

**Chengyuan Yu**

**College of Communication and Information, Kent State University, Kent, Ohio, USA**

**Yanchao Yang**

**Qingong College, North China University of Science and Technology, Tangshan, Hebei, China**

## **DEVELOPING A SCALE OF TRANSLANGUAGING FOR INFORMATION-BASED ACADEMIC WRITING (Paper)**

### **Abstract:**

To reflect that the large population of multilingual writers can translanguage in their writing information literacy practice, this study first conducted interviews to understand this phenomenon. The analysis of the interviews and expert judgement informed the development and validation of a translingual writing information literacy scale. The statistical analysis demonstrates the validity and reliability of the scale and shows that translingual writing information literacy is unidimensional. This paper ends with discussion of the potential research and pedagogical value of this scale.

### **1. Introduction**

Writing information literacy is a concept proposed by Norgaard (2003), a composition scholar, to highlight the connection between information literacy and writing. By writing information literacy, Norgaard introduced the new concepts in writing research to the field of Library and Information Science (LIS) and argued that information literacy, resembling writing, is situated in specific contexts, process-oriented, and relevant with “the full social and cultural range of rhetorical practice” (Norgaard, 2003, p. 129). Following Norgaard’s work, researchers have been making efforts to maximize the benefits of connecting writing and information literacy through teaching and research (e.g., Shao & Purpur, 2016; Yu & Zhao, 2021, Yu, 2024). Theory-wise, an information-based academic writing (IBAW) model was proposed to describe the writing information literacy for academic purpose (Yu & Zhao, 2021). In this IBAW model, information literacy is integrated into the whole academic writing process. Writers need to actively search for, evaluate, and use information in their academic writing, and academic writing is information-based. While this model excitingly continued the theoretical dialogue between academic librarians and writing experts, it is not updated with the fact that academic writing has become a global enterprise with many academic writers being multilingual and probably using different languages or translanguageing throughout their writing process (e.g., Kiramba, 2017; Turnbull, 2019; Velasco & García, 2014). In relation to information literacy, a multilingual writer can identify information needs, access, evaluate, and use information across languages. To continue the dialogue between writing and LIS researchers, this study introduces the concept of translanguageing, which believes that the different languages that multilingual speakers speak are not separate entities, but comprise a linguistic repertoire that they can use flexibly, to the LIS field. This theory suggests that multilingual speakers can take advantage of all the languages they know in their information use process to benefit their learning, rather than

are constrained by their language learner status. To achieve this goal, we present the development of a translanguaging for IBAW (TfIBAW) scale, which can give information literacy instructors who teach multilingual speakers on how well their students can use different languages in their IBAW. This diagnostic information can be useful for instructors to modify and improve their teaching, so that they can better help those multilingual speakers with their writing information literacy. Two research questions were proposed to guide this study:

RQ1: How does translanguaging figure in IBAW?

RQ2: To what extent does different evidence support the validity and reliability of the TfIBAW scale?

## 2. Methods

An exploratory mixed-methods approach was used in this study to develop the scale of TfIBAW. Twenty-four multilingual writers in one discipline, i.e., education, were interviewed, because academic writing and information literacy are found to be disciplinary-specific and different disciplines may have their specific practice (e.g., ACRL, 2015; Bawarshi & Reiff, 2010). An expert judgement panel (n = 6) went through the draft scale and provided feedback. A total of 873 participants completed the scale developed based on the analysis of the interviews.

The interviews were conducted individually. The interviews ranged from approximately 30 min to 70 min. The interview data were analyzed through iterative qualitative coding in two cycles. The first cycle identified potential codes and the second cycle categorized the first-cycle codes into categories representing TfIBAW practice. The expert judgement panel provided feedback to help with the revision of the scale. Exploratory and confirmative factor analysis (EFA and CFA) were conducted to examine the factor structure of the self-assessment scale. The data were randomly split into two parts: one part for EFA (n = 240) and the other part for CFA (n = 633). For reliability, Cronbach Alpha, Rasch analysis, and gender DIF were conducted on the CFA dataset.

## 3. Findings

### 3.1 Translanguaging and IBAW

The interviews demonstrate that multilingual writers can make use of different languages and semiotic systems to varying extent during the processes of IBAW, including information seeking, summarizing information and knowledge, organizing thoughts, note-taking while writing, and revising. For example, one participant told us: “I would start from searching in Chinese and read these Chinese articles. These Chinese articles usually cite English articles, and I will go to read these English articles afterwards” (Interview14). Searching and reading in first language were believed to provide writers with an understanding of the topic quickly (Interview6). This demonstrates that different languages were used by writers, and they recognized the value of using different languages in IBAW. Furthermore, they can think across languages and use different semiotic systems in IBAW, and use experience of writing in one language for writing in the other language. According to one participant, “it is difficult to organize and write in directly English. I know it in Chinese and write in both English and Chinese and translate the Chinese part into English”. One participant shared with the researcher

with the notes he usually does while writing and different languages and symbols were used (Interview16). This also reminds the researchers that translanguaging is not only about switching between named languages, but also semiotic systems. The results demonstrate the translanguaging nature of IBAW and informed the drafting of the scale.

### 3.2 Validity and Reliability of the TfIBAW Scale

The expert panel mainly provided comments on the accuracy of language use and specifically emphasized that translanguaging also includes use of semiotic systems other than languages. Ultimately, we had a nine-item scale (in 1-5 Likert scale), as shown in Table 1.

**Table 1. TfIBAW Scale**

Item	Descriptor
1	Can effectively use the first language to search for the concepts learned in English
2	Can use different languages to search for information
3	Can use English to summarize knowledge learned in the first language
4	Can use the first language to summarize knowledge learned in English
5	Can flexibly use multiple languages and semiotic systems to make writing outline
6	Can flexibly use multiple languages and semiotic systems to take notes while reading
7	Can flexibly use multiple languages and semiotic systems to revise writing
8	Can effectively draw on experience of writing in different languages
9	Can think across different languages

The KMO measure for the data was .925, indicating that the distribution of values was marvelous for conducting factor analysis. The Bartlett's test of sphericity ( $df = 36, p < .000$ ) was significant, indicating that the correlation was not an identity matrix and that the factor matrix can be extracted. For communalities, the extraction communalities for all items were above .50. Therefore, no items should be removed. EFA was conducted using Eigenvalues larger than 1.0 as a standard. A one-factor solution explained 66.48% of the total variance. All nine items were loaded on one factor with loading above .60. The one-factor solution was further tested and confirmed using CFA (Maximum Likelihood Estimation with bootstrapping,  $RMR = .028$ ,  $GFI = .982$ ,  $CFI = .986$ ,  $TLI = .978$ ). The Cronbach Alpha of the one-factor scale is .884. For Rasch analysis, the infit MNSQ values (.90 to 1.18) and outfit MNSQ values (.89 to 1.21) displayed that the data were adequately fitted to the Rasch model. The PTMEA CORR coefficients (.66 to .71) suggested that the 9 items contributed to the measurement of the focal construct. Rasch item reliability was .98 and person reliability .85. The item separation was 6.82 and person separation 2.41. The gender DIF contrast values of all items were smaller than .50 logit. All the results were desirable (Wang, 2008), indicating that the scale was sensitive to differences between respondents of different groups and with varying levels, and therefore reliable.

### 4. Discussion and Conclusion

This study reveals that IBAW involves translanguaging practices, where writers use different semiotic systems and think across languages. The pedagogical implication of this finding is particularly valuable in the English-medium-instruction (EMI) context where students with different linguistic backgrounds are expected to write in English. The instruction of the

information literacy component should highlight the value of students' first language and encourage students to think about their information needs in both languages, access information in different languages, evaluate information in different languages using different standards appropriately (as the production, quality, and value of information is associated with the context and the intended use, see ACRL, 2015), understand the accessed information in the full use of their linguistic and semiotic repertoire, and adopt culture-specific ethics of information. The use of different languages can facilitate a higher engagement with information which can be conceptualized as both learning opportunities and recourses. For example, determining information needs in different languages can lead to a comprehensive understanding of the writers' information needs. As searching for information is exploratory and learning itself (Yu & Zhao, 2021), using different languages in the process provides more opportunities to learn. The use of different languages requires scenario-dependent selection between languages, which requires academic writers being clear about their micro-purposes in the process of IBAW, and is therefore a good opportunity for instructors to teach beyond specific micro-processes to highlight metacognitive awareness in the information literacy processes (Yu & Zhao, 2021; Yu, 2023).

A validated scale of TfIBAW was developed, showing satisfactory psychometric quality. Translanguaging, despite being reflected in different processes of IBAW, is found to be unidimensional. This suggests that translanguaging might be a process resembling the individual IBAW process (e.g., evaluating information). However, it is possible that the unidimensionality results from the participants' lack of awareness of the process nature of writing. Further validation studies are needed in different contexts with participants of different experience in writing, and linguistic and disciplinary backgrounds. For research, the scale can be used to explore the relationship between translanguaging and information literacy/writing processes to gain a fine-grained view of translanguaging in IBAW. This scale can be used as a diagnostic assessment to promote metacognitive awareness to integrate knowledge from different languages.

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