worlds, podcasts and web design applications as “Poor” – “Do not know”.

Table 16. Frequency of using computer and internet applications (Study 2)

Working with:	Very frequently	Frequently	Occasionally	Rarely	Very rarely	Never
1 Word processor	18 (26%)	21 (30%)	<b>23</b> (33%)	7 (10%)	1 (1%)	0 (0%)
2 Email	<b>27</b> (39%)	26 (37%)	13 (19%)	3 (4%)	1 (1%)	0 (0%)
3 World Wide Web	<b>49</b> (70%)	10 (14%)	2 (3%)	2 (3%)	3 (4%)	4 (6%)
4 Graphics software	4 (6%)	6 (9%)	13 (19%)	16 (23%)	<b>18</b> (26%)	13 (19%)
5 Database	1 (1%)	4 (6%)	10 (14%)	20 (29%)	<b>21</b> (30%)	14 (20%)
6 Spreadsheet (for data organization)	2 (3%)	9 (13%)	13 (19%)	<b>24</b> (34%)	16 (23%)	6 (9%)
7 Concordancer (for text analysis)	0 (0%)	0 (0%)	6 (9%)	14 (20%)	14 (20%)	<b>36</b> (51%)
8 Language learning software (CD-ROM, DVD)	1 (1%)	4 (6%)	9 (13%)	16 (23%)	<b>21</b> (30%)	19 (27%)
9 Language learning website	7 (10%)	14 (20%)	<b>23</b> (33%)	11 (16%)	8 (11%)	7 (10%)
10 Language learning mobile app	1 (1%)	6 (9%)	18 (26%)	<b>19</b> (27%)	15 (21%)	11 (16%)
11 Blog	4 (6%)	3 (4%)	12 (17%)	13 (19%)	<b>20</b> (29%)	18 (26%)
12 Wiki	20 (29%)	<b>24</b> (34%)	18 (26%)	5 (7%)	1 (1%)	2 (3%)
13 Text chatting	11 (16%)	11 (16%)	10 (14%)	11 (16%)	<b>18</b> (26%)	9 (13%)
14 Voice chatting	7 (10%)	7 (10%)	10 (14%)	<b>16</b> (23%)	14 (20%)	<b>16</b> (23%)
15 Video conferencing	3 (4%)	3 (4%)	8 (11%)	13 (19%)	20 (29%)	<b>23</b> (33%)
16 Computer game	14 (20%)	10 (14%)	<b>18</b> (26%)	12 (17%)	10 (14%)	6 (9%)
17 Electronical dictionary	10 (14%)	16 (23%)	<b>23</b> (33%)	14 (20%)	6 (9%)	1 (1%)

Note. N=70.

Table 17. Self-ratings of skills for using computer and internet applications (Study 2)

Working with:		Very good	Good	Acceptable	Poor	Very poor	Do not know
1	Word processing applications (e.g., MS Word)	5 (7%)	19 (27%)	<b>38</b> (54%)	5 (7%)	0 (0%)	3 (4%)
2	Spreadsheet applications (e.g., MS Excel)	3 (4%)	10 (14%)	<b>38</b> (54%)	13 (19%)	2 (3%)	4 (6%)
3	Database applications (e.g., MS Access)	3 (4%)	2 (3%)	19 (27%)	<b>22</b> (31%)	8 (11%)	16 (23%)
4	Presentation applications (e.g., MS PowerPoint)	5 (7%)	11 (16%)	<b>33</b> (47%)	12 (17%)	4 (6%)	5 (7%)
5	Communication applications (e.g., Skype)	3 (4%)	7 (10%)	<b>33</b> (47%)	12 (17%)	4 (6%)	11 (16%)
6	Learning management systems (e.g., Moodle)	2 (3%)	8 (11%)	<b>35</b> (50%)	13 (19%)	5 (7%)	7 (10%)
7	Virtual worlds (e.g., Second Life)	1 (1%)	5 (7%)	20 (29%)	11 (16%)	3 (4%)	<b>30</b> (43%)
8	Social networking services (e.g., Facebook)	11 (16%)	21 (30%)	<b>25</b> (36%)	8 (11%)	2 (3%)	3 (4%)
9	Blogs (e.g., Blogger)	1 (1%)	7 (10%)	<b>22</b> (31%)	16 (23%)	2 (3%)	<b>22</b> (31%)
10	Wikis (e.g., PBworks)	6 (9%)	14 (20%)	<b>37</b> (53%)	5 (7%)	1 (1%)	7 (10%)
11	Podcasts (e.g., Apple Podcasts)	4 (6%)	5 (7%)	17 (24%)	12 (17%)	3 (4%)	<b>29</b> (41%)
12	File sharing sites (e.g., Dropbox)	12 (17%)	19 (27%)	<b>23</b> (22%)	6 (9%)	1 (1%)	9 (13%)
13	Photo sharing sites (e.g., Picasa)	1 (1%)	10 (14%)	22 (31%)	13 (19%)	1 (1%)	<b>23</b> (33%)
14	Video sharing sites (e.g., YouTube)	10 (14%)	16 (23%)	<b>31</b> (44%)	7 (10%)	0 (0%)	6 (9%)
15	Web design applications (e.g., Dreamweaver)	3 (4%)	4 (6%)	21 (30%)	12 (17%)	4 (6%)	<b>26</b> (37%)
16	Web search engines (e.g., Google)	19 (27%)	<b>23</b> (33%)	22 (31%)	3 (4%)	0 (0%)	3 (4%)
17	Dictionary apps (e.g., Dictionary.com)	11 (16%)	18 (26%)	<b>26</b> (37%)	5 (7%)	0 (0%)	10 (14%)

Note. N=70.

Despite that their perceived digital literacy skills were tended to be rated at an acceptable level or lower, the participants' mean score of the general digital literacy test (Section IV of the DLQ-LL) was high (8 out of 10). The easiest question to them (100% correct) was about

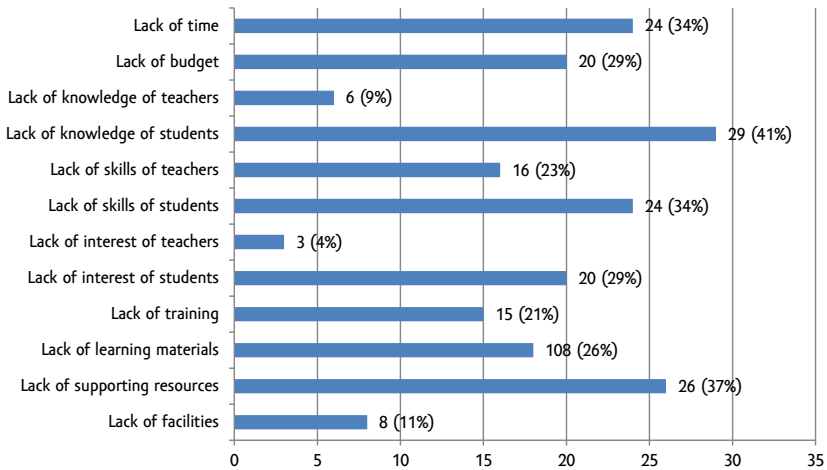
a video conference device while the most difficult question to them (only 25% correct) was about the process of converting spoken words into text (see Table 18).

Table 18. Results of the Digital Literacy Test (Section IV) (Study 2)

Mean scores	8 (out of 10)
The easiest questions	Q1. Which device do you need to install on your computer in order to have a video conference with your friends?: 70 (100%) correct
The most difficult questions	Q4. Which technology is the process of converting spoken words into text?: 18 (25%) correct

Note. N=70.

Figure 2 shows that the most common factors affecting their use of digital technologies for language learning include the lack of knowledge of students (41%), lack of supporting resources (37%), lack of time (34%) and lack of skills of students (34%).



Notes. N=70; multiple responses allowed

Figure 2. Factors affecting the use of digital technologies for language learning (Study 2).

The participants' attitudes toward the use of digital technologies were generally positive (see Table 19). The mean rating of 4.4 (out of 5) in the first, second and eighth statements indicates that most participants enjoy using digital devices, feel comfortable using digital devices and think that it is important for them to improve their digital fluency. The mean rating of 4.3 in the ninth statement also indicates that they think that their learning can be enhanced by using digital tools and resources.



Table 19. Mean self-ratings of views and attitudes toward the use of digital technologies (Study 2)

1. I enjoy using digital devices.	4.4
2. I feel comfortable using digital devices.	4.4
3. I am aware of various types of digital devices.	3.7
4. I understand what digital literacy is.	3.7
5. I am willing to learn more about digital technologies.	4.1
6. I feel threatened when others talk about digital technologies.	2.8
7. I feel that I am behind my fellow students in using digital technologies.	3.4
8. I think that it is important for me to improve my digital fluency.	4.4
9. I think that my learning can be enhanced by using digital tools and resources.	4.3
10. I think that training in technology-enhanced language learning should be included in language education programs.	3.9

Notes. N=70; 1 Strongly disagree; 2 Disagree; 3 Uncertain; 4 Agree; 5 Strongly agree

## Discussion

The results of the two studies indicate that all participants were aware of digital technologies and were interested in using them. In terms of the ownership of mobile devices such as electronic dictionaries, smartphones, tablet computers and laptops, out of a total of 170 participants in the two studies, only 2 students in Study 1 marked that they did not own any mobile device. While most participants in Study 2 learnt how to use the computer in the first place more from their family or themselves than their teachers/trainers, most participants in Study 1 learnt more from their teachers/trainers than their family or themselves. The participants in both studies, on other hand, found out new digital technologies mainly from websites, friends or social networks and the participants in Study 2 (83%) were relatively more active in getting information from websites than the participants in Study 1 (61%).

With regard to the self-assessment of computing skills, there was an interesting finding. Most participants in Study 1 indicated that their computer, Internet and digital literacy level was good or very good whereas most participants in Study 2 assessed their computer, Internet and digital literacy level as acceptable or good. It indicates that the self-assessed level of the participants in Study 1 was generally higher than the self-assessed level of the participants in Study 2. When the mean scores of the digital literacy test (Section IV of the questionnaire) in both groups were compared, however, the participants in Study 2 (computer science and engineering EFL students in Japan) achieved much higher than the participants in Study 1 (international EAP students in Australia): 8 out of 10 versus 5.4 out of 10.

The difference between self-competency and actual knowledge was similarly found in two other previous studies on computer literacy: Son et al. (2011) reported that the Indonesian teachers in their study tended to self-rate their computer literacy level higher than their actual knowledge of the use of the computer; Murray and Blyth (2011) conducted a study on 103 Japanese university students' perceived levels of computer and Internet literacy with an adapted version of the computer literacy questionnaire used in Son et al.

(2011) and reported that the Japanese students seemed to self-rate their competencies lower than their actual knowledge of the computer and the Internet.

These findings imply that students' self-assessment of digital literacy skills does not always reflect their practical knowledge of digital literacy and each group has a different level of expectations and needs in their digital literacy skills with a different background and experience. Therefore, it would be inappropriate to accept the results of the digital literacy questionnaire, particularly the self-assessment section, without taking into account the respondents' expectations and needs in their situations. Another interesting finding from the results of the digital literacy test was the statistically significant difference between the EAP I group and the EAP II group in Study 1. A possible reason for the difference might be that the test results were influenced by each group's English proficiency level – the higher proficiency group (EAP II) achieved higher scores than the lower proficiency group (EAP I) in the English version of the questionnaire.

In both studies, the participants' responses to the "Do" and "Can" questions in the questionnaire show that most participants used the computer for learning purposes (97%) and used social networking services (91%) although a majority of them (63%) did not have a personal homepage or profile on the web and about a half of them (48%) were not able to create and update web pages. Most participants in the two studies rarely or never used concordancers while the participants in Study 1 tended to work with language learning software and video conferencing more frequently than the participants in Study 2. Also, most participants in the two studies rated their skills for using virtual worlds, podcasts and web design applications as poor or unknowledgeable while the participants in Study 2 were more modest in their self-rated skills for using other applications than the participants in Study 1. This finding somehow echoes the findings of Gobel and Kano (2014) who reported that their Japanese university students used certain kinds of digital technologies only in a limited way.

In relation to the factors affecting the use of digital technologies for language learning, the most common factor selected by both groups in the two studies was the lack of knowledge of students. This finding supports the need for learner training (Hubbard, 2013) in digital learning environments. While the participants in Study 1 considered all factors listed in the questionnaire were generally important, the participants in Study 2 did not consider the lack of knowledge of teachers, the lack of interest of teachers and the lack of facilities as influential from their perspective. Overall, the participants in both studies showed positive attitudes toward the use of digital technologies as shown in Tables 10 and 19. Most of them indicated that they enjoyed and felt comfortable using digital devices. They also indicated that they were willing to learn more about digital technologies and thought that it is important for them to improve their digital fluency and their learning can be enhanced by using digital tools and resources.

It was a meaningful attempt to conduct surveys in two different contexts and compare the results of the surveys. Despite the small number of participants in each study, the findings of the two studies provide some insights into the participants' awareness and use of the digital technologies and the similarities and differences between the two groups in the two studies in self-assessed skills and views of the use of digital technologies for language learning. It is recommended to investigate the digital literacy level of language learners in other contexts further and examine the practical ways of improving their digital literacy skills and responding to the factors affecting digital language learning in the specific contexts.

## Conclusion

The studies reported in this article have looked at the concept of digital literacy and explored the experience and digital literacy levels of two groups of English language learners. The digital literacy questionnaire, which was developed specifically for language learners and adopted in the studies, has been a useful instrument in understanding the participants' awareness and use of digital technologies and their attitudes toward the use of the technologies for language learning. It has the potential to be developed further as a self-assessment tool that can provide individual users with diagnostic feedback on their digital literacy. For the development of digital literacy in language education, it is suggested that language learners need to be given practical guidelines and opportunities to learn what digital tools and resources are available and how to find and use them for language learning. By improving their digital literacy skills, they would become effective and independent learners who can take advantage of the tools and resources for language learning in authentic contexts.

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