Machine Translation Use as Translanguaging in Content and Language Integrated Learning: A Case Study in a General English Course for Global Citizenship

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This study investigated the convergence of content and language integrated learning, translanguaging, and global citizenship education in an EFL tertiary English class. Conceptualized within translanguaging as an assemblage for meaning-making, machine translation was incorporated into the course in a way that EFL bilinguals could fully avail themselves of their linguistic repertoire for the learning of global citizenship and language. The analyses of thirty-three students' response essays and survey results demonstrate the success of MT as both a scaffold for bridging language-content gaps and a tool for language acquisition. Design features, perceived as important, were a careful introduction and training on MT use and teacher feedback on MT-assisted writing. Survey results emphasize the crucial role of the students' L1 in meaning-making. The study offers a practical guide for educators interested in using MT in L2 writing instruction and encourages further research on the theoretical and pedagogical applications of translanguaging in diverse EFL contexts.

Keywords: machine translation and writing, CLIL (Content and language integrated learning), translanguaging, global citizenship, EFL, general English

1. INTRODUCTION

The use of Machine Translation (MT) in Second Language Education (SLE) has indeed grown beyond being a "taboo" (Lee, 2021). Research literature of the past thirty years at the intersection of MT and SLE shows some positive grounds for MT use (Jolley & Maimone, 2022): the growing reliability of MT technology (Im, 2017; Kim, 2020), generally positive perceptions of students and teachers after experiencing MT use (Clifford, Merschel, & Munné, 2013; Kim, 2020; Kim, 2023; Niño, 2009), and accumulating reports of the positive effects of MT on second language (L2) development (Ahn & Chung, 2020; Fredholm, 2014; Garcia & Pena, 2011; Im, 2017; Lee, 2020; Lee, 2021; Lee & Briggs, 2021; Niño, 2020; Tsai, 2019). However, the research literature also shows that there is still a strong sense of uncertainty and ambivalence on the part of both teachers and students towards the use of MT (Jolley & Maimone, 2022). Two major concerns are recurring. First is the ethical concern that sees MT use as an act of dishonesty, and second is the pedagogical concern that MT use still hinders language learning and makes students overly reliant on such tools (Ducar & Schocket, 2018).

Two opposing approaches towards MT use have been identified in the field (Jolley & Maimone, 2022). One approach sees MT as a disservice to L2 learners, and claims that the convenience of MT facilitates students' avoidance of L2 (Musk, 2014) and leads students to lose independence and resilience in their learning (Klekovkina & Denié-Higney, 2022). Various solutions to regulate students' MT use, or to turn their attention away from MT, are discussed (Klekovkina & Denié-Higney, 2022; Ducar & Schocket, 2018). On the other hand, the other approach sees MT as a resource, adopting an "integrate-educate-model" approach (Ahn & Chung, 2020; Lee, 2020; Niño, 2020; Tsai, 2019). The rationale for this approach is largely based on the argument that we should accept the inevitable reality and reframe the wide use of MT as an opportunity, calling for clear guidance and careful design.

This paper, taking the perspective of seeing MT as resource, attempts to find a deeper theoretical ground to further develop the rationale for the use of MT in SLE. To address both the ethical and pedagogical concerns around MT use, we should delve deeper, to a more fundamental question of SLE, regarding what should be its ultimate purpose. If its purpose is solely the acquisition of L2, and the construction of L2 sentences is a substantial part of the assessment, then there is indeed legitimacy in seeing MT use as cheating and interference in L2 learning (Ducar & Schocket, 2018). However, the landscape of the SLE field is changing at a fundamental level, reflecting the changing demands of our globalizing society (Oh, 2021). This study adopts two major theoretical movements in SLE as highly relevant to MT use: Content and Language-integrated Learning (CLIL), which emphasizes "how language and content are best learnt in integration" (Llinares & Evnitskaya, 2021, p. 367), and the concept of *translanguaging*, which deliberately engages with the full linguistic and

semiotic repertoires of learners, all as resources for learning (García & Otheguy, 2021).

These movements promote a dual purpose of education for both language learning *and* content learning. They require a focus on language *as a* meaning-making resource and allow openness to other semiotic resources other than language. It focuses less on L2 itself, but rather on the learner, on the particular set of linguistic resources of a particular learner, and on the growth of the learner as a competent multilingual communicator. With such alternative perspectives, this study claims that the use of MT can be conceptualized in a dramatically different way. It is therefore no longer an ethical problem or hindrance to learning but can be welcomed into SLE classrooms as valuable resource for meaning-making, communication, and learning (Vogel, Ascenzi-Moreno, & García, 2018).

This paper is part of a larger study regarding General English course development in EFL higher education based on the notions of CLIL, translanguaging, and global citizenship education (Oh, 2021, 2022a). This paper focuses particularly on the use of MT in writing within the larger study. This paper makes the case that a crucial requisite for MT to be a resource is careful designing that tailors the use of MT for the purpose of both content and language learning. For language learning, certain features need to be designed to ensure L2 learning is taking place. The question of "how to incorporate technological innovations without compromising academic performance" (Clifford et al., 2013, p. 109) needs to be addressed to claim the role of MT as a resource. For content learning, the course needs to be structured around meaningful content and values, driving the meaningful use of MT. We follow the scholarship on citizenship education in SLE (Byram, 2010; Porto, 2021) that directs attention to the *purpose* of SLE, arguing that the purpose should be holistic identity development towards democratic values. The use of technology is rapidly shifting towards the use of Chat GPT, but the framework outlined in the paper (CLIL, translanguaging, and technology) can serve as the theoretical foundation for technology-enhanced English education.

This study first aims to build up a theoretical rationale for using MT in SLE, grounded in a scholarly space where CLIL, translanguaging, and citizenship education intersect. It also aims to empirically examine whether MT use is indeed helpful for both language learning and content learning and how certain design features affect content and language learning. It ultimately aims to provide a practical, yet theoretically grounded guide for practitioners in designing MT use.

2. CLIL, TRANSLANGUAGING AND MT

To set the theoretical foundation, this section attempts to make interconnections among the three concepts of CLIL, translanguaging, and MT, in relation to the EFL context.

2.1. CLIL and MT

CLIL refers to "an approach which merges subject and (foreign) language development in educational contexts" (Nikula & Moore, 2019, p. 238). While CLIL has been a growing and influential framework in SLE pedagogy, studies have indicated some problematic aspects in CLIL classrooms (Nikula & Moore, 2019; Porto, 2021). Some of the difficulties or challenges of CLIL, which are relevant to the focus of this study, are listed below (i.~v. from Porto, 2021, pp. 933-934; and vi. from Nikula & Moore, 2019):

> i. structural, utilitarian, market-driven, Eurocentric
> ii. mismatch between students' cognitive development and their language proficiency
> iii. input-based, transmission approach
> iv. focus on receptive skills to the detriment of productive skills
> v. too much focus on content-language integration at below sentence-level grammar and vocabulary
> vi. L1 use as random and intuitive

The main argument of Porto (2021) is that the theory of citizenship pedagogy can broaden the outlook of CLIL and overcome these difficulties. That is, the shift from a utilitarian and market-driven approach to a value-based approach is claimed as a solution at a fundamental level.

This study strongly supports such an approach. Furthermore, this study makes the claim that MT is an effective tool for this type of alternative approach, precisely addressing each of the difficulties listed above. CLIL's central difficulty, most tangible in the classroom, is the second point in the list above, which is the mismatch between the second language learners' language level and their cognitive level, or the level of content they are capable of learning. Some of the other difficulties of CLIL (iii. to v. in the list above) regarding input, receptive skills, and easy grammar, are stemming from this content-language gap. The technology of MT precisely addresses this fundamental challenge of CLIL. As such, it can serve as a powerful scaffold for second language learners to manage demanding materials in the CLIL classroom.

2.2. CLIL and Translanguaging

The concept of translanguaging relates to the sixth point in the list above, the random and intuitive use of L1 in CLIL. The link between CLIL and translanguaging is subtle and can even be controversial, because of the unclear place of L1 in CLIL as well as in general SLE

classrooms, which precisely relates to the controversy of MT use in SLE. However, the notion of translanguaging has been used since early on in CLIL literature to recognize and theorize the use of L1 in CLIL classrooms (Nikula & Moore, 2019).

Translanguaging, in literal terms, refers to the practice of crossing the borders between languages. *Spontaneous* translanguaging refers to the natural behaviors of multilinguals, while *pedagogical* translanguaging refers to the planned, systematic use of multilingualism in classrooms for content and language learning (Cenoz & Gorter, 2021). Although it is often used interchangeably with *code-switching*, the idea of translanguaging fundamentally has a critical orientation as a perspective of/for the minority (García & Otheguy, 2021):

> Translanguaging theory/practice makes visible the *injustice* of requiring bilingual people, and especially students, to use less than half of their linguistic repertoire, while comparing them to monolinguals who can use almost their entire repertoire to perform the same task. (García & Otheguy, 2021, 16)

Such a critical approach has had great resonance in the field of SLE, but its key challenge is its weakness in the actual pedagogy of how to preplan a systematic alternation between languages in the classroom (Galante, 2020). This study makes the case that the use of MT can be meaningful in this respect, moving CLIL away from random L1 use and alternations, because designing MT use is precisely designing the L1 use.

2.3. Translanguaging and MT, for EFL Learners

Translanguaging has been an open and productive concept for continual theorization (Canagarajah, 2018; Hawkins, 2018; Li, 2018). Translanguaging now means more than crossing the borders between so-called "languages". It also means transcending other semiotic divides, a process of assembling multiple languages, voices, modes, and resources available to students for communication and learning (Hawkins, 2018; Li, 2018). Canagarajah (2018) has proposed that non-human resources, such as diverse AI tools or even the surrounding spatial features, should be considered as part of the larger whole, or what he calls an *assemblage*, working together in meaning-making.

The use of MT, from the perspective of translanguaging, can be seen in two ways. It is the very technology of actually and effectively crossing the boundaries of languages (Celic & Seltzer, 2013). And secondly, the use of MT itself can be understood as a form of translanguaging across semiotic boundaries. It is crossing human cognition and non-human cognition (Canagarajah, 2018), forming a "human-machine assemblage" for better meaning-making (Vogel et al., 2018).

This machine technology for translanguaging is particularly crucial in an EFL context where English for communication is uncommon among the general public. Translanguaging theory has originated and developed mainly in English-speaking contexts, such as Welsh-English education in Wales (Cenoz & Gorter, 2021), minority students in the US (García & Otheguy, 2021, or Chinese-English bilinguals in Hong Kong (Li, 2018), where translanguaging between L1s and English is indeed the actual and spontaneous practice of the minority multilinguals. However, EFL learners often do not have access to spoken English and are therefore not able to naturally translanguage between their L1s and English, particularly in EFL classrooms (as numerous studies have shown regarding unspoken English in EFL classrooms, e.g., Lee, 2018; Littlewood, 2014). As such, translanguaging makes visible another kind of injustice in EFL context, requiring the non-English speaking EFL learners not to make use of their L1s, downgrading their content levels and alienating them from meaningful English content. The content-language gap is inevitable without the technology of translation to cross the linguistic barrier. MT is a powerful and already widely used technology for EFL students to freely translanguage.

3. MT IN L2 WRITING TASK

An increasing number of empirical studies have designed tasks with MT use and examined the effects of MT use on L2 development, mostly focusing on L2 writing (Ahn & Chung, 2020; Fredholm, 2014; Garcia & Pena, 2011; Im, 2017; Lee, 2020; Lee, 2021; Lee & Briggs, 2021 Niño, 2020; Tsai, 2019). The common conclusion of these studies suggests careful design and guidance in employing MT as an effective learning tool. However, a specific pedagogy of how to actually integrate MT into L2 classrooms in ways that help L2 development is still an under-researched area.

From the current research literature, a way to find practical tips is to consider their pedagogical implications and suggestions, or their research design of the writing tasks (in terms of the content and task sequence) for the research participants. Some of the core pedagogical suggestions from these studies include the following:

- careful introduction, training, or explicit discussions about the strengths and weaknesses of MT (Ahn & Chung, 2020; Im, 2017; Lee & Briggs, 2021; Niño, 2009)
- considerations of students' level of L2 proficiencies (Ahn & Chung, 2020; Garcia & Pena, 2011; Lee, 2021)
- pre-editing and post-editing strategies (Im, 2017; Lee & Briggs, 2021)
- submission of multiple versions for accountability (Lee & Briggs, 2021)

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teachers' feedback in addition to MT feedback (Im, 2017)

These points, however, do not yet make up a comprehensive methodology for practitioners to apply.

As for the content of the writing tasks, considering the large content areas which are taught in CLIL programs (for instance, the discipline of Global Citizenship Education in this study), the contents in the research literature consist mostly of simple or isolated topics (e.g., complaint email in Garcia & Pena, 2011; texting language of young people in Lee, 2019; or reflection on a movie and international trade fairs in Tsai, 2019).

As for the sequencing of the MT tasks, Table 1 shows how the sequencing was designed in some of these empirical studies. A common type of study (Type 1) examines the effects of MT by comparing the draft without the use of MT and the draft with the use of MT (Ahn, Chung, 2020; Fredholm, 2014; Garcia & Pena, 2011). In these studies, no particular steps are taken before or after the participants wrote their drafts using MT.

TABLE 1
Sequencing in Writing with MT Tasks in Research Designs

Type	Step1 (first draft)	Step 2 (MT use)	Step 3 (final draft)
1	None	L2 + MT	
2	L1 or L2	L2 + MT	
3	L1 and L2	L1→MT→L2	L2
4	Group planning	Group L2+MT	Individual L2

In Type 2, one additional step is taken before MT use, in which participants were asked to write a draft either in L1 (Niño, 2020), or in L2 without using MT (Im, 2017). In Type 3 (Tsai, 2019; Lee, 2019, 2020), participants went through at least three steps. In the first step, they wrote an L1 draft and then students' own L2 draft before using MT. The middle step was simply producing an MT output, copying the result of their L1 input from Step 1. Then, participants finalized their draft by combining and revising their own L2 version from Step 1 and the MT's L2 version from Step 2. Consequently, there were four versions of the same content, all of which were to be submitted: L1 text, L2 text, MT output, and the revised text[1]. The use of MT was thus compartmentalized in Step 2, and the direction of translation was controlled from L1 to L2.

Type 4 refers to Lee's (2021) study, in which she critiques previous studies that only allowed "a one-time experience for a given writing task" (Lee, 2021), rather than addressing how to fully incorporate MT into a larger curriculum. Lee (2021) shows a course design with

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[1] The sequence in Tsai (2019) slightly varies.

a different approach to MT design. In Step 1, instead of writing a complete draft, students were to brainstorm and plan their writing. Also, the planning and drafting in Steps 1 and 2 were done in groups. Then, the final draft in Step 3 was submitted individually.

Through these different types of sequencing, several issues related to MT design are shown, including the planning vs. complete draft before MT use, the language of initial drafting before MT use (L1 or L2, or both), individual vs. group writing, and the direction of translation during MT use.

As for the specific research questions, this paper adopts the research context of the EFL General English course development study of Oh (2021, 2022a), which reports on how its desired course goals have been achieved. This paper examines the particular role of MT use and its designs in writing tasks in achieving course goals.

(1) Content learning
(1a) How was the goal of learning global citizenship achieved in the writing task using MT?
(1b) How was MT helpful in learning global citizenship in the writing task?
(2) Language learning
(2a) How was the goal of learning English achieved in the writing task using MT?
(2b) How was MT helpful for learning English in the writing task?
(3) Task design
(3a) How was each design feature of the writing task using MT helpful in learning English and global citizenship?
(3b) How was each language sequence of the writing task using MT helpful in learning English and global citizenship?

4. METHODOLOGY

4.1. Setting and Participants

This study was conducted in the first semester (March to June) in 2021 in a first-year General English class at a small-sized Christian university in South Korea. The second author has primarily designed, taught, and researched the citizenship-based, MT-integrated CLIL curriculum model in the larger study (Oh, 2021, 2022a). The first author, also teaching General English at the same university, managed the writing part of the studied course, and partially participated in the course and research design. Due to COVID-19, classes were conducted online, except for exams, which were administered in person.

The study was conducted during a mandatory General English courses that the second author was teaching. A placement test (a mock TOEIC test) was administered at the beginning of the semester to place freshmen into separate classes according to their English proficiency level. The class chosen for this study was the second highest level. The students involved in this study achieved TOEIC scores ranging from 350 to 550, mostly in the 400s, which is generally considered to be low intermediate to intermediate. There were 33 students in the class, all students with Korean as their L1, and who were not majoring in English. During orientation in the first class, they were informed that the class was part of this research project, and their work would be used for analyses of introduced research questions. The research proceeded with their informed consent.

4.2. Course Design

The overall course design and implementation, described in detail in Oh (2021, 2022a), is presented in a shorter version here, with more focus on writing with MT. The curriculum development adopts the Backward Design approach (Wiggins & McTighe, 2005), which sets the desired goals first, then determines forms of evidence to assess whether the goals were achieved, and finally plans the learning activities needed for assessment. The four goals set for the course were 1) understanding of globalization and global citizenship, 2) global competence, 3) technology competence, and 4) English competence. For this paper, the curriculum framework is partly simplified to set the course goals as content learning (global citizenship) and language learning (English). MT is itself one of the course goals (technology competence) in the larger framework, but in this paper we will limit its place to that of a tool to achieve the learning goals.

Regarding the evidence for assessment, successful task completion itself serves as evidence for having achieved the learning goals. Oh (2021, 2022a) argues that the claims of naturalistic approach to second language acquisition (Krashen, 1982) to provide continuous exposure to comprehensible input is not feasible in an EFL context. The EFL classroom alone cannot provide a sufficient amount of input for naturalistic automatization of language use. Oh (2021, 2022a) argues that the alternative approach based on CLIL is to focus on meaning-making and successful completion of meaningful tasks.

The main learning materials were multimodal texts from three sources: 1) GCED open online course videos provided by UNESCO [2] 2) OECD documents on PISA global competence (OECD, 2018), and 3) online English news articles, as outlined in Table 2.

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[2] www.gcedonlinecampus.org

TABLE 2

Main Texts of the Course

Media Text	Topic
GCED1 lecture video	Interconnectedness and interdependence of globalization
GCED2 lecture video	Contradictions and inequality of globalization
GCED3 lecture video	Definitions of global citizenship

GCED4 lecture video	5 core themes of GCED
	  1. human rights
	  2. respecting diversity
	  3. conflict and peacebuilding
	  4. globalization and social justice
	  5. sustainability

OECD (2018) document	PISA global competence framework
Online articles for Article Analysis presentation	· Indian women's rights (BBC) · Covid-19 vaccine patent (CNN) · sustainable clothing technology (CNN) · carbon emission of global rich (CBS)

Learning activities were designed to systematically build up to the article analysis presentation task at the end of the semester. There were five writing assignments throughout the semester, all of which were Personal Response (PR) essays. The main activities of the course that are relevant to the PR assignments are listed in Appendix A.

For the PR assignments, students were required to write two paragraphs. For the first paragraph, they were to write a summary of the reading text, and for the second paragraph, they were to write their personal connections to the text. The rubric with which PRs were scored is presented in Appendix B.

The "How to use MT" lecture taught students about what perspective to take with regard to using MT, and provided explanations for the writing tasks. The following features of task design were presented as ways to ensure English learning with MT use:

- · submission of all four versions
- · scoring
- · memorization of one of the PRs for the midterm and final exams
- · teacher feedback for the PR chosen for memorization

Although all submissions were scored, teacher feedback was provided only to the PRs students had chosen for memorization for the writing section of exams. Memorization was a way to have students use the teacher feedback for clear output (the mode of final output of students' essays is an aspect to be further developed).

The sequences of language use required for each PR are outlined in Table 3. Students were asked to write four versions for each PR. For sequence 1, for example, students were to submit the English text, the Korean text, the translated English text (a direct copy of the MT result), and the revised English text.

TABLE 3
Sequencing of Languages of PR Assignments

Sequence	Step1 (First draft)	Step2 (MT Use)	Step3 (Final draft)
1	E, K	K → MT → E	E
2	K, E	K → MT → E	E
3	K, E	E → MT → K	E

*E: English, K: Korean
*sequence 1 for PR1, sequence 2 for PR 2, 3, 4, sequence 3 for PR5

These sequences were designed based on specific goals, namely 1) to have students write a complete draft (instead of writing a plan) before MT use, 2) to have students write two drafts in both Korean and English before drafting with MT, and 3) to control the direction of translation during MT use. Having students write a complete English draft before MT use was a way to ensure English learning, and writing a complete Korean draft helped the teacher to know what the students had intended to write when reading through their work.

The difference between sequence 1 and 2 was the order of language used for the first drafting. The difference between sequence 2 and 3 was the direction of translation. However, as the course progressed, the authors realized that students were already constantly changing the direction of translation while using MT. This was especially prevalent where the translation direction from English to Korean would be used by students to double-check what they had written (also reported in Clifford et al., 2013). This study, therefore, focuses on the difference between sequence 1 and 2, what can be seen as the order of translanguaging in the prewriting stage.

4.3. Data Collection and Analysis

Data were collected for mainly two purposes. One was to show evidence of having achieved the learning goals. The other was to show the role of MT in achieving the goals of the study. The data collected for this study were student documents of submitted PRs and exam papers, scoring records of PRs and exams (scored by the first author), teacher feedback, and student survey results. Average scores were calculated for each category.

To show evidence of content learning, content-analysis of students' PRs was conducted.

The QuillBot summarizer program[3] was used to elicit a list of key sentences to be analyzed for central themes. Only the personal response paragraphs were analyzed to see students' personal understanding of the contents[4]. Some of the sentences selected from the program are shown as examples.

Three surveys were conducted during the course of the semester: the initial survey in the beginning of semester, a second survey after the midterm exam, and the last one at the end of the semester. This paper uses data from the second survey after the midterm exam. This is because four of the five PR assignments were done before the midterm exam, and after the midterm exam, MT was mainly used for reading (except for the PR5 assignment).

Nine survey questions related to MT use in this survey are reported in this paper. These survey questions asked for students' ratings about the helpfulness of the given aspect of MT on a scale of eleven (from 0 to 10, 0 being not at all and 10 being completely). A question then asked for students' comments about their ratings (Writing comments was optional). These survey results provided both numeric and written data. Students' numeric responses were calculated for their averages. Written comments were analyzed for patterns and repeated themes in relation to the research questions. Some of the comments were chosen to be presented as examples.

5. FINDINGS

5.1. Content Learning

5.1.1. Evidence of content learning

Through content analysis of PRs, we could examine what the students had learned about global citizenship and whether the goal of content learning was achieved. Table 4 shows the key themes in students' writings in each of the PRs and some of the example sentences from the summary-producing software.

TABLE 4
Key Themes from PR Content Analysis

PR	Key Themes	Example Sentence
PR1	· Had not known how much we are interconnected and interdependent even in the smallest, daily actions	- After reading the text, I could clearly imprint on my head that I am a member of the global community and

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[3] https://quillbot.com/summarize
[4] PR5 was not included for reasons specified later.

	· Will reconsider and be careful about the impact of my actions to others	felt how many people's lives are contained in my life.
PR2	· Shocked to know the degree of global inequality · Interest in human rights of unprotected children and women	- I didn't know much about global wealth inequality. Now I understand what it is.
PR3	· Understanding of global citizenship as sense of belonging and responsibility · Willingness to take actions and work with others	- I want to be a global citizen who is passionately committed to social justice, participates in communities at various levels, from local to global, and collaborates with others to make the world a more equal and sustainable place.
PR4	· Understanding of the five core areas of GCED · Particular interest in one of the five areas	- With a lot of education about human rights, I have always thought about my own human rights, but never properly regarded human rights as a tool for respecting and protecting the human rights of others.

Overall, students expressed how they had not really understood, or had not been aware of, commonly used terms like globalization and inequality, and how the lecture helped them understand the meanings and realities of these concepts. Students showed greater awareness of global inequality, their individual place in the world as it interconnects with others, and a greater sense of responsibility for the impact of their actions on others.

One survey question concerned their content learning. It asked: "Are you a global citizen? Why or why not?" 72% responded "yes," 25% responded "no," and 3% responded "I do not know." An analysis of students' comments on either their "yes" or "no" answers is shown in Table 5. Interestingly, students' comments showed different ways of understanding the concept of global citizenship, which reflects the multiple interpretations the concept of global citizenship can have.

TABLE 5
Survey Result of the Questions, "Are You a Global Citizen? Why or Why Not?"

Response	Comments Examples	Students' Understanding of Global Citizenship
Yes	- I am a global citizen because I was born with the right to be recognized as a global citizen and to be protected in this world.	as inherent quality
	- Yes, because I think the first step of being a global citizen is to know what a global citizen is, and through this class I learned what a global citizen is.	as awareness
	- Yes, because through this class, I am gradually practicing efforts for the world's climate and environment, such as reducing the use of disposable products.	as practice

No	I don't think I am a global citizen yet because I lack interest in global issues. I don't think I can regard myself as a complete global citizen because I cannot see everything without discrimination yet.	as qualification to be reached

For those who answered yes, some understood global citizenship as a quality they already inherently possess. Others understood it as not inherent but a learned awareness. Still others understood it as what they practice. For those who answered no, they understood global citizenship as a certain set of ethical qualifications which they have not yet achieved. However, both of the yes and no respondents show a clear understanding of the concept of global citizenship and application of the concept to themselves. The no responses do not clearly indicate that the respondents have not achieved the content learning goal, but rather show a high degree of critical self-reflection.

5.1.2. The role of MT for content learning

The role of MT use for learning global citizenship was also given a generally positive rating, even though it was a bit lower than the score for English learning. Few students responded that the *writing assignments* were helpful in understanding the content but questioned the helpfulness of MT per se for content learning. However, many students commented on the benefits of MT.

TABLE 6

Survey Result on the Role of MT for Global Citizenship Learning

Question	Average	Positive Comments Example	Negative Comments Example
The use of MT in PR tasks was helpful for acquiring knowledge of global citizens and fostering global citizenship identity.	6.8	- I could express into English the thoughts that I should have as global citizens. - I was able to share my load on the translator and write the content more faithfully and in more depth. - More than when I was translating myself, I could apply the knowledge more to myself and understand better.	- When I used the translator, I kept looking only at the English language, so it was difficult to concentrate on acquiring knowledge about global citizens and developing my global citizenship identity.

As shown in Table 6, students commented on how MT reduced their cognitive load and helped them think more about the content, and to personally connect to the content by thinking how the content applies to their own situations. The use of MT helped students to express their own thoughts about the content with a much weaker linguistic and affective

barrier, which helped them with their content learning. However, as shown in the second negative comment, MT could add cognitive load with distracting effect, if the student was not familiar with using MT. An interesting point is that although the question asked about the role of MT in the writing task, a recurring theme pertained to the benefit of MT use for understanding the content better.

5.2. Language Learning

5.2.1. Evidence of language learning

Table 7 shows the average scores and the submission rates of the five PRs and two exams.

TABLE 7
Average Scores of Writing Tasks

Task	Average Score	Submission rate
PR1	18.5/20	32/33 (97.0%)
PR2	18.5/20	31/33 (93.9%)
PR3	18.2/20	31/33 (93.9%)
PR4	17.6/20	28/33 (84.8%)
Midterm exam Writing Part	7.87/10	29/33 (87.9%)
PR5	19.3/20	30/33 (90.9%)
Final exam Writing Part	9.03/10	30/33 (90.9%)

Students overall showed a high degree of task completion. The decrease of the average score, particularly for PR4, is from students' overall fatigue with the course and the task being too close to the midterm exam. From survey responses, some students expressed that the course load was heavy and deadlines for some of the PRs were too close in succession. The scores and submission rates went up again towards the end of the semester, and overall, students participated actively in the writing tasks.

Active participation is also reflected in the lengths of students' writings, which is seen as a key indicator of writing performance (Garcia & Pena, 2011). Initially, students were guided that the length of the PR should be between 150 and 200 words. However, most students went over this limit, even though they knew they would have to memorize some of their paragraphs. When it became apparent that students were spending an excessive amount of effort on memorization only, they were asked to memorize only the second paragraph for the final exam. Figure 1 shows examples of students' memorized writing.

FIGURE 1

Example of Response in Midterm Exam(left) and Final Exam(right)
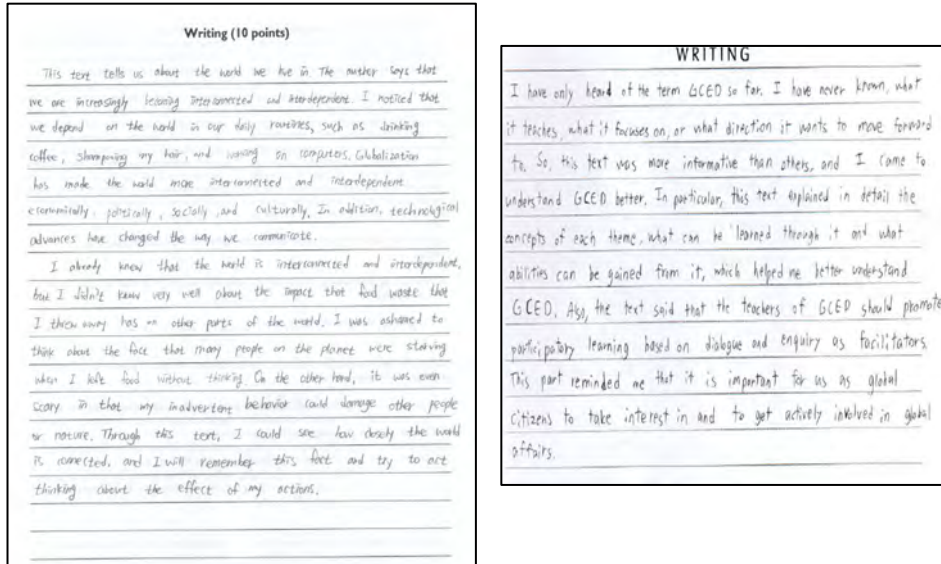
5.2.2 The role of MT for language learning

Students generally gave a positive rating for the helpfulness of MT use for English learning, as shown in Table 8.

TABLE 8

Survey Results on the Role of MT in English Learning

Question	Average	Positive Comments Example	Negative Comments Example
The use of MT in PR assignments was helpful for learning English.	7.4	- It gave smooth sentence examples and served as a guide. - I learned what the problem was with my English *writing*. - I can't invest only in the English course, and the course was a big burden, but MT helped me continue my studies.	- It helped doing the assignment easier, but in terms of improving my English, I am not sure.

Students responded that MT provides examples and guides on vocabulary, grammar, and sentence structures, which helped students acquire these skills. Some students pointed out that seeing the MT results helped them see their own English abilities as well as areas that need improvement, and helped them revise their sentences by themselves. MT also lowered

their affective barriers for task beginning, task completion, and even course completion. Also, some students pointed out that their competence in using MT was improved, which they saw as helpful for English learning. A few students expressed negative responses, explaining that although MT use helped with the completion of the task, they questioned whether it was helpful for English learning. These comments show similar findings with previous studies about the pedagogical effectiveness of using MT (Clifford et al., 2013; Kim, 2020; Niño, 2009).

5.3. Task Design

5.3.1. Design features

Four design features of the PR assignment were present in the survey: the introductory lecture, submission of all four versions, teacher's feedback, and memorization of PRs. Students' ratings on each of these features are shown in Table 9.

TABLE 9
Survey Results for Each Feature of Task Design

Question	Average	Comments Example
The **introductory lecture** on how to use MT was helpful for appropriately using MT.	7.2	- I didn't feel the need for a guide because I thought I knew it already, but when I saw it, the shortcomings of the translator were well explained, so I learned a lot about how to use it. - I realized that translator does not just makes sentences that you don't know. but it gives a lot of knowledge in grammar and words.
Having to **submit all versions** of the PR assignment was helpful for learning English and constructing the content of writing.	6.7	- As I compared the subtle differences between the versions, I could create a better text. - Each version took so long, and the degree of my concentration decreased, but I felt proud once I submitted the work.
Receiving **teacher feedback** on the PR assignment was helpful for learning English and constructing the content of writing.	8.4	- My errors that could not be detected by MT were fixed. - With only my own ability and MT, I could not be 100% sure, so when someone gave me feedback, I was relieved.
Memorizing PRs on the exam was helpful learning English and global citizenship.	6.3	- By memorizing sentences that had been fixed correctly, I could learn the sentence structures. - In my case, it wasn't that helpful because I just memorized it.

Results show that each of the design features played a role in helping students' language learning and content learning. Regarding the introductory lecture, studies have emphasized

the role of a careful introduction and training regarding MT use (Ahn & Chung, 2020; Im, 2017; Lee & Briggs, 2021; Niño, 2009), and such emphasis is affirmed in this study as well.

Submission of multiple versions and memorization received relatively lower ratings in comparison. The lower ratings may be due to the fact that these features required a lot of work from the students. Memorization, especially, does involve rote learning, and had the least number of positive comments. However, submission of multiple versions received numerous positive remarks. The very act of producing different versions of the same content had significant effects, as the example comments show. This feature also relates to the sequence of MT use examined in the next survey result; different sequences of the "multiple versions" had their own learning effects.

Teacher feedback had the highest rating among the design features. In their comments, students expressed awareness of the limited role of MT. Several students expressed their anxiety over the quality of their work even with the help of MT, and their sense of relief when receiving the teacher's feedback. Teacher feedback was the most customized feedback which could detect errors that MT could have missed and provide new or better expressions for their intended meaning.

5.3.2. Language sequence

Students were asked to rate the helpfulness of drafting in English before MT use and drafting in Korean before MT use (shown in Table 10). Both sequences were rated positively, each having their own strengths and weaknesses.

TABLE 10

Survey Results for Language Sequencing

Question	Average	Positive Comments Example	Negative Comments Example
In the PR assignment, **English writing before using MT** was helpful in learning English and constructing content.	7.2	- You don't have a lot of chances to write English on your own, but this breaks the entry barrier. - Since I do not translate right away, the dependence on the translator decreases. This was helpful in learning English.	- I couldn't write the sentence as intended because I had no English vocabulary. It was impossible to write directly in English. I think and write in Korean in my head first, so there is no difference from writing in Korean first and writing in English first.
In the PR assignment, **Korean writing before MT use** was helpful in thinking process	7.4	- Writing in Korean first creates depth in the content, and you can learn sentence structure or vocabulary in the process of transferring in-depth content to English.	- English writing was much more helpful than Korean writing.

Machine Translation Use as Translanguaging in Content and Language Integrated Learning...

| and content construction. | - As I tried to write my thoughts in Korean, it helped me understand and remember the main text, more than when I read the text repeatedly. |

Writing an English text before MT use was generally seen as "very difficult, but helpful." Several students responded that writing in English itself was a new experience for them, with one student specifically stating that it felt strange to do so. For many, it was difficult to construct the content and organization of their writing when using English first, and they could not express their intended meaning. One student even remarked that "there is no difference between writing in Korean first and writing in English first" because she was already thinking in Korean first. However, despite the difficulty, students generally acknowledged its benefits for their English learning. Having students not use MT right away, but having them attempt to write in English first, was a crucial design feature to ensure English learning with MT use, confirmed by these findings.

Writing in Korean before writing in English was generally seen by the students as "helpful for in-depth content construction." By writing in Korean first, it became much easier and felt more natural to construct meaning as the students had intended. Because they could put more focus on the content-side than on the language-side of their writing, they could think in depth. As one of the comments shows, the reduced cognitive load in writing helped them focus not only on better content for writing, but also on better understanding of the learning materials.

These results suggest that the ideal sequence for a writing task with MT would be: 1) L1 writing, 2) L2 writing, 3) MT use, 4) Revision. It takes the advantage of both sequences of thinking in L1 first, which is helpful in constructing the content, and drafting in L2 before MT use, which is helpful in language learning. However, the survey results also showed that students experienced different advantages from each sequence, and therefore there is no one best sequence for everybody.

6. DISCUSSION AND CONCLUSION

This study aimed to build a theoretical and empirical rationale for MT use in SLE. Theoretically grounded on CLIL and translanguaging, this study conceptualized MT use as a valuable resource for content and language learning in SLE, and explored its role in EFL writing, while also testing task design features to support its pedagogical benefits. In order to develop global citizenship, students completed the task of writing five personal response papers to materials on global citizenship education and online articles dealing with global issues. MT use was a necessity in this context because of the content-language gap;

meaningful engagement with the course contents meant tapping into linguistic resources beyond their current L2 proficiency. MT was postulated as a key scaffolding component to fill this gap, and its hypothesized pedagogical role was tested empirically.

The findings of the study supported the conceptualization of MT use as a resource for managing demanding materials, resulting in successful content and language learning in the CLIL classroom. This is significant in that empirical evidence confirmed the integrate-educate-model approach, and translanguaging with MT was put into practice in the EFL CLIL classroom. The EFL classroom has been an under-researched context for translanguaging theorization. Survey results on language sequencing in particular show the critical role of L1 for EFL students regarding their meaning-making. It would be a clear injustice if the Korean-speaking participants in this study were deprived of the opportunity to access powerful contents on interconnectedness and inequality of globalization, and to discuss their change of perspectives and willingness to act through English writings. It was with the help of MT that the entire linguistic repertoire of EFL students, together with MT, worked as an assemblage, helping students make sense of demanding materials and expressing their personal responses.

This study marks the pioneering effort to investigate the utilization of MT as a resource to address cognitive and linguistic gaps within a CLIL approach in an EFL tertiary setting. The study combined the use of MT and L1 into a single unit of analysis. However, there is a need for a more detailed examination of this phenomenon. A recent study by Oh (2022b) has demonstrated a significant correlation between L2 vocabulary and reading, even when MT is employed, underscoring the significance L2 proficiency in MT-mediated reading. Although the study did not delve into the interplay of L1 reading comprehension and L2 proficiency in the context of MT-mediated reading, it introduced a theoretical mechanism wherein L1 and MT collaborate to enhance L2 reading comprehension, utilizing the Construction Integration Model (Kintsch, 1998). Further research is needed to validate this proposed theory, and the outcomes of such studies hold the potential to significantly advance our understanding of the mechanisms governing the role of L1 in L2 reading, particularly when MT or ChatGPT are used as aids. It appears to be crucial to extend this line of inquiry to explore the role of L1 in MT or Chat-GPT-mediated writing. A promising theoretical framework for such a study could be a process writing approach, which involves a cycle of planning, translating, and reviewing (Graham & Sandmel, 2011).

This study provides a general roadmap for practitioners trying to use MT in their teaching of L2 writing. MT design should firstly involve meaningful and engaging content, possibly a strong, value-based content-area, and secondly, careful introduction to MT use, thirdly, task requirements that may involve multiple versions through MT use and sequencing of L1 and L2, some type of feedback, and a certain mode for final output that uses the feedback in some form of spoken or written output. It is not that there is one best way of MT design, but

each pedagogical decision will have its own strengths and weaknesses. Clearly, the use of MT will expand the scope of possible contents and activities. This shows the power of critical theories, which enables us to change perspectives and transgress what has long been a taboo.

Lastly, it is essential to acknowledge the limitations of this study. The sample size used was relatively small due to its nature as a case study with limited scope. For the successful implementation of this model in broader English language courses, catering to a more diverse population of EFL learners, it is crucial to conduct further replication studies with a larger and more representative sample. Furthermore, it is important to recognize that this study was conducted entirely online during the COVID pandemic period. The implications and feasibility of implementing this approach in face-to-face classes remain unexplored. There is a pressing need for feasibility studies in diverse contexts, exploring adjustments tailored to different levels of L2 proficiency in a face-to-face classroom setting. These efforts will contribute to a more comprehensive understanding of the model's potential and limitations in diverse educational contexts.

Applicable level: Tertiary

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APPENDIX A

Main Activities of the Course Relevant to Writing Assignments

Activity	Description
Initial lectures	・ Grammar lecture ・ "How to write a Personal Response (PR)" lecture ・ "How to use MT" lecture
GCED1	・ Comprehension lecture / activity ・ PR1 writing
GCED2	・ Comprehension lecture / activity ・ PR2 writing
GCED3	・ Comprehension lecture / activity ・ PR3 writing
GCED4	・ Comprehension lecture / activity ・ PR4 writing
Midterm exam Global competence	・ "Writing part": memorization of one of the PRs ・ Comprehension lecture / activity
Article Analysis	・ Comprehension lecture ・ Article analysis activity
presentation	・ Group presentation ・ PR5 writing
Final exam	・ "Writing part": memorization of one of the PRs

APPENDIX B

PR Scoring Rubric

Domains	Description	Points (Total: 20)
Required Structure	Two paragraphs, 150 words minimum	5
Content	Relevance, clarity, quantity	5
Organization	Coherence, logic	3
Vocabulary	Diversity	2
Mechanic	Errors in grammar, spelling, punctuation	5