

A Study on the Knowledge in Academic Vocabulary
of Students in Liberal Arts and Sciences

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This research covers the aspects of academic vocabulary and students' university major subjects and the differences in their years of studies.

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Abstract

Academic vocabulary is considered one of the essential elements in constructing excellent academic writings, and the development of knowledge about academic words requires daily practices and acquisitions. This research compares the academic vocabulary knowledge of students from liberal arts and sciences, investigating whether the major subject of university students exerts both positive and negative impacts on their knowledge in academic vocabulary, both receptive and productive, and thereby suggest some other methods to improve students' learning in academic vocabulary at universities. The research obtained data from liberal arts and sciences students from different universities, ranging from year one to year four. The academic vocabulary being tested in this research is based on Cohead's (2008) Academic Words List (AWL), which has been used widely. The result suggested that the major subjects of students had both positive and negative effects on their academic vocabulary knowledge, mainly due to their assignments types.

Keywords: academic vocabulary, liberal arts, sciences, university major subjects

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Cohen, Glasman, Rosenbaum-Cohen, Ferrara, & Fine (1998) has defined academic vocabulary as “specialised non-technical lexis” while Anderson (1980) and Yang (1986) referred it as “sub-technical vocabulary”. The Academic Word List, which is suggested by Coxhead (1998), is a comprehensive list of 570 academic word families and this research also tests students’ academic vocabulary knowledge based on this list. Numerous researches have been proved that students' knowledge in academic vocabulary is deemed one of the most significant factors in composing a good piece of academic writing (as cited in Lin & Morrison, 2010). The lack of academic vocabulary has been proved to be a barrier hindering students' success in the academic aspect (Corson, 1997; Garcia, 1991; Snow & Kim, 2007). There are a few studies that focus on the use of academic vocabulary in different subjects. For instance, Chung and Nation (2003) contrasted the specific terminologies in an anatomy book and an applied linguistics book, indicating that “academic words have plenty of chance for occurring in academic texts from different genres and fields” (Shabani & Tazik, 2014, p.1723). After learning the use of academic vocabulary in different professional fields, it is of equal importance to investigate how students can acquire the knowledge of academic vocabulary. Therefore, this paper aims at examining whether the major subject of university students exerts both positive and negative impacts on their knowledge in academic vocabulary and thereby suggest some other methods to improve students’ learning in academic vocabulary at universities.

Lin & Morrison (2010) mentioned that one's knowledge of vocabulary could be broken down into two aspects, which are receptive and productive academic vocabulary. "Receptive vocabulary refers to the words a learner needs for reading and listening" (Lin & Morrison,

2010, p.256), which reflects students' ability in comprehending lectures and related reading materials while "productive academic vocabulary are the words a learner needs for speaking and writing for academic purposes" (Lin & Morrison, 2010, p.256), which is related to students' capability of composing good academic writings. Therefore, this research addresses both aspects of academic vocabulary.

Since liberal arts students often need to write essays for assignments, which require frequent use of productive academic vocabulary whereas sciences students need to do calculation and lab reports, which do not require much academic vocabulary. As a result, before interpreting the collected data, the author predicted that students who study liberal arts have a more profound knowledge of academic vocabulary than those who study sciences.

Method

Participants

There are in total of 35 participants in this research, in which female participants account for 65.7% while male participants account for 34.3%. All of them are year one to year four university students who are studying either liberal arts or sciences.

Measures

The research was conducted by filling in a Google form, which consists of three parts. The first part of the form is a questionnaire and it comprises in total of 7 questions related to the relationship between participants' knowledge of academic vocabulary and their major subjects, including self-evaluation of their academic vocabulary knowledge, methods and channels to acquire those knowledges, the types of their assignments, the reasons for and rate of difficulty in using academic vocabulary in assignments, whether their assignments facilitate their learning in academic vocabulary and suggestions to conduct a better learning.

The second part aims to test the receptive vocabulary of the participants. There are ten questions in this section. The test mentioned in Lin & Morrison's (2010) study is adopted, which is the receptive test in Nation's Vocabulary Levels Test (Nation, I. S. P., & Beglar, D., 2007) at the level of 10,000 words. Participants are required to match the meanings with the words provided. This test has been used for assessing one's vocabulary size for around ten years, and it was considered "the nearest things we have to a standard test in vocabulary" (Meara, 1996).

The last section is to collect some assignment samples so as to analyse the productive academic vocabulary size. Online VocabProfilers (Cobb, T., 2002) is employed, and it helps to analyse the percentage and density of academic vocabulary in those samples. The vocabulary sources of the web page are based on Laufer, Nation, and Coxhead's Lexical Frequency Profiler (LFP) (Heatley, A., Nation, I.S.P. & Coxhead, A., 2002).

Procedure

The participants were recruited via the online platform. The Google form was sent through online message groups, and it was voluntary for them to fill in the form. The consent form was already included in the form in order to ensure the participants were well-informed before engaging in this research. After reading the consent form, they could start completing the remaining parts. The data collected can be seen by the designers of the form, and all data had been analysed through Google software at the moment when they were collected.

Results and Discussions

Summary of Data Collected

There were in total of 33 participants in this research, with 20 of them were from liberal arts while 13 of them were from sciences. In terms of the year of studies, there were 10 liberal

arts and 11 sciences junior students (year one and two) while 10 liberal arts and 2 sciences senior students (year three and four) respectively.

Questionnaire

Self-Rating on Academic Vocabulary Knowledge by Different Years of Students from the Two Fields

The mean score of self-rating on knowledge about academic vocabulary by year one and two liberal arts and sciences students were 5 and 5.09 out of 10 respectively, while those rated by year three and four students from both fields are 5.9 and 6.5 out of 10 respectively. As you can see, senior students from both areas had a higher score than the junior students. This may be caused by the fact that junior students commonly do not acquire much knowledge about academic vocabulary since they recently graduated from secondary schools and may not yet adapt to the academic style of writing in university settings. There were several junior students, from both areas expressed their confusions that they cannot identify what kinds of words are academic vocabulary and some of them even mixed up the concept of academic vocabulary with specialised terminologies. On the contrary, senior students have already get used to this mode of writing and also be able to improve their academic vocabulary knowledge by consistently reading an array of academic sources when working on assignments.

Methods Used in Learning Academic Vocabulary Knowledge

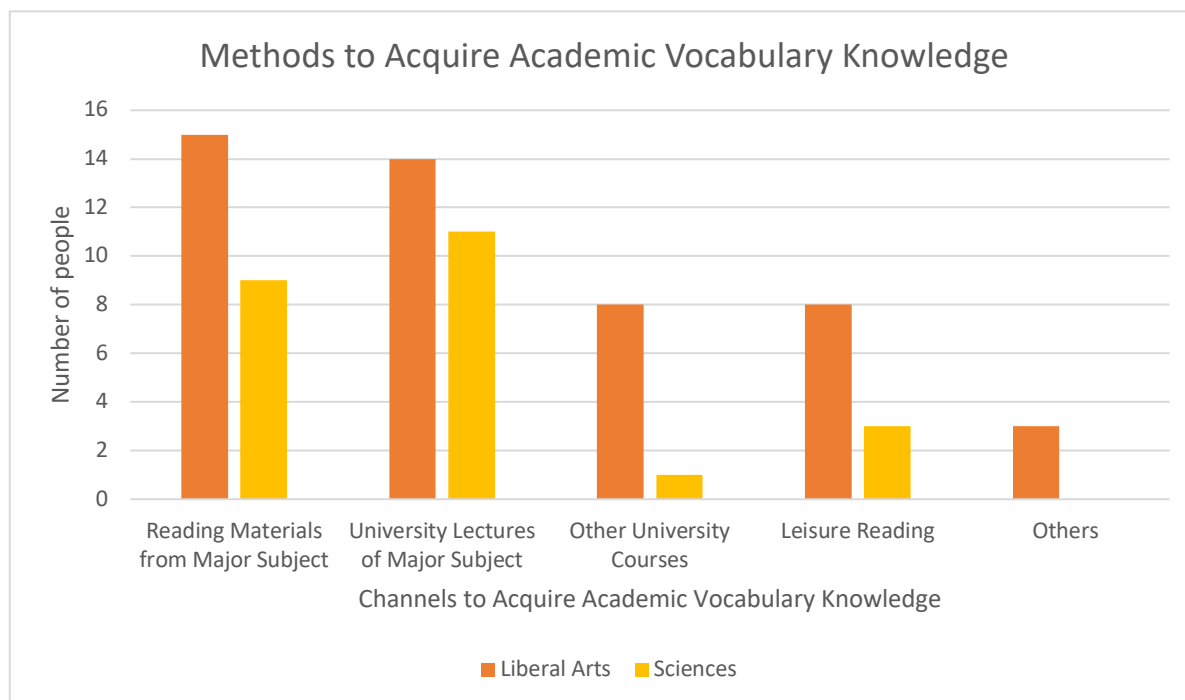


Figure. 1. Bar chart showing the methods liberal arts and sciences students adapt to acquire academic vocabulary knowledge.

I found that students from both liberal arts and sciences acquired their academic vocabulary knowledge mostly from reading materials and university lectures of their major subjects, with 75% liberal arts students and 69.2% sciences students acquired that knowledge from the former while 70% liberal arts students and 84.6% sciences students gained that knowledge from the latter. This may occur since reading materials, and lectures gave by professors from the two fields include academic sources, for example, academic journals and research papers, which contain a significant number of academic vocabulary.

Another noticeable point was that there are more liberal arts students learnt academic vocabulary from other university courses and leisure readings than those from sciences. One possible interpretation is that most courses that liberal arts students take are language-based and related to essay writings. Therefore, they are provided with sufficient opportunities to

practice using academic vocabulary. Regarding leisure reading, this is mainly related to personal interests; thus, no obvious conclusions can be drawn from this point.

There are no patent differences in students from the two areas concerning their methods to acquire academic vocabulary knowledge.

Level of Difficulty in Utilising Academic Vocabulary in Assignments

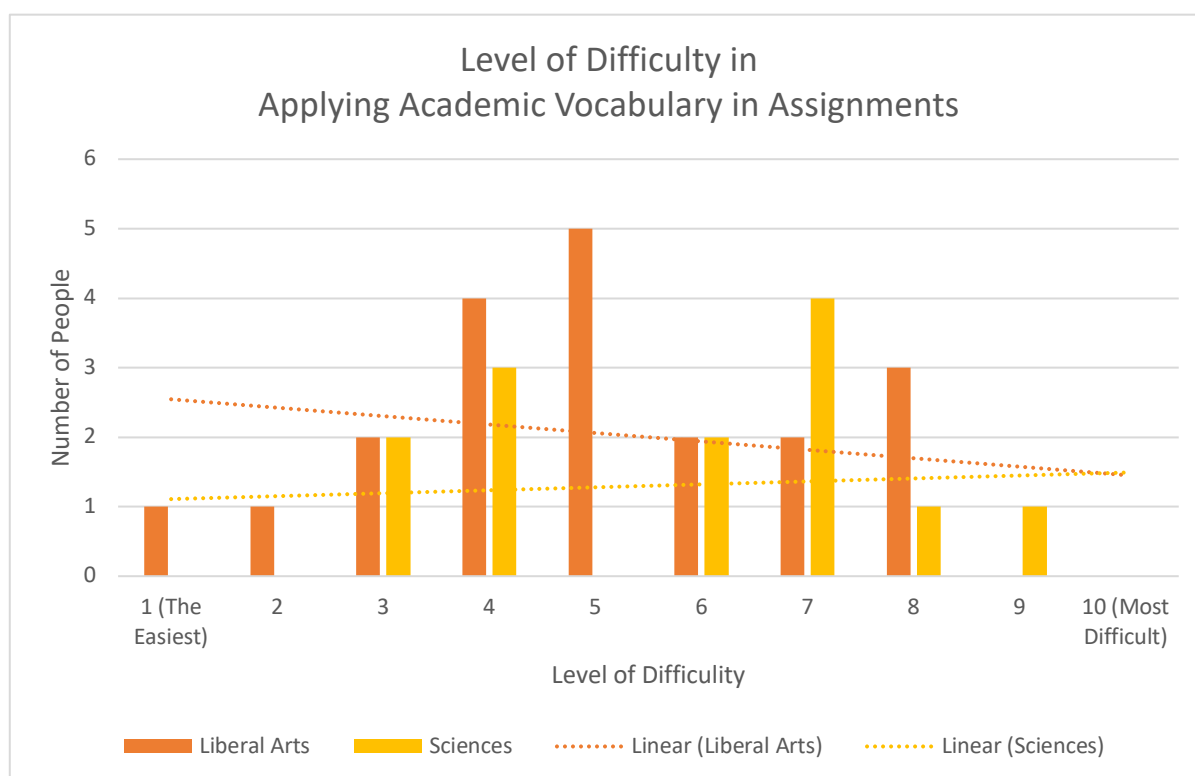


Figure. 2. Bar chart revealing the level of difficulty in applying academic vocabulary in liberal arts and sciences assignments.

While given chances to practice is a significant means to polish their techniques in using academic vocabulary appropriately, these opportunities are typically captured by accomplishing different kinds of university assignments, in which essays require a considerable amount of academic words while lab reports do not. An essential objective of this research was, hence, to investigate whether the types of assignments (Appendix D) in both areas bring along any consequences of their academic vocabulary knowledge.

Viewing from the figure. 2., it is not difficult to notice that the level of difficulty in applying academic vocabulary in assignments rated by liberal arts students shows a declining trend whereas that rated by sciences students depicts an inclining tendency. This can be explained from the comments made by the participants in the questionnaire: several participants from liberal arts attributed the above trend to the fact that they often consulted online translation apps or looked up academic vocabulary in dictionaries, and in these processes, they may be able to expand their receptive vocabulary size by repeatedly searching for these words and then capable of memorising them. As a result, it is normal to observe that a majority of liberal arts students thought it was an easy task to apply academic vocabulary in their assignments. On the other hand, students who study sciences associated the trend with reasons such as, it is not necessary for them to utilise a variety of academic vocabulary in their assignments as most of them are lab reports, which require calculations more than essay writings and more importantly, sciences students are demanded to include specific terminologies instead of academic vocabulary as they mentioned in the survey. Owing to their lack of practices in encompassing academic vocabulary in assignments, several sciences students expressed their worries that they did not understand how to apply those vocabulary accurately and adequately.

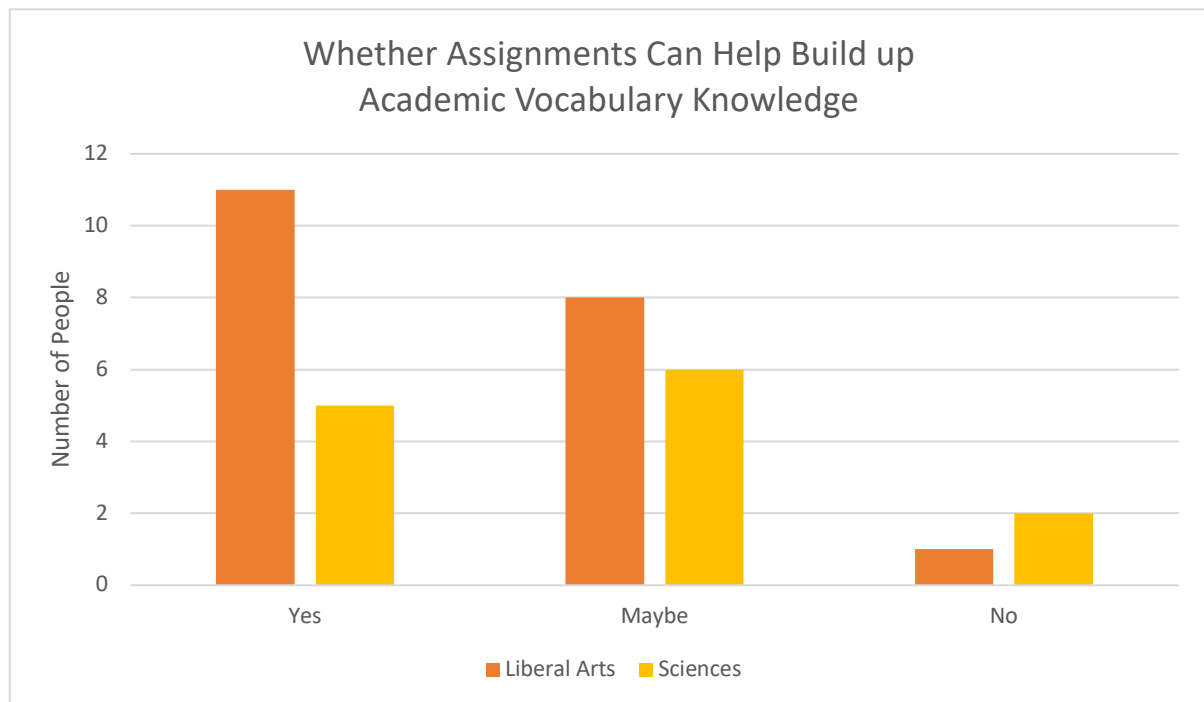
Assignments' Effectiveness in Helping to Build up Relevant Knowledge

Figure. 3. Bar chart describing liberal arts and sciences students' tendencies of whether their assignments can help build up their academic vocabulary knowledge.

Before conducting the research, I predicted that sciences students might not find their assignments assist them in building up academic vocabulary knowledge as they did not have to utilise a great deal of academic vocabulary in lab reports. Interestingly, however, the findings revealed that liberal arts and sciences students alike suggested that their assignments indeed or may assist them in improving that knowledge. The primary determinant is that students from these two areas thought that their assignments provided them with adequate, if not many, possible chances to use academic vocabulary. While completing assignments, they developed a sense in how to apply those words meticulously as well as comprehended the usage and meaning of each word thoroughly and effectively. Besides, they specified the effectiveness of doing researches before producing a good piece of assignment, be that an essay or a lab report, which allowed them to frequently expose to academic sources, including reference books, academic articles written by scholars and professors and academic

journals published by universities. All these sources are well-consisted of ample academic vocabulary for them to learn, which is beneficial for them to enlarge their receptive vocabulary sizes.

Concerning their years of studies, 90% year one and two liberal arts students and over 80% year one and two sciences students felt that their assignments contribute to their academic vocabulary knowledge. All year three and four students agreed on that. There is one reason junior and senior students share, which is finishing assignments provide doors of opportunity for them to practice using academic vocabulary, acknowledging the underlying importance of practical uses of their relevant knowledge when completing assignments. But still, there are some dissimilarities. I found the reasons why year one and two liberal arts students thought this was an effective way to learn those words is that they usually could memorise those vocabulary when trying to apply them in essays while year three and four students from the same field realised what help them most was the research process before starting to accomplish their assignments because those words are passively learnt by them when they were evaluating those academic sources. This seems to imply that junior liberal arts students tend to acquire related knowledge by rote-learning and those who have studied longer at universities are inclined to self-directed learning when it comes to gaining academic vocabulary knowledge from involving in assignments.

One worth-noticing point is that those who critiqued their assignments were not helpful in building up relevant knowledge are all junior students, from both fields. Apart from traditional methods to learn academic vocabulary, for instance, do more readings, attend English courses and be more focus in lectures, they suggested some other innovative measures, which are watching You-Tube, playing games and peer-learning. This may imply that junior students would like to acquire academic vocabulary knowledge in novel as well as

interactive ways when comparing to senior students, no matter they study liberal arts or sciences.

The Receptive Vocabulary Test

Regarding the results of the receptive vocabulary test, I found that, unexpectedly, sciences students attained a mean score of 29 marks out of 30, which was 0.4 marks higher than that of liberal arts students. Unlike liberal arts students, sciences students do not have to utilise academic vocabulary in their assignments regularly. Therefore, I predicted before researching that their academic vocabulary knowledge may be less than that of liberal arts students. The result, however, contradicts to my prediction. To understand the reason leads to this finding, one reasonable explanation can be the fact that with less academic vocabulary knowledge, sciences students may have to consult the Internet or utilise dictionaries more often than liberal arts students. Looking up words in dictionaries from time to time, they may then learn those vocabulary passively by comprehending the semantic meanings, which suits this receptive test that "use of receptive vocabulary involves recognising the form of a word and retrieving its meaning" (Lin & Morrison, 2010, p. 256).

The Analysis of Students' Assignment Samples

In order to assess their academic vocabulary knowledge comprehensively, it is of equal importance to examine their productive academic vocabulary. I extracted four assignment samples which are uploaded by liberal arts and sciences students respectively. After copying their assignments to the online VocabProfiler, I found that the mean percentage of academic words of samples from liberal arts students was 7.53% while that from sciences students was 6.61%. As discussed above, it is surprising that sciences students did better in the receptive academic vocabulary test. However, the distinction between knowing a word passively and actively using it is significant (as cited in Lin & Morrison, 2010); therefore, it is much more

challenging when compared to the receptive vocabulary test (Nation, I. S. P., & Beglar, D., 2007). It is not surprising to observe that liberal arts students outperformed sciences students, which is in line with my prediction initially. As discussed above, liberal arts students frequently use academic vocabulary when composing essays. They are more familiar with how to actively apply those words in their writings, as one of the liberal arts students indicated in the questionnaire, “when you need to do your academic assignment, you will use academic vocabulary naturally.”

Limitations and Improvements

Tests and Methods Used

While the receptive vocabulary test adopted in this research is a well-acknowledged test and is widely used (Laufer, 1998; Nation, 2008), the measure used to assess the productive academic vocabulary is yet not very commonly used, although the instrument I used is based on Laufer, Nation, and Coxhead's Lexical Frequency Profiler (LFP) (Heatley, A., Nation, I.S.P. & Coxhead, A., 2002). It would better if the samples could be evaluated by professional tutors or professors so as to obtain more comprehensive results. In addition, the samples used for analysis were not produced instantly by students; thus, instead of depending on their own academic vocabulary knowledge, students may use external instruments to assist them while composing these assignments.

Data Collection

As only 33 pieces of reply were received, this was indeed a relatively small sample size. Despite the fact that one of the objectives of this research was to find out the differences in years of studies from both areas of students, there were only two senior sciences students involved in this research. In order to establish a more reliable database, more participants should be recruited.

Implications

As academic vocabulary plays a vital role in producing good academic assignments in university settings, I would suggest that universities should first introduce the basic knowledge about academic vocabulary to first-year students from both fields, such as the definition of academic vocabulary and the Academic Word List (AWL) (Cohead, 1998). To ensure they make progress in boosting their academic vocabulary knowledge, universities could introduce some innovative methods, including games, video-watching and interactive learning for first-year students as it is found in this research that they preferred these kinds of learning styles. Finally, for universities, including an adequate amount of academic readings, for instance, academic journals, articles as well as reference books written by scholars could assist sciences students to compensate their lacks of academic vocabulary knowledge when compared with liberal arts students. For individuals, sciences students could actively enrol in various university courses that are related to language areas, which could provide them with opportunities to enhance their productive vocabulary by writing academic articles.

Conclusion

In conclusion, there are no apparent differences in liberal arts students' and sciences students' performances in terms of receptive academic vocabulary. However, when it comes to the productive test, liberal arts students had a better overall result. This is due to the reason that liberal arts students often have chances to practice using academic vocabulary when accomplishing assignments. As a result, this research proves that the impacts on academic vocabulary knowledge of liberal arts students and sciences students were brought by their types of assignments.

References

- Anderson, J. I. (1980). The lexical difficulties of English medical discourse for Egyptian students. *English for Specific Purposes*, 37(4), 3e5.
- Chung, M., & Nation, P. (2003). Technical vocabulary in specialised texts. *Reading in a Foreign Language*, 15, 103–116.
- Cobb, T. (2009). Vocabprofiler. Retrieved from <http://www.lex tutor.ca/vp/eng>.
- Corson, D. (1997). The learning and use of academic English words. *Language Learning*, 47(4), 671–718. doi:10.1111/0023-8333.00025
- Cohen, A. D., Glasman, H., Rosenbaum-Cohen, P. R., Ferrara, J., & Fine, J. (1988). Reading English for specialised purposes: discourse analysis and the use of student informants. In P. Carrell, et al. (Eds.), *Interactive approaches to second language reading* (pp. 152e167). Cambridge: Cambridge University Press.
- Coxhead, A. (1998). An academic word list. Occasional Publication Number 18. New Zealand: LALS, Victoria University of Wellington
- García, G.E. (1991). Factors influencing the English reading text performance of Spanish-speaking Hispanic children. *Reading Research Quarterly*, 26(4), 371–392. doi:10.2307/747894
- Heatley, A., Nation, I.S.P. & Coxhead, A. (2002). Range and frequency programs. Retrieved from <http://www.victoria.ac.nz/lals/staff/paul-nation.aspx>
- Lin, Linda H. F., & Morrison, Bruce. (2010). The Impact of the Medium of Instruction in Hong Kong Secondary Schools on Tertiary Students' Vocabulary. *Journal of English for Academic Purposes*, 9(4), 255-266.

- Meara, P. (1996). The dimensions of lexical competence. In G. Brown, K.Malmkjaer., & J. Williams (Eds.), *Performance and Competence in second language acquisition* (pp. 35-53). Cambridge: CambridgeUniversity Press.
- Nation, I. S. P., & Beglar, D. (2007). A vocabulary size test. *The Language Teacher*, 31(7), 9-13.
- Shabani, & Tazik. (2014). Coxhead's AWL Across ESP and Asian EFL Journal Research Articles (RAs): A Corpus-based Lexical Study. *Procedia - Social and Behavioral Sciences*, 98(C), 1722-1728.
- Snow, C.E., & Kim, Y. (2007). Large problem spaces: The challenge of vocabulary for English language learners. In R.K. Wagner, A. E. Muse & K.R. Tannenbaum (Eds.), *Vocabulary acquisition: Implications for reading comprehension* (pp. 123–139). New York: Guilford.
- Yang, H. (1986). A new technique for identifying scientific/technical terms and describing science texts. *Literary and Linguistic Computing*, 1, 93-103.

Appendix A

The Head Words in AWL

abandon	aspect	coincide
abstract	assemble	collapse
academy	assess	colleague
access	assign	commence
accommodate	assist	comment
accompany	assume	commission
accumulate	assure	commit
accurate	attach	commodity
achieve	attain	communicate
acknowledge	attitude	community
acquire	attribute	compatible
adapt	author	compensate
adequate	authority	compile
adjacent	automate	complement
adjust	available	complex
administrative	aware	component
adult	behalf	compound
advocate	benefit	comprehensive
affect	bias	comprise
aggregate	bond	compute
aid	brief	conceive
albeit	bulk	concentrate
allocate	capable	concept
alter	capacity	conclude
alternative	category	concurrent
ambiguous	cease	conduct
amend	challenge	confer
analogy	channel	confine
analyse	chapter	confirm
annual	chart	conflict
anticipate	chemical	conform
apparent	circumstance	consent
append	cite	consequent
appreciate	civil	considerable
approach	clarify	consist
appropriate	classic	constant
approximate	clause	constitute
arbitrary	code	constrain
area	coherent	construct
consult	document	flexible
consume	domain	fluctuate
contact	domestic	focus
contemporary	dominate	format
context	draft	formula
contract	drama	forthcoming
contradict	duration	foundation

contrary	dynamic	found
contrast	economy	framework
contribute	edit	function
controversy	element	fund
convene	eliminate	fundamental
converse	emerge	furthermore
convert	emphasis	gender
convince	empirical	generate
cooperate	enable	generation
coordinate	encounter	globe
core	energy	goal
corporate	enforce	grade
correspond	enhance	grant
couple	enormous	guarantee
create	ensure	guideline
credit	entity	hence
criteria	environment	hierarchy
crucial	equate	highlight
culture	equip	hypothesis
currency	equivalent	identical
cycle	erode	identify
data	error	ideology
debate	establish	ignorance
decade	estate	illustrate
decline	estimate	image
deduce	ethic	immigrate
define	ethnic	impact
definite	evaluate	implement
demonstrate	eventual	implicate
denote	evident	implicit
deny	evolve	imply
depress	exceed	impose
derive	exclude	incentive
design	exhibit	incidence
despite	expand	incline
detect	expert	income
deviate	explicit	incorporate
device	exploit	index
devote	export	indicate
differentiate	expose	individual
dimension	external	induce
diminish	extract	inevitable
discrete	facilitate	infer
discriminate	factor	infrastructure
displace	feature	inherent
display	federal	inhibit
dispose	fee	initial
distinct	file	initiate
distort	final	injure
distribute	finance	innovate
diverse	finite	input
insert	minimise	precede

insight	minimum	precise
inspect	ministry	predict
instance	minor	predominant
institute	mode	preliminary
instruct	modify	presume
integral	monitor	previous
integrate	motive	primary
integrity	mutual	prime
intelligence	negate	principal
intense	network	principle
interact	neutral	prior
intermediate	nevertheless	priority
internal	nonetheless	proceed
interpret	norm	process
interval	normal	professional
intervene	notion	prohibit
intrinsic	notwithstanding	project
invest	nuclear	promote
investigate	objective	proportion
invoke	obtain	prospect
involve	obvious	protocol
isolate	occupy	psychology
issue	occur	publication
item	odd	publish
job	offset	purchase
journal	ongoing	pursue
justify	option	qualitative
label	orient	quote
labour	outcome	radical
layer	output	random
lecture	overall	range
legal	overlap	ratio
legislate	overseas	rational
levy	panel	react
liberal	paradigm	recover
licence	paragraph	refine
likewise	parallel	regime
link	parameter	region
locate	participate	register
logic	partner	regulate
maintain	passive	reinforce
major	perceive	reject
manipulate	percent	relax
manual	period	release
margin	persist	relevant
mature	perspective	reluctance
maximise	phase	rely
mechanism	phenomenon	remove
media	philosophy	require
mediate	physical	research
medical	plus	reside
medium	policy	resolve

mental	portion	resource
method	pose	respond
migrate	positive	restore
military	potential	restrain
minimal	practitioner	restrict
retain	status	thesis
reveal	straightforward	topic
revenue	strategy	trace
reverse	stress	tradition
revise	structure	transfer
revolution	style	transform
rigid	submit	transit
role	subordinate	transmit
route	subsequent	transport
scenario	subsidy	trend
schedule	substitute	trigger
scheme	successor	ultimate
scope	sufficient	undergo
section	sum	underlie
sector	summary	undertake
secure	supplement	uniform
seek	survey	unify
select	survive	unique
sequence	suspend	utilise
series	sustain	valid
sex	symbol	vary
shift	tape	vehicle
significant	target	version
similar	task	via
simulate	team	violate
site	technical	virtual
so-called	technique	visible
sole	technology	vision
somewhat	temporary	visual
source	tense	volume
specific	terminate	voluntary
specify	text	welfare
sphere	theme	whereas
stable	theory	whereby
statistic	thereby	widespread

Appendix B

The Website of the Google Form

<https://goo.gl/forms/FY6ZZTRaECSxTopy1>

Appendix C

Data Collected in This Research

<https://docs.google.com/spreadsheets/d/1KNhwWJO4CbBm4roLIFYP6nIRFDtHZzpicxwbMM-sUcl/edit#gid=1725152961>

Appendix D

A Bar Chart Showing the Types of Assignments of Liberal Arts and Sciences Students

