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Process vs. Product: Divergent Translanguaging Practices and Perceptions in Emergent Bilinguals' Digital Multimodal Composing

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Abstract

This study investigated emergent Mandarin-English bilinguals' practices and perceptions of translanguaging in the process and product of digital multimodal composing (DMC) in a content and language integrated learning (CLIL) context. Fifty-one first-year undergraduates taking a CLIL course took a questionnaire survey and submitted ten group videos. To account for potential individual differences, linear mixed-effects models were built for the questionnaire responses. The results showed that the participants' translanguaging practices differed in the process and product of DMC. Regarding their translanguaging practices, in the process of DMC, they mainly translanguaged from Mandarin to English and occasionally to Chinese dialects, which was most evident during group discussion; in the product of DMC, they mainly translanguaged from English to Mandarin, with little use of Chinese dialects. The analysis of the videos supported the questionnaire results, revealing translanguaging mostly in subtitles and visuals. Concerning perceptions of translanguaging, the participants generally had positive attitudes and viewed translanguaging primarily as a way of learning rather than a tool of building interpersonal relationships or expressing identity. Based on these findings, pedagogical implications for fostering a more functionally diverse approach to translanguaging in DMC are discussed.

Keywords: translanguaging; digital multimodal composing; emergent bilinguals; practices; perceptions

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1. Introduction

With the prevalence of digital technologies, digital multimodal composing (DMC) has become a common practice for second-language (L2) teaching and learning (Jiang & Hafner, 2025) in and out of the classroom. As an L2 pedagogy (Jiang, 2018; Zhang et al., 2023), DMC refers to textual practices using digital tools to manoeuvre a variety of semiotic modes such as visuals, words and sounds to communicate meaning (Ainsworth et al., 2023; Jiang, 2018; Kessler, 2024). The various forms of DMC include PowerPoint slides, podcasts, infographics, videos, and webpages, to name the most common ones (Jiang & Hafner, 2025). In recent years, under the influence of multilingualism, attention has turned to the translanguaging practices in L2 teaching and learning. Translanguaging, defined as the deployment of one's multilingual and multimodal repertoires in meaning making (Li, 2018), offers a valuable new framework for researching DMC.

DMC provides abundant opportunities for translanguaging practices (Jiang & Hafner, 2025; Wang, 2019). During DMC, L2 learners, as emergent bilinguals, strategically deploy their linguistic and semiotic repertoires to support meaning-making, scaffold communication, and construct knowledge. Such translanguaging practices create more inclusive and flexible learning environments that not only enhance emergent bilinguals' learning but also validate their linguistic identities.

Translanguaging in DMC has been empirically proven to support both L2 development and content mastery by enhancing learners' engagement and scaffolding L2 use in meaningful contexts (e.g., Li & Wang, 2024; Wang, 2024; Wu et al., 2025; Zhou & Pan, 2025). In addition, while recent studies have documented L2 teachers' translanguaging practices in class (e.g., Li & Wang, 2024; Liu et al., 2024; Talley, 2025) and their ambivalent attitudes to translanguaging (cf., Alrayes, 2024; Talley, 2025; Wang et al., 2025), there is a paucity of research on emergent bilinguals' own translanguaging practices and perceptions. Yet, for any translanguaging pedagogy to be impactful in real classrooms, we must understand it from both teachers' and students' perspectives, addressing not just its theoretical potential, but also the needs, preferences, and challenges that shape how translanguaging is adopted, adapted, and experienced by learners in and out of the classroom.

Against this backdrop, this study investigated Chinese L2 English learners' practices and perceptions of translanguaging in DMC in a content and language integrated learning (CLIL) context, which offers particularly abundant opportunities for translanguaging. Hopefully, the findings may provide additional empirical evidence for translanguaging pedagogies and inform L2 teachers about learners' perspectives for implementing translanguaging pedagogies.

2. Literature Review

As a linguistic practice shaping DMC processes and products, translanguaging enables emergent bilinguals to capitalize on their full linguistic and semiotic repertoires to navigate the multifaceted demands of DMC. Understanding how translanguaging facilitates DMC and promotes learning requires examining not only how emergent bilinguals strategically deploy translanguaging practices but also their perceptions of

these practices.

2.1 Translanguaging in DMC

DMC creates unique spaces for translanguaging, where emergent bilinguals are not confined to the L2 they are learning but draw on all available linguistic and semiotic resources to construct meaning, collaborate, and express identities.

The translanguaging spaces afforded by DMC can be both interactional and performative (Ho & Tai, 2024). Interactional spaces arise as learners discuss, negotiate, and collaborate during the process of a DMC task, while performative spaces emerge in the final product, where emergent bilinguals construct and display their multiple identities. At the same time, García et al. (2017) identify three key elements of translanguaging pedagogies: stance, design, and shifts. Stance concerns teachers' and students' perceptions of translanguaging; design involves how teachers plan learning activities to create translanguaging spaces; and shifts refer to the dynamic movement between linguistic and semiotic resources during interaction.

While Ho and Tai's (2024) classification necessitates the investigation of both the process and product of DMC, García et al.'s (2017) three elements highlight what constitutes an effective translanguaging pedagogy. However, few studies have specifically examined how they interrelate in DMC contexts, especially from the student's perspective in both the process and product of DMC. To fully understand how translanguaging facilitates L2 learning, it is necessary to examine both the shifts and stance of emergent bilinguals in the process and product of DMC.

2.2 Emergent bilinguals' translanguaging practices

Studies on emergent bilinguals' translanguaging practices have explored both the process and product of L2 learning tasks. Concerning the product, Ho (2022) interviewed a group of undergraduates at a university in Hong Kong and analyzed the video they produced, finding that during the DMC task they skillfully deployed a wide range of linguistic and semiotic resources, subject knowledge, and learning experiences to facilitate meaning expression and enhance the content of their video. As regards the process of learning, Wang (2016) observed L2 Chinese lessons in a New Zealand university, reporting that the L2 Chinese learners, just like their teachers, initiated translanguaging as a "co-constructed dialogic approach" (p. 1) to enhance the communicativeness of the class.

In a review study, Pacheco et al. (2022) summarize the functions of emergent bilinguals' translanguaging practices in DMC, highlighting the necessity to differentiate such functions in the process and product of DMC. According to Pacheco et al. (2022), in the process of DMC, translanguaging helps emergent bilinguals to collect information and prepare scripts (reported by 47% of the studies reviewed, hereafter indicated by percentages), discuss and share information and ideas (34%), and interact with communities out of class (31%). In the product of DMC, translanguaging serves a different set of functions: it helps emergent bilinguals to show their identities as multilingual speakers (74%), convey refined meanings (34%), and engage diverse

audiences (23%).

In a recent study, Wang (2024) acknowledged Pacheco et al.'s process-product model and explored beginning L2 Chinese learners' translanguaging in self-introduction videos. Despite the participants' limited Chinese proficiency, Wang found that they actively utilized diverse semiotic resources to express their identities and improve their videos' form and content. In addition, their videos also demonstrated translanguaging practices in the process of the DMC project, as some videos featured the students' family members introducing themselves in Chinese, which they had learned from the student before making the video. Thus, Wang (2024) highlights that translanguaging in this DMC project not only promoted academic achievements but also consolidated the participants' relationships with their family members. Notably, Wang (2024) did not specifically explore her participants' translanguaging practices in the process of the DMC project but only made inferences from the product of the DMC project, thus leaving an incomplete picture of the emergent bilinguals' translanguaging practices.

In short, the empirical studies reviewed above, although drawing on data from both the process and product of DMC, generally have not differentiated the functions translanguaging might serve in the process and product of DMC.

2.3 Emergent bilinguals' perceptions of translanguaging

Studies on emergent bilinguals' perceptions of translanguaging have mostly focused on the process of in-class learning, reporting mixed attitudes.

Some of these studies explored perceptions of teachers' translanguaging practices in class. For example, Wang (2016) reports that more than half of the L2 Chinese students surveyed expressed an affirmative view on multilingual instruction. This finding is echoed by Zhou and Mann (2021), who conducted an action research study on teachers' translanguaging strategies and students' attitudes, reporting that the students acknowledged the benefits of their teachers' carefully planned translanguaging practices in promoting learning.

Other studies examined emergent bilinguals' perceptions of their own translanguaging practices in class. For instance, Trinh (2025) surveyed Vietnamese students' translanguaging practices and perceptions, finding that these students viewed their own translanguaging practices as a beneficial tool to achieve better communication and better learning environments in class while acknowledging potential confusion and over-reliance on L1. However, Wang (2024) reports challenges felt by beginning level L2 Chinese learners in a New Zealand university, such as unpredictable workload and insufficient technological skills.

While investigating emergent bilinguals' perceptions of both their teachers' and peers translanguaging practices, Wang and Shen (2023) report that L2 learners were positive about their teachers' translanguaging practices for the benefits of facilitating learning but concerned about their peers' translanguaging practices out of a monolingual ideology.

These studies have revealed emergent bilinguals' ambivalent perceptions of translanguaging practices in class: positive about their teachers' translanguaging but doubtful about their peers' translanguaging. Little attention has been paid to either

translanguaging practices in out-of-class contexts or those manifested in learning products (e.g., DMC artifacts).

In conclusion, empirical studies have found that emergent bilinguals can skillfully engage in translanguaging practices to enhance communication in the process of DMC (e.g., Wang, 2016) and express themselves in the product of DMC (e.g., Ho, 2022; Wang, 2024). Moreover, their perceptions of their own translanguaging practices in the learning process in class are mixed, with both positive and negative feelings (e.g., Trinh, 2025; Wang, 2024; Wang & Shen, 2023). While these findings help us to understand translanguaging among emergent bilinguals, two major research gaps remain: 1) there is a lack of research on emergent bilinguals' practices and perceptions of translanguaging in the process of DMC, especially out of class; 2) most empirical studies have focused on either process or product, practices or perceptions, with limited attention to how the two dimensions interact, thus failing to differentiate the functions of translanguaging in the process and product of meaning-making. Understanding out-of-class translanguaging and the interaction between the product/process and practices/perceptions dimensions is crucial for unpacking how translanguaging practices evolve during DMC and are manifested in the final artifact.

Therefore, adopting Ho and Tai's (2024) division of translanguaging spaces and Garciá et al.'s (2017) translanguaging elements, this study investigated the practices (shifts) and perceptions (stance) of translanguaging among emergent bilinguals, both in the process (interactional) and product (performative) of a DMC project in a CLIL context.

The specific research questions are:

1) How do Chinese L2 English learners deploy translanguaging in the process and product of their DMC project?
2) How do Chinese L2 English learners perceive the functions of translanguaging in the process and product of their DMC project?

3. Research Method

This study adopted a mixed-methods design, combining a questionnaire survey that investigated the participants' practices and perceptions of translanguaging in DMC with a qualitative analysis of their videos as evidence of translanguaging practices.

3.1 Participants

The participants were 51 first-year undergraduates majoring in Business English or International Trade at a university in South China. There were 20 boys and 31 girls, all aged 17-19 at the time of the investigation. Their English proficiency level was intermediate, as all had just passed the National College Entrance Examination.

Both the business English majors and international trade majors were required to take the business English course, which aimed to improve their English proficiency through learning texts on entrepreneurship, business management, trade policies, and intercultural differences. Therefore, the course provided a typical content and language integrated learning (CLIL) context. The videos analyzed in this study were from a course assignment requiring the participants to introduce a certain aspect of the Chinese culture

to imaginary international audiences.

3.2 Questionnaire and Videos

The instrument adopted in this study was a questionnaire on practices and perceptions of translanguaging in the process and product of DMC. The participants' videos were also analyzed to examine their translanguaging practices in the product of DMC.

The questionnaire was developed based on Pacheco et al.'s (2022) framework of the process and product of translanguaging in DMC. It consisted of two sections, totaling 34 items. Section 1 contained 18 items eliciting information about frequencies of language use in the process and product of DMC. These 18 items were in the form of 4-point Likert scales, with 1=never, 2=sometimes, 3=often, 4=always.

Section 2 contained 16 items, focusing on perceptions of the usefulness and functions of translanguaging in DMC. Four functions were listed for process and four for product. Apart from the three functions of translanguaging listed by Pacheco et al. (2022) for the process of DMC (i.e., accessing information, collaborating with peers, interacting with communities) and three for the product of DMC (i.e., constructing identity, enhancing meaning, engaging audience), "learning" was listed as an additional function for both process and product, as it is a valued function of translanguaging mentioned by different groups of emergent bilinguals (e.g., Wang & Shen, 2023; Zhou & Mann, 2021). These 16 items were in the form of 5-point Likert scales, with 1=strongly disagree, 2=disagree, 3=not sure, 4=agree, 5=strongly agree.

The reliabilities (Cronbach's alpha values) of the overall questionnaire, Section 1, and Section 2 were .90, .67, and .96, suggesting acceptable to high reliabilities.

In addition, ten group videos were collected and analyzed to identify the participants' translanguaging practices in the product of DMC. Following the requirements of the assignment, in each of the ten videos, the participants introduced a cultural phenomenon or a cultural product that is unique to China. The specific topics covered in the videos included: herbal tea, din sum (2 videos), bowl cakes, casserole porridge, double-layer milk custard, lion dance (2 videos), cross talk, and Cantonese opera. Each video lasted about five minutes, incorporating three components: subtitle, image, and voice-over.

3.3 Procedure

The study lasted 15 weeks, with the procedures visualized in Table 1.

Table 1. Research procedures

Week	DMC Activities
1	DMC project assignment; grouping; consultation
2-13	DMC project preparation; consultation
14	Video submission
15	Questionnaire survey

In the first week, the teacher assigned the video task and informed the participants of the requirements for the assignment: the video should target at international audiences,

the content should focus on one cultural aspect or artefact, the video should be about five minutes long with subtitles, and there should be collaboration between the members in each 3-4-person group.

Then the participants had 12 weeks to complete the group video project. During Weeks 2 to 13, they were allowed to consult the teacher or give the teacher feedback whenever they felt necessary. They submitted their videos in Week 14 and took the questionnaire survey online in Week 15.

3.4 Data Analysis

The responses to the questionnaire were converted to scores for practices and perceptions of translanguaging in the process and product of DMC, and the scores were then analyzed statistically using SPSS (29.0). To account for individual differences, linear mixed-effects models (LMMs) were built to make comparisons.

An overall LMM was first built to explore the participants' translanguaging practices in the process and product of DMC. The dependent variable was score (1-4), the fixed factors were language (English, Mandarin, dialect), phase of DMC (process, product), and their interaction. Then two additional LMMs were built for process and product. The dependent variable was score, the fixed factors were language, process activity (information search, group discussion, real-life communication) or product component (image, subtitle, voice-over) and their interaction.

Perceptions were analyzed in the same fashion. First an overall LMM was built for the participants' perceptions of translanguaging functions in the process and product of DMC. The dependent variable was score (1-5), the fixed factors were language (English, Mandarin, dialect), phase of DMC (process, product), and their interaction. Two additional LMMs were built for process and product. The dependent variable was score, the fixed factors were language, process function (accessing information, collaborating with teammates, interacting with community, learning) or product function (expressing identity, augmenting meaning, negotiating meaning, learning) and their interaction.

In all six LMMs, the random factor was intercepts of participants.

The videos were analyzed in terms of image, subtitle, and voice-over. Specifically, the subtitles of each video were marked as English only, Chinese only, or both English and Chinese. The duration of the images with non-English language (including Mandarin or Chinese dialects) in each video was calculated in second and then converted to percentage by dividing it by the total duration of the whole video. Likewise, the duration of non-English language in the voice-over was calculated and converted to percentage.

4. Results

Analyses of the questionnaire responses and videos revealed variations in the participants' practices and perceptions of translanguaging in the DMC project.

4.1 Translanguaging Practices in the Process and Product of DMC

The participants' reported translanguaging practices in the process and product of DMC are visualized in Figure 1. The fixed effects of overall LMM (Table 2) showed that

the participants used more Mandarin (B = 1.16, SE = 0.14, p < .001) but less dialects (B = -0.57, SE = 0.07, p < .001) than English, and there was more translanguaging in the product of DMC than in its process (B = 1.20, SE = 0.11, p < .001). In addition, there were interactions between language and phase of DMC (Bs = -1.30, -1.81, SEs = 0.13, 0.22, ps < .001). The random intercepts of participants were significant (B = 0.06, SE = 0.02, p < .001), suggesting participant-level variability.

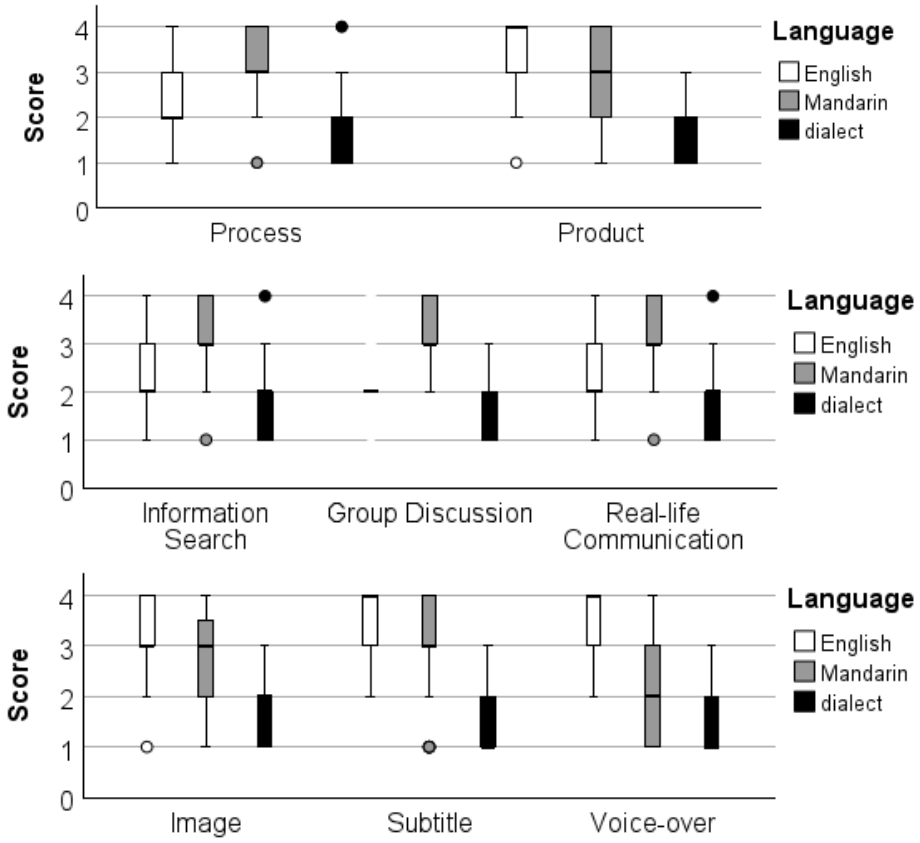


Figure 1. Comparisons of translanguaging practices: overall (top), in process (middle), and in product (bottom)

Table 2. Fixed-effects of overall LMM for translanguaging practices. The reference for language was English and for phase of DMC was process (same in Tables 3-4).

	B	*SE*	*Z*	**95% CI**		*p*
Intercept	2.16	0.09	24.69	1.99	2.33	<.001***
Language=Dialect	-0.57	0.07	-8.13	-0.71	-0.43	<.001***
Language=Mandarin	1.16	0.14	8.50	0.90	1.43	<.001***
Phase=Product	1.20	0.11	10.63	0.98	1.42	<.001***
Dialect x Product	-1.30	0.13	-10.37	-1.55	-1.05	<.001***
Mandarin x Product	-1.81	0.22	-8.42	-2.23	-1.39	<.001***
Marginal R^2	.48					
Conditional R^2	.53					

The fixed-effects of the LMM for process (Table 3a) showed that overall the participants used less dialects (B = -0.61, SE = 0.11, p < .001) but more Mandarin (B = 1.02, SE = 0.15, p < .001) than English. They used all languages comparably across the activities (ps > .136). There was an interaction between language and activity (B = 0.31, SE = 0.14,

p = .026). Simple main effects (Table 3b) revealed that although in all three types of activities during the process of DMC, the participants used less dialects and more Mandarin than English (all ps < .001), they used relatively more Mandarin in group discussion (B = 1.33, SE = 0.17, p < .001) than in information search and real-life communication (Bs = 1.02, 1.14, SEs = 0.15, 0.17, ps < .001).

Table 3. LMM for translanguaging practices in process of DMC

a. Fixed- and random effects

	B	***SE***	***Z***	**95%CI**		***p***
Intercept	2.22	0.10	21.90	2.02	2.42	<.001***
Language=Dialect	-0.61	0.11	-5.47	-0.83	-0.39	<.001***
Language=Mandarin	1.02	0.15	6.89	0.73	1.31	<.001***
Activity=Real-life Communication	-0.02	0.12	-0.16	-0.26	0.22	.873
Activity=Group Discussion	-0.16	0.11	-1.49	-0.36	0.05	.136
Dialect x Real-life Communication	0.08	0.14	0.58	-0.19	0.35	.563
Dialect x Group Discussion	0.04	0.13	0.30	-0.22	0.30	.763
Mandarin x Real-life Communication	0.12	0.17	0.71	-0.21	0.44	.478
Mandarin x Group Discussion	0.31	0.14	2.24	0.04	0.59	.026*
Random Intercepts of Participants	0.05	0.02	2.55	0.03	0.12	.011*
Marginal R^2	.51					
Conditional R^2	.56					

b. Simple main effects

		B	***SE***	***Z***	**95% CI**		***p***
Info. Search	Intercept	2.22	0.10	21.90	2.02	2.42	<.001***
	Dialect vs. English	-0.61	0.11	-5.47	-0.83	-0.39	<.001***
	Mandarin vs. English	1.02	0.15	6.89	0.73	1.31	<.001***
Group Discus.	Intercept	2.06	0.11	18.91	1.84	2.27	<.001***
	Dialect vs. English	-0.57	0.09	-6.40	-0.74	-0.39	<.001***
	Mandarin vs. English	1.33	0.17	7.84	1.00	1.67	<.001***
Real-life Com.	Intercept	2.20	0.12	18.66	1.96	2.43	<.001***
	Dialect vs. English	-0.53	0.10	-5.23	-0.73	-0.33	<.001***
	Mandarin vs. English	1.14	0.17	6.83	0.81	1.47	<.001***

The fixed-effects of LMM for product (Table 4a) revealed that the participants used less Mandarin (B = -0.53, SE = 0.22, p = .019) and dialects (B = -1.63, SE = 0.14, p < .001) than English in the product of DMC, and they used more languages in subtitle (B = 0.26, SE = 0.09, p = .004) and voice-over (B = 0.28, SE = 0.09, p = .002) than in image. There were interactions between language and product component (Bs = -0.55-0.20, SEs = 0.11-0.22, ps =.002-.381). Simple main effects (Table 4b) indicated that the participants used less Mandarin and dialects than English in all three components of their videos, but their use of Mandarin was significantly less than English in voice-over (B = -1.08, SE = 0.21, p < .001) compared with that in image (B = -0.53, SE = 0.22, p = .019) and subtitle (B = -0.33, SE = 0.16, p = .043).

Table 4. LMM for translanguaging practices in product of DMC

a. Fixed-and random effects

	B	*SE*	*Z*	95% CI		*p*
Intercept	3.18	0.11	28.03	2.95	3.40	<.001***
Language=Dialect	-1.63	0.14	-11.52	-1.91	-1.35	<.001***
Language=Mandarin	-0.53	0.22	-2.36	-0.97	-0.09	.019*
Component=Voice-over	0.28	0.09	3.12	0.10	0.45	.002**
Component=Subtitle	0.26	0.09	2.93	0.08	0.43	.004**
Dialect x Voice-over	-0.35	0.11	-3.10	-0.58	-0.13	.002**
Dialect x Subtitle	-0.37	0.12	-3.09	-0.61	-0.14	.002**
Mandarin x Voice-over	-0.55	0.22	-2.45	-0.99	-0.11	.015*
Mandarin x Subtitle	0.20	0.22	0.88	-0.24	0.64	.381
Random Intercepts of Participants	0.05	0.02	2.04	0.02	0.13	.041*
Marginal R^2	.49					
Conditional R^2	.52					

b. Simple main effects

		B	*SE*	*Z*	95% CI		*p*
Image	Intercept	3.18	0.11	28.03	2.95	3.40	<.001***
	Dialect vs. English	-1.63	0.14	-11.52	-1.91	-1.35	<.001***
	Mandarin vs. English	-0.53	0.22	-2.36	-0.97	-0.09	.019*
Sub-title	Intercept	3.43	0.10	35.35	3.24	3.62	<.001***
	Dialect vs. English	-2.00	0.14	-14.15	-2.28	-1.72	<.001***
	Mandarin vs. English	-0.33	0.16	-2.04	-0.65	-0.01	.043*
Voice-over	Intercept	3.45	0.10	35.47	3.26	3.64	<.001***
	Dialect vs. English	-1.98	0.15	-13.15	-2.28	-1.68	<.001***
	Mandarin vs. English	-1.08	0.21	-5.07	-1.50	-0.66	<.001***

This pattern of language use is supported by the analysis of the videos (Table 5). Of the ten videos, six used both English and Chinese in their subtitles, all had very limited Chinese in images (ranging from 1.09% to 5.26%), and only one contained one second of Mandarin (0.30%) in the background of the English narration.

Table 5. Language use in images, subtitles, and voice-overs

Video No.	Length	Non-English Image in Second (%)	Language(s) in Subtitle	Non-English Voice-over in Second (%)
1	5’34”	11(3.29%)	English	1(0.30%)
2	4’35”	3(1.09%)	English & Mandarin	-
3	5’04”	16(5.26%)	English & Mandarin	-
4	5’04”	5(1.65%)	English & Mandarin	-
5	5’22”	13(4.04%)	English & Mandarin	-
6	7’01”	6(1.43%)	English & Mandarin	-
7	4’49”	4(1.38%)	English	-
8	6’07”	6(1.64%)	English	-
9	3’16”	10(5.10%)	English & Mandarin	-
10	6’52”	10(2.43%)	English	-

In summary, the participants demonstrated different translanguaging practices in the process and product of the DMC project. In the process, they relied heavily on their L1 Mandarin, especially for group discussion, whereas in the product, they mostly used English, with Chinese in subtitles and very small fractions of images.

4.2 Perceptions of Translanguaging in the Process and Product of DMC

The participants' perceptions of the functions of translanguaging in the process and product of DMC are visualized in Figure 2. The fixed-effects of the overall LMM showed that the participants were more affirmative about the functions of translanguaging in the product than in the process, $B = 0.14$, $SE = 0.47$, $p = .003$. The intercepts of participants were statistically significant, $B = 0.23$, $SE = 0.05$, $p < .001$. Marginal R^2 was .01, showing that phase of DMC alone explained only 1% of the variance. Conditional R^2 was .63, reflecting that adding the random effect increased the explained variance to 63%.

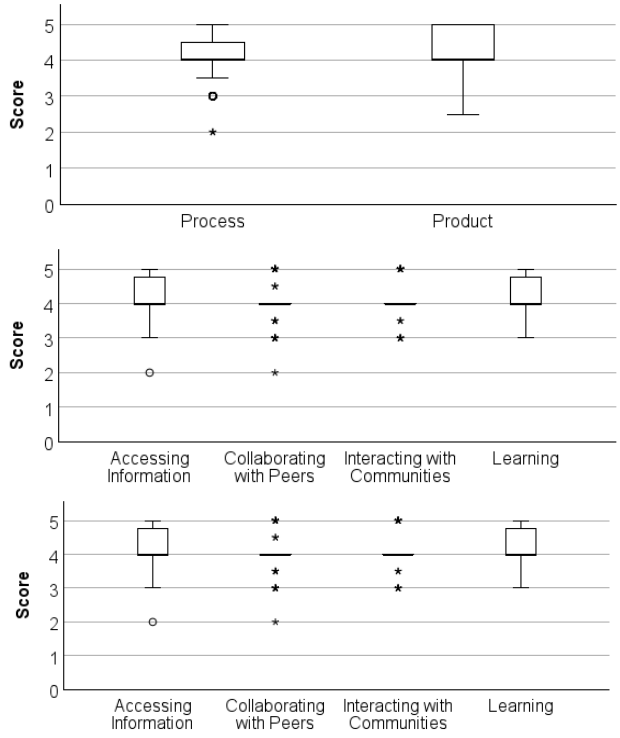


Figure 2. Comparisons of perceptions of translanguaging functions: overall (top), in process (middle), and in product (bottom)

The fixed-effects of the LMM for perceptions of translanguaging in the process of DMC showed variations by function ($p < .001$). The intercepts of participants were statistically significant, $B = 0.22$, $SE = 0.05$, $p < .001$. Marginal R^2 was .01, meaning that function alone explained merely 1% of the variance. Conditional R^2 was .62, indicating that the fixed and random effects together explained 62% of the variance. Post-hoc pairwise comparisons (Table 6) revealed that the participants were more affirmative about translanguaging for accessing information ($B = 0.16$, $SE = 0.06$, $p = .004$) and learning ($B = 0.19$, $SE = 0.07$, $p = .008$) than collaborating with peers.

Table 6. Pairwise comparisons between the functions of translanguaging in process

Comparisons	***B***	***SE***	***Z***	**95% CI**		***p***
Accessing Info. vs. Collaborating w. Peer	0.16	0.06	2.88	0.05	0.26	.004**
Accessing Info. vs. Interacting w. Com.	0.06	0.08	0.71	-0.10	0.22	.478
Accessing Info. vs. Learning	-0.03	0.08	-0.35	-0.19	0.14	.726
Collaborating w. Peer vs. Interacting w. Com.	-0.10	0.08	-1.20	-0.26	0.06	.234
Collaborating w. Peer vs. Learning	-0.19	0.07	-2.69	-0.32	-0.05	.008**
Interacting w. Com. vs. Learning	-0.09	0.06	-1.40	-0.21	0.04	.163

The fixed-effects of the LMM for perceptions of translanguaging in the product of DMC showed a marginal main effect of function (p = .078). The intercepts of participants were statistically significant, B = 0.26, SE = 0.05, p < .001. Marginal R^2 was .002, indicating that function alone explained only 0.2% of the variance. Conditional R^2 was .88, revealing that the fixed and random effects together explained 88% of the variance. Pairwise comparisons (Table 7) revealed less affirmative perceptions for enhancing meaning (B = -0.05, SE = 0.02, p = .020) and marginally less affirmative perceptions for engaging audiences (B = -0.07, SE = 0.04, p = .082) than learning.

Table 7. Pairwise comparisons between the functions of translanguaging in product

Comparisons	***B***	***SE***	***Z***	**95% CI**		***p***
Constructing Identity vs. Enhancing Meaning	0.02	0.04	0.47	-0.06	0.10	.637
Constructing Identity vs. Engaging Audience	0.04	0.04	0.95	-0.04	0.12	.343
Constructing Identity vs. Learning	-0.03	0.04	-0.73	-0.11	0.05	.465
Enhancing Meaning vs. Engaging Audience	0.02	0.04	0.50	-0.06	0.10	.617
Enhancing Meaning vs. Learning	-0.05	0.02	-2.35	-0.09	-0.01	.020*
Engaging Audience vs. Learning	-0.07	0.04	-1.75	-0.15	0.01	.082

In brief, the participants were more affirmative about translanguaging in the product of DMC than in its process. For process, they valued the functions of accessing information and learning more than collaborating with peers. For product, they valued the function of learning more than enhancing meaning and engaging audiences.

5. Discussion

This study investigated emergent Chinese-English bilinguals' practices and perceptions of translanguaging in the process and product of a DMC project, revealing some patterns of "shifts" and "stance" of translanguaging in DMC.

5.1 Practices of Translanguaging in Process and Product of DMC

The first research question asked about the participants' translanguaging practices in the process and product of DMC. The results showed that the participants reported more translanguaging practices in the product of DMC (i.e., the video) than in its process. Moreover, their translanguaging practices differed in the process and product of DMC. In the process, they reported primarily using Mandarin and translanguaging to English and Chinese dialects. In the product, they reported primarily using English and translanguaging to Mandarin and Chinese dialects, which was supported by the qualitative analysis of their videos. These findings offer insights into how the emergent bilinguals strategically deploy their linguistic repertoires across the different phases of DMC, aligning with and extending existing research findings of translanguaging in L2 DMC contexts.

First, the finding that the participants reported more frequent translanguaging practices in the DMC product (i.e., the video) than in the DMC process highlights that translanguaging serves a critical performative function in the final multimodal artifact, which supports Ho and Tai's (2024) framework distinguishing interactional and

performative translanguaging spaces in DMC. In the product phase, the participants skillfully used translanguaging as a deliberate design choice to enhance meaning-making and self-expression, which are goals inherent to the public nature of DMC products compared to the more private or collaborative nature of the composing process. The qualitative analysis of the videos further corroborates this with tangible evidence that translanguaging in the product was not accidental but a purposeful act of multimodal meaning-making.

Second, the distinct patterns of translanguaging across the DMC process and product reflect the dynamic alignment of linguistic choices with the goals and constraints of each phase. During the DMC process, the participants likely prioritized communicative efficiency when searching for information or discussing in groups, leading them to rely on Mandarin, their shared dominant language, while using English and dialects to clarify specific concepts, share technical terminology, or draw on cultural-specific expressions. They also translated information from Chinese to English, as revealed by some participants during their consultation with the course teacher. This supports the previous finding that L1 is often used as a supportive language by emergent bilinguals during communication (Trinh, 2025; Wang, 2016) and reveals the role of translanguaging as a scaffolding tool for collaborative problem-solving in interactive contexts. In contrast, the primary use of English in the final video product suggests that the participants were attuned to the requirements of the DMC task, which positions English as the default language for their videos, while still leveraging Mandarin and dialects to enrich content (e.g., including Chinese menus and interviews), convey cultural nuances (e.g., showing Chinese characters at entrances of restaurants), or ensure clarity (e.g., English-Chinese subtitles). This pattern suggests that emergent bilinguals are not passive language users but active agents who negotiate between task requirements, audience expectations, and their own linguistic repertoires.

In conclusion, the different patterns of translanguaging in the process and product of DMC demonstrate the participants' "shifts" in their translanguaging practices, revealing that these learners can actively adjust their language use in response to different purposes, communicative needs, and contextual demands when engaging in the DMC project.

5.2 Perceptions of Translanguaging in Process and Product of DMC

The second research question was about the participants' perceptions of translanguaging in the process and product of DMC. Overall, these emergent bilinguals were positive about translanguaging in DMC, with more affirmative attitudes to translanguaging in the product than in the process. Moreover, they were more affirmative about accessing information and learning than collaborating with their group members in the process, and more affirmative about learning than enhancing meaning and engaging audiences in the product. These findings further enrich our understanding of how emergent bilinguals view translanguaging as a meaning-making resource in relation to task phases and communicative goals.

The overall positive attitudes toward translanguaging in DMC align with studies highlighting emergent bilinguals' recognition of translanguaging for facilitating L2

learning (e.g., Trinh, 2025; Wang & Shen, 2023; Zhou & Mann, 2021). More notably, the stronger affirmative attitudes toward translanguaging in the product than in the process echo the earlier finding of more frequent translanguaging practices in the DMC product, suggesting a consistency between the participants' perceptions and their actual linguistic behaviors. This discrepancy in attitudes across the DMC phases may stem from the distinct functions of translanguaging in each context. In the final product, translanguaging is a deliberate, creative choice that enhances the quality of the DMC product, which likely brings a more positive evaluation. In contrast, translanguaging during the process may be perceived as a supportive tool rather than a value-adding practice, thus evoking a slightly less affirmative stance.

Moreover, the differences in attitudes toward translanguaging for specific purposes reveal that these emergent bilinguals' perceptions are context-dependent. During the DMC process, translanguaging for accessing information and facilitating learning directly addresses the participants' individual needs, leading to their positive attitudes. In contrast, translanguaging for collaboration may involve more negotiation and potential misalignment of linguistic preferences, which could weaken the participants' positive perceptions. In the DMC product, the participants' stronger affirmation of translanguaging for learning reflects their inherent awareness of DMC as a course assignment, where learning gains are a core expectation. The relatively weaker attitudes toward translanguaging for meaning enhancement and audience engagement may stem from the participants' belief that English use should be prioritized for these functions in L2 tasks, or their limited experience in designing multimodal products for specific audiences in real-life contexts. This suggests that while emergent bilinguals recognize translanguaging's value for learning, they may need more guidance to fully leverage its potential for effective multimodal communication.

Taken together, the participants' perceptions reflect their "stance" toward translanguaging, which is generally favorable yet predominantly learning-oriented, prioritizing translanguaging's function for learning over its function for promoting interpersonal interactions.

5.2 Pedagogical Implications

These findings carry important implications for L2 teachers implementing translanguaging pedagogies in CLIL contexts. Specifically, the distinct patterns and functions of translanguaging in the DMC process and product highlight the need for pedagogical designs that explicitly guide learners to recognize and deploy translanguaging across both phases. For example, teachers could incorporate pre-composing activities that guide learners to plan how they will use translanguaging in their final product and reflective activities that help learners articulate the rationale behind their linguistic choices in both process and product.

Moreover, the unbalanced perceptions of translanguaging's functions in the process and product of DMC necessitate teachers' explicit guidance to raise learners' awareness of the various benefits and functions of translanguaging. To this end, teachers need to highlight how translanguaging can support collaboration, enhance content quality, engage

audience, and foster identity expression. This can be achieved by discussing how translanguaging contributes to different goals and analyzing exemplary DMC products that effectively use translanguaging for these goals.

6. Conclusion

In conclusion, this study's findings on emergent bilinguals' translanguaging practices and perceptions in DMC reveal two core insights. First, emergent bilinguals' translanguaging practices differ across the process and product of DMC, reflecting strategic alignment with communicative needs. Second, their overall stance toward translanguaging is favorable but predominantly learning-oriented, prioritizing its utility for information access and individual learning over interpersonal functions. These results indicate that DMC affords rich translanguaging spaces where emergent bilinguals actively adjust their language use, while also highlighting the need for a translanguaging-informed DMC pedagogy that validates both interactional and performative translanguaging, and guides learners to leverage translanguaging's multifaceted value beyond individual learning. Ultimately, this study contributes to a nuanced understanding of translanguaging in DMC, laying a foundation for more inclusive and effective CLIL instruction.

This study has its limitation. Data on DMC process and perceptions relied on self-reports, which may suffer from inaccuracy or social desirability bias. Additionally, more qualitative data on situational language use is needed to capture emergent bilinguals' linguistic repertoire deployment in DMC and their perceptions. To address this, future research should collect fine-grained data through interviews and audio/video recordings of in-process translanguaging. Despite this limitation, the findings advance our understanding of translanguaging in DMC and highlight the need to consider task phases and purposes when designing translanguaging-informed DMC pedagogy.

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