



Video viewing as a mediation of learning content-based vocabulary: Assisting students in understanding disciplinary vocabulary in context

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ABSTRACT

Although much research in the area of second language (L2) vocabulary development has extensively been researched, video text viewing as a strategy for understanding disciplinary vocabulary in context is rarely reported in the literature. To fill this void, the present action research reports the findings of vocabulary self-collection strategy (VSS) along with the use of video as a multi-semiotic medium of understanding disciplinary vocabulary in content-based EFL instruction. Informed by students' reflective journal, observation, and interview data, students recounted that the VSS encouraged them to learn disciplinary vocabulary in different discourse contexts. Through role scaffolding by a teacher and peer support, they were engaged in the discovery of vocabulary by documenting unfamiliar or interesting words from their readings and by exploring different meanings of vocabulary using e-dictionaries and corpora. The other research findings showed that the students had enhanced their awareness of word classes, word orders, and word meanings. This empirical evidence suggests that VSS can be a catalyst for engaging students in such post-listening tasks as writing a summary of the video text and creating new vocabulary mapping or profiling.

Keywords: Content-based language instruction; disciplinary vocabulary; EFL classroom; vocabulary self-collection strategy (VSS)

First Received:

25 September 2016

Revised:

12 December 2016

Accepted:

1 September 2018

Final Proof Received:

24 September 2018

Published:

30 September 2018

How to cite (in APA style):

Yanto, E. S., & Nugraha, S. I. (2018). Video viewing as a mediation of learning content-based vocabulary: Assisting students in understanding disciplinary vocabulary in context. *Indonesian Journal of Applied Linguistics*, 8, 316-324. doi: 10.17509/ijal.v8i2.13278

INTRODUCTION

While much research has addressed second language (L2) vocabulary development, the use of video-mediated text viewing as a strategy is still under-reported. To fill this void, this article reports a study on the implementation of vocabulary self-collection strategy (VSS) along with the use of video as the multi-semiotic medium of understanding disciplinary vocabulary in content-based EFL instruction. This study responds to students' needs for learning disciplinary vocabulary in order to understand specialised texts in Indonesian secondary schools (Widodo, 2015).

Secondary school teachers reported that their students lacked specialized or disciplinary vocabulary; as a result, they encountered difficulties in understanding disciplinary textbooks and manuals in English (Widodo, 2015). Some studies (Akbarian, 2010; Fengxiang, 2013; Widodo, 2015) show that vocabulary is one of the contributing factors in text comprehension. To help students learn disciplinary vocabulary in an interactive and engaging way, students practice profiling specialized vocabulary by integrating VSS with the use of video. The strategy was first introduced by Haggard (1982, 1986) and since then has been employed in

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different instructional contexts. In this instructional practice, students select new and useful words from their reading, use the context and other resources to determine the meanings of the words, and propose the words to be learned by others in groups. Even though VSS is not a new instructional concept, to which extent this strategy helps students develop their vocabulary repertoire remains scantily examined. This concern has driven the present study. Therefore, the present study examines the following questions:

1. To what extent do vocabulary self-collection strategy (VSS) and video viewing help students develop their specialized vocabulary?
2. What are the students' responses to the learning of vocabulary using this VSS?

Aspects of disciplinary English vocabulary

To acquire sufficient vocabulary is one of the major goals in learning English as an additional language (Widodo, 2015). Vocabulary plays an important role in second or foreign language learning because it covers all the words students must know to access their background knowledge, express their ideas and communicate effectively, and learn about new concepts (see Nunan, 1991; Schmitt, 2000; Wilkins, 1972). Previous studies on second and additional language vocabulary development have shown that there is no one best method for vocabulary instruction and that vocabulary should be taught both directly and indirectly (The National Reading Panel, 2000). For example, a study conducted by Nation (2001) shows that vocabulary lays the foundation of essential language skills, such as listening, speaking, reading, and writing. This concurs with Folse's (2010) work that vocabulary is a critical component of reading and listening comprehension. In addition, Widodo (2016, p. 121) contends that "vocabulary plays a crucial role in language fluency development and knowledge building." He adds that there are three crucial components of students' success in EFL learning: productivity, meaning making, and word quantity. In a content-based EFL instruction context, students should be provided with a range of general academic and content-based words, which in turn assist them in developing language proficiency. Furthermore, vocabulary is essential for the success of language learners' comprehension (Folse, 2010; Nagi, 1998). This implies that acquiring proficient vocabulary contributes to learners' acquisition and creation of knowledge.

The acquisition of both academic vocabulary and technical or disciplinary English vocabulary is gradual in nature. With this in mind, words are not learned instantly, but they are learned over a period of time. Exposure to particular words influences the number of words learned. McCarthy (1990, p. viii) points out that "no matter how well the students learn grammar, no matter how successfully the sounds of L2 are mastered, without words to express a wider range of meanings, communication in an L2 just cannot happen in any

meaningful way." In other words, students' word knowledge is connected to academic success as students who have rich vocabularies can comprehend new ideas and concepts more quickly than students with limited vocabularies. This argument leads to the goal of the study; that is, to help students develop their specialized vocabulary and engage with meaning making through VSS and video viewing.

It is reported that reading is the major source of vocabulary development in L1 and L2 (Widodo, 2016). Students with a strong reading skill who read a variety of texts may realize a significant improvement in their vocabulary without direct instructions. However, these students may also be aware of some incidental vocabulary expansion through independent reading. Widodo (2016, p. 122) and Nation (2001, pp.12-13) outlined that a word occurs in written text in four different categories.

- High-frequency words: these cover a very large proportion of running words in spoken and written texts and occur in all kinds of language uses. High-frequency words are the most frequent 2,000 words of English. This vocabulary typically embraces approximately 80% of the running words of academic texts and newspapers, and roughly 90% of conversations and novels.
- Academic words: these words are commonly used in different kinds of academic texts. They include roughly 8.5% of academic text, 4% of newspapers, and less than 2% of the running words of novels.
- Technical words: these are very closely related to the topic and subject area of the text (e.g., *hydroponics*). They embrace approximately 5% of the running words in texts.
- Low-frequency words: these words are not high-frequency words, not academic words, and not technical words for a particular subject.

Technical vocabulary is a main target for learners who have special purposes of language learning, and it is a type of specialized vocabulary. English teachers who want to improve the vocabulary of their students should teach technical or disciplinary vocabulary (see Chung & Nation, 2004; Nation, 2001). Interweaving subject matters and English language teaching can be highly motivating for students because students are able to apply what they learn in their English classes to their field of study (Widodo, 2015).

In the area of horticulture, for instance, students need to know how extensive disciplinary vocabulary might be, how often these words occur in text and how teachers and learners should handle with them. They should know semantic relationships around the term of hydroponics, the practice of growing plants without soil, for example. Thus, English teachers should introduce disciplinary vocabularies, which represent the concept

of hydroponics, such as *nutrient solution, lifeless leaves, fallen branches, living cells, nutrient deficiency, dissolved salts, excretion of organic wastes, amounts of nutrient salts, and organic matter*. These words should have semantic relationships. This semantic relationship shows how particular words (e.g., hydroponics-related words) render textual meanings tied to social contexts (e.g., agronomy).

Vocabulary self-collection strategy (VSS) as a mediation of understanding disciplinary vocabulary in context

Vocabulary Self-Collection Strategy (VSS) is one of the strategies that promotes the use of context for vocabulary selection (Haggard, 1982). It is an interactive strategy in which students select words from texts that they believe are important to learn. Through discussion and teacher guidance, students narrow down the number of suggested words from five to eight words that the entire class will learn. They record the words and use them in speaking and in writing. Therefore, the strategy provides students with some benefits throughout VSS activities. First, VSS allows students to have an interest and awareness of words. Students write the words down and share the words with their peers. "This makes students learn new vocabulary based on their individual experiences and world knowledge" (Martin, Martin, & Ying, 2002, p. 34). Second, "they engage in their own learning, discover how to recognize important or interesting words from their readings, and develop their vocabularies knowledge involving awareness of word structure, including an understanding of word classes and word orders" (Martin, Martin, & Ying, 2002, p. 34).

There are a number of reasons why teachers incorporate VSS and video viewing into vocabulary learning. Firstly, in this digital era, students are already familiar with YouTube, video cameras, and smartphone cameras as part of their daily life. Implementing VSS along with video viewing helps students comprehend words and situate words in a specific context (Dalton & Grisham, 2011). "VSS is an after-reading strategy, which promotes a lively interest in words through students expression and participation in a learning community that enjoys playing with words and emphasizes self-efficacy in word learning" (Martin, Martin, & Ying, 2002, p. 34).

In other words, the integration of VSS and video viewing could satisfy students' curiosity and enhancement for learning words. One of the advantages of video viewing is its inherent characteristics to make instructions more interesting and enjoyable to learners. Lastly, VSS integrated with video viewing allows students to capture the essence of 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.

More importantly, VSS and video viewing allow a teacher and students to be a collaborator and a scaffolder in which "a more capable peer should be paired with a less capable student in learning activity. For this reason, students should learn from their more capable peers and their teacher as a more competent person" (Vygotsky's 1978, p.86). In addition, Ohta (2001, p.9) presents an adapted version of Vygotsky's definition suitable for this context: "[f]or the L2 learner, the ZPD is the distance between the actual developmental level as determined by individual linguistic production, and the level of potential development as determined through language produced collaboratively with a peer or teacher." Thus, VSS is considered as an interaction-based activity viewing students as active constructors of their own learning landscape who are responsible for their own vocabulary learning supported by other capable peers and the teacher.

METHOD

Research context and participants

The site of this study was a private secondary Islamic boarding school located in West Java. This school had a population of more than 400 students with various sociocultural backgrounds. This study was conducted for two months from August until September 2016. We chose the site because of two considerations: (1) learning processes at this school were supported by well-equipped learning facilities including installed classroom projectors, broadband Wi-Fi internet networks, language laboratory, and a library and (2) the authors got entry access to this school.

Thirty senior high school students participated in this study. Their ages ranged between 16 and 17 years old. The authors asked the student participants to obtain consent from their parents or guardians to make sure that they were allowed to participate in this study. Students' participation was fully voluntary. The participants received formal English instruction for 6 years. In this context, they only used English in the English classroom. Most of the students were bilingual (e.g., Bahasa Indonesia, Javanese, Sundanese). Some students were fluent in three languages: English, Arabic, and Bahasa Indonesia. Arabic was one of the compulsory languages the students had to learn in addition to English. Most of the students came from middle-upper socio-economic backgrounds (e.g., teachers, doctors, public servants, entrepreneurs, government employees, casual workers). The students had elementary and intermediate language proficiency based on a TOEFL paper-based placement test. Students' motivation to attend the school was to further their studies into university or college.

Research design

To address the two research questions mentioned earlier, the present study employed action research, as Kemmis, McTaggart, and Nixon (2014) emphasized, which focuses on "changing people's practices, their

understandings of their practices, and the conditions under which their practices are carried out” (p. 51). Informed by this justification, VSS and video viewing used in this study was a way to change and improve student participants’ learning of specialized vocabularies. In this study, one of the co-authors taught one section of an ESP course, *hydroponics*. The topics taught in the classroom by the co-author were *Introduction to hydroponics, requirements for hydroponics, a choice of plants, growing media, growing system, considerations when choosing a hydroponic system, and scientific investigation*.

Instructional procedures

All the students went through three-step learning activities, such as: scaffolding, small group discussion, and in-class presentation.

1. Scaffolding or Modeling: Before the participants worked on VSS, one of the authors, who served as a teacher educator, explained the purpose of VSS to the students in class. He told students that they were assigned to find new and interesting words from their readings. He also demonstrated how to self-select video; how to select and nominate important words from the readings; how to argue for selecting the word such as what word I believe is important to learn? Why would I

select it as an interesting or important word to learn? How is the word used? What is the meaning of the word? Can I get the meaning of the word from the context, dictionary, glossary, and corpus? how to use context and other resources to learn the meaning of a particular word. For example, the teacher might use a glossary, a dictionary, a corpus, a diagram to unfold the meaning of the word. This teacher modeling facilitated the students in completing the VSS chart (see Figure 1).

2. Small group discussion: The students worked in small groups of three to five members, and they read a short passage with the teacher. In their small groups, they talked about each word and why they thought the class should learn the word. By consensus, they nominated two up to five words.
3. In-class presentation: After the small-group discussion, the teacher brought the groups together for a class discussion. Each group leader reported to the class, providing the list of words selected by the small group members. The teacher and students recorded the words on the VSS class chart, along with reasons for choosing the word and the contextual meanings.

No	Word	I found it on page	Reason for Selection	Students' definition	Dictionary's definition or Corpus's information
1					
2					
3					
4					
5					

Figure 1. Vocabulary self-collection strategy chart

It is important to note that after the class presentation was done, the teacher asked the class to write the final list of the words on their vocabulary notebook and had the students look up each word in the online dictionary and/or corpus to confirm the meaning of the words. In this way, the students were afforded ample opportunity to better understand the target words. Finally, the teacher told the students to reflect on the process of navigating and viewing meaning through an online dictionary and corpus. He also had the students reflect on the strong points and the challenge of video viewing and VSS in learning disciplinary vocabularies.

Data collection and analysis

To examine students’ responses to the use of vocabulary self-collection strategy (VSS) along with the use of video viewing, data were collected from the students’ reflective journals, observations, and interviews. Students

kept a reflective journal every week, and they uploaded the journal onto the class Bulletin Board System (BBS). The reflective journals were used to gather information on students’ thoughts of learning disciplinary vocabulary through video viewing. Classroom observations were conducted to examine “in what ways the students interacted with their peers, and how they interacted with lesson units and other materials as resources for meaning making inside language classrooms” (Widodo, 2015, p.65). This data collection method focused on students’ reactions and interactions regarding the activities happening in the classroom. Semi-structured interviews were conducted with six participants to obtain in-depth information on their experiences of vocabulary learning in the course and thoughts on vocabulary learning using VSS along with the use of video viewing. The questions for the interviews (see Appendix A for a List of Interview Questions) were geared towards students’ thoughts of

being better readers, independent and active learners, their perspectives on learning specialized vocabulary using VSS and video viewing, and strong and weak points of using VSS and video viewing. All the interviews were conducted in the Indonesian language, and the interview scripts were translated into English. All of these encounters were digitally recorded with participants' permission. All of the interview data were transcribed, sorted out, and labeled as emergent finding themes. All of the data were analyzed through an interpretative and narrative lens (Widodo, 2015) To fully understand and interpret verbal data containing students' experiences with the VSS along with video viewing, the data were classified into the students' responses to video viewing, students' reading as a meaning making task, and students' responses to the strong point of VSS as an independent and self-motivated strategy. These three layers of the analysis were intended to capture some emerging findings relevant to the two research questions.

FINDINGS AND DISCUSSION

Drawing on the data from students' reflective journals, observations, and interviews, three main themes were identified: (1) the efficacy of video viewing, (2) vocabulary learning through reading as a meaning making process, and (3) independent and self-motivated strategy for specialized vocabulary learning. These themes reflect the two central questions of the study.

The efficacy of video viewing

The students' perceptions of video viewing were positive. All of the students enjoyed watching the video clips in class and had interest in using them for learning 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 clip viewing contained authentic vocabulary. The following two students' vignettes provide more empirical evidence of students' interests in video viewing to learn specialized vocabulary.

Student Vignette 1

I like to learn disciplinary vocabulary through video viewing. It was fun and interesting with the variety of hydroponics-related topics.

Student Vignette 2

It was an amazing experience that I could learn many important disciplinary words that I had never seen in the textbook. It was also interesting that I could learn the words by guessing the meanings from the contexts of horticulture.

The two students' vignettes indicate that learning disciplinary vocabulary through video viewing could be more interesting and enjoyable to learners. Another advantage of video viewing is that it could provide information that seems to be less possible to be

presented in the classroom because of such constraints as class size, location, and costs. The students were exposed to more contextual learning materials as they were presented in an authentic or real-life context. They explained that video could be an effective tool for learning specialized vocabulary because it contains a combination of visual and aural information (multi-semiotic resources). They also reported that the video was not just a tool for learning specialized vocabulary, but it also allowed them to engage in reading as a meaning making task.

The students showed a positive attitude towards the usefulness of video viewing in learning disciplinary vocabulary. They perceived that video clip viewing was useful for learning disciplinary vocabulary due to the repeated exposure to the words such as *rock wool*, *a nutrient film technique*, *wick system*, and *nutrition*. Some words appeared more than once in the video clips, and these words (e.g., *rock wool*, *nutrient*, and *a nutrient film technique*) seemed to draw students' attention. After seeing and hearing the words repeatedly, they became familiar with the definition and usage of the words learned. The visual explanation of the video clips also helped the students guess the meanings of the new words (i.e., *rock wool*, *nutrient* and *wick system*). A student's comment gleaned from the interview is presented below.

Student Vignette 3

I felt that video viewing was useful. I could watch the video clips whenever or wherever because the teacher provided them online. Since I had online homework every week, I could watch the video clips over and over, at least 4 to 5 times per an episode. I felt that I became familiar with the words i.e., rock wool, nutrient, nutrient film technique and wick system and learned them naturally even though I didn't know those words before.

The students also found that an online class was easy to access and useful for reviewing vocabulary while doing online activities, such as navigating and viewing the disciplinary vocabularies the students learned. The other students mentioned that the video clip viewing was motivating because they contained many practical and applicable words for helping students have conversations with others in daily life. The following are two excerpts from the reflective journal.

Student Vignette 4

By doing vocabulary activities online, I was happy reviewing words and double-checking the words (i.e., solution, lifeless leaves, fallen branches, living cells, nutrient deficiency, and dissolved salts) that I hadn't understood in the class by using online dictionaries (i.e., <http://www.macmillandictionary.com/>) and corpus. (i.e., <http://skell.sketchengine.co.uk/run.cgi/skell#>)

Student Vignette 5

I believed that VSS and video viewing activities with group members encouraged us to learn specialized vocabulary because group work made me try to guess even though my guessing was unreasonable and sometimes completely wrong. The teacher asked us to guess individually first and shared the ideas in class. Sometimes, my group members explained how they figured out the meanings from the video clips and this type of interactions with members helped me remember the words for a long time.

This empirical evidence shows that video viewing and the use of vocabulary self-collection strategy (VSS) can have a considerable impact on students' learning outcomes. Video is a suitable tool for language learners because of its wide access to real language use so that students could pick up specialized vocabulary available in different contexts. The video viewing provides the students with the opportunity to assess their comprehension in various situations they might encounter that could not be readily available in the classroom. Furthermore, it can be used to give students a chance to demonstrate their comprehension. The potential of video viewing in the EFL classroom can possibly maximize students' natural ability to acquire, process, and otherwise utilize their knowledge. The use of video viewing gives students more authentic materials. Moreover, it can help students better understand specialized vocabulary because they can study the materials many times.

Vocabulary learning through reading as a meaning making process

Readers construct a meaning actively not only from the visual clues in the text (e.g., vocabularies and structure of text) but also from non-visual information (e.g., reader's schemata of the world or reader's experience). Widodo (2016) highlights that "reading is an interactive process in that readers are involved in making sense of a text as the manifestation of author's thought" (p.127). All the participants argued that VSS not only facilitated them in identifying unfamiliar words such as *micronutrient, rock wool, inert, hardness and softness* but also helped them make sense of the words in context. They realized that VSS was an effective strategy for learning specialized vocabulary. VSS also made the students engaged in reading as a meaning making task. The following two students' vignettes from their reflective journals provide empirical evidence concerning the effectiveness of the VSS in learning disciplinary vocabulary.

Student Vignette 6

The VSS along with video viewing not only offered a new, fresh way of learning vocabulary, but also placed me at the center of engaging learning. When taught in a conventional way, vocabulary teaching seems to involve a classical expository teaching method in which the teacher positions her/himself at the center of instructional activities. VSS, on the other hand, allowed me to 'explore' learning materials more flexibly at my own pace. I viewed and navigated or 'searched' the word meanings using online dictionaries as well as using online corpus linguistics to look at the context in which the words most possibly occurred and the way they were used in different context. This seemed to imply that I took the authority and be responsible for my own learning.

Student Vignette 7

Learning specialized vocabulary using VSS and video viewing encouraged me to be an active learner. I was aware of what I was working on and actively explored the word meanings through online dictionaries and corpus and use of those words in different contexts. This was made possible for me since the guidelines were well set up at the outset and, most critically, the readily used online learning resources including online dictionaries and corpus. More significantly, interaction between teacher and me as well, my classmates and I were also observed by the teacher in order to make sure that the learning process ran well.

Due to too many unfamiliar words, at the beginning, the student participants found that reading authentic texts was difficult. In addition, they elucidated that they had to read for meaning. In the previous formal English learning, the reading instruction emphasized multiple question-oriented reading exercises. One of the participants said "reading habit was a challenging activity. I worked hard with the VSS at the early stages." Further, the student participant commented, "the VSS enabled the long-term acquisition of vocabulary, we created both the vocabulary and the meaning from a specialized text we are currently using, we learn the vocabulary not only in context but also we learn to use the VSS that will help us better understand our current text and others in the future."

To this aim, the students were introduced to how to use the freely available resources as shown in Table 1.

Table 1. Freely available resources

No	Resources	Links
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#

These types of learning resource software provided sufficient and representative e-dictionaries and corpora. They helped the students identify general and technical words. Another student participant reported that “these corpora help me identify the frequencies of identified words and distinguish how words are used in context. I find these online tools useful in enriching my vocabulary size and my knowledge in making meaning.” This emphasizes the role of e-dictionaries and corpora in the learning of specialized vocabulary by using the VSS and video viewing.

Student Vignette 8

For me, learning specialized vocabulary by using the VSS and video viewing was a new idea. This was a new method of learning vocabulary. I had never experienced it before. It was an innovative and interesting strategy. I utilized online dictionaries and corpus. In addition, utilizing technology, i.e. online dictionaries and language corpus allowed me to find the word meaning quickly and accurately.

The students observed that these online dictionaries provided them with quick access to the meanings of unknown words. These dictionaries also helped the students increase their vocabulary size (how many words they already know) and depth of the vocabulary (how well they know such words contextually). As a result, the breadth and depth of vocabulary enhances reading comprehension, which in turn facilitates meaning making (Nergis, 2013). Therefore, this finding reflects the importance of using dictionaries in vocabulary-focused learning. Moreover, all the participants claimed that both corpora and online dictionaries helped them complete the VSS. From a functional perspective, e-dictionaries, corpora, and digital translators as semiotic media facilitate a meaning making process (Widodo, 2015).

Independent and self-motivated strategy for specialized vocabulary learning

Much literature in L2 vocabulary learning emphasizes that vocabulary learning should be contextualized and that this learning allows students to learn particular vocabulary (Widodo, 2015). When asked about the extent to which VSS and video viewing help students develop their specialized vocabulary and perceptions about the learning activity, all of the students felt excited as they became familiar with the VSS format and discussion. Additionally, the students felt that VSS helped them become more aware of specialized words of hydroponics. The VSS provided the students with a platform for generating both the vocabulary and the meanings from the hydroponics texts. In addition, through scaffolding by teachers and peer support, not only could the students explore various aspects of the language – e.g., how lexico-grammar was used in context through texts, but also enhance their content knowledge, particularly horticulture. This empirical evidence supports the use of the VSS in learning

disciplinary vocabulary in context in order to engage students in collaborative learning and to build a learning community in which teachers play a vital role as a guide throughout the VSS process. The following two students' vignettes provide empirical evidence on an independent and self-motivated strategy for specialized vocabulary learning.

Student Vignette 9

VSS enables me to collect what I want to learn as much as possible. I also feel motivating to do the same way as other English texts and it creates active vocabulary learning and improves my long-term memory.

Students Vignette 10

VSS helps me add the specialized vocabulary what I want to learn and share it with other groups. Thus, I can also add my specialized vocabulary from other groups. To this end, I can learn much vocabulary so that I can understand the meaning of the text I read.

The two students' vignettes indicate that VSS could be a stimulant for an effective strategy to help students understand the meanings of new words, use them in conversations and writing, and make personal connections with words while reading or watching videos. The VSS could also be a catalyst for engaging students in writing a brief summary of the text from the video, for example. Additionally, the students can build their vocabulary knowledge through active participation in word discussions and activities related to word learning. One of the student participants recounted,

VSS helps me create important connections between new words and their meanings. So, my understanding and long term memory of the words are developed. VSS also helped me work together to determine the words I do not know from the text and VSS also affects my enthusiasm for learning and collecting the words.

In terms of learning motivation, the data above are consistent with Ruddell (2005, p.166) who suggests that the purpose of the vocabulary self-collection strategy (VSS) is to motivate students to learn new words by promoting a “long-term acquisition and development of the vocabulary of academic disciplines with the goal of integrating new content words into students' working vocabularies.” Another student added that “I find the VSS useful in understanding the meaning of the specialized words more than what I have known before. So I can use the words in other contexts that impact the meaning of those words.” Vocabulary knowledge is critical to the long-term literacy development of all students (Graves et.al, 2014).

CONCLUSION

This study aimed to document how the use of VSS and video viewing helped students learn specialized

vocabulary. It was found that the use of VSS and video viewing provide students with rich semiotic resources for learning disciplinary vocabulary in context. The two tasks, VSS and video viewing, enriched students' reading experiences as the students were actively involved in identifying important words from their reading or video to share with members of their class. Equally important, Such tasks nurtures students' curiosity and interest in learning disciplinary vocabulary. Drawing on these findings, the present study offers three practical implications for the teaching of specialized vocabulary. Firstly, the teacher might consider integrating technologies, such as online concordances (e.g., BNC and COCA) and video into the teaching of English as these resources could facilitate students to enhance their language repertoire. Secondly, it is also imperative that teachers encourage students to become actively engaged in a multi-semiotic learning process, moving from a highly teacher-centered to more learner-centered classroom. Finally, teachers may socialize students into integrated vocabulary lessons where the learning of vocabulary is integrated with other language skills, such as listening and reading where authentic language use is of top priority.

ACKNOWLEDGMENTS

This research received no financial support from any funding organizations. It complied by research ethics with human beings. We would like to express our sincere gratitude to the participants and the school English teacher engaged in this research project. Our heartfelt thanks also go to Dr. Handoyo Puji Widodo (Associate Professor of Shantou University) for his insightful feedback on the early version of the draft. We wish to extend our sincere thanks to anonymous reviewers for their useful comments on this manuscript.

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Appendix A

List of Interview Questions

1. What do you think that you, through VSS, will be better readers as they understand key words in depth from their readings?
2. What do you think that VSS helps students independently and actively learn how to understand words in their contexts?
3. What do you think that VSS helps students better understand how it can make text more comprehensible?
4. What do you think that VSS as a strategy that can be applied to learning any content area or specialized vocabulary?
5. How much do you value the strong points of VSS and Video Viewing?
6. What do you think of the weaknesses of VSS?

Appendix B

List of Hydroponic Vocabularies

No	Specialized Vocabulary
1.	Hydroponics: a technique of growing plants (without soil) in water containing dissolved nutrients
2.	Drip culture: a hydroponic method of growing plants by allowing nutrient solutions to drip slowly onto an inert medium in which the plants are growing
3.	Cultivation: the <u>process of growing crops or plants</u>
4.	Silica: a <u>hard white or clear substance that exists in sand and other materials, used for making glass</u>
5.	Inert: CHEMISTRY an inert <u>substance does not produce a chemical reaction</u> when it is <u>mixed</u> with other substances
6.	Vermiculite: a hydrated magnesium aluminum silicate mineral which resembles mica in appearance
7.	Aerated: containing many small bubbles of air
8.	Micronutrients: nutrient needed in tiny amounts: a substance that an organism requires for normal growth and development but only in very small quantities, e.g. a vitamin or mineral
9.	Insoluble: CHEMISTRY an insoluble <u>substance does not dissolve and disappear</u> when you put it into <u>liquid</u>
10.	Precipitate: CHEMISTRY if a <u>solid substance precipitates</u> , or if something <u>precipitates</u> it, it becomes <u>separate</u> from the <u>liquid</u> that it is in and <u>drops</u> to the bottom of the <u>container</u>
11.	Fluctuation: <u>frequent changes</u> in the amount, <u>value</u> , or <u>level</u> of something
12.	phosphoric acid: transparent solid used as fertilizer : a water-soluble transparent solid acid. Use: fertilizer, rust-proofing, in soft drinks, pharmaceuticals, animal feeds. Formula: H ₃ PO ₄
13.	Rockwool: basalt rock /molten rock and chalk are melted at a very high temperature and then spun into long, glass-like fibers.
14.	Clay pellets: lightweight expanded clay aggregate that has been pelletized and fired in kilns until it expands into small, orange-red balls.
15.	Perlite: It is a kind of volcanic glass (composed chiefly of silica) that has been super-heated until it explodes.
16.	Coir: Fiber gathered from coconut husks (a by-product of processing the fruits for food) is formed into large blocks, smaller bricks or planter pots. It's sometimes labeled as "coco peat" or "coco coir"
17.	Delivery system: transports water/nutrients from the pump to the plants and back
18.	The wick system: It's the simplest system and does not require any moving parts used to draw the nutrient solution into the growing medium.
19.	The Ebb and Flow system: A submerged pump temporarily floods the grow tray. The excess nutrient solution drains back into the reservoir and can be used again.
20.	Continuous drip: It is regulated by a submerged pump and is one of the most widely used hydroponic systems.
21.	Nutrient Film Technique (NFT): the system provides a continuous flow of nutrient solution.
22.	Micronutrients are those absorbed in small to minute quantities.
23.	The raft system: it is an interesting technique of growing lettuce and other short stature crops.
24.	The Dutch Bucked method: a method allows the grower to use just about any growing medium, including coco-coir, perlite, LECA stone, gravel, and even sand.
25.	LECA: Lightweight Expanded Clay Aggregate that has its common trade names include Geolite, Groxoc and Hydroton.
26.	Turgor: rigidity of living cells : the normal rigid state of plant cells, caused by outward pressure of the water content of each cell on its membrane
27.	Salts: a <u>substance or medicine that looks like ordinary salt, used for a particular purpose</u>
28.	Nutrient: a <u>substance in food that plants, animals, and people need to live and grow</u>
29.	Nutrition: <u>food considered</u> as something that <u>keeps you healthy</u>
30.	Microbes: a very small living thing that you can see only with a microscope. Some microorganisms cause disease.
31.	Evaporation: becoming vapor , a process in which something is changed from a liquid to a vapor without its temperature reaching boiling point.
32.	Hardness: water quality , the degree to which water contains mineral salts.
33.	Softness: water quality, the degree to which water contains low mineral salts.
34.	Crops: a <u>plant grown for food, usually on a farm</u> .
35.	Gravel: <u>small pieces of stone used for making paths and roads</u> .