

Connecting the Dots: Language Proficiency and Information and Communication Technology Competency of EMI University Students

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Abstract

Transitioning to university is particularly challenging for students entering an English as Medium of Instruction (EMI) university where academic activities are conducted in their second language. While existing literature has explored the Information and Communication Technology (ICT) competency of undergraduates and their impact on academic success, there is a scarcity of studies focusing on understanding the relationship between students' language proficiency and ICT competency. This study looked into the ICT competency of 1742 new first-year students at a Chinese EMI university in East China. Furthermore, the research investigated the relationship between students' English proficiency levels and their ICT skill sets. The results reveal that students with prior EMI exposure in high school and higher English proficiency demonstrate significantly enhanced ICT competency. They highlight the need for tailored institutional support at EMI universities to bridge the gap between language proficiency and technological competence, ultimately fostering a conducive language learning environment for these students.

Keywords: EMI, Transition to university, ICT competency, Language proficiency

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Introduction

Transitioning to university is both exciting and challenging for first-year college students because students need to adjust to a new learning and living environment in new roles as college students (Coertjens et al., 2017). Among all the challenges students need to confront during the transitioning phase, developing the digital competence required in higher education is probably one of the most salient. Information and Communication Technology (ICT) competency, an important element of digital competency is essential for students to succeed in the university environment, as more academic work is now assigned and completed digitally (Breen et al., 2023).

Although today's college students are commonly believed to be "digital natives" (Prensky, 2001, p.1), researchers have repeatedly found that students face difficulties in a few key areas of academic practice, including how to search for credible information, evaluate information, and incorporate such information in their academic work (Kennedy et al., 2008). In other words, students' familiarity with certain digital technologies does not automatically translate into ICT competency in academia (Vo, 2021). In addition, students who enroll at English as Medium of Instruction (EMI) universities face even more pressing linguistic challenges (Ganapathy et al., 2015). While it is quite clear that both ICT competency and English proficiency are essential for students' transition and future academic success at university, very few studies have investigated the relationship between students' English proficiency and their ICT competence at the onset of their university life. The current study, therefore, aims to address this research gap by examining the relationship between these two key skill sets.

Methodology

The current study was conducted at an EMI university in East China using approximately 5000 first-year students. Most of these students finished their high school studies in Chinese as Medium of Instruction (CMI) high schools in China. In the third week of their first semester, all Year 1 (Y1) students received an email message in English that contained the link to a participation information form and the link to the survey. Students were given a week to complete the survey. The survey instrument adopted in the current study draws upon previous research survey instruments included in EDUCAUSE (2022) and Nwosu et al. (2018). In total, the survey includes four sections and 26 questions, asking participants about their digital device ownership, previous experiences with virtual learning technology, and their ICT competence.

The ICT competency questions were adapted from Nwosu et al. (2018) and collected information about students' competency in computer operation and maintenance, word processors, spreadsheets and presentation software, internet and email, and information literacy (searching and evaluating online information). A sample item about computer operation and maintenance is: "I can disable programs that run automatically on startup of my PC but which I do not need."

Students' English proficiency was measured by the *LinguaSkill Tests* (Cambridge English, n.d.) which all new Y1 students took at this EMI university as the English Placement Test. The test results were converted into the corresponding Common European Framework of Reference (CEFR) language levels. In addition, students were also asked to provide demographic data like gender and instruction language at high school. In total, 1742 students submitted complete and valid responses. All the survey data collected were analyzed by the Statistical Package for Social Sciences (SPSS 22.0).

Results

The survey results showed that the ownership rate of new Y1 students of digital devices was very high. Specifically, 98.2% of the new Y1 students owned at least one digital device, and 69.6% of them owned at least three digital devices. Smartphones, laptops, and tablets are the most popular three categories of digital devices among young college students.

Results of the ICT competence questions indicated that students reported the highest level of competence in their abilities to use the internet and email, followed by computer operation and maintenance and searching and evaluating information online. The lowest competence was reported in the use of spreadsheets. Similarly, students were not very confident with the use of word processors and presentation software.

Further analysis was conducted to analyze the relationships between these self-reported ICT competencies and students' CEFR levels, as indicated by their English placement test results. Results showed that consistently, students who had higher English proficiency levels reported higher ICT competence as shown in Table 1 below.

We also used the Mann-Whitney U tests to find out if the instruction of language at high schools had any influence on students' ICT competence. The results also suggested students who had prior study experiences at an EMI high school reported significantly higher ICT competence: computer operation and maintenance ($U = 133450.50, p < 0.05$), word processor ($U = 128661.50, p < 0.01$), spreadsheet ($U = 130110.50, p < 0.01$), presentation software

Table 1. Means, standard deviations, and one-way analyses of variances in language proficiency and ICT competency

	CEFR A2 (n = 165)		CEFR B1 (n = 583)		CEFR B2 (n = 400)		CEFR C1+ (n = 14)		χ^2*	Sig
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Computer Operation and Maintenance	3.69	1.05	3.8	0.9	3.94	0.83	4.44	0.61	13.64	0.003
Word Processor	3.54	1.04	3.7	0.99	3.89	0.88	4.37	0.88	21.21	0.000
Spreadsheet	3.06	1.2	3.41	1.14	3.58	1.06	4.26	0.83	32.95	0.000
Presentation Software	3.14	1.17	3.58	1.09	3.8	0.96	4.23	0.99	45.2	0.000
Email and Internet	3.62	1.04	3.84	0.94	4.08	0.84	4.41	0.7	31.51	0.000
Information Literacy	3.59	0.99	3.75	0.99	3.91	0.9	4.57	0.62	24.45	0.000

*Degree of freedom = 3.

($U = 124070.50$, $p < 0.01$) and email and internet use ($U = 121533.50$, $p < 0.01$), and information literacy ($U = 129150.50$, $p < 0.01$). It's quite possible that due to the differences in high school curricula and assessment, those who studied at EMI high schools had more opportunities to practice and improve their technological skills.

Discussion and Conclusion

Our study aims to address the research gap by examining the relationship between EMI students' English proficiency and their ICT competency levels. The results demonstrated that students who were recruited with higher English proficiency reported higher ICT competency in all six ICT competence areas. This means that students with lower language proficiency levels will face more challenges in catching up with other peers in an EMI environment. While our findings were broadly similar with previous research on digital literacy and English proficiency levels (e.g., Alsmari, 2021; Indah et al., 2022), ours was one of the first attempts to specifically focus on the relationship between English proficiency and ICT competency.

In addition, our study also revealed the combination of high device ownership but lower self-reported software skills among new EMI university

students. This highlights a potential mismatch that educators in EMI institutions should be aware of when designing curricula and support programs. EMI institutions may consider revisiting the admission criteria to ensure new students meet the language proficiency requirements.

Another way to address this problem is to implement a robust foundation program at the EMI institutions. English for Academic Purposes (EAP) modules, which aim to improve both students' English proficiency and academic skills, for example, can combine the digital skills training elements into the curriculum (Roche, 2017).

Our study has several limitations. Firstly, the response rate, despite being over 30%, may not represent all new Y1 students of this EMI university, and the findings are not generalizable to other EMI institutions. Secondly, the use of self-report data on ICT competence is prone to biases such as social desirability bias (Blair et al., 2020), which may not accurately reflect students' true ICT competencies. Future research should address these limitations by including more diverse educational contexts, using more comprehensive measures, and exploring ICT competency development. Another direction of research could be examining the ICT competency with the broader digital literacy construct. The Framework Digital Literacies 3.0, proposed by Pegrum et al. (2022), covers four general focus areas of various digital literacies and serves as a useful map for language teachers and learners to navigate the complicated digital literacies landscape. It will be helpful to examine the interplay between different aspects of digital literacy among learners, particularly in EMI settings.

In short, EMI institutions should be more engaged in understanding new students' ICT competency, their training needs, and help these students overcome the challenges imposed by the language barriers and new digital skills required by the new learning environment.

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