

Developing Student Teachers' Academic Language in Collaborative and Reflective Multimodality-Assisted Content Learning in Indonesian Initial Teacher Education (ITE) Context

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Abstract

This article discusses the evidence from recent classroom research where 70 student teachers learned statistics for second language research course to develop new ways of embedding technology for content learning. This research also reports on findings of qualitative investigation into the use of online and offline resources for content practice coupled with reflective practice and photo voice. Drawn from Braun and Clark's thematic analysis, it seeks to situate how this content learning is pedagogically enacted in the Indonesian ITE context. Grounded in action learning (AL), the study examines on how much intermediate-level English student teachers engaged in collaborative and reflective activities over a period of 12 weeks. Throughout the project, 70 student teachers participated in four main activities, including (1) video viewing, personalizing digital dictionaries, corpus or glossaries as semiotic mediation facilitated a meaning making process, (2) creating a graphic organizer used to discuss complex concepts and clarify the statistics term meaning, (3) listing the key concepts by using learning logs (grammar, reading, and vocabulary logs) and, (4) presenting reflective practice and photo voice. The study's findings suggest that even though the participants encountered content and language-related difficulties in the beginning, they were positive about technology-assisted collaborative and reflective activities in content and language learning. This study proposes that multimodal pedagogy has the potential to promote student teachers' academic language of content area in EAL classroom context and that these alternative teaching tools are needed in contemporary times for reading, navigating, viewing, intertextualizing, and resemiotizing in content and language learning.

Keywords: academic language; meaning making process; semiotic mediation; video viewing

1. Introduction

The present study aims to document a classroom-based study investigating the use of online and offline resources for content practice coupled with reflective practice and photo voice. These resources mediated content and language learning to advance Indonesian university students' academic language in tertiary EAL classrooms. Widodo (2016) maintained that, "An initial teacher education (ITE) program plays a role in producing qualified teachers who can take on different roles in educational contexts, such as, primary school, secondary school, and college." For student teachers who take on one of their roles as teacher researchers (e.g. action researchers, narrative inquirers), they need to understand quantitative research, to interpret test scores, such as how they are derived and how to interpret them, to participate in data-driven decision making, and to be educated consumers of educational research. There is an enormous difference between everyday language, known as Basic Interpersonal Communication Skills (BICS) and academic language, known as Cognitive Academic Language Proficiency (CALP) acquisition for English Language Learners (ELL) (Cummins, 1979). Lavy and Mashiach-Eizenberg (2009) asserted that the language of statistics can sometimes be challenging for students. Many statistical terms are uncommon or unfamiliar; some terms, such as 'degree' and 'table', have a variety of interpretation in everyday communication. 'Degree' and 'table' mean diploma and furniture, but in mathematics meaning, 'degree' and 'table' mean an arrangement of numbers, symbols or words to exhibit facts or relations and the sum of the exponents for the variables in an algebraic term (Rubenstein & Thompson, 2002; Watson, 2006; Winsor, 2007; Kaplan, Fisher, & Rogness, 2009; Lesser & Winsor, 2009).

The texts of the 21st century need student teachers to implement new skills, strategies, and pedagogical background to support students' communication with multimodal texts of the content learning, the different symbol systems students employ in communication practices. Multimodality becomes an issue for student teachers when they plan, practice, and reflect on their content learning, for instance, statistics in second language research. In this article, the authors attempt to document the shift from a focus on monomodal, print-based content learning texts to a focus on the skills necessary for producing and consuming multimodal text. For this reason, student teachers need to navigate, design, interpret, and analyze statistics texts in more complex and interactive ways by involving e-learning resources like videos, a graphic organizer, lists of the key concepts by using learning logs (grammar, reading and vocabulary logs), personalized digital dictionaries, and corpus or glossaries as semiotic mediation facilitated a meaning making process. Even though learning academic language is not a new social practice in ELT, learning academic language along with the use of multimodality is still rarely investigated. Additionally, the recent literature on academic language learning only provides theoretical and practical information with no empirical evidence. Thus, this study aims to examine the extent to which the use of multimodality can help student teachers learn academic language creatively. The authors use multimodality by combining text, audio, and image as individual modes and how these can be creatively combined to produce meaning and encourage interaction and learning in the classroom. Multimodality provides student teachers with extended opportunities for content learning. To address this empirical concern, the present study examines the following questions:

1. To what extent do multimodality help student teachers develop their academic language?
2. What are the student teachers responses to the learning of academic language by using multimodality?

2. Literature review

2.1 Defining and conceptualizing Multimodality

Modes as a fundamental of a multimodal approach deal with visual, audio, texts or speech, and movement channels used in a classical classroom situation (Marchetti & Cullen, 2016). The origin of the terms *multiliteracies* and *multimodality* was established in a seminal article by The New London Group (1996), which discussed on how changes in communication sparked by new technologies urgently needed to be addressed regarding teaching and learning through conventional print-based media; in the last few decades, the most noticeable shift has been from page to screen (Kress, 2010), for example from chalk to PowerPoint, greatly influencing design and selection of resources. Research has documented changes in school textbooks (Kress, 2010) and evidence shows how images in 1930s textbooks were used to supplement the text, while today, 'image' is the 'shipping agent or carrier' of meaning. Many modern textbooks contain links to online and supplementary digital material. As the British Council has found, '...new technologies such as overhead projectors, interactive whiteboards, laptop computers and wireless internet have opened up the classroom to the outside world' (Peacock, 2013). Marchetti and Cullen (2016) asserted that a multimodal approach is multifaceted, due to its interdisciplinary nature, drawing on diverse fields of enquiry, such as educational history, sociolinguistics, design, and perhaps primarily social semiotics. In examining classroom communication, "Multimodality expresses the complexity and interrelationship of more than one mode of meaning, combining linguistic, visual, auditorial, gestural or spatial modes" (Mills, 2009). Jewit (2006) claimed that the difference in the learning situation is not technological resources alone but also the interrelationship and interaction with multimodal semiotic resources. She added that investments and technological resources have increased the potential offered to teachers for selecting input materials but require careful re-thinking of the learning process, which is still based on the traditional view of literacy-centred on oral and written language.

The New London Group considered the classroom a good place to develop communication and awareness of discourse practices, providing real opportunities for students

to express their individual cultural experiences while building on their linguistic resources. Thus, they could become active participants and interact with the social context, whether it be a work or private context (The New London Group, 1996). Social semiotics emphasized the social context of communication and how meaning is shaped through an individual's choice of resources, whether it is text, image, or a combination of resources. The focus is on the process rather than on the system. Kress (2010) answered the question of why people make their choices in the concept of 'interest' and how this leads to choices of which mode to foreground in a specific instance and how these decisions are embedded in social and cultural origins.

2.2 Video viewing as a multimodal pedagogy

The example of using video in the classroom involves a variety of modes, primarily visual, and can exclude or include text as required by the teacher and dependent on the students' need and choice. There is also a great choice available in the audio or speech modes, and finally the mode of movement which occurs within the video. For example, there is an exciting possibility offered by kinetic typography, which is a combination of text, movement, sound with or without image (see appendix for a small selection of video links). The teacher's conscious decision in selecting and evaluating material is fundamental in the development of critical awareness of the visual media by both teachers and students alike (Marchetti & Cullen, 2016). There are a number of reasons why the authors incorporate video viewing into academic language learning. Firstly, in this digital era, students are already familiar with YouTube, video camera, and smart phone video as part of their daily life. To embed academic language learning along with video viewing, it helps students to comprehend words and situate words in a specific context (Dalton & Grisham, 2011). In other words, the integration of academic language learning and video viewing could satisfy students' curiosity and enhancement for learning academic words (Yanto & Sidik, 2018).

Secondly, the advantage of video viewing is its inherent characteristics to make instructions more interesting and enjoyable to learners. Lastly, academic language learning integrated with video viewing allows students to portray the essence of academic vocabulary learning. Therefore, students will be exposed to words, multiple readings of a text, collaboration of students and teachers, spoken discussion and presentation, selecting words that are important to know, and confirming their understanding of the word meanings with dictionaries or corpus. (Martin et al., 2002). More importantly, video viewing has a significant impact on the educational process by allowing students to access information, develop and apply this information, and communicate more with other students, thereby making the whole process more active (Mai, 2007). This activity is in line with Vygotsky's (1978) concept of Zone of Proximal Development (ZPD), suggesting that a more capable peer should be paired with a less capable student in learning activity.

3. Research Method

3.1 Research Context and Participants

The site of this study was a state university located in the western part of Java. private secondary Islamic boarding school located in West Java. Seventy students (50 females and 20 males) who enrolled in the course of Statistics in language research participated in this research project. In this course, the students were divided into two classes: Class A and Class B with mixed gender and language ability. They were sophomores majoring in English education program. All 70 participants agreed to write reflective journals, photo voices about their experiences with these activities. The participants were multilinguals with competencies in Sundanese and Bahasa Indonesia. Ranging from 19 to 21 years old, their English language level is intermediate. For ethical purposes, pseudonyms are used in this article.

3.2 Research design

To address the two research questions relating to the extent to which the use of multimodality can help student teachers learn academic language creatively, the nature of the present study employed action research aiming as Kemmis, Mc Taggart, and Nixon (2014) emphasized that action research focuses on "changing people's practices, their understandings

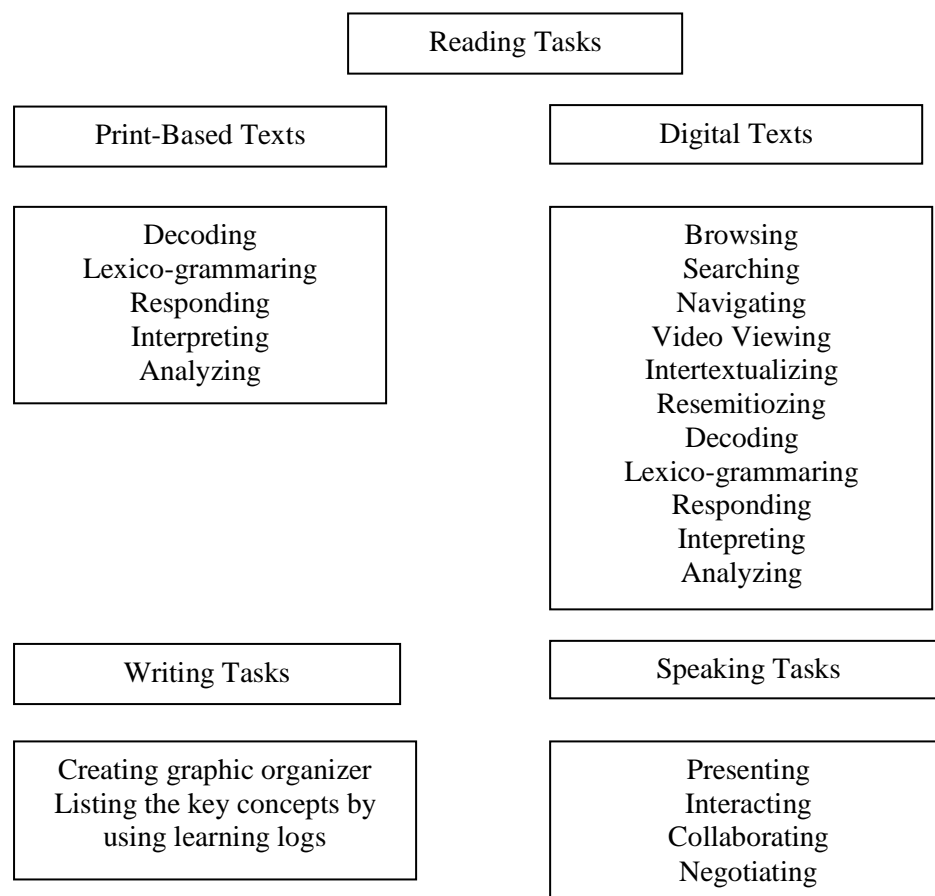
of their practices, and the conditions under which their practices are carried out” (p.51). In addition, Kemmis, Mc Taggard, and Nixon (2014) argued that “action research itself is a social practice, a practice changing practice, which cannot ignore the theoretical terrain that might help participants to work from a critically informed perspective on social life.”

Following these justification, multimodality used in this study was a way to change and improve the student participants in learning specialized vocabularies. In this study, the author taught some sections of an statistics in second language research course i.e., descriptive statistics and inferential statistics.

3.3 Instructional procedures

The general goal of the statistics for second language research course was to build and enhance students’ knowledge, experiences, and skills, as well as students’ content area and their academic language. In the course, the students were required to attend 16 class periods over 16 weeks. To attain these goals, following some preliminary announcements related to the course, students were informed that they would be working on some in or out-class activities or project related to things students learned in the course individually or collaboratively for seven weeks in which each class period lasted for 100 min. With this in mind, the student teachers were expected to engage in a range of meaning making oriented learning task as illustrated in the figure 1.

Figure1. Meaning Making Tasks



The ultimate aim of the tasks was to reveal the student teachers to a range of texts and engage them in different meaning making actions.

3.4 Data collection and analysis

To examine students’ responses to the use multimodality, the data were collected from the students’ reflective journals and photovoice. Reflection is a tool for action and change because it helps enhance self-awareness of experiences (Widodo, 2015). In this study, students

wrote a reflective journals as a tool for reflecting on what they experienced in their class activities and their engagement in the course. The students also wrote a reflective diary as a tool for documenting their learning tour and for increasing alertness of their own learning. Photovoice or photo elicitation (also known as photo novella) deals with a documentary photographs from the perspective of visual sociology. It is a means of documenting a variety of social activities and settings (Hurworth,2004). Photovoice also gave the parties the opportunity to create and discuss photo as a semiotic mediation of sharing their views, ideas, and experience. This method was used to combine more information/perspectives or data collected from classroom observations. Additionally, photovoice was used to portray what students did when working collaboratively on assigned activities or tasks outside the classroom (Widodo, 2015). Photovoice and reflective diaries are complementary. In other words, photovoice could add more information to students' reflective diaries.

4. Findings and discussions

Based on in-dept data analysis informed by Braun and Clark's thematic analysis, the authors drew two emergent finding themes. These themes were frequently identified from the students' reflective journals and photovoice. These finding themes include: (1)students' Reflections on Engaging with video viewing; (2)multimodality approach as a social networking site for performing expressive and creative academic language pedagogy.

4.1 Students' Reflections on Engaging with video viewing

The students' view of video viewing were convinced. All of the students enjoyed watching the video out of the class chosen for the sample lesson of basic statistics featuring several important input characteristics in terms of the visual, text, and audio modes. Students used the videos for learning academic language or disciplinary vocabulary since they learned disciplinary vocabulary in authentic contexts where specific words were used in specific social situations. In students' reflective journals, they wrote that video viewing contained authentic vocabulary. The following two students' vignettes provide more empirical evidence of the interest of video viewing in learning academic language or specialized vocabulary.

Table 1:Students' reflection on Engaging with video viewing

Students	Diary Entries
Rudi	Browsing and viewing video for the sample lesson of basic statistics were fun, interesting, and easy. It provided quick access to the visual text I hunted for. For instance, when I was assigned to discover the topics about descriptive statistics i.e., organizing and graphing data, measures of central tendency and measures of variability. I tried to type key words, such as descriptive statistics. Then, the machine browser, Google—YouTube, informs me a variety of video lesson about descriptive statistics. Simply by clicking on key words, I could easily get the assigned video. Through Google as browser and detector, I became an autonomous learner.
Rina	To me, surfing statistics video through the YouTube gives me a lot of choices. This digital engine gave me unlimited access to variety video-based sample statistics lesson. I do enjoysurfing different the videos which are relevant to my need.

Figure 2. The Students engaging in video viewing



All of the students enjoyed watching the video out of the class

4.2 Multimodality approach as a social networking site for performing expressive and creative academic language pedagogy

From a traditional viewpoint, aspects such as vocabulary knowledge, background knowledge (schemata), knowledge of grammar, metacognitive awareness, syntactic knowledge, and learning strategies are crucial in comprehending texts (Widodo, 2015). In this study, vocabulary knowledge, knowledge of grammar, and syntactic knowledge are termed as lexicogrammatical resources. Background knowledge and metacognitive awareness are called as genre knowledge, meta-language ability, and language appraisal ability. Learning strategies are termed as meaning making practices. To enable students to understand all the terms, students need to engage in activities or tasks addressing how language works in texts. Widodo (2015) argued that “learning to analyze lexicogrammar in a functional framework requires a good understanding of the relationship between function and structure, between choice and meaning, and between function and context”(p.209).

Drawing on reflective diary and photovoice data, students engaged in meaning making activities (e.g., personalizing digital dictionaries and corpus, creating graphic organizers, and listing key concepts by using learning logs). Students analyzed a variety of statistics texts as unit of analysis they read and shared the result of the analysis with their classmates. Students shared, negotiated, and discussed ideational, interpersonal and textual meanings of texts. They explored linguistic aspects of the statistics they learned. Thus, comprehending how language works in text both digital and printed provided the students with a critical way to understand content knowledge (e.g., statistics concepts and terms) and statistical practices.

Figure 3. Example of graphic organizer of measurement scales

Measurement Scales				
Scale	Order	Distance	True Zero	Examples
Nominal	no	no	no	Color, Gender, Ethnicity, Country
Ordinal	yes	no	no	Rating scales, Rank orders
Interval	yes	yes	no	Time of day, Year, IQ, Likert scales
Ratio	yes	yes	yes	Age, Height, Weight, Rates

<p>Data types</p> <ul style="list-style-type: none"> Interval scale – measurements with defined and constant intervals between successive values. Values are continuous. Ordinal scale – measurements using classifications with a natural sequence (lowest to highest), but with undefined intervals. Values are discontinuous. Nominal scale – classifications that form no natural sequence.

In exploring different lexico-grammatical resources, genres, and appraisal resources, the students utilized digital dictionaries and corpus. To this aim, the students were introduced to how to use the freely available resources. E-dictionaries and corpus function as semiotic mediation facilitated a meaning making process. Most of the students employ digital dictionaries to confirm the exact meanings of the words identified or found in the statistics texts. They explored a range of word use using a corpus. One of students wrote:

“The use of a corpus facilitated me to understand certain language uses that are not available in any of the traditional tools (dictionaries). To me, dictionary is able to offer definitions along with restricted examples of word use in context. With this in mind, I need knowing more about the variability use of different words in different contexts. I am very eager in comprehending particular words in statistics text available on the corpus. I think the use both dictionaries and corpus can enhance my vocabulary sizes.”

Table 2: Freely Available Resources (see Yanto & Sidik, 2018)

No	Resource	URL
1.	Cambridge Dictionary	http://dictionary.cambridge.org/
2.	Macmillan Dictionary	http://www.macmillandictionary.com
3.	Oxford Dictionary	http://oxforddictionaries.com
4.	Corpus	http://www.wordandphrase.info/
5.	Corpus	http://skell.sketchengine.co.uk/run.cgi/skell#

The students' responses on listing key concepts using learning logs in terms of autonomous learning were positive. The overall students expressed that learning logs could help them be independent and active learners in comprehending statistics texts as demonstrated in the following excerpts from the students' reflective journals.

Table 3: Students' reflection on Engaging with learning logs

Student Teachers	Responses
Ali	I encountered unknown words such as standard error, confidence interval, a frequency distribution and class interval. To solve this lexical difficulty, I used learning logs to help me to understand unknown words independently.
Erin	... with learning logs I could be more actively and independently find the meanings of unfamiliar words in the statistics texts by reading them repeatedly ... without employing learning logs, I might have only found the meanings of the words without trying to understand entirely and I might have quickly forgotten the meaning of the texts.
Bani	Using learning logs made me understand each word in detail.

Table 3, cont.

Ani	Through learning logs I could find new academic words in statistics texts actively and enthusiastically.
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All of the students agreed that learning logs could facilitate them to understand unknown words actively and independently. They also stated that they were able to systematically record some academic words to comprehend the statistics texts. More importantly, by using these tools, they were extremely motivated to learn new academic words and to comprehend the statistical texts by reading it repeatedly.

5. Conclusion

Some conclusions can be elicited from the findings of the study. First, the students were motivated not only to learn about language, but also about to learn through language. In learning through language, for instance, learning statistics, students should be provided with authentic, multimodal, and relevant learning in terms of their needs and choices. Second, multimodality approach can scaffold comprehension and production of academic language. Thirdly, students who are engaged in cognitive work in content areas (e.g., statistical study) have motivation to learn language that supports their learning. Finally, multimodality approach can support students' communication increasing academic writing and academic vocabulary development.

References

- Cummins, J. 1979. *Cognitive/ Academic Language Proficiency, Linguistic Interdependence, the Optimum Age Question and Some Other Matters. Working Papers on Bilingualism, No. 19.* Toronto: University of Toronto.
- Dalton, B. & Grisham, D.L. 2011. eVoc Strategies: 10 Ways to Use Technology to Build Vocabulary. *The Reading Teacher*, 64(5), 306-317.
- Hurworth, R. 2004. Photo-interviewing. *Qualitative Research Journal*, 4, 73-79.
- Jewitt, C. 2006. *Technology, Literacy, Learning. A Multimodal Approach.* New York: Routledge.
- Kaplan, J. J., Fisher, D., & Rogness, N. 2009. Lexical ambiguity in statistics: What do students know about the words: association, average, confidence, random and spread? *Journal of Statistics Education*, 17(3), 1-19.
- Kress, G. 2010. *Multimodality: a social semiotic approach to contemporary communication.* New York: Routledge.
- Lavy, I., & Mashiach-Eizenberg, M. 2009. The interplay between spoken language and informal definitions of statistical Concepts. *Journal of Statistics Education*, 17(1).
- Lesser, L., & Winsor, M. 2009. English language learners in introductory statistics: Lessons learned from an exploratory case study of two-pre service teachers. *Statistics Education Research Journal*, 8(2), 5-32.
- Mai, N. 2007. Learning with multimedia: Engaging students with constructivist learning. *International Journal of instructional media*, 34(2), 10.
- Martin, M. A., Martin, S. H. & Ying, W. 2002. The Vocabulary Self-Collection Strategy in the ESL Classroom. *TESOL Journal*, 11(2), 34-35.
- Marchetti, L., & Cullen, P. 2016. A multimodal approach in the classroom for creative learning and teaching. *Psychological and creative approaches to language teaching*, 39-51.
- Mills, K. A. 2009. Multiliteracies: Interrogating competing discourses. *Language and Education*, 23(2), 103-116.
- New London Group. 1996. A Pedagogy of Multiliteracies: Designing Social Futures. *Harvard Educational Review*, 66(1), 60-92.
- Peacock, M. 2013. Foreword. In Motteram, G. (Ed.) *Innovations in learning technologies for English language teaching.* London: British Council.

- Rubenstein, R., & Thompson, D. R. 2002. Understanding and Supporting Children's Mathematical Vocabulary Development. *Teaching Children Mathematics*, 9(2),107-112.
- Seah, L. H., Clarke, D., & Hart, C. 2015. Understanding Middle School Students' Difficulties in Explaining Density Differences from a Language Perspective. *International Journal of Science Education*, 37(14), 2386-2409.
- Vygotsky, L. S. 1978. *Mind in society*. M.Cole, V. John-Steiner, S. Scribner, & E. Souberman (Eds.). Cambridge, MA: Harvard University Press.
- Watson, J. M. 2006. *Statistical literacy at school: Growth and goals*. Mahwah, NJ:Lawrence Erlbaum.
- Widodo, H. P. 2015. *The Development of Vocational English Materials from a Social Semiotic Perspective: Participatory Action Research*. Doctoral Thesis. University of Adelaide, Australia.
- Widodo, H. P. 2016. Developing an Informed Curriculum for Initial Teacher Education (ITE):Building Student Teachers' Theoretical and Practical Knowledge and Shaping Teacher Identity. In *Proceeding of International Conference on Teacher Training and Education*, 1(1).
- Winsor, M. S. 2007. Bridging the language barrier in mathematics. *Mathematics Teacher*, 101,372–378.
- Yanto, E. S.& Nugraha, S. I.2018. Video Viewing as a Vehicle For Learning Content-based Vocabulary: Helping Students UnderstandDisciplinaryVocabulary in Context. In Widodo, H.P.(Ed.) *Researching EnglishLanguage Pedagogy and Teacher Professional Development in Indonesia's Educationallandscape*.